

PREDICTION OF JOB SELECTION AMONG  
FACULTY OF COMPUTING STUDENTS IN  
UNIVERSITI MALAYSIA PAHANG

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(COMPUTER SYSTEMS & NETWORKING)  
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PREDICTION OF JOB SELECTION AMONG FACULTY OF COMPUTING  
STUDENTS

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Thesis submitted in fulfillment of the requirements  
for the award of the degree of  
Bachelor of Computer Science in Computer Systems and Networking

Faculty of Computing  
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FEBRUARY 2023

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## **ABSTRAK**

Terdapat pelbagai pekerjaan dalam bidang teknologi maklumat dan sains penkomputeran. Hal ini adalah kerana teknologi adalah sentiasa bertambah baik. Mengikuti situasi ini, pelbagai pekerjaan baru dalam bidang ini telah diwujudkan. Projek ini adalah untuk membantu pelajar-pelajar Fakulti Komputeran di Universiti Malaysia Pahang (UMP) supaya dapat informasi tentang pekerjaan yang boleh dimohon selepas graduasi. Ini adalah penting kerana setiap kerja terdapat ilmu yang berbezaan dan perlu dikuasai. Jika siswa atau siswa dapat menguasai ilmu and kemahiran berkenaan dalam universiti, ia akan memberi peluang besar untuk mendapat kerja selepas graduasi. Bagi universiti, mereka boleh membuat keputusan menggunakan analisis ini. Sama ada membuka kelas baru atau tutup kelas yang kurang digunakan dalam pasaran. Teknik yang didapati dalam projek ini merangkumi pembelajaran mesin, untuk menganalisis data siswazah. Teknik yang dipilih adalah merujuk dari kajian lepas, merangkumi MLP, SVM dan CART. SVM telah dipilih. Ramalan pekerjaan kepada pelajar computer pada masa depan juga dijalankan. Dengan ini, para pelajar dapat lebih mengenali pekerjaan yang mereka dapat memohon, dan mencari maklumat dengan lebih fokus. Keputusan ditunjukkan dalam Google Data Studio.



## **ABSTRACT**

There are many jobs in the computer science and information technology field. As technology keeps improving, there are many new careers generated and obviously, job selection in this field will be more and more. This project is aims to help the students from Faculty of Computing in University Malaysia Pahang (UMP) in order to obtain the information about the career can be applied after their graduation. This is vital as every job has different knowledge that needs to be mastered. If the students can obtain the skills and knowledge in the university, it will help the students to get the jobs easier in their future day after graduation. In the university perception, by analysing the job career selected by the graduates, they can make the decision on whether to open or close a class to follow the market demand, or to update the current syllabus. By doing so, the university will have the higher ranking with high employment rate. All attributes have been identified. The techniques include in the project is machine learning that used to analyses the data of the graduated. The techniques selected were from the previous study, which is SVM, MLP, and CART. The best technique is SVM with the highest accuracy among these three techniques. Prediction on the career for future Faculty of Computing students is also a part of the scope for this project. This project enables students to have a clear idea for the future job they can apply for, so they can find more information and more focus. The output is shown in a dashboard, using Google Data Studio.

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## LIST OF SYMBOLS



## LIST OF ABBREVIATIONS

UMP	Universiti Malaysia Pahang
FK	Faculty of Computing
IT	Information Technology
KNN	K-Nearest Neighbours
DT	Decision Tree
CPC	Cooperative Patent Classification
NLTK	Natural Language Toolkit
MLP	Multilayer Perceptron
SVM	Support Vector Machine
CART	Classification and Regression Tree
L-BFGS	Limited-memory BFGS
CRISP-DM	Cross-Industry Standard Process for Data Mining
WEKA	Waikato Environment for Knowledge Analysis
cv	Cross-validation

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

Along with the industry 4.0 development, the information technology (IT) field has become more important nowadays. This can be proved by the gadgets we use in our daily lives, such as the social media we use, the smart appliance in our home, and the company's system; all are the treasures created from the research in the IT field. Thus, many universities have provided computing and information technology courses. Among the universities in Malaysia that provide the related courses, Universiti Malaysia Pahang (UMP) provides the computing science course that majors in three aspects: software engineering, computer system and networking, and multimedia. These courses are under the faculty name of the Faculty of Computing (FK).

According to the study, it said that the study field is vital in relating to the labour market among university graduates [1]. This is because there are some jobs that require the candidate to have professional and related skills. For instance, not everyone can be competent in the job of a software engineer or network engineer as it requires a lot of knowledge and skills in this field. Most of the graduates from FK will seek a job that is related to the IT field as they have the knowledge of it, rather than challenge themselves in an unfamiliar sector.

In this study, we are going to use the FK graduated job selection data to predict the future FK students' job selection using machine learning. The future FK students in this study are 2021 FK students as the data obtained is 2019 and 2020 graduates. The reason of the study is that FK students are the lack of information regarding the selection. First, we will analyse the job selection features of FK graduates and analyse the pattern of the job selection. Machine learning is important because it will select the important

features in the dataset, which will influence the prediction [2]. After that, we can use the data to predict the future FK students' job selection. This can be used for students with no idea about their future careers as a reference. The faculty is also able to use this prediction to focus on which courses should be applied to the students to enhance their competency.

## **1.2 PROBLEM STATEMENTS**

Referring to the reference [3], no matter which courses the students have chosen, the question that needs to be gone through is that "What kind of specialist do I want to be?". There are many kinds of studies in the IT field, such as network security, data mining, graphic design, system development, and more, as follow the development of the world [4]. Each of these requires different knowledge that is unable to be learned quickly. Hence, it is vital for IT students to identify which career they want to employ in the future to focus on the technique or knowledge they must learn.

The problem for the FK students, especially first-year students, is that they lack the information regarding the career they can be applied to [5]. This is because there are various careers that can be provided in the IT field. For instance, computer system and networking students are not limited to being network engineers or network designers. They can become database administrators, mobile application developers, cloud engineers, and others. "A ship that sails without a compass will get lost at sea," said Matshona Dhliwayo. Students need a reference to know which career they can apply for after they graduate to have a clear direction to study hard and get the job.

Using this study, they can know the seniors' job selection and be able to ask them (or lecturers) about the requirements and job descriptions. By doing so, they can plan for the elective subjects they need to take, and they will be able to take them seriously as it is necessary for their future job. It is essential for UMP to keep updated with the trends nowadays. This study enables the FK management to decide on the course to be opened to raise the students' employability to follow the trends in the labour market.

### **1.3 OBJECTIVES**

This study discusses the prediction for future job selection among FK students in UMP. The objective to be achieved in this study are shown below.

- i. To determine features involved in job selection among faculty of computing graduates.
- ii. To analyse the pattern of job selection among faculty of computing graduates.
- iii. To predict the future FK students (2021) job selection.

### **1.4 SCOPE**

The scope of the analysis will only focus on the FK students in UMP. It will predict future FK students' job selection using the data from FK graduates. The FK graduated data will be analysed to determine the features and pattern.

### **1.5 SIGNIFICANCE OF THE PROJECT**

This study is vital for the FK students and FK management. Students that are no idea about their future job selection may refer to this study to do their future job analysis to decide the field they want to try. For the FK management, they are able to use this study to analyse which new courses can be added to raise the students' employability or the talks they can hold to increase students' knowledge for their future job selection.

### **1.6 THESIS ORGANIZATION**

This study consists of three chapters. Chapter 1 introduces the problem, objective, scope, and the importance of the study. As a summary of chapter 1, we know the issue is FK students are the lake of information for their future job selection. Using the data of job selection from the FK graduates, we can analyse their job selection features and pattern. It can be a reference for future FK students. Then, we will make the prediction for future FK students' job selection.

Chapter 2 discusses the literature review of the study. The contents include the background of the study, a comparison of the references, and the references used. The comparison will compare the advantages and disadvantages of the previous research and the techniques used.

Chapter 3 is about the methodology of the proposed study. It includes the framework, requirement, and method for the analysis. The flowchart, data design with dataset description, evidence of early work, and testing plan will be introduced in this chapter.

Chapter 4 is results and discussion. It discusses the pre-processing of the data such as data cleaning and data filtering. Then, we will select the attributes most relevant with the title. Next, three machine learning techniques will be applied to test the technique with highest accuracy. The highest accuracy will be applied to do the prediction on job selection for future FK graduates. The result will be shown in dashboard using Google Data Studio.

Chapter 5 is the conclusion. It will do the conclusion of this study, discuss the part to be improve in the future study.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

There are some similar studies regarding the prediction of job selection. This section discusses the method for each study and compares the advantages and disadvantages. The technique used for the forecast will be limited to using machine learning. Machine learning is able to perform quantitative analysis, and the machine can learn to predict a subject using the previous data by analysing the pattern [6].

#### **2.2 PREVIOUS RESEARCH WORKS**

##### **2.2.1 CareerRec: A Machine Learning Approach to Career Path Choice for Information Technology Graduates**

In this study [4], the authors collected the data from the employees in the IT field, which involved 2255 employees in Saudi Arabia, via an online survey. These data had been used to train the supervised machine learning algorithms to have an accurate outcome prediction using technical skills, soft skills, and programming language skills. Before processing the data, the authors carried out the pre-processing process in which they removed the duplicated rows and assigned the value to the missing parts. The authors transformed the 565 unique values in the job title feature into 37 distinct job titles and assigned them into three classes: Analyst, Developer, and Engineer. The authors used the label encoding along with the categorical variables in the feature engineering part. This is because it can be used in various kinds of prediction models. The authors used Python and implemented five machine learning algorithms: K-Nearest Neighbors (KNN), Decision Tree (DT), Bagging meta-estimator, Gradient Boosting, and XGBoost. KNN is

used to solve regression and classification problems based on similarity measures. DT is a root to leaf decision making that passes through the tree, answering “yes” and “no” to have a correct output [7]. The bagging meta-estimator will combine the forecast from several DTs using the majority voting mechanism. Gradient Boosting will use the multiple weaker prediction models (such as DT) to produce a more accurate prediction model. XGBoost is similar to Gradient Boosting, but it is optimized to avoid overfitting or bias. After their testing, the authors found that the XGBoost algorithm has the highest accuracy, 70.47%.

### **2.2.2 Job Forecasting Based on the Pattern Information: A word Embedding-Based Approach**

The study [8] aims to use the word embedding-based method for career prediction by using the methods of calculating the similarities between patents and jobs. The job attributes’ descriptions were collected from O\*NET, and patent classifications codes’ descriptions were collected from cooperative patent classification (CPC). The word embedding model was trained and extracted the embedding vectors using the descriptions. After that, each job was given the most similar patent classification code, and a matching table was created. The word embedded models applied are Word2Vec, Doc2Vec, FastText, and BERT. These models had been trained in an unsupervised learning way using job attributes’ descriptions and patent classification codes. Before this, the authors pre-processed the description texts so that the model could learn the descriptions more efficiently. They used the WordNet tokenizer to tokenize the text. Next, using the NLTK (Natural Language Toolkit) in Python, they removed the stop words in the description. There are 1011 jobs that had class (31) and were named as the career clusters. The description of job attributes had been extracted from embedding vectors, and each job has the job representation vectors. These job representation vectors were clustered into 31 clusters and compared with the career cluster. Same with patent classification codes which had been clustered to compare with the cluster in the CPC system. K-means algorithm was used to compare the clustered groups. After the testing, the authors found that the FastText model is the best model for the prediction.

### **2.2.3 Predicting Career Using Data Mining**

The study [9] focuses on forecasting the career of computer science students using the graduates' data. The data was collected from 13 university graduates in Bangladesh, where the graduates are currently working in the industry. After the pre-processing of data, there are several features have been decided, and they will be encoded with numeric values. Several classification algorithms have been used. The accuracy was evaluated via 10-Fold Cross-Validation. To run the data mining algorithms, the sci-kit learn library in Python has been implemented, which are ID3, Classification and Regression Tree (CART), Random Forest, Support Vector Machines, and Neural Networks. ID3 requires the dataset to be categorized, and the noise must be cleared before running it. The pre-processed and categorized data can be run in CART, and it does not require clearing the noise. Random Forest needs to apply with Gini Index technique as each tree classifier uses it to measure attributes. In Support Vector Machines (SVMs), the One vs Rest method needs to be chosen when the data is multiclass. Multilayer Perceptron (MLP) had been chosen in Neural Networks. A feed-forward artificial neural network has at least one hidden layer of nodes in addition to the input and output layers. The Limited-memory BFGS (L-BFGS) function is used as a weight optimiser. After the authors run the prediction, they found that CART and MLP have the highest accuracy at 95.24%, and the precision rate for MLP is slightly more than CART.



## 2.2.4 Comparison Among Research

Table 2.2.1: Comparison Among Research

Criteria	Research 1	Research 2	Research 3
<b>Research and Authors</b>	H. Al-Dossari, Z. Al-Qahtani, F. A. Nughaymish, M. Alkahlifah, and A. Alqahtani, "CareerRec: A Machine Learning Approach to Career Path Choice for Information Technology Graduates," 2020.	T. Ha, M. Lee, B. Yun, and B. Y. Coh, "Job Forecasting Based on the Patent Information: A Word Embedding-Based Approach," 2022	M. Y. Arafath, S. Ahmed, M. Saifuzzaman, and S. A. Hossain, <i>Predicting Career Using Data Mining; Predicting Career Using Data Mining.</i> 2018
<b>Domain</b>	To help students select the most suitable career in the IT field using technical skills, soft skills, and programming skills.	A framework to predict career trends using patent classification codes.	To predict the career of computer science graduates using graduated data.
<b>Techniques</b>	Machine Learning Algorithms: -K-Nearest Neighbors (KNN) -Decision Tree (DT) -Bagging meta-estimator -Gradient Boosting -XGBoost	K-means algorithms Word embedding models: -Word2Vec -Doc2Vec -FastTest -BERT WordNet tokenizer Natural Language Toolkit (NLTK)	Data Mining Algorithms: -ID3 -CART -Neural Networks, MLP -Support Vector Machines, One vs Rest -Random Forest Limited-memory BFGS (L-BFGS)
<b>Highest Accuracy/ Normalized mutual information</b>	XGBoost (70.47%)	FastTest (0.424)	MLP, CART (95.24%)
<b>Data</b>	Online survey	-Occupational Information Network (O*NET) -Cooperative Patent Classification (CPC)	Online survey
<b>Advantages</b>	XGBoost has the capability to handle missing values and is easy to use.	It considers the technology change.	MLP Can be applied to complex non-linear problems.
<b>Disadvantages</b>	Inequivalent data will cause an inaccurate outcome.	Unable to reflect contextual information in texts which document embedding	The output accuracy depends on the quality of training.

		does because the length of data is short.	
<b>Limitation</b>	XGBoost does not perform well on unstructured data.	Only suitable for large-scale data.	MLP is sensitive to feature scaling.

### 2.3 SUMMARY

From previous research, Research 3 will be used in this study. This is because the research target is similar, and the accuracy shows the highest rate using the MLP and CART (95.24%). Research 1 uses a similar method, but the XGBoost is easy to be affected by the outlier. Research 2 is suitable for predicting the large scale of data but not suitable for this study which only focuses on FK students.

## CHAPTER 3

### METHODOLOGY

#### 3.1 RESEARCH FRAMEWORK

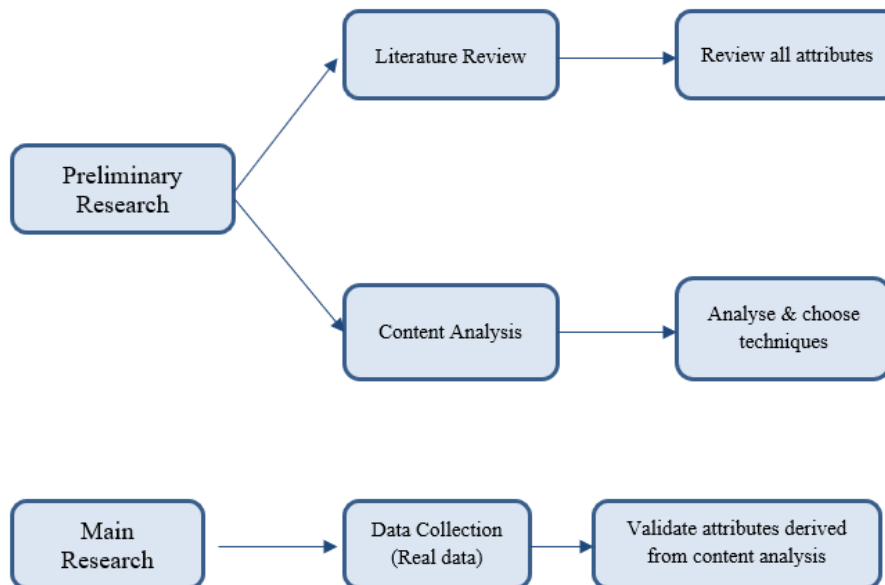


Figure 3.1.1 Research Methodology Framework

Figure 3.1.1 shows the flow of this study. In the beginning, we need to run a literature review where we will review all attributes from it. Three research have been viewed in the chapter 2. After that, we will do the content analysis where we will analyse and choose the techniques to be applied in this study. We will review all attributes and techniques involved. 3 most related techniques have been chosen which are MLP, SVM and CART.

After the preliminary preparation, we will start the research by collecting the data from the Academic Centre with the approval from Dr. Saradatul. The data only include from graduates 2019 until 2020. We will then validate attributes derived from content analysis.

### 3.1.1 FLOW MODEL

CRISP-DM is a flow model that helps in planning, organizing, and implementing machine learning. It contains six phases: business understanding, data understanding, data preparation, modelling, evaluation, and deployment. Using the explanation in the study [10], each stage has a different function. Business understanding will decide the data mining goals and look for the required resources and available. Data understanding will collect the data, explore and check for the quality. Data preparation will choose the data that can be used, eliminate the useless data and clean the noise. In the modelling phase, we will build the model and select the data mining techniques to be used. After that, we will evaluate the results against our objectives. We will redo the evaluation again, starting from business understanding if the evaluation is unsatisfactory. Else it will proceed to the deployment phase. The deployment phase will do the final report or the dashboard.

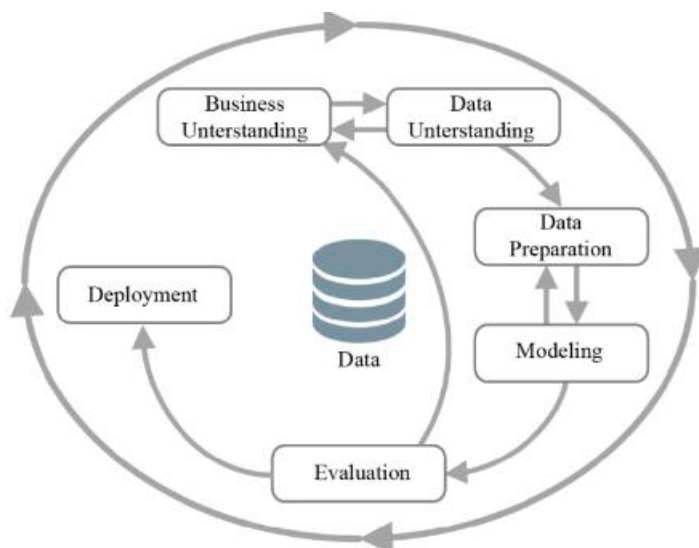


Figure 3.1.2 CRISP-DM Process

Source: Huber et al. 2019 [11]

The business understanding will be changed to research understanding in order to let it fit into the study. This is because this study does not face business, but it is research for the UMP. Other stages remain the same.

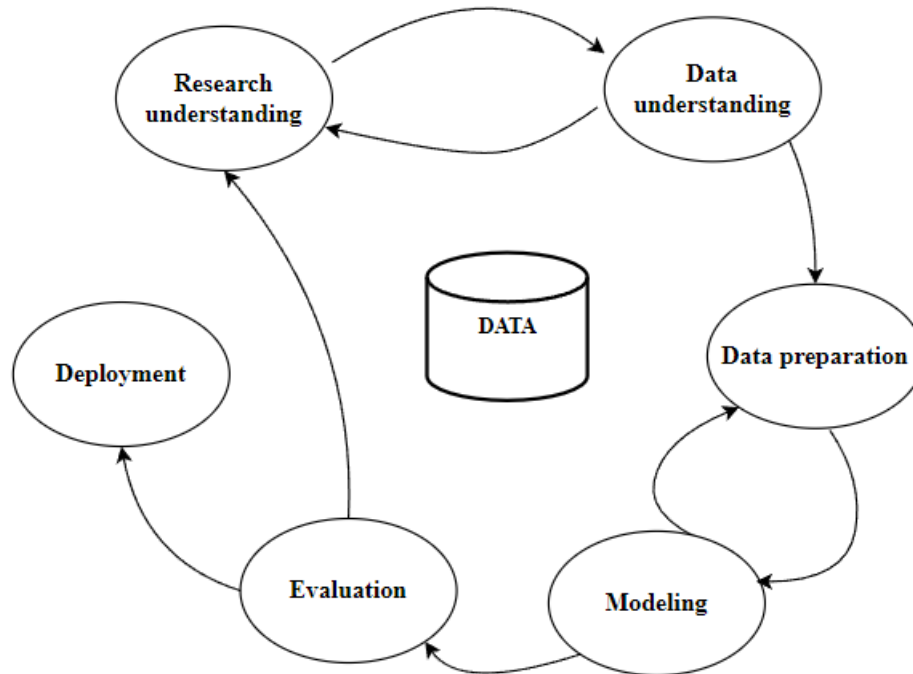


Figure 3.1.3 Modified CRISP-DM Process

### 3.2 RESEARCH UNDERSTANDING

This section will discuss the research goals, requirements, input, output, limitation and the flow of this study. This study is targeted to produce the outcome that predicts the job selection for the UMP FK students using the graduates' data. This is because the FK students are the lack of the information for a job they can apply for. Using this study, FK students are able to know more about what job they can selected for the future. We will first analyse the features and patterns using the data of FK graduates as input. After that, we will be able to predict the job selection for the UMP FK students. The limitation is that the data obtained is not all completed, hence it might have a slight difference with the real situation.

First of all, we need to do the research understanding which this section is doing. Before the testing runs, we need to collect the data of FK graduates from UMP and understand the data, which is the data understanding phase. The data are collected from

academic center and confidential paper is signed. It contains graduates' personal information, their education information, and working information. We need to understand the features code in the data we get and analyse which features code is required and not. This will be explained in the next section.

After we analyse the data, we will proceed to the data preparation phase. We need to eliminate the unused data to keep the important criteria used. The noise and the missing value need to be cleared at the same time, using WEKA. WEKA, with the full name of Waikato Environment for Knowledge Analysis, is an application that contains various machine learning techniques to be used to process the raw data [12]. It may process the outcome into a diagram or processed data.

In the modelling phase, we will run the testing and decide the most accurate technique to be used. In Chapter 2, there are three research have been discussed. The techniques used in this study are MLP, SVM, and CART. Depending on only one technique is less reliable, we will apply these three techniques using the training data and analyse the output with the highest accuracy, precision, recall, and F-measure. The next section will explain each technique and its limitation.

The prediction and the pattern will be analysed after the modelling phase, which is in evaluating phase to obtain the results. The pattern of the features in UMP graduates' job selection will be generated and used for the prediction for future FK students' job selection.

Last, the dashboard will be created using Google Data Studio, which is the deployment phase. The dashboard will visualize the results we get, which are the pattern of the features of job selection of FK graduates, and the prediction for the future job selection among FK students.

### **3.2.1 Multilayer Perceptron (MLP)**

MLP is a feedforward artificial neural network model consisting of input, output, and hidden layers [13]. It is made up of multiple layers of points in a graph that each layer completely links with others. Neurons are the elements of the output and hidden layers.

Each of the neurons represents the processing unit. Using non-linear activation functions, it is able to obtain the non-linear mapping relationship between the input and output data [14]. This model lacks memory function. However, it can be solved using the Limited-memory BFGS (L-BFGS).

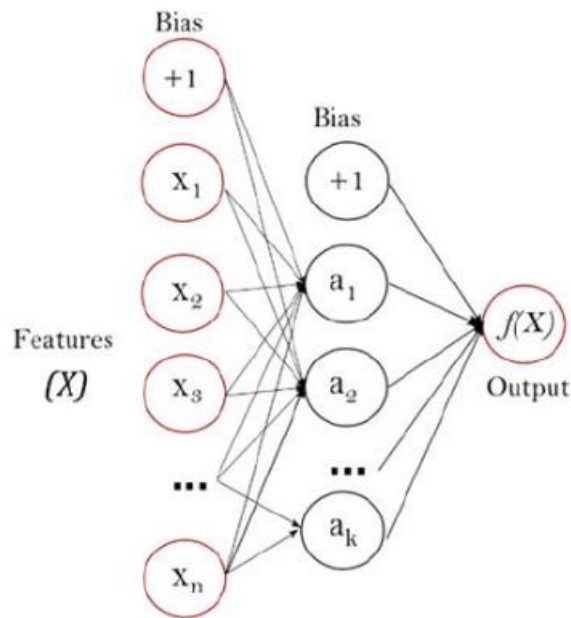


Figure 3.2.1 MLP Process

Source: Akmal Che Yahaya et al. 2020 [15]

### 3.2.2 Support Vector Machines (SVM)

SVM is a widely used machine learning method for classification purposes [13]. It is a supervised learning method that uses the training data to create input-output mapping functions that learn using observation [16]. SVM is mainly used to determine the best separation border, referred to as a hyperplane, to distinguish the classes from one another. The kernel function is important in the construction of the SVM model [17]. There are three kernel functions in basic: polynomial kernel function, radial basis function, and Sigmoid kernel function. The limitation of SVM is that it is difficult to select the correct kernel function.

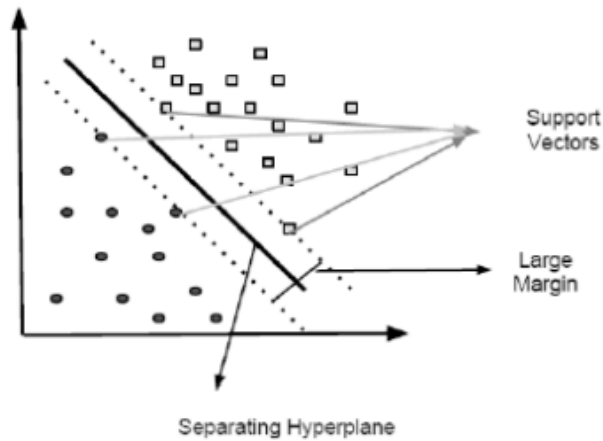


Figure 3.2.2 SVMs illustration

Source: Kuzey et al. 2018 [16]

### 3.2.3 Classification and Regression Tree (CART)

CART is a non-parametric method commonly used for prediction, using the input data [18]. It is basically the decision tree representing the regression or classification results [19]. The parent node is placed at the top. It represents the most influencing parameters. There are branches below the parent node by the selected split criterion. Each branch will have the leaf nodes that represent the results after the test. It uses the if-else statement to split the results. The limitation of this model is that it is robust if outliers and auto-correlated input data exist [20].

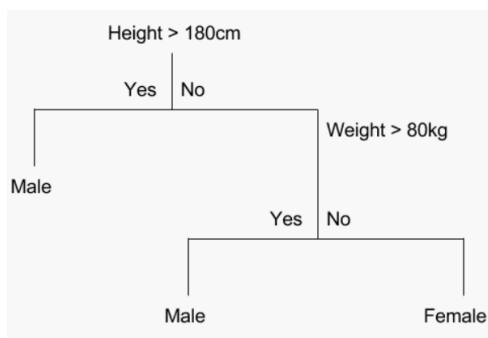


Figure 3.2.3 CART illustration



### 3.3 DATA UNDERSTANDING

The data is obtained from the academic center of UMP. There exist three Microsoft Excel files that contain different data. The first excel file and second excel file declared the features code for each respective year, which is 2019 and 2020. The third excel file contains all the data of the graduates from UMP in 2019 and 2020. Figure 3.3.1 shows the example of the features code used for the data in 2019. NAMA MEDAN is the features code for each feature. It follows by the KETERANGAN which represents the full name for the code. For instance, e\_jantina represents the gender of the graduates while Figure 3.3.2 shows the details criteria used for each features code. Referring to Figure 3.3.2, the number of 2 in features code e\_jantina represents the graduate as a female.

NO.	MEDAN	NAMA MEDAN	KETERANGAN
1	A	e_nama	NAMA (SEPERTI DALAM KP/PASPORT)
2	B	e_kp	NO KP/PASPORT
3	C	e_matrik	NO. MATRIK / PELAJAR
4	D	e_tentera	NO TENTERA
5	E	e_jantina	JANTINA
6	F	e_hari_lahir	HARI LAHIR
7	G	e_bulan_lahir	BULAN LAHIR
8	H	e_tahun_lahir	TAHUN LAHIR

Figure 3.3.1 Features Code Example 2019

JANTINA	KETURUNAN	JENIS OKU	STATUS PERKAHWINAN
<b>Kod Keterangan</b>	<b>Kod Keterangan</b>	<b>Kod Keterangan</b>	<b>Kod Keterangan</b>
1 Lelaki	1 Melayu	1 Penglihatan	1 Bujang
2 Perempuan	2 Cina	2 Pendengaran	2 Berkahwin
	3 India	3 Anggota fizikal	3 Bercerai
	4 Iban	5 Pertuturan	4 Berpisah
<b>WARGANEGARA</b>	5 Bidayuh	6 Pelbagai	5 Duda
<b>Kod Keterangan</b>	6 Melanau	7 Masalah pembelajaran	6 Balu/Janda
1 Warganegara	7 Kadazan/Dusun		
2 Bukan Warganegara	8 Bajau	<b>CABARAN (OKU)</b>	<b>BANTUAN KEWANGAN</b>
3 Penduduk Tetap	9 Murut	<b>Kod Keterangan</b>	<b>Kod Keterangan</b>
	14 Orang Asli (Semenanjung)	1 Kewangan	1 IPT anda
<b>PENDAPATAN KELUARGA</b>	16 Kadayun	2 Kemudahan pengangkutan	2 Baitulmal/Zakat
<b>Kod Keterangan</b>	24 Bumiputera Lain	3 Kemudahan penginapan	3 Yayasan
1 RM500 dan ke bawah	26 Lain-lain Bumiputera Sabah	4 Semasa belajar; Kemudahan belajar	4 Lain-lain
2 RM501 - RM1000	27 Lain-lain Bumiputera Sarawak	4 Semasa mencari pekerjaan; Kemudahan mencari pekerjaan	<b>STATUS PEKERJAAN</b>
3 RM1001 - RM1500	28 Sikh	4 Semasa bekerja; Kemudahan di tempat kerja	<b>Kod Keterangan</b>
4 RM1501 - RM2000	100 MELAYU	5 Diskriminasi	1 Bekerja
5 RM2001 - RM2500	101 BUGIS	6 Pertubuhan/komunikasi	2 Melanjutkan Pengajian
6 RM2501 - RM3000	102 BOYAN	7 Lain-lain	3 Meningkatkan Kemahiran
9 RM3001 - RM4000	103 BANJAR		4 Menunggu Penempatan Pekerjaan
10 RM4001 - RM5000	104 JAWA		5 Belum Bekerja
11 RM5001 - RM6500	105 JAWI PEKAN		
12 RM6501 dan keatas	106 MINANGKABAU		<b>STATUS PENYERTAAN DALAM SKPG1 KPM</b>
	200 CINA		<b>Kod Keterangan</b>
	201 CANTONESE		1 Sertai
	202 FOOCHOW		2 Tidak sertai
	203 HAINANESE		

Figure 3.3.2 Detail Features Code

There are total of 387 features for the data. Using the WEKA, it will eliminate the unnecessary features and filter the important. Hence, we will be able to determine the features involved in the job selection among the FK graduates, as mentioned in objective. The features code and detail of the code can be viewed in Appendix A.

### 3.4 PROPOSED DESIGN

After using the WEKA to analyse the pattern of job selection and do the prediction, the result will be shown in a dashboard. Below is the example of the dashboard will be created using Google Data Studio. Since the features will be chosen are not yet decided, the dashboard below will show the necessary outcome only, which are the job title that FK graduated choose and also the prediction of the job title for current FK students in the future.



Figure 3.4.1 Example of Dashboard

### 3.5 PROJECT REQUIREMENT

Throughout the Chapter 3, we are able to confirm that the tools needed for this project. First of all, Jupyter Notebook will be used to do the data pre-processing while

WEKA is needed to do the data training, data analyse, and prediction. It can be downloaded using the laptop and it is free of charge.

Next, Google Data Studio is required to do the dashboard, which is to demonstrate the output of the analysis. It is a free website that provide by Google that only require a google account.

The data of FK graduated is the main criteria for this project. As mentioned before, this data had been obtained from the academic center and a confidential letter is signed. It contains the job title that FK graduated are working for, and also others information provided, which need to be analysed to determine the useful data.

Using a laptop is sufficient for this project, which is the author's own laptop. The laptop model is ASUS TUF Gaming FX505DT, Windows 11, Processor AMD Ryzen 5, RAM 12GB, and 64-bit operating system.

Microsoft Office Word is needed to do the report or documentation, while Microsoft Office Excel is used to open the data files. UMP student account is used to login the Microsoft account.

### **3.6 SUMMARY**

This chapter discusses the flow of the project, discussed the input, process, and outputs of the analysis. The input is the FK graduated data. It will be process using the WEKA. The process includes data pre-processing, training and analysis. It will use SVM, MLP and CART machine learning to compare the accuracy, and decide the machine learning technique to be used in the prediction and analysis. The output is the dashboard which contains the prediction of job title for each course for FK and others significant information. The limitation of the project is that the data is not filled 100% correctly, such as there have some features not filled by the participant, hence it might not 100% accurate with the real situation. However, the data accuracy will be promised accurate as the technique used will have the accuracy above 75% using current data.

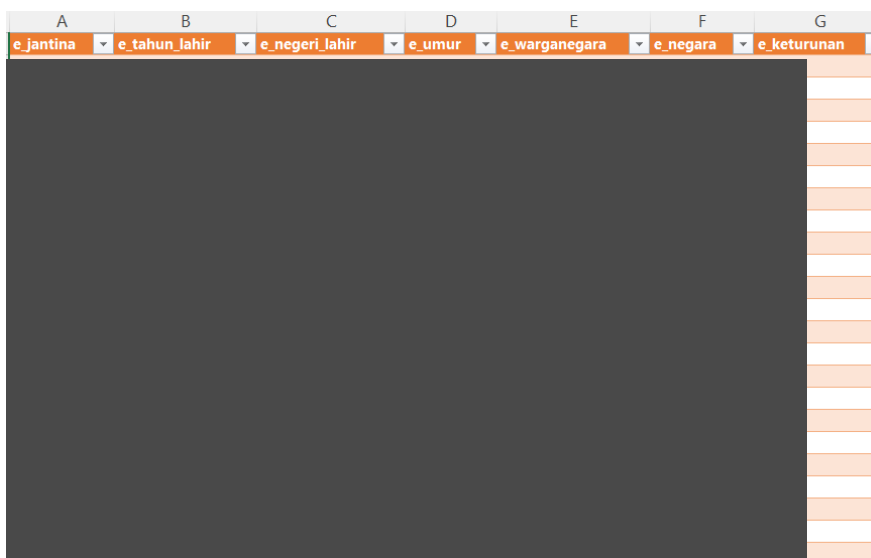
## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 INTRODUCTION

This chapter discuss the process and the result of the project. The process including the attributes selection and filter to be applied to clean the data. Then it will run the training set to test the accuracy for each algorithm. Thus, we can select the algorithm with the highest accuracy to do the prediction of the job selection for the FK students.

Figure 4.1.1 showing some of the attributes in the raw data. It will be filtered to only FK degree students which the course code is BCN, BCG and BCS as shown in Figure 4.1.2. The missing values, which is the empty column will be replace with question mark as it will be recognised as the missing value in the WEKA then.



The image shows a spreadsheet interface with seven columns labeled A through G. The headers for these columns are: A: e\_jantina, B: e\_tahun\_lahir, C: e\_negeri\_lahir, D: e\_umur, E: e\_warganegara, F: e\_negara, and G: e\_keturunan. Each header cell has a small downward arrow on its right side, indicating a dropdown menu. The main body of the spreadsheet is mostly obscured by a large dark grey rectangular area, with only the rightmost edge of the data rows visible, showing several empty cells in the G column.

Figure 4.1.1 Some Attributes from the Raw Data

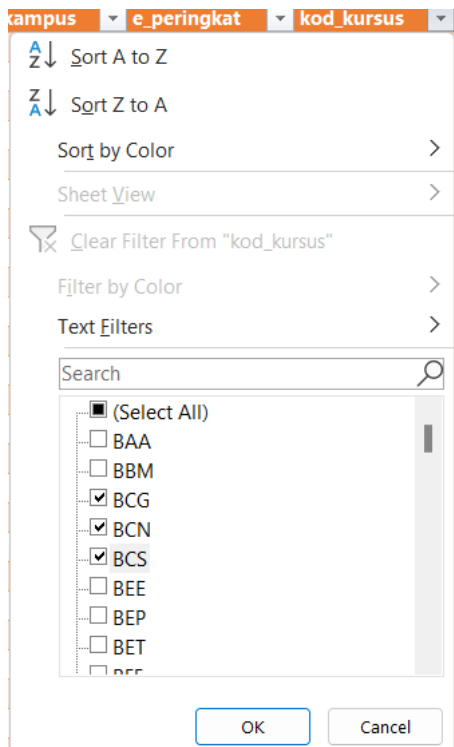


Figure 4.1.2 Filter for FK Degree Students

## 4.2 PRE-PROCESSING

Before we can use the data for training purpose, the data need to undergo a data cleaning process. An abnormal data not only increase the bandwidth, they will lead to node energy consumption increase and the inaccurate output [21]. Jupyter Notebook have been used to carry out a data cleaning process. Pandas module and numpy module have been import. Then, we need to create a dataframe to read the csv file from our laptop. After the csv file have been read, we can drop the instance that is not in the working state and the instance with empty job title, column that having more than 200 missing values, and the column fill with “-” only as it does not give any insight. After all these data have been clean, we can check for the duplicate data. Since there is no duplicate data, we can proceed to output the filtered data as a csv file. The code is shown as figure below.

```

In [1]: #CA19099 FYP
import pandas as pd
import numpy as np

In [2]: df = pd.read_csv(r'C:\Users\USER\Desktop\FK ONLY\2019AllFKData.csv')

In [3]: # Drop e_status is not 1 (working)
df.drop(df[df['e_status'] != 1].index, inplace = True)

In [4]: # Replace empty strings with NaN
df.replace('', np.nan, inplace=True)
df.replace('-', np.nan, inplace=True)

In [5]: # Drop column with any NaN values
df.dropna(axis=1, how='all', thresh=df.shape[0]-200, inplace=True)

In [6]: # Drop row with NaN values in e_41_b_1 (jobs)
df2=df.dropna(axis=0, subset=['e_41_b_1'])

In [7]: df2.to_csv("2019DecodeFKworkOnly.csv", index=False)

In [8]: #check duplicates
df.duplicated().sum()

Out[8]: 0

```

Figure 4.2.1 Data Cleaning

Figure 4.2.2 showing the interface after the data have been opened in the WEKA. We are able to view the visualization for each attribute and some information will be shown on the top of the visualization.

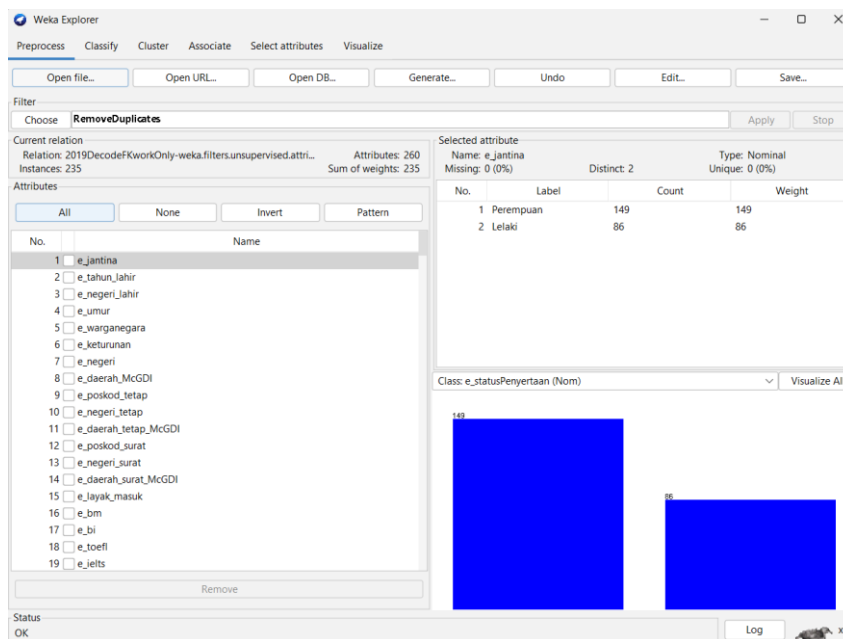


Figure 4.2.2 Filter Applied

## 4.2.1 Select Attributes

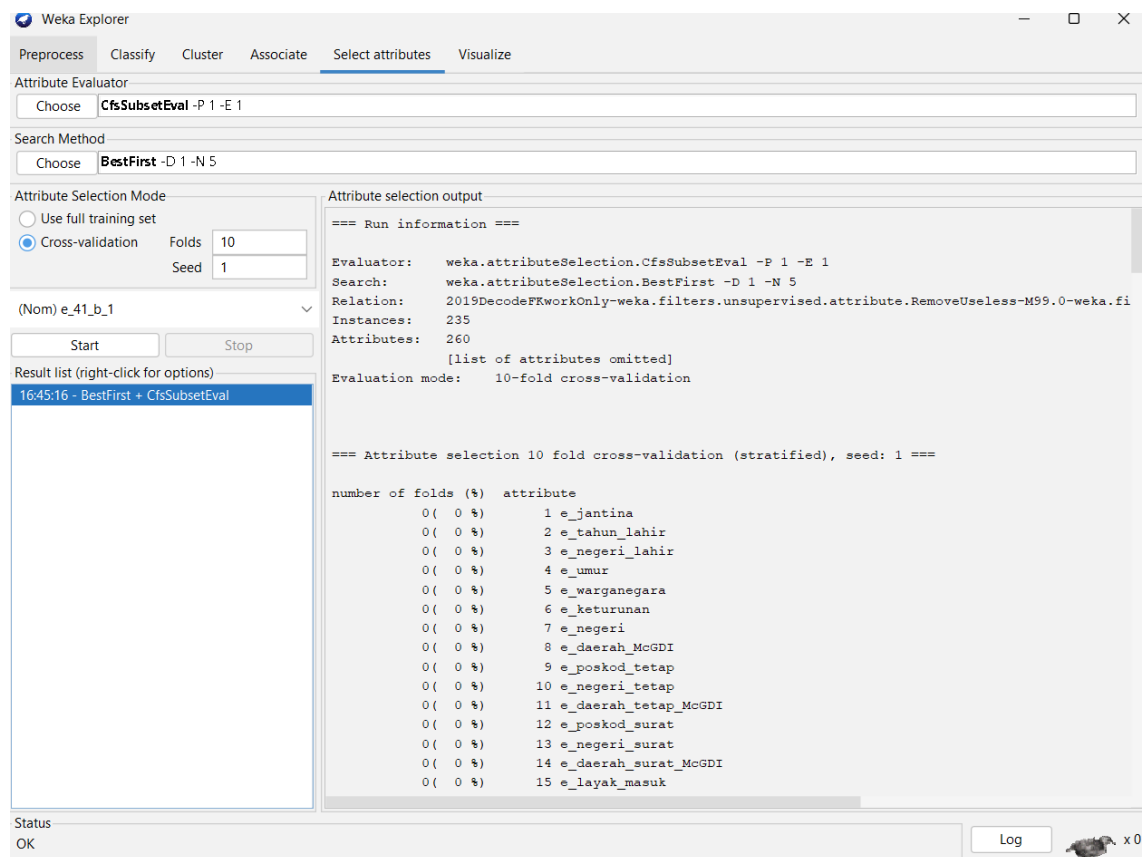


Figure 4.2.3 Attributes Selected

Weka provide a “Select attributes” to help user in features selection. Since there are too many attributes in the dataset, we can use this function to eliminate the useless attributes. CfsSubsetEval using BestFirst search method have been applied to eliminate the useless features. CfsSubsetEval will select the features based on the predictive ability and redundancy degree. It will prefer the features that are highly correlated to the target class which is job (e\_41\_b\_1) with low intercorrelation [22]. BestFirst search method use a backtracking option along with greedy hill climbing to search the space of attribute subsets [23]. According to the output, the attributes selected are as follows: e\_17\_nama\_syarikat (100%), e\_25\_a\_1\_lain (80%), e\_29\_a\_i (70%), e\_41\_a (100%), e\_41\_d (100%), and e\_47\_lain (100%).

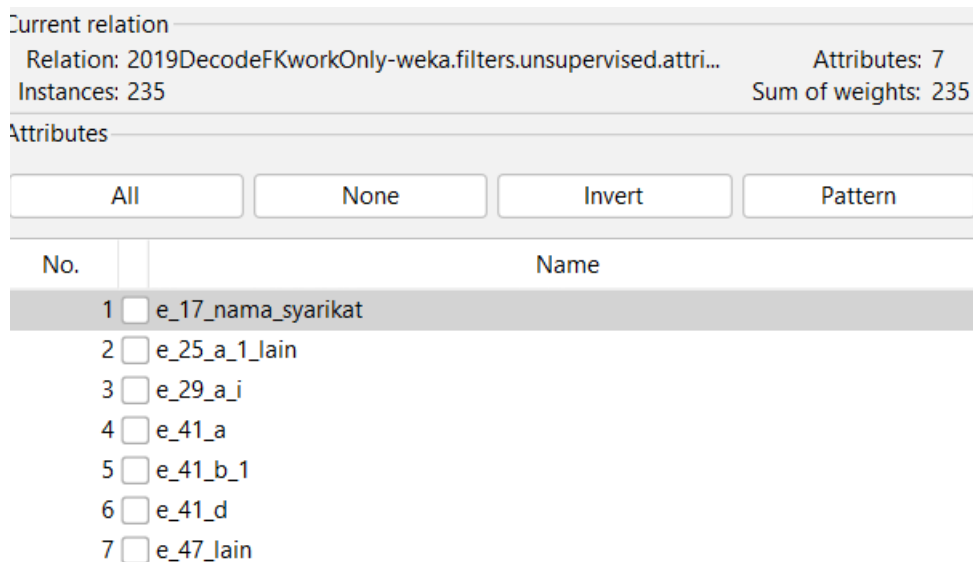


Figure 4.2.4 Attributes after elimination

### 4.3 MODELING

In this phase, the machine learning techniques have been chosen is implemented to test the highest accuracy. Cross-validation (cv) with 10 folds is selected to test the accuracy. Cv will run nine times as a classifier training and the tenth will be the testing classifier. All these 10 sets count as one-fold. It will change the test set for each folds so each data set will be used as a testing set and training set [24].

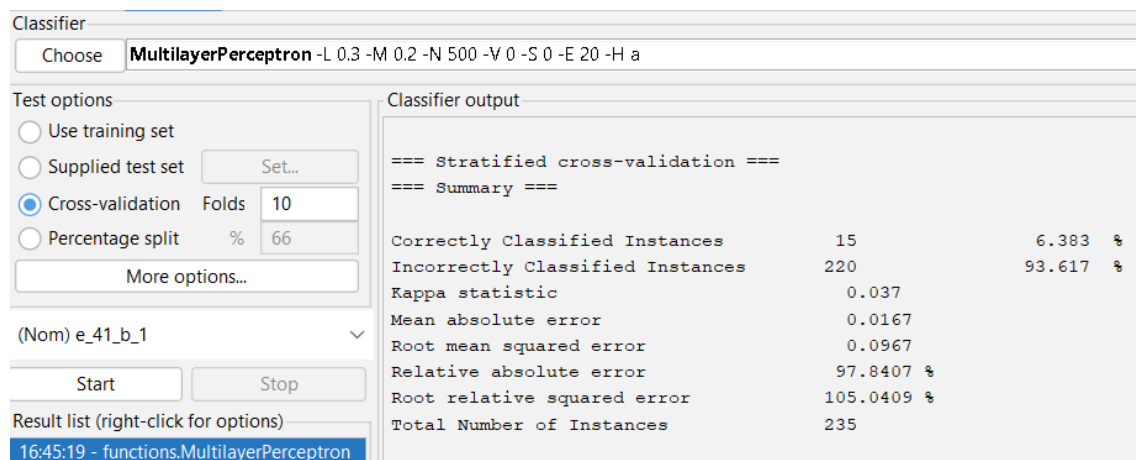


Figure 4.3.1 Accuracy for MLP



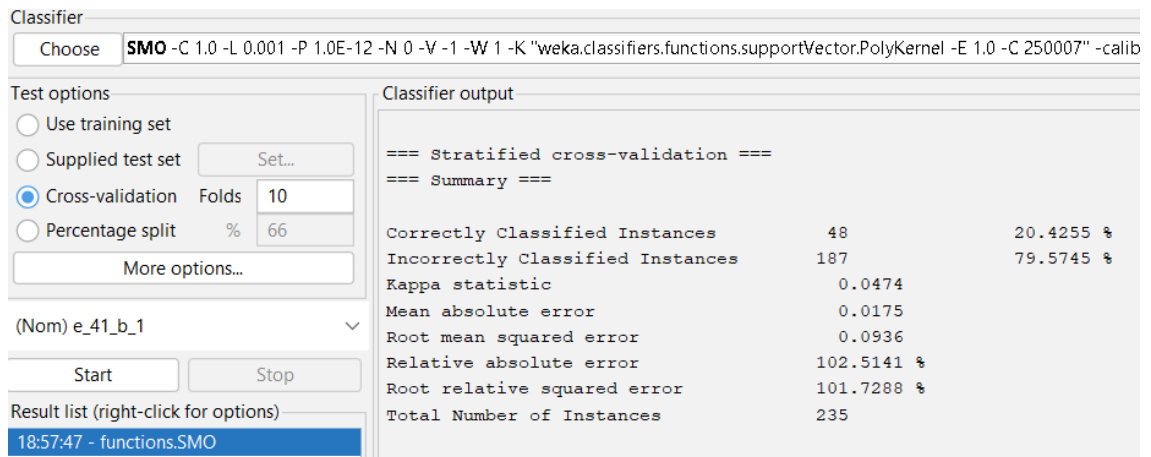


Figure 4.3.2 Accuracy for SVM

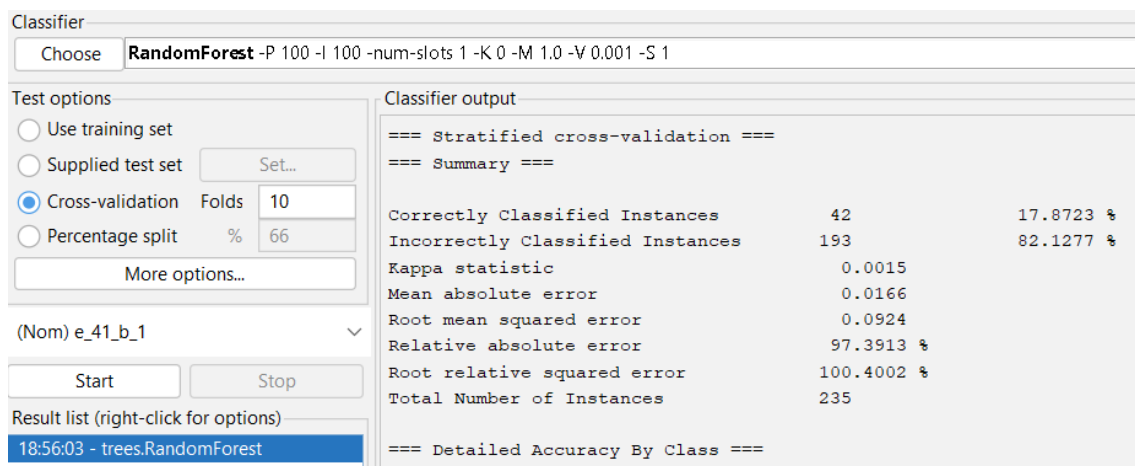


Figure 4.3.3 Accuracy for CART

From figures above, we can see that the accuracy for each machine learning is 6.383% (MLP), 20.4255% (SVM) and 17.8723% (CART). The highest accuracy is SVM. Hence, we will apply it for the prediction.

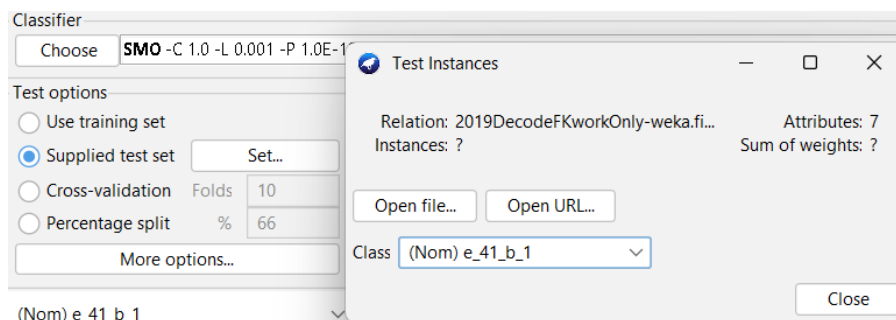


Figure 4.3.4 Select the File to be Applied

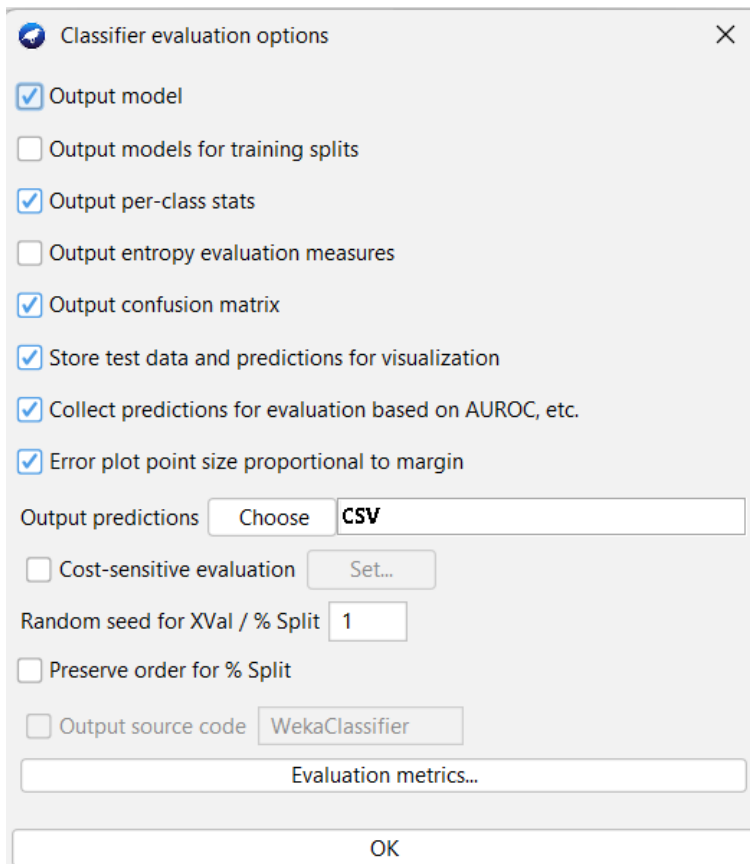


Figure 4.3.5 Select Output Predictions as CSV

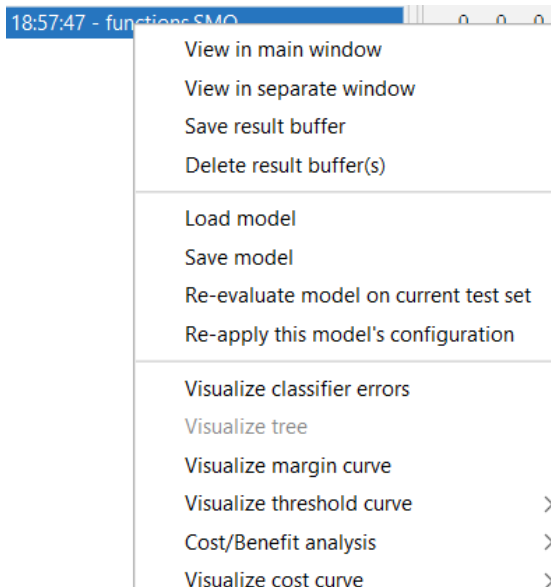


Figure 4.3.6 Re-evaluate model on current test set

To do the prediction, we need to use Supplied test set and click the “Set” button to use the file we want to predict. Then, “More options” button enable us to select the output prediction to be shown in which form. In this paper, it will show in csv. Right click at the training result that run previously, using the SVM machine learning, select the re-evaluate model on current test set to do the prediction. The output is show in Appendix B. The summary of the prediction is shown in figure below.

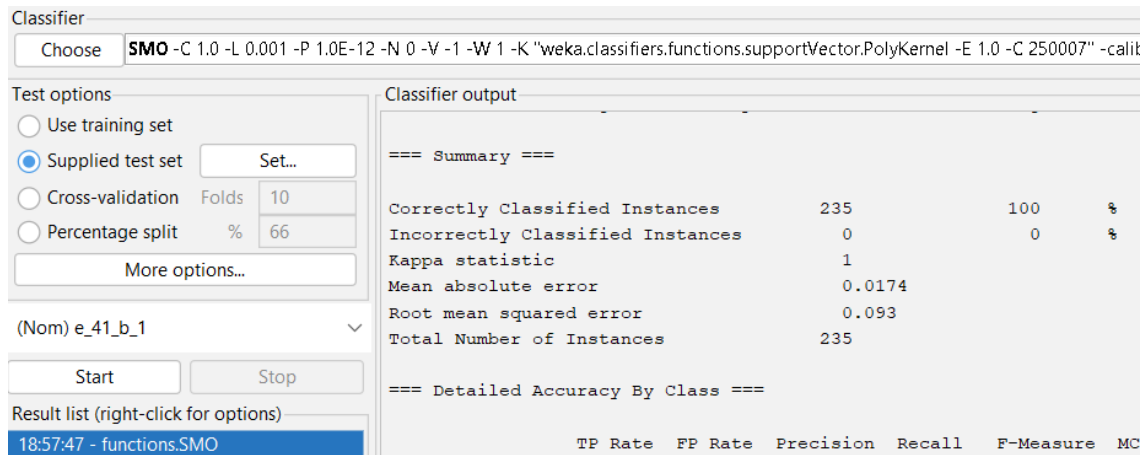


Figure 4.3.7 Prediction Summary Output

#### 4.4 FILTER FOR IT FIELD ONLY

The job has been filtered into two types of job class, which is IT job and non-IT job class for more specific job references. It then run again with different machine learning method again to test the accuracy again, focus on IT job only. The result is show as below.

Classifier

Choose **MultilayerPerceptron** -L 0.3 -M 0.2 -N 500 -V 0 -S 0 -E 20 -H a

Test options

Use training set

Supplied test set

Cross-validation Folds

Percentage split %

(Nom) e\_41\_b\_1

Result list (right-click for options)

00:21:28 - functions.MultilayerPerceptron

Classifier output

```

=== Summary ===
Correctly Classified Instances      28          17.284 %
Incorrectly Classified Instances   134          82.716 %
Kappa statistic                    0.055
Mean absolute error                0.0255
Root mean squared error            0.1131
Relative absolute error            98.5571 %
Root relative squared error        99.6904 %
Total Number of Instances         162

=== Detailed Accuracy By Class ===

```

Figure 4.4.1 IT Job using MLP

Classifier

Choose **SMO** -C 1.0 -L 0.001 -P 1.0E-12 -N 0 -V -1 -W 1 -K "weka.classifiers.functions.supportVector.PolyKernel" -E 1.0 -C 250007" -cal

Test options

Use training set

Supplied test set

Cross-validation Folds

Percentage split %

(Nom) e\_41\_b\_1

Result list (right-click for options)

00:21:28 - functions.MultilayerPerceptron

00:22:26 - functions.SMO

Classifier output

```

=== Summary ===
Correctly Classified Instances      30          18.5185 %
Incorrectly Classified Instances   132          81.4815 %
Kappa statistic                    0.0713
Mean absolute error                0.0263
Root mean squared error            0.1147
Relative absolute error            101.6185 %
Root relative squared error        101.1427 %
Total Number of Instances         162

=== Detailed Accuracy By Class ===

```

	TP Rate	FP Rate	Precision	Recall	F-Measure

Figure 4.4.2 IT Job using SVM

Classifier

Choose **REPTree** -M 2 -V 0.001 -N 3 -S 1 -L -1 -I 0.0

Test options

Use training set

Supplied test set

Cross-validation Folds

Percentage split %

(Nom) e\_41\_b\_1

Result list (right-click for options)

00:21:28 - functions.MultilayerPerceptron

00:22:26 - functions.SMO

00:24:00 - trees.REPTree

Classifier output

```

=== Summary ===
Correctly Classified Instances      28          17.284 %
Incorrectly Classified Instances   134          82.716 %
Kappa statistic                    0.0224
Mean absolute error                0.0254
Root mean squared error            0.1134
Relative absolute error            98.5061 %
Root relative squared error        100.0365 %
Total Number of Instances         162

=== Detailed Accuracy By Class ===

```

	TP Rate	FP Rate	Precision	Recall	F-Measure
	0.000	0.000	?	0.000	?

Figure 4.4.3 IT Job using CART

SVM still providing the highest accuracy among three machine learning techniques, hence it will be used for the prediction.

## 4.5 RESULT

The output has been modified to the Google Data Studio by linking the result from the Google Spreadsheet. When the mouse move to the selected bar, it will show the record number of that predicted job. Figure 4.5.1 until Figure 4.5.9 are showing the result of the dashboard. In Figure 4.5.1 and Figure 4.5.5, the x-axis shows the actual job in the tables, and the bar shows the predicted job they will be, with the number of it. In Figure 4.5.2, Figure 4.5.3, Figure 4.5.6 and Figure 4.5.7, it shows the actual job graph at the top and the predicted job at the bottom. Hence, we can do the comparison between the actual job and the predicted job. The jobs are showing the highest 20 jobs have been applied from the graduates. Figure 4.5.10 showing the QR code that will be directed to the dashboard.

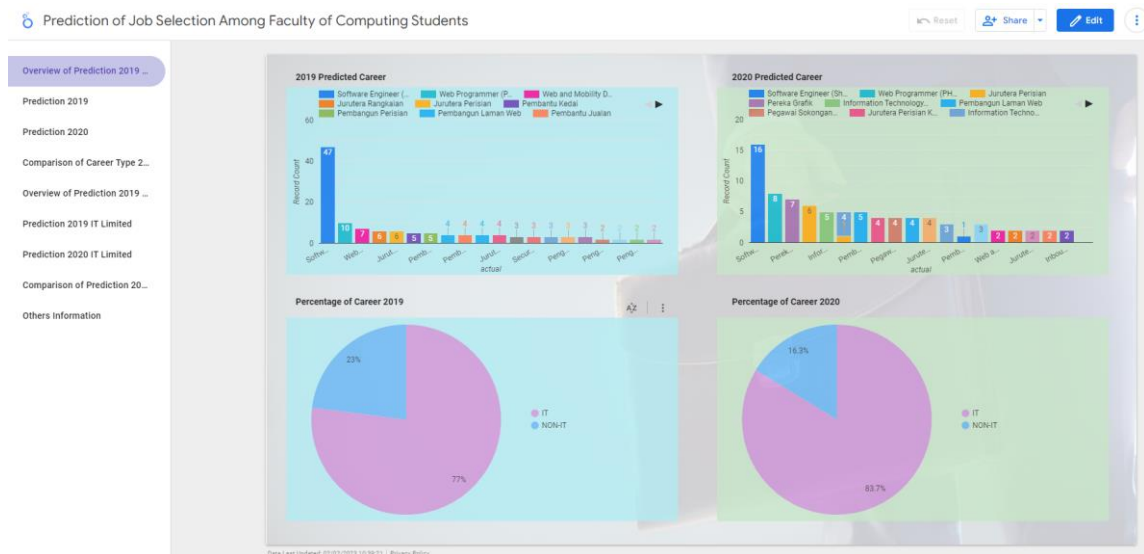


Figure 4.5.1 Dashboard Overview of Prediction 2019 and Prediction 2020

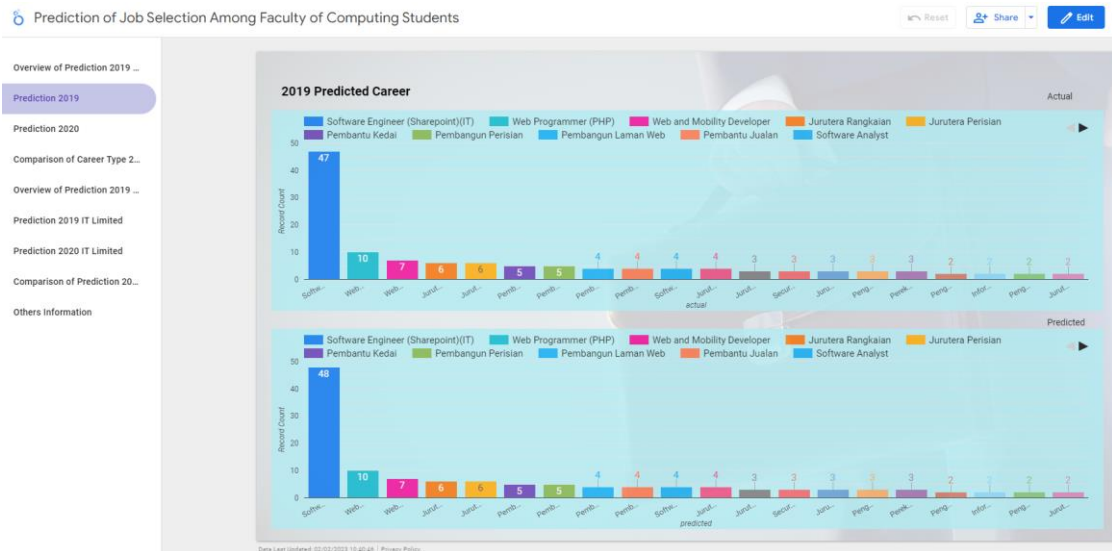


Figure 4.5.2 Dashboard of Prediction 2019

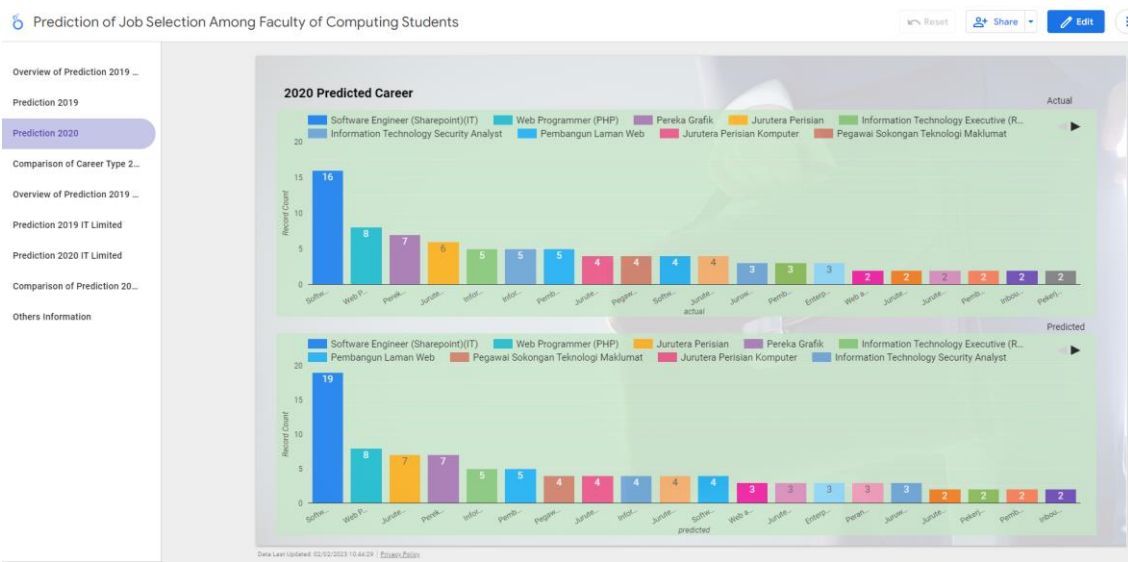


Figure 4.5.3 Dashboard of Prediction 2020

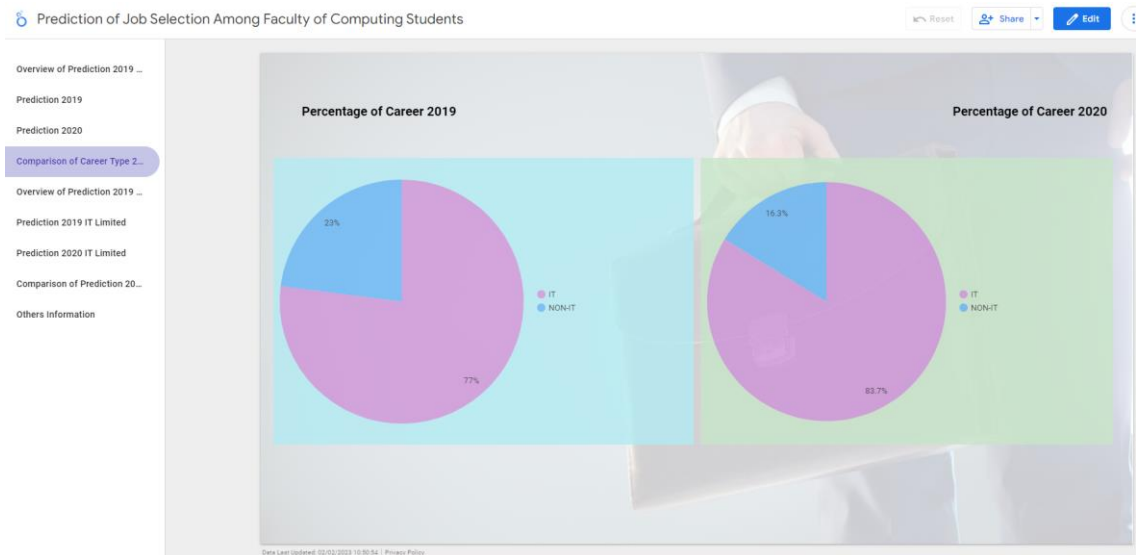


Figure 4.5.4 Dashboard Percentage of Career Type 2019

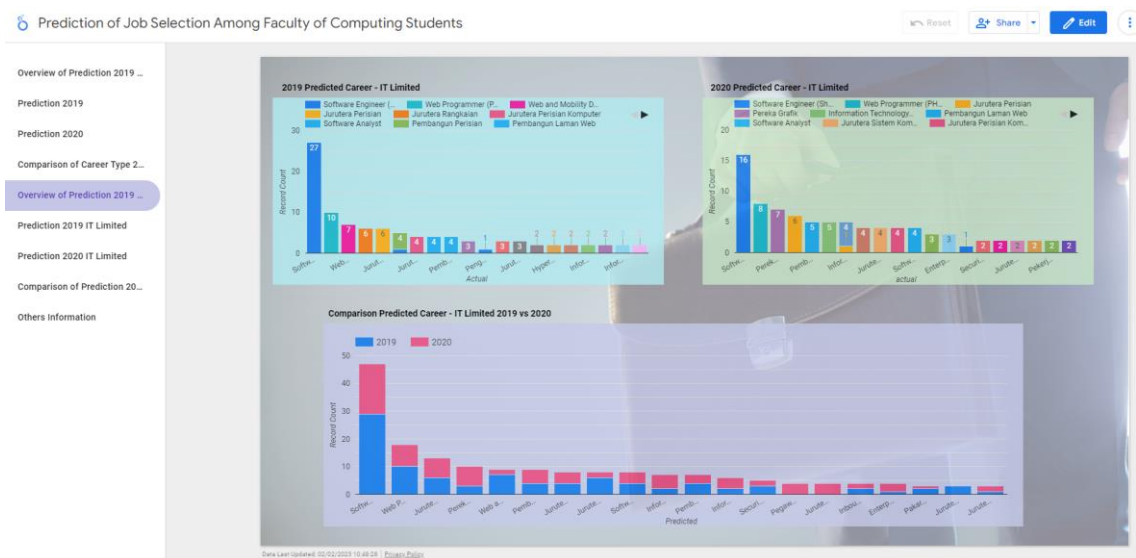


Figure 4.5.5 Dashboard Overview of Prediction 2020 IT Limited

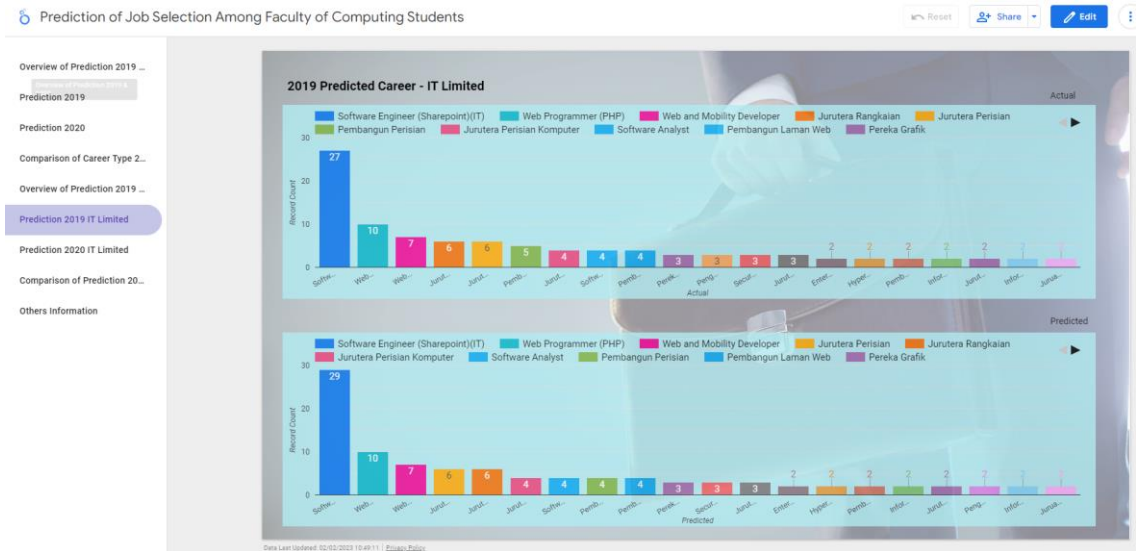


Figure 4.5.6 Dashboard Prediction 2019 IT Limited

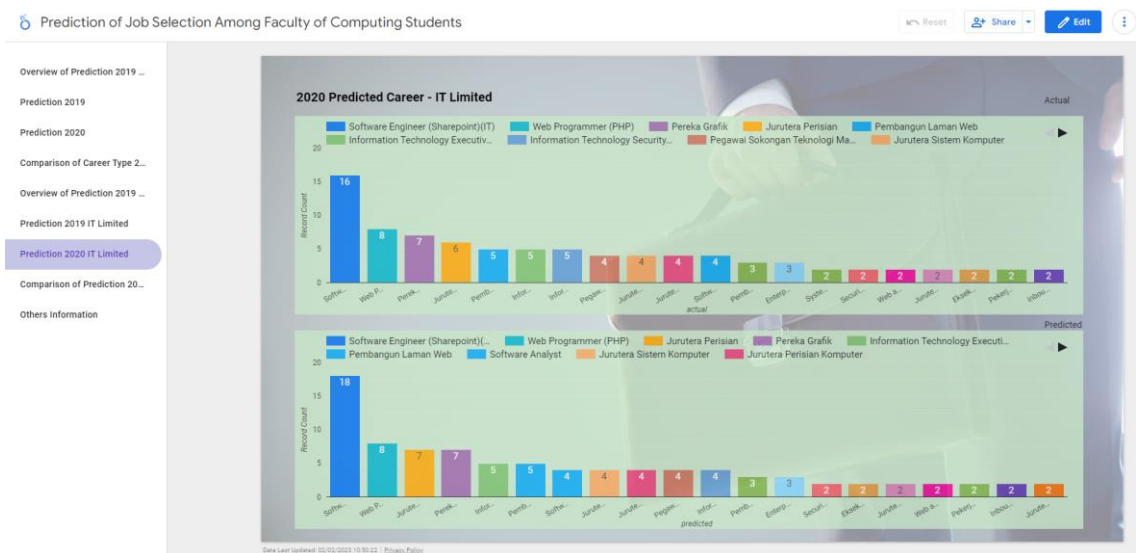


Figure 4.5.7 Dashboard Prediction 2020 IT Limited



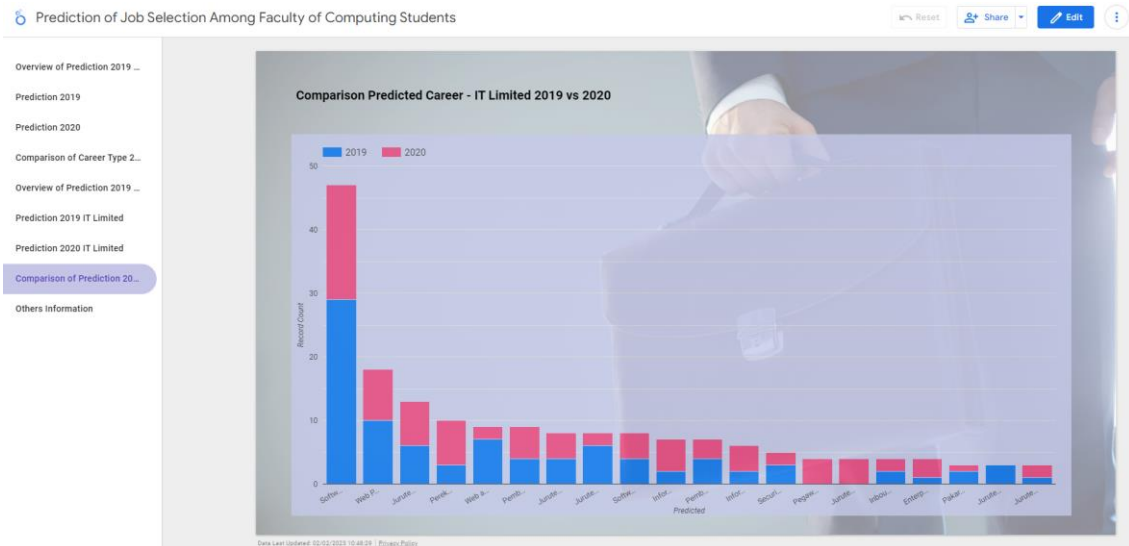


Figure 4.5.8 Dashboard Comparison Career 2019 vs 2020 IT Limited



Figure 4.5.9 Dashboard Other Information



Figure 4.5.10 QR code to the Dashboard

By analysing the graph as shown in previous, we can see that the graduates work in non-IT field have drop from 23% to 16.3%. This have proven that the opportunity work in IT field have increased year by year. Majority of graduates have work as a software engineer (Sharepoint), web programmer (php), and jurutera perisian for both years.

#### **4.6 SUMMARY**

As a summary, we have predicted the career for the future FK students and present the result in the Google Data Studio. The attributes have been eliminated using WEKA select attribute function. The machine learning in use is support vector machine (SVM) as it having the highest accuracy compare with CART and MLP.

## **CHAPTER 5**

### **CONCLUSION**

#### **5.1 INTRODUCTION**

This chapter will discuss the objective, limitations, and future works. We will have a re-evaluated for the objective to ensure all the objective have been achieved. Limitations will be discussed, and the future works will be mentioned so it can be improved in the next research.

#### **5.2 OBJECTIVES ACHIVEMENT**

In the Chapter 1.3, three objectives have been decided as following:

- i. To determine features involved in job selection among faculty of computing graduates.
- ii. To analyse the pattern of job selection among faculty of computing graduates.
- iii. To predict the future FK students' job selection.

The first objective has been achieved by using the “Select Attribute” function in WEKA. The attributes have been selected are e\_17\_nama\_syarikat, e\_25\_a\_1\_lain, e\_29\_a\_i, e\_41\_a, e\_41\_d, and e\_47\_lain as written in chapter 4.2.1.

The second objective is to analyse the pattern of job selection among the FK graduates. This have been achieved in chapter 4.5 by viewing the pattern of graph.

The third objective also have been done in the chapter 4 by using the SVM techniques for both years. The software engineer (Sharepoint) will have the highest possibility to be choose for the current FK students.

### **5.3 LIMITATION**

The limitation of the project is the sample data are limited. The data need to have more sample for more year to view the trend of the job selection. The job should standardize to one language to avoid the duplicated job in different language.

### **5.4 FUTURE WORK**

The future work can consider collecting more year of data to increase the samples can be used to train and predict the career. It is also possible to apply for other courses to enhance their knowledge about the career and the related information in their field.

## REFERENCES

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## APPENDIX A GANTT CHART

TASKS	DATE	WEEK															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
First Meeting with supervisor		█															
Chapter 1		█	█	█													
Chapter 2				█	█	█											
Chapter 3.1 and 3.2						█	█										
FYP First Evaluation							█	█									
Chapter 3 Fully Complete								█	█	█	█	█	█				
Preparation For Presentation													█	█			
FYP Second Evaluation														█	█		
FYP Correction																█	█
FYP Final Evaluation																	█

TASKS	DATE	WEEK												
		17	18	19	20	21	22	23	24	25	26	27	28	29
Meeting for Chapter 4		█												
Chapter 4 draft		█	█	█	█									
Submit Chapter 4						█	█							
Supervisor evaluation							█	█						
Chapter 5 draft								█	█					
Report TurnIn									█	█				
Submit Chapter 5										█	█			
Submit full thesis											█	█		
Submit poster												█	█	
Presentation													█	█
Submit correction														█



## FEATURES CODE

### Profile

NAMA MEDAN	KETERANGAN
e_nama	NAMA (SEPERTI DALAM KP/PASPORT)
e_kp	NO KP/PASPORT
e_matrik	NO. MATRIK / PELAJAR
e_tentera	NO TENTERA
<u>e_jantina</u>	JANTINA
e_hari_lahir	HARI LAHIR
e_bulan_lahir	BULAN LAHIR
e_tahun_lahir	TAHUN LAHIR
<u>e_negeri_lahir</u>	NEGERI LAHIR
e_umur	UMUR
e_bulan_umur	BULAN UMUR
e_hari_umur	HARI UMUR
<u>e_warganegara</u>	KEWARGANEGARAAN (BAGI BUKAN WARGANEGARA)
<u>e_negara</u>	NEGARA ASAL (BAGI BUKAN WARGANEGARA)
<u>e_keturunan</u>	KETURUNAN (BAGI WARGANEGARA)
e_keturunan_lain	LAIN-LAIN KETURUNAN (BAGI WARGANEGARA)
<u>e_negeri</u>	NEGERI BERMASTAUTIN (BAGI WARGANEGARA)
<u>e_daerah</u>	DAERAH BERMASTAUTIN (BAGI WARGANEGARA)
<u>e_negara_tin</u>	NEGARA BERMASTAUTIN (BAGI WARGANEGARA)
e_alamat_tetap	ALAMAT TETAP
e_poskod_tetap	POSKOD TETAP
<u>e_negeri_tetap</u>	NEGERI TETAP
<u>e_daerah_tetap</u>	DAERAH TETAP
<u>e_negara_tetap</u>	NEGARA TETAP
e_alamat_surat	ALAMAT SURAT
e_poskod_surat	POSKOD SURAT
<u>e_negeri_surat</u>	NEGERI SURAT

#### JANTINA

Kod	Keterangan
1	Lelaki
2	Perempuan

#### WARGANEGARA

Kod	Keterangan
1	Warganegara
2	Bukan Warganegara
3	Penduduk Tetap

## KETURUNAN

Kod Keterangan

100 MELAYU  
101 BUGIS

## NEGERI

Kod Keterangan

1 Johor  
2 Kedah

<a href="#">e_daerah_surat</a>	DAERAH SURAT
<a href="#">e_negara_surat</a>	NEGARA SURAT
<a href="#">e_tel_rumah</a>	NO. TELEFON RUMAH
<a href="#">e_tel_pej</a>	NO. TELEFON PEJABAT
<a href="#">e_tel_hp</a>	NO. TELEFON BIMBIT
<a href="#">e_emel1</a>	EMEL 1
<a href="#">e_emel2</a>	EMEL 2
<a href="#">e_oku</a>	ADAKAH ANDA TERGOLONG DALAM GOLONGAN ORANG KURANG UPAYA (OKU)?
<a href="#">e_oku_no</a>	NO. OKU

## JENIS OKU

Kod Keterangan

1 Penglihatan  
2 Pendengaran

<a href="#">e_oku_b</a>	JENIS KETIDAKUPAYAAN (OKU)
<a href="#">e_okub1</a>	APAKAH CABARAN UTAMA YANG DIHADAPI : SEMASA BELAJAR
<a href="#">e_okub1lain</a>	APAKAH CABARAN UTAMA YANG DIHADAPI : SEMASA BELAJAR : LAIN-LAIN SILA NYATAKAN
<a href="#">e_okub2</a>	APAKAH CABARAN UTAMA YANG DIHADAPI : SEMASA MENCARI PEKERJAAN
<a href="#">e_okub2lain</a>	APAKAH CABARAN UTAMA YANG DIHADAPI : SEMASA MENCARI PEKERJAAN : LAIN-LAIN SILA NYATAKAN

## CABARAN (OKU)

Kod Keterangan

1 Kewangan  
2 Kemudahan pengangkutan

<a href="#">e_17_fi</a>	SUMBER ELAUN DITERIMA (DARIPADA IPT)
<a href="#">e_17_fii</a>	SUMBER ELAUN DITERIMA (DARIPADA SYARIKAT TEMPAT LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT)
<a href="#">e_17_fiii</a>	SUMBER ELAUN DITERIMA (DARIPADA PENAJA PENGAJIAN) :
<a href="#">e_penaja</a>	PENAJA PENGAJIAN
<a href="#">e_penaja_lain</a>	PENAJA PENGAJIAN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_terima_bantuan_kewangan</a>	SELAIN DARIPADA BANTUAN DI ATAS, ADAKAH ANDA MENERIMA SEBARANG BANTUAN KEWANGAN LAIN SEMASA DI INSTITUSI?
<a href="#">e_bantuan_kewangan</a>	SUMBER BANTUAN KEWANGAN
<a href="#">e_bantuan_kewangan_lain</a>	SUMBER BANTUAN KEWANGAN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_pendapatan</a>	JUMLAH PENDAPATAN BULANAN KELUARGA
<a href="#">e_status_kahwin</a>	STATUS PERKAHWINAN
<a href="#">e_kerja_sambilan</a>	PERNAHKAH ANDA BEKERJA (SAMBILAN, SEPARA MASA/SEPENUH MASA) SEMASA ANDA MENGIKUTI PENGAJIAN INI?
<a href="#">e_pekerjaan_ibubapa</a>	PEKERJAAN IBU DAN BAPA/ PENJAGA

#### **SUMBER ELAUN**

<b>Kod</b>	<b>Keterangan</b>
1	RM100 ke bawah
2	RM101 - RM200

#### **PENAJA PENGAJIAN**

<b>Kod</b>	<b>Keterangan</b>
1	Jabatan Perkhidmatan Awam (JPA)
2	PTPTN

#### **BANTUAN KEWANGAN**

<b>Kod</b>	<b>Keterangan</b>
1	IPT anda
2	Baitulmal/Zakat

#### **PENDAPATAN KELUARGA**

<b>Kod</b>	<b>Keterangan</b>
1	RM500 dan ke bawah
2	RM501 - RM1000

#### **STATUS PERKAHWINAN**

<b>Kod</b>	<b>Keterangan</b>
1	Bujang
2	Berkahwin

## Kelayakan Bahasa/Bidang/NEC

<a href="#">e_layak_masuk</a>	KELAYAKAN MASUK KE PERINGKAT PENGAJIAN
<a href="#">e_layak_lain</a>	KELAYAKAN MASUK KE PERINGKAT PENGAJIAN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_bm</a>	KELAYAKAN BAHASA (BM-SPM)
<a href="#">e_bj</a>	KELAYAKAN BAHASA (BI-SPM)
<a href="#">e_muett</a>	KELAYAKAN BAHASA (MUET)
<a href="#">e_toeffl</a>	KELAYAKAN BAHASA (SKOR TOEFL)
<a href="#">e_ielts</a>	KELAYAKAN BAHASA (SKOR IELTS)

### KELAYAKAN MASUK

#### Kod Keterangan

- |   |      |
|---|------|
| 1 | SPM  |
| 3 | STPM |

### KELAYAKAN BAHASA (SPM)

#### Kod Keterangan

- |   |    |
|---|----|
| 1 | 1A |
| 2 | 2A |

### KELAYAKAN MUET

#### Kod Keterangan

- |   |        |
|---|--------|
| 1 | Band 1 |
| 2 | Band 2 |

### KELAYAKAN TOEFL

#### Kod Keterangan

- |   |           |
|---|-----------|
| 1 | 300 - 350 |
| 2 | 351 - 400 |

### KELAYAKAN IELTS

#### Kod Keterangan

- |   |        |
|---|--------|
| 1 | Band 1 |
| 2 | Band 2 |

## INSTITUSI

<a href="#">e_peringkat</a>	PERINGKAT PENGAJIAN
<a href="#">kod_kursus</a>	KOD KURSUS
<a href="#">e_anugerah</a>	SIJIL/DIPLOMA/IJAZAH YANG DIANUGERAHKAN
<a href="#">e_anugerah_singkatan</a>	IJAZAH YANG DIANUGERAHKAN (SINGKATAN)
<a href="#">e_fakulti</a>	FAKULTI/PUSAT AKADEMIK

PERINGKAT PENGAJIAN	
Kod	Keterangan
1	Diploma
2	Diploma Lulusan Ijazah

<a href="#">e_bidang</a>	BIDANG PENGAJIAN UTAMA
<a href="#">e_sub_bidang</a>	SUB BIDANG PENGAJIAN
<a href="#">e_nec</a>	KOD NEC-DETAIL (3 DIGIT)
<a href="#">e_program</a>	PROGRAM PENGAJIAN
<a href="#">e_program_penuh</a>	PROGRAM PENUH
<a href="#">e_pengkhususan</a>	PENGGHUSUSAN
<a href="#">e_cgpa</a>	PNGK/CGPA/HPNM/HPNG
<a href="#">e_grade</a>	GRADE BAGI IPTS
<a href="#">e_bulan_masuk</a>	BULAN MEMULAKAN PENGAJIAN
<a href="#">e_tahun_masuk</a>	TAHUN MEMULAKAN PENGAJIAN
<a href="#">e_bulan_tamat</a>	BULAN MENAMATKAN PENGAJIAN
<a href="#">e_tahun_tamat</a>	TAHUN MENAMATKAN PENGAJIAN
<a href="#">e_mod</a>	MOD PENGAJIAN
<a href="#">e_mod_jenis</a>	KAEDAH PENGAJIAN
<a href="#">e_lokasi</a>	LOKASI PENGAJIAN
<a href="#">e_cawangan</a>	CAWANGAN
<a href="#">e_francais</a>	STATUS FRANCAIS
<a href="#">e_nama_francais</a>	NAMA INSTITUSI FRANCAIS
<a href="#">e_negeri_institusi</a>	NEGERI INSTITUSI
<a href="#">e_bulan</a>	BULAN KONVOKESYEN
<a href="#">e_tahun</a>	TAHUN KONVOKESYEN
<a href="#">e_matrik_2</a>	NOMBOR MATRIK 2
<a href="#">e_peringkat_2</a>	PERINGKAT PENGAJIAN 2
<a href="#">kod_kursus_2</a>	KOD KURSUS 2
<a href="#">e_anugerah_2</a>	SIJIL/DIPLOMA/IJAZAH YANG DIANUGERAHKAN 2
<a href="#">e_anugerah_singkatan_2</a>	ANUGERAH SINGKATAN 2
<a href="#">e_fakulti_2</a>	FAKULTI/PUSAT AKADEMIK 2
<a href="#">e_bidang_2</a>	BIDANG PENGAJIAN UTAMA 2

BIDANG PENGAJIAN	
Kod	Keterangan
1	Sastera & Sains Sosial
2	Sains

SUB BIDANG PENGAJIAN	
Kod	Keterangan
101	UNDANG-UNDANG
102	SASTERA/SAINS SOSIAL

NEC / SUB BIDANG MELANJUTKAN PENGAJIAN	
Kod	Keterangan
142	Education science
143	Training for pre-school teachers

MOD PENGAJIAN	
Kod	Keterangan
1	Sepenuh Masa
2	Separuh Masa

KAEDAH PENGAJIAN	
Kod	Keterangan
3	Pengajian Jarak Jauh
4	Pembelajaran Maya/Online

LOKASI PENGAJIAN	
Kod	Keterangan
1	Pengajian Dalam Kampus
2	Pengajian Luar Kampus

PERINGKAT PENGAJIAN	
Kod	Keterangan
1	Diploma
2	Diploma Lulusan Ijazah

<a href="#">e_sub_bidang_2</a>	SUB BIDANG PENGAJIAN 2
<a href="#">e_nec_2</a>	KOD NEC 2
<a href="#">e_program_2</a>	PROGRAM PENGAJIAN 2
<a href="#">e_pengkhususan_2</a>	PENGGHUSUSAN 2
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<a href="#">e_grade_2</a>	GRADE BAGI IPTS 2
<a href="#">e_bulan_masuk_2</a>	BULAN MEMULAKAN PENGAJIAN 2
<a href="#">e_tahun_masuk_2</a>	TAHUN MEMULAKAN PENGAJIAN 2
<a href="#">e_bulan_tamat_2</a>	BULAN MENAMATKAN PENGAJIAN 2
<a href="#">e_tahun_tamat_2</a>	TAHUN MENAMATKAN PENGAJIAN 2
<a href="#">e_mod_2</a>	MOD PENGAJIAN 2
<a href="#">e_mod_jenis_2</a>	KAEDAH PENGAJIAN 2
<a href="#">e_lokasi_2</a>	LOKASI PENGAJIAN 2
<a href="#">e_penaja_2</a>	PENAJA PENGAJIAN 2
<a href="#">e_penaja_2_lain</a>	PENAJA PENGAJIAN : LAIN-LAIN SILA NYATAKAN 2
<a href="#">e_15_a_i</a>	PENILAIAN AKTIVITI KOKURIKULUM (PERSATUAN)
<a href="#">e_15_a_ii</a>	PENILAIAN AKTIVITI KOKURIKULUM (KELAB)
<a href="#">e_15_a_iii</a>	PENILAIAN AKTIVITI KOKURIKULUM (SUKAN)

e_15_a_i sehingga e_15_a_iii	
Kod	Keterangan
1	Sangat tidak aktif
2	Tidak aktif

# INTERNSHIP

<a href="#">e_15_b</a>	PADA PANDANGAN ANDA, ADAKAH PELAJAR YANG TERLIBAT AKTIF DALAM AKTIVITI KOKURIKULUM LEBIH MUDAH UNTUK MENDAPAT PEKERJAAN?
<a href="#">e_16</a>	ADAKAH LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT DIWAJIBKAN OLEH IPT ANDA?
<a href="#">e_17</a>	PERNAHKAH ANDA MENGIKUTI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT SEMASA MENGIKUTI PROGRAM PENGAJIAN INI
<a href="#">e_17_a</a>	TEMPOH ANDA MENGIKUTI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT SEMASA MENGIKUTI PROGRAM PENGAJIAN INI
<a href="#">e_17_a_1</a>	ADAKAH ANDA BERPUAS HATI DENGAN TEMPOH LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT?
<a href="#">e_17_a_2</a>	JIKA TIDAK, BERAPA LAMA TEMPOH YANG DIPERLUKAN?
<a href="#">e_17_b</a>	KATEGORI (SEKTOR) INDUSTRI TEMPAT ANDA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_17_c</a>	KATEGORI INDUSTRI UTAMA/KLASIFIKASI INDUSTRI
<a href="#">e_17_nama_syarikat</a>	NAMA SYARIKAT SEMASA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_17_alamat</a>	ALAMAT SYARIKAT SEMASA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT

## e\_15\_b

### Kod Keterangan

- 1 Sangat tidak setuju
- 2 Tidak setuju

## STATUS LATIHAN INDUSTRI OLEH IPT

### Kod Keterangan

- 1 Ya
- 2 Tidak

## TEMPOH IKUTI LI/INTERNSHIP SEMASA DI IPT

### Kod Keterangan

- 1 1 bulan
- 2 2 bulan

## TEMPOH LI/INTERNSHIP DIPERLUKAN

### Kod Keterangan

- 1 Kurang daripada 3 bulan
- 2 3 - 4 bulan

## SEKTOR INDUSTRI

### Kod Keterangan

- 1 Kerajaan
- 2 Badan Berkanun

## KATEGORI INDUSTRI UTAMA /SEKTOR EKONOMI

### Kod Keterangan

- 1 Pertanian, Perhutanan dan Perikanan
- 2 Perilombongan dan Pengkuarian

<a href="#">e_17_poskod</a>	POSKOD SYARIKAT SEMASA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_17_negeri_syarikat</a>	NEGERI SYARIKAT SEMASA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_17_daerah_syarikat_McGDJ</a>	DAERAH SYARIKAT SEMASA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_negara_syarikat</a>	NEGARA SYARIKAT SEMASA MENJALANI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_17_e</a>	ADAKAH ANDA MENERIMA SEBARANG ELAUN/UPAH SEMASA MENGIKUTI LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT TERSEBUT?

e\_17,e\_17\_a\_1&e\_17\_e

Kod Keterangan

- 1 Ya
- 2 Tidak



# SCALE

<a href="#">e_20_a</a>	KURIKULUM : A. KESESUAIAN KANDUNGAN PENGAJIAN
<a href="#">e_20_b</a>	KURIKULUM : B. IMBANGAN KOMPONEN TEORI DAN AMALI/APLIKASI/KLINIKAL
<a href="#">e_20_c</a>	KURIKULUM : C. KESESUAIAN STRUKTUR LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT
<a href="#">e_20_d</a>	KURIKULUM : D. MATA PELAJARAN WAJIB KOKURIKULUM
<a href="#">e_20_e</a>	KURIKULUM : E. MATA PELAJARAN WAJIB UNIVERSITI/INSTITUSI
<a href="#">e_20_f</a>	KURIKULUM : F. KEPELBAGAIAN MATA PELAJARAN KOKURIKULUM YANG DITAWARKAN
<a href="#">e_20_g</a>	KURIKULUM : G. MENYEDIAKAN PELAJAR UNTUK MENGHADAPI DUNIA PEKERJAAN
<a href="#">e_20_h</a>	KURIKULUM : H. LATIHAN INDUSTRI TELAH MEMBERI MANFAAT KEPADA SAYA DALAM MENDAPATKAN PEKERJAAN YANG BERSESUAIAN
<a href="#">e_21_a</a>	SISTEM PENILAIAN YANG DIGUNAKAN OLEH INSTITUSI ANDA : A. TELUS
<a href="#">e_21_b</a>	SISTEM PENILAIAN YANG DIGUNAKAN OLEH INSTITUSI ANDA : B. PEMARKAHAN KERJA KURSUS (TUGASAN/UJIAN/AMALI, DLL)
<a href="#">e_21_c</a>	SISTEM PENILAIAN YANG DIGUNAKAN OLEH INSTITUSI ANDA : C. PEMARKAHAN PEPERIKSAAN
<a href="#">e_21_d</a>	<b>SISTEM PENILAIAN YANG DIGUNAKAN OLEH INSTITUSI ANDA : D. PEMARKAHAN LATIHAN INDUSTRI/INTERNSHIP/PRAKTIKAL/ATTACHMENT (tambah Mei 2019)</b>
<a href="#">e_22_a</a>	PERKHIDMATAN BIMBINGAN KERJAYA : A. MAKLUMAT MENGENAI PELUANG PEKERJAAN DAN KERJAYA
<a href="#">e_22_b</a>	PERKHIDMATAN BIMBINGAN KERJAYA : B. MAKLUMAT PELUANG PEKERJAAN DALAM KAMPUS
<a href="#">e_22_c</a>	PERKHIDMATAN BIMBINGAN KERJAYA : C. BIMBINGAN DALAM KEMAHIRAN MENGHADIRI TEMU DUGA
<a href="#">e_22_d</a>	PERKHIDMATAN BIMBINGAN KERJAYA : D. BIMBINGAN DALAM PENYEDIAAN MEMOHON PEKERJAAN (RESUME, SURAT PERMOHONAN, DLL)
<a href="#">e_22_e</a>	PERKHIDMATAN BIMBINGAN KERJAYA : E. BANTUAN DALAM MENDAPATKAN PEKERJAAN
<a href="#">e_22_f</a>	PERKHIDMATAN BIMBINGAN KERJAYA : F. MAKLUMAT DALAM MELANJUTKAN PENGAJIAN
<a href="#">e_22_g</a>	<b>PERKHIDMATAN BIMBINGAN KERJAYA : G. SYARIKAT LUAR SERING MENGADAKAN AKTIVITI PENGAMBILAN PEKERJA DALAM KAMPUS (mansuh Mei 2019)</b>
<a href="#">e_22_h</a>	<b>PERKHIDMATAN BIMBINGAN KERJAYA : H. BERJAYA MENARIK PENGLIBATAN MAJIKAN YANG BERKUALITI (tambah Mei 2019)</b>
<a href="#">e_23_a</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : A. BERPENGETAHUAN TEORI DAN PRAKTIKAL YANG SEIMBANG
<a href="#">e_23_b</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : B. INTERAKSI DENGAN PELAJAR
<a href="#">e_23_c</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : C. INOVATIF DAN KREATIF DALAM PENGAJARAN/PENYELIAAN
<a href="#">e_23_d</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : D. KEUPAYAAN MENGHUBUNGKAITKAN PENGAJARAN/PENYELIAAN DENGAN AMALAN TERKINI INDUSTRI
<a href="#">e_23_e</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : E. PENDEDAHAN KEPADA PELAJAR TENTANG PENGETAHUAN TERKINI DALAM BIDANG PENGAJARAN
<a href="#">e_23_f</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : F. PENYAMPAIAN KULIAH DAN KUALITI PENGAJARAN
<a href="#">e_23_g</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : G. SEDIA BERINTERAKSI DENGAN PELAJAR SECARA ATAS TALIAN (ONLINE INTERACTION)
<a href="#">e_23_h</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : H. MEMPUNYAI KELAYAKAN DALAM BIDANG YANG BERSESUAIAN UNTUK MENGAJAR/MENYELIA
<a href="#">e_23_i</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : I. KEMAHIRAN BERKOMUNIKASI DALAM BAHASA MELAYU
<a href="#">e_23_j</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : J. KEMAHIRAN BERKOMUNIKASI DALAM BAHASA INGGERIS
<a href="#">e_23_k</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : K. TENAGA PENGAJAR MUDAH DIHUBUNGI KHUSUSNYA UNTUK
<a href="#">e_23_l</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : L. KUALITI PENASIHAT AKADEMIK (MEMBANTU, PRIHATIN, MUDAH DIHUBUNGI)
<a href="#">e_23_m</a>	TENAGA PENGAJAR (PENSYARAH/PENYELIA/FASILITATOR/PENASIHAT AKADEMIK) : M. KUALITI SISTEM PENASIHATAN AKADEMIK (QUALITY OF ACADEMIC ADVISING)
<a href="#">e_24_a</a>	KEMUDAHAN PRASARANA : A. KEMUDAHAN DAN PERKHIDMATAN PERPUSTAKAAN SECARA KESELURUHAN
<a href="#">e_24_a.i</a>	KEMUDAHAN PRASARANA : A. I. RUANG BELAJAR YANG SELESA DAN KONDUSIF
<a href="#">e_24_a.ii</a>	KEMUDAHAN PRASARANA : A. II. JUMLAH SUMBER/BAHAN TERKINI (BUKU RUJUKAN, DLL)
<a href="#">e_24_a.iii</a>	KEMUDAHAN PRASARANA : A. III. WAKTU OPERASI PERPUSTAKAAN
<a href="#">e_24_a.iv</a>	KEMUDAHAN PRASARANA : A. IV. PERKHIDMATAN/LAYANAN KAKITANGAN PERPUSTAKAAN
<a href="#">e_24_a.v</a>	KEMUDAHAN PRASARANA : A. V. SUMBER ATAS TALIAN (E-BOOK/E-TUTORIAL/E-JURNAL DAN LAIN-LAIN)
<a href="#">e_24_a.vi</a>	KEMUDAHAN PRASARANA : A. VI. PERKHIDMATAN PERPUSTAKAAN ATAS TALIAN (ONLINE)
<a href="#">e_24_b</a>	KEMUDAHAN PRASARANA : B. MAKMAL (KOMPUTER, SAINS), STUDIO, DAPUR, BENGKEL, DLL
<a href="#">e_24_c</a>	KEMUDAHAN PRASARANA : C. KEMUDAHAN DEWAN KULIAH/BILIK TUTORIAL YANG KONDUSIF
<a href="#">e_24_d</a>	KEMUDAHAN PRASARANA : D. KEMUDAHAN SUKAN/REKREASI
<a href="#">e_24_e</a>	KEMUDAHAN PRASARANA : E. KEMUDAHAN KAFETERIA/KANTIN
<a href="#">e_24_f</a>	KEMUDAHAN PRASARANA : F. KEMUDAHAN PENGINAPAN
<a href="#">e_24_g</a>	KEMUDAHAN PRASARANA : G. KEMUDAHAN PENGANGKUTAN
<a href="#">e_24_h</a>	KEMUDAHAN PRASARANA : H. KEMUDAHAN PUSAT/KLINIK KESIHATAN
<a href="#">e_24_i</a>	KEMUDAHAN PRASARANA : I. KEMUDAHAN TEMPAT LETAK KENDERAAN
<a href="#">e_24_j</a>	KEMUDAHAN PRASARANA : J. KESELAMATAN KAMPUS
<a href="#">e_24_k</a>	KEMUDAHAN PRASARANA : K. PEMBELAJARAN BERSEPADU ATAS TALIAN
<a href="#">e_24_l</a>	KEMUDAHAN PRASARANA : L. KEMUDAHAN KEDAI BUKU KAMPUS
<a href="#">e_24_m</a>	KEMUDAHAN PRASARANA : M. KEMUDAHAN RUANG BELAJAR YANG KONDUSIF
<a href="#">e_24_n</a>	KEMUDAHAN PRASARANA : N. KEMUDAHAN ICT DI KAMPUS
<a href="#">e_24_o</a>	<b>KEMUDAHAN PRASARANA : O. KEMUDAHAN KEDAI SERBAGUNA (tambah Mei 2019)</b>
<a href="#">e_25_a.i</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. I. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-1 : PENILAIAN
<a href="#">e_25_a.i_input</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. I. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-1
<a href="#">e_25_a.i_lain</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. I. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-1 : LAIN-LAIN SILA NYATAKAN
<a href="#">e_25_a.ii</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. II. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-2 : PENILAIAN
<a href="#">e_25_a.ii_input</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. II. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-2
<a href="#">e_25_a.ii_lain</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. II. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-2 : LAIN-LAIN SILA NYATAKAN
<a href="#">e_25_a.iii</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. III. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-3 : PENILAIAN
<a href="#">e_25_a.iii_input</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. III. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-3
<a href="#">e_25_a.iii_lain</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : A. III. KEMAHIRAN ICT/PERISIAN YANG ANDA MAHIR : I) PILIHAN KE-3 : LAIN-LAIN SILA NYATAKAN
<a href="#">e_25_b</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : B. KEMAHIRAN BERBAHASA MELAYU
<a href="#">e_25_c</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : C. KEMAHIRAN BERBAHASA INGGERIS
<a href="#">e_25_d</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : D. KEMAHIRAN BAHASA SELAIN DARIPADA BAHASA MELAYU DAN BAHASA INGGERIS : PENILAIAN
<a href="#">e_25_d_input</a>	KEMAHIRAN/PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : D. KEMAHIRAN BAHASA SELAIN DARIPADA BAHASA MELAYU DAN BAHASA INGGERIS : BAHASA

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KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : D. KEMAHIRAN BAHASA SELAIN DARIPADA BAHASA MELAYU DAN BAHASA INGGERIS : LAIN-LAIN SILA NYATAKAN  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : E. KEMAHIRAN KOMUNIKASI INTERPERSONAL  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : F. KEMAHIRAN BERFIKIR SECARA KRITIS DAN KREATIF  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : G. KEMAHIRAN MENYELESAIKAN MASALAH  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : H. KEMAHIRAN ANALITIKAL/ MENGANALISIS  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : I. BEKERJA SECARA KUMPULAN/ TEAM WORK  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : J. PENERAPAN DAN PENGAMALAN NILAI-NILAI POSITIF  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : K. PENDEDAHAN KEPADA PENGETAHUAN AM DAN ISU SEMASA  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : L. KEMAHIRAN PENGURUSAN DAN KEPIMPINAN (tambah Mei 2019)  
 KEMAHIRAN/ PENGETAHUAN YANG DIPEROLEHI DARIPADA PENGAJIAN ANDA : M. PENERAPAN CIRI-CIRI KEUSAHAWANAN (tambah Mei 2019)  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A. PERNAHKAH ANDA MENGGUNAKAN SEBARANG PERKHIDMATAN BIMBINGAN/KAUNSELING YANG DISEDIAKAN OLEH IPT ANDA?  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.I. BIMBINGAN/KAUNSELING AKADEMIK : PENILAIAN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.I. BIMBINGAN/KAUNSELING AKADEMIK : LOKASI : LOKASI : LAIN-LAIN SILA NYATAKAN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.II. BIMBINGAN/KAUNSELING PERIBADI : PENILAIAN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.II. BIMBINGAN/KAUNSELING PERIBADI : LOKASI : LOKASI : LAIN-LAIN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.III. BIMBINGAN/KAUNSELING KEWANGAN : PENILAIAN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.III. BIMBINGAN/KAUNSELING KEWANGAN : LOKASI : LOKASI : LAIN-LAIN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.IV. BIMBINGAN/KAUNSELING KERJAYA : PENILAIAN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : A.IV. BIMBINGAN/KAUNSELING KERJAYA : LOKASI : LOKASI : LAIN-LAIN SILA NYATAKAN  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : B. JIKA TIDAK, SILA NYATAKAN SEBABNYA :  
 PERKHIDMATAN BIMBINGAN KERJAYA DAN KAUNSELING : B. JIKA TIDAK, SILA NYATAKAN SEBABNYA : LAIN-LAIN SILA NYATAKAN  
 KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIaan DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - KEYAKINAN DIRI  
 KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIaan DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - KEMATANGAN DIRI  
 KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIaan DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - JATI DIRI

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[e\\_25\\_b sehingga e\\_25\\_k\\_2](#)  
[e\\_26\\_cb1\\_nilai sehingga e\\_26\\_cb4\\_nilai](#)

**Kod Keterangan**

- 1 Amat tidak memuaskan
- 2 Tidak Memuaskan

**TEMPAT PERKHIDMATAN**

**Kod Keterangan**

- 1 Unit / Pusat Bimbingan Kerjaya
- 2 Fakulti

**SEBAB TIDAK MENGGUNAKAN PERKHIDMATAN**

**Kod Keterangan**

- 1 Tidak tahu kewujudan
- 2 Malu

**KOD KEMAHIRAN ICT**

**Kod Keterangan**

- 1 Microsoft Word
- 2 Microsoft Excel

e_27_d	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - LEBIH BERPENGETAHUAN
e_27_e	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - MINAT UNTUK TERUS BELAJAR
e_27_f	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - PEKA DENGAN PERKEMBANGAN SEMASA
e_27_g	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - BERDIKARI
e_27_h	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - BERFIKIR SECARA KRITIS DAN KREATIF
e_27_j	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - BERSEDIA HADAPI CABARAN DUNIA LUAR & PEKERJAAN
e_27_k	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - MENYELESAIKAN MASALAH DAN MEMBUAT KEPUTUSAN
e_27_l	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - BEKERJA SECARA BERPASUKAN
e_27_m_lain	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - BERKOMUNIKASI DENGAN BERKESAN
e_28_j	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : SEJAUH MANAKAH PENDIDIKAN DI INSTITUSI TELAH MEMBERI IMPAK KEPADA DIRI ANDA? - LAIN-LAIN (sila nyatakan)
e_28_ii	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : PERSEPSI TERHADAP REPUTASI INSTITUSI : I. REPUTASI SEBAGAI INSTITUSI PENYELIDIKAN TERKEMUKA
e_28_iii	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : PERSEPSI TERHADAP REPUTASI INSTITUSI : II. REPUTASI SEBAGAI PEMBEKAL PENDIDIKAN BERKUALITI
e_28_iv	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : PERSEPSI TERHADAP REPUTASI INSTITUSI : III. REPUTASI SEBAGAI INSTITUSI AKADEMIK CEMERLANG
e_28_v	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : PERSEPSI TERHADAP REPUTASI INSTITUSI : IV. REPUTASI BIDANG YANG ANDA CEBURI
e_29_a	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : PERSEPSI TERHADAP REPUTASI INSTITUSI : V. PERSEPSI SECARA UMUM
e_29_a_j	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : (A) ADAKAH UJAZAH/DIPLOMA/SIJIL YANG DIPEROLEHI SETIMPAL/BERBALOI BERBANDING MASA DAN WANG RINGGIT YANG TELAH DIBELANJUKAN?
e_29_b	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : (A) ADAKAH UJAZAH/DIPLOMA/SIJIL YANG DIPEROLEHI SETIMPAL/BERBALOI
e_29_b_j	BERBANDING MASA DAN WANG RINGGIT YANG TELAH DIBELANJUKAN? YA/ TIDAK : MENGAPA
e_30	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : (B) ADAKAH ANDA AKAN MENCADANGKAN KEPADA ORANG LAIN /KELUARGA UNTUK MELANUUTKAN PENGAJIAN DI INSTITUSI INI?
e_30_lain	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : (B) ADAKAH ANDA AKAN MENCADANGKAN KEPADA ORANG LAIN /KELUARGA UNTUK MELANUUTKAN PENGAJIAN DI INSTITUSI INI? YA/TIDAK : MENGAPA
e_31_a	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : ADAKAH ANDA PERNAH /SEDANG MEMOHON PEKERJAAN YANG TERDAPAT DI LUAR NEGARAH? JIKA YA : MENGAPA
e_31_b_1	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : A) ADAKAH ANDA INGIN MENGIKUTI PROGRAM LATIHAN TAMBAHAN BAGI MEMBANTU DALAM MEMBINA KERJAYA ANDA?
e_31_b_2	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : B) PILIH PROGRAM YANG INGIN DIKUTI : PILIHAN 1
e_31_b_3	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : B) PILIH PROGRAM YANG INGIN DIKUTI : PILIHAN 2
e_31_b_lain	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : B) PILIH PROGRAM YANG INGIN DIKUTI : PILIHAN 3
e_31_c	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : B) PILIH PROGRAM YANG INGIN DIKUTI : LAIN-LAIN SILA NYATAKAN
	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : C) JIKA PROGRAM LATIHAN YANG BERKAITAN DIANURKAN OLEH KEMENTERIAN PENDIDIKAN MALAYSIA/ INSTITUSI ANDA, ADAKAH ANDA BERSEDIA UNTUK MENGHADIRI DENGAN PEMBIAYAAN SENDIRI?

e_27_a sehingga e_27_l	
Kod	Keterangan
1	Sangat tidak mempengaruhi
2	Tidak Mempengaruhi

e_28_i sehingga e_28_v	
Kod	Keterangan
1	Sangat tidak cemerlang
2	Tidak Cemerlang

PROGRAM LATIHAN TAMBAHAN:	
Kod	Keterangan
1	Kemahiran Interpersonal
2	Kemahiran Berbahasa Inggeris

e_32a1_1	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : IPT ANDA
e_32a1_3	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : PERBADANAN USAHAWAN NASIONAL BERHAD (PUNB)
e_32a1_4	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : MALJIS AMANAH RAKYAT (MAR)
e_32a1_5	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : BANK NEGARA MALAYSIA
e_32a1_7	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : MULTIMEDIA DEVELOPMENT CORPORATION SDN. BHD.
e_32a1_8	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : KEMENTERIAN PENDIDIKAN MALAYSIA (KPM)
e_32a1_6	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : LAIN-LAIN
e_32a1_f_lain	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : KURSUS/PROGRAM KEUSAHAWANAN SEMASA DI IPT : JIKA YA : LAIN-LAIN SILA NYATAKAN
e_32a2_bln	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : TEMPOH KURSUS/PROGRAM YANG DIKUTI : BULAN
e_32a2_hari	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : TEMPOH KURSUS/PROGRAM YANG DIKUTI : HARI
e_32_b	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : C) ADAKAH ANDA SEDANG BERUSAHA UNTUK MENJADI SEORANG USAHAWAN DALAM MASA TERDEKAT?
e_32_b_j	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : B) ADAKAH ANDA BERMINAT UNTUK MENJADI SEORANG USAHAWAN? (tambah Mei 2019)
e_32_c_j	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : D) ADAKAH IPT ANDA MENYEDIAKAN SOKONGAN KEUSAHAWANAN? (tambah Mei 2019): MODAL
e_32_c_ii	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : D) ADAKAH IPT ANDA MENYEDIAKAN SOKONGAN KEUSAHAWANAN? (tambah Mei 2019): MAKLUMAT
e_32_c_iii	KEBERKESANAN PROGRAM PENGAJIAN DAN KESEDIAAN DIRI : D) ADAKAH IPT ANDA MENYEDIAKAN SOKONGAN KEUSAHAWANAN? (tambah Mei 2019): BIMBINGAN
e_33	MELANUUTKAN PENGAJIAN : 1. SETELAH ANDA MENAMATKAN PENGAJIAN DI INSTITUSI INI, ADAKAH ANDA TELAH MENDAFTAR UNTUK MELANUUTKAN PENGAJIAN?
e_34	MELANUUTKAN PENGAJIAN : 1. A. MOD PENGAJIAN
e_34_jenis	MELANUUTKAN PENGAJIAN : 1. B. KAEDAH PENGAJIAN
e_35_a	MELANUUTKAN PENGAJIAN : 2. A. PERINGKAT PENGAJIAN
e_35_b	MELANUUTKAN PENGAJIAN : 2. B. BIDANG PENGAJIAN/ PROGRAM (bagi peringkat lanjutan Diploma dan ke atas)
e_35_c	MELANUUTKAN PENGAJIAN : 2. C. SUBBIDANG PENGAJIAN (bagi peringkat lanjutan Diploma dan ke atas)
e_35_d	MELANUUTKAN PENGAJIAN : 2. D. NAMA PROGRAM PENGAJIAN (CONTOH: DIPLOMA KEJURUTERAAN AWAM)
e_35_e	MELANUUTKAN PENGAJIAN : 2. E. PENGKHUSUSAN
e_36	MELANUUTKAN PENGAJIAN : 3. PENAJA PENGAJIAN
e_36_lain	MELANUUTKAN PENGAJIAN : 3. PENAJA PENGAJIAN : LAIN-LAIN SILA NYATAKAN
e_37_jenis	MELANUUTKAN PENGAJIAN : 4. INSTITUSI DI MANA ANDA MELANUUTKAN PENGAJIAN (JENIS IPT)
e_37	MELANUUTKAN PENGAJIAN : 4. SILA PILIH INSTITUSI (NAMA INSTITUSI)
e_37_lain	MELANUUTKAN PENGAJIAN : 4. INSTITUSI DI MANA ANDA MELANUUTKAN PENGAJIAN (Lain-lain institusi: Sila nyatakan)

## PENGANJUR

### Kod Keterangan

- 1 Institusi/Universiti anda
- 3 Perbadanan Usahawan Nasional Berhad (PUNB)

## MOD PENGAJIAN - MELANJUTKAN PENGAJIAN

### Kod Keterangan

- 23 Sepenuh Masa (Dalam kampus)
- 24 Sepenuh Masa (Luar kampus)

## PERINGKAT PENGAJIAN - MELANJUTKAN PENGAJIAN

### Kod Keterangan

- 3 Diploma Lulusan Ijazah
- 4 Ijazah Pertama/Sarjana Muda

## BIDANG PENGAJIAN - MELANJUTKAN PENGAJIAN

### Kod Keterangan

- 1 PENDIDIKAN
- 2 KEMANUSIAAN DAN KESENIAN

## NEC / SUB BIDANG MELANJUTKAN PENGAJIAN

### Kod Keterangan

- 142 Education science
- 143 Training for pre-school teachers

## BIDANG PENGAJIAN - MELANJUTKAN PENGAJIAN

### Kod Keterangan

- 1 PENDIDIKAN
- 2 KEMANUSIAAN DAN KESENIAN

[e\\_38](#)

[e\\_39](#)

[e\\_39\\_lain](#)

MELANJUTKAN PENGAJIAN : 5. ADAKAH ANDA MELANJUTKAN PENGAJIAN DALAM BIDANG YANG SAMA/ BERKAITAN DENGAN PROGRAM YANG TELAH ANDA IKUTI SEBELUM INI?

MELANJUTKAN PENGAJIAN : 6. SEBAB UTAMA ANDA MELANJUTKAN PENGAJIAN

MELANJUTKAN PENGAJIAN : 6. SEBAB UTAMA ANDA MELANJUTKAN PENGAJIAN : LAIN-LAIN SILA NYATAKAN

e\_30

e\_31\_a & e\_31\_c

e\_32\_a, e\_32\_b, e\_32\_b\_i, e\_32\_c\_j sehingga e\_32\_c\_iii

e\_33

e\_38

### Kod Keterangan

- 1 Ya
- 2 Tidak

## SEBAB UTAMA MELANJUTKAN PENGAJIAN

### Kod Keterangan

- 1 Minat yang mendalam mencari ilmu
- 2 Meningkatkan tahap kelayakan akademik

## WORKING INFORMATION

<a href="#">e_40</a>	STATUS TERKINI (SEMASA MELENGKAPKAN KAJI SELIDIK)
<a href="#">e_41_a</a>	BEKERJA : C. KUMPULAN PEKERJAAN UTAMA
<a href="#">e_41_a2</a>	BEKERJA : C. MAKLUMAT SUB PEKERJAAN
<a href="#">e_41_a3</a>	BEKERJA : C. MAKLUMAT PEKERJAAN (TERPERINCI)
<a href="#">e_41_b</a>	BEKERJA : D. JAWATAN (SILA NYATAKAN-mansuh Mei 2019)
<a href="#">e_41_b_1</a>	BEKERJA : D. JAWATAN (MASCOD 6 DIGIT-tambah Mei 2019)
<a href="#">e_41_c</a>	BEKERJA : E. KETERANGAN PEKERJAAN
<a href="#">e_41_d</a>	BEKERJA : F. NAMA AGENSI/ SYARIKAT/PERNIAGAAN (BAGI YANG BEKERJA SENDIRI/ FREELANCE, SILA NYATAKAN NAMA SYARIKAT ANDA JIKA BERDAFTAR DENGAN SSM)
<a href="#">e_41_e_alamat</a>	BEKERJA : G. ALAMAT AGENSI/ SYARIKAT/PERNIAGAAN
<a href="#">e_41_e_poskod</a>	BEKERJA : G. POSKOD AGENSI/ SYARIKAT/PERNIAGAAN
<a href="#">e_41_e_negeri</a>	BEKERJA : G. NEGERI AGENSI/ SYARIKAT/PERNIAGAAN
<a href="#">e_41_e_daerah</a>	BEKERJA : G. DAERAH AGENSI/ SYARIKAT/PERNIAGAAN
<a href="#">e_41_e_negara</a>	BEKERJA : G. NEGARA AGENSI/ SYARIKAT/PERNIAGAAN (JIKA BEKERJA DI LUAR NEGARA)
<a href="#">e_42</a>	BEKERJA : 2. TARIKH MEMULAKAN PEKERJAAN INI
<a href="#">e_43</a>	BEKERJA : 1. TARAF PEKERJAAN SEKARANG
<a href="#">e_43_1</a>	BEKERJA : 1. A. TARAF JAWATAN
<a href="#">e_43_a</a>	BEKERJA : 1. A. JENIS PERNIAGAAN
<a href="#">e_43_a_lain</a>	BEKERJA : 1. A. JENIS PERNIAGAAN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_43_b_1</a>	BEKERJA : 1. B. SUMBER MODAL : PILIHAN 1
<a href="#">e_43_b_2</a>	BEKERJA : 1. B. SUMBER MODAL : PILIHAN 2
<a href="#">e_43_b_3</a>	BEKERJA : 1. B. SUMBER MODAL : PILIHAN 3
<a href="#">e_43_b_lain</a>	BEKERJA : 1. B. SUMBER MODAL : LAIN-LAIN SILA NYATAKAN
<a href="#">e_43_c</a>	BEKERJA : 1. C. ADAKAH PERNIAGAAN ANDA BERDAFTAR DENGAN SURUHANJAYA SYARIKAT MALAYSIA (SSM)
<a href="#">e_43_d</a>	BEKERJA : 1. D. TAHUN PENDAFTARAN DENGAN SSM
<a href="#">e_43_e</a>	BEKERJA : 1. E. SAIZ ORGANISASI (BILANGAN STAF)
<a href="#">e_43_f</a>	BEKERJA : 1. F. JUMLAH MODAL MEMULAKAN PERNIAGAAN

### STATUS ANDA SEKARANG

Kod	Keterangan
4	Bekerja sepenuh masa
5	Bekerja separa masa
2	Belum/Tidak bekerja

### KUMPULAN PEKERJAAN UTAMA

Kod	Keterangan
1	Pengurus
2	Profesional

### JAWATAN

Kod	Keterangan
11101	Pegawai Perubatan
11102	Pegawai Pergigian

### TARAF PEKERJAAN

Kod	Keterangan
4	Bekerja sendiri
5	Bekerja dengan keluarga

### TARAF JAWATAN

Kod	Keterangan
1	Tetap
2	Kontrak

### JENIS PERNIAGAAN

Kod	Keterangan
1	Francais
2	Kontraktor Binaan/Elektrik/Paip/dll

**SUMBER MODAL**

Kod	Keterangan
1	Sendiri
2	Rakan kongsi

**ADAKAH SYARIKAT BERDAFTAR DENGAN SSM?**

Kod	Keterangan
1	Ya, berdaftar sebagai satu enterprise (Milikan Tunggal)
2	Ya, berdaftar sebagai satu enterprise (Perkongsi)

**SAIZ ORGANISASI**

Kod	Keterangan
4	Lebih daripada 100 orang
5	Kurang daripada 5 orang

**JUMLAH MODAL MEMULAKAN PERNIAGAAN**

Kod	Keterangan
7	RM5,000 dan ke bawah
8	RM5,001 - RM10,000

e_43_g	BEKERJA : 1. G. BERAPAKAH PENDAPATAN KASAR TAHUNAN PERNIAGAAN ANDA SEKARANG?
e_43_h_1	BEKERJA : 1. H. CABARAN YANG ANDA HADAPI DALAM MEMULAKAN PERNIAGAAN : PILIHAN 1
e_43_h_2	BEKERJA : 1. H. CABARAN YANG ANDA HADAPI DALAM MEMULAKAN PERNIAGAAN : PILIHAN 2
e_43_h_3	BEKERJA : 1. H. CABARAN YANG ANDA HADAPI DALAM MEMULAKAN PERNIAGAAN : PILIHAN 3
e_43_h_jain	BEKERJA : 1. H. CABARAN YANG ANDA HADAPI DALAM MEMULAKAN PERNIAGAAN : LAIN-LAIN SILA NYATAKAN
e_44	BEKERJA : 3. PENDAPATAN BULANAN (TERMASUK ELAUN)
e_45	BEKERJA : SEKTOR PEKERJAAN
e_45_jain	BEKERJA : SEKTOR PEKERJAAN : LAIN-LAIN SILA NYATAKAN
e_46_kod	BEKERJA : 4. SEKTOR EKONOMI/KLASIFIKASI INDUSTRI
e_46_kod_2	BEKERJA : 4. SUB SEKTOR EKONOMI
e_47	BEKERJA : 5. APAKAH SUMBER MAKLUMAT UNTUK MENDAPATKAN PEKERJAAN SEKARANG?
e_47_jain	BEKERJA : 5. APAKAH SUMBER MAKLUMAT UNTUK MENDAPATKAN PEKERJAAN SEKARANG? : LAIN-LAIN SILA NYATAKAN
e_48_a	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : A. KEMAMPUAN MENYESUAIKAN DIRI DI TEMPAT KERJA
e_48_b	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : B. KEMAMPUAN MENYELESAIKAN MASALAH DAN MEMBUAT KEPUTUSAN
e_48_c	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : C. KEYAKINAN MELAKSANAKAN TUGAS
e_48_d	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : D. KEMAMPUAN BERKERJA SECARA BERPASUKAN
e_48_e	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : E. KEMAHIRAN BERKOMUNIKASI
e_48_f_1	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : F. I) KEUPAYAAN BERBAHASA MELAYU : PERTUTURAN
e_48_f_2	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : F. II) KEUPAYAAN BERBAHASA MELAYU : PENULISAN
e_48_g_1	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : G. I) KEUPAYAAN BERBAHASA INGGERIS : PERTUTURAN
e_48_g_2	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : G. II) KEUPAYAAN BERBAHASA INGGERIS : PENULISAN
e_48_k	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : H. KEUPAYAAN BERBAHASA KETIGA (SELAIN BAHASA MELAYU DAN BAHASA INGGERIS) : PENILAIAN
e_48_k_j	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : H. I) KEUPAYAAN BAHASA KETIGA : PERTUTURAN
e_48_k_lj	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : H. II) KEUPAYAAN BAHASA KETIGA : PENULISAN
e_48_k_input	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : H. KEUPAYAAN BERBAHASA KETIGA (SELAIN BAHASA MELAYU DAN BAHASA INGGERIS) : BAHASA
e_48_k_jain	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : H. KEUPAYAAN BERBAHASA KETIGA (SELAIN BAHASA MELAYU DAN BAHASA INGGERIS) : BAHASA : LAIN-LAIN SILA NYATAKAN
e_48_h	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : I. PENGGUNAAN ICT DALAM PEKERJAAN

**CABARAN MEMULAKAN PERNIAGAAN**

Kod	Keterangan
1	Modal
2	Pasaran

**PENDAPATAN BULANAN**

Kod	Keterangan
13	RM1000 dan ke bawah
3	RM1001 - RM1500

**SEKTOR PEKERJAAN**

Kod	Keterangan
2	Badan Berkanun
3	Syarikat multinasional

**SUB SEKTOR EKONOMI**

Kod	Keterangan
101	PENGELUARAN TANAMAN DAN TERNAKAN, PEMBURIAN DAN AKTIVITI PERKHIDMATAN BERKAITAN
102	PERHUTANAN DAN PEMBALAKAN

**SUMBER MAKLUMAT UNTUK MENDAPATKAN PEKERJAAN**

Kod	Keterangan
1	Internet
2	Media cetak/Iklan

<a href="#">e_48_j</a>	BEKERJA : KEUPAYAAN DAN KEMAMPUAN DALAM MELAKSANAKAN PEKERJAAN SEKARANG : J. KEUPAYAAN MENGAPLIKASI ICT DALAM PEKERJAAN
<a href="#">e_49_a</a>	BEKERJA : PENILAIAN DAN TAHAP KEPUASAN TERHADAP PEKERJAAN SEKARANG. A. MEMBERI SATU PENGALAMAN BERHARGA
<a href="#">e_49_b</a>	BEKERJA : PENILAIAN DAN TAHAP KEPUASAN TERHADAP PEKERJAAN SEKARANG. B. SANGAT MENGCABAR
<a href="#">e_49_c</a>	BEKERJA : PENILAIAN DAN TAHAP KEPUASAN TERHADAP PEKERJAAN SEKARANG. C. BANYAK PERKARA BOLEH DIPELAJARI
<a href="#">e_49_d</a>	BEKERJA : PENILAIAN DAN TAHAP KEPUASAN TERHADAP PEKERJAAN SEKARANG. D. RELEVAN DENGAN BIDANG PENGAJIAN
<a href="#">e_49_e</a>	BEKERJA : PENILAIAN DAN TAHAP KEPUASAN TERHADAP PEKERJAAN SEKARANG. E. MEMBERI KEPUASAN DIRI YANG TINGGI
<a href="#">e_49_f</a>	BEKERJA : PENILAIAN DAN TAHAP KEPUASAN TERHADAP PEKERJAAN SEKARANG. F. PROGRAM PENGAJIAN (SECARA KESELURUHAN) MEMBANTU DALAM PEKERJAAN SEKARANG
<a href="#">e_50</a>	BEKERJA : 8. A) SEJAUH MANAKAH PROGRAM PENGAJIAN ANDA (SECARA KESELURUHAN) MEMBANTU DALAM PEKERJAAN SEKARANG?
<a href="#">e_50_b</a>	BEKERJA : 8. ADAKAH ANDA BEKERJA DALAM BIDANG YANG SAMA DIPELAJARI DI INSTITUSI?
<a href="#">e_51</a>	BEKERJA : 9. PEKERJAAN SEKARANG MERUPAKAN PEKERJAAN ANDA YANG...SELEPAS MENAMATKAN PENGAJIAN DI IPT
<a href="#">e_51_a</a>	BEKERJA : 9. A. TEMPOH ANDA MENUNGGU UNTUK MENDAPAT PEKERJAAN PERTAMA
<a href="#">e_51_b</a>	BEKERJA : 9. B. BILAKAH ANDA MULA AKTIF Mencari PEKERJAAN PERTAMA, SELEPAS MENAMATKAN PENGAJIAN DI IPT?
<a href="#">e_51b_lain</a>	BEKERJA : 9. B. BILAKAH ANDA MULA AKTIF Mencari PEKERJAAN PERTAMA, SELEPAS MENAMATKAN PENGAJIAN DI IPT? : LAIN-LAIN SILA NYATAKAN
<a href="#">e_52</a>	BEKERJA : 10. ADAKAH ANDA MASIH Mencari PEKERJAAN LAIN PADA MASA INI?
<a href="#">e_52_a</a>	BEKERJA : 10. JIKA YA, SILA NYATAKAN SEBAB UTAMA MASIH Mencari PEKERJAAN LAIN
<a href="#">e_52_a_lain</a>	BEKERJA : 10. JIKA YA, SILA NYATAKAN SEBAB UTAMA MASIH Mencari PEKERJAAN LAIN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_53_1</a>	BEKERJA : 11. ADAKAH ANDA MEMPUYAI KERJA SAMPINGAN?
<a href="#">e_53_i_ya_1</a>	BEKERJA : 11. JIKA YA, SILA NYATAKAN SEBAB MMEPUYAI KERJA SAMPINGAN : PILIHAN 1
<a href="#">e_53_i_ya_2</a>	BEKERJA : 11. JIKA YA, SILA NYATAKAN SEBAB MMEPUYAI KERJA SAMPINGAN : PILIHAN 2
<a href="#">e_53_i_ya_3</a>	BEKERJA : 11. JIKA YA, SILA NYATAKAN SEBAB MMEPUYAI KERJA SAMPINGAN : PILIHAN 3
<a href="#">e_53_i_ya_4</a>	BEKERJA : 11. JIKA YA, SILA NYATAKAN SEBAB MMEPUYAI KERJA SAMPINGAN : PILIHAN 4
<a href="#">e_53_i_ya_lain</a>	BEKERJA : 11. JIKA YA, SILA NYATAKAN SEBAB MMEPUYAI KERJA SAMPINGAN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_53_2</a>	BEKERJA : 11. IJ). ADAKAH PEKERJAAN SEKARANG MERUPAKAN SATU PENINGKATAN DALAM KERJAYA ANDA BERBANDING DENGAN SEBELUMNYA?
<a href="#">e_53_2a</a>	BEKERJA : 11. IJ). JIKA YA, SILA NYATAKAN :
<a href="#">e_53_2a_lain</a>	BEKERJA : 11. IJ). JIKA YA, SILA NYATAKAN : LAIN-LAIN SILA NYATAKAN
<a href="#">e_okub3</a>	APAKAH CABARAN UTAMA YANG DIHADAPI : SEMASA BEKERJA
<a href="#">e_okub3lain</a>	APAKAH CABARAN UTAMA YANG DIHADAPI : SEMASA BEKERJA : LAIN-LAIN SILA NYATAKAN
<a href="#">e_54</a>	BELUM/TIDAK BEKERJA : 1. SEBAB UTAMA BELUM/TIDAK BEKERJA :

**e\_48\_a sehingga e\_49\_f**

Kod	Keterangan
1	Amat Rendah
2	Rendah

**e\_50**

Kod	Keterangan
1	Amat tidak membantu
2	Tidak membantu

**PEKERJAAN SEKARANG MERUPAKAN PEKERJAAN ANDA YANG**

Kod	Keterangan
1	Pertama
2	Ke-2

**TEMPOH MENUNGGU UNTUK MENDAPAT PEKERJAAN PERTAMA**

Kod	Keterangan
1	Sebelum tamat pengajian
2	1 bulan

**MULA AKTIF Mencari PEKERJAAN PERTAMA**

Kod	Keterangan
1	Sebelum tamat pengajian
2	Sejurus tamat pengajian

**SEBAB UTAMA MASIH MENCARI PEKERJAAN LAIN****Kod Keterangan**

- 1 Mencari pekerjaan yang setaraf dengan kelayakan
- 2 Mendapat gaji yang lebih tinggi

**SEBAB MEMPUNYAI KERJA SAMPINGAN****Kod Keterangan**

- 1 Mendapat/menambah pengalaman
- 2 Menambah pendapatan

**PENINGKATAN YANG DICAPAI****Kod Keterangan**

- 1 Kenaikan pangkat sahaja
- 2 Kenaikan gaji sahaja

e\_50\_b

e\_52

e\_53\_1 &amp; e\_53\_2

e\_55\_a

**Kod Keterangan**

- 1 Ya
- 2 Tidak

e\_54\_lain

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**BELUM/TIDAK BEKERJA : 1. SEBAB UTAMA BELUM/TIDAK BEKERJA: LAIN-LAIN SILA NYATAKAN (mansuh Mei 2019)****BELUM/TIDAK BEKERJA : 2. PERNAHKAH ANDA MENGHADIRI TEMU DUGA PEKERJAAN****BELUM/TIDAK BEKERJA : 2. BERAPA KALI ANDA PERNAH MENGHADIRI TEMU DUGA****BELUM/TIDAK BEKERJA : 3. SEKTOR PEKERJAAN PILIHAN ANDA MENGIKUT KEUTAMAAN : PILIHAN 1****BELUM/TIDAK BEKERJA : 3. SEKTOR PEKERJAAN PILIHAN ANDA MENGIKUT KEUTAMAAN : PILIHAN 2****BELUM/TIDAK BEKERJA : 3. SEKTOR PEKERJAAN PILIHAN ANDA MENGIKUT KEUTAMAAN : PILIHAN 3****BELUM/TIDAK BEKERJA : 3. SEKTOR PEKERJAAN PILIHAN ANDA MENGIKUT KEUTAMAAN : PILIHAN 4****BELUM/TIDAK BEKERJA : 3. SEKTOR PEKERJAAN PILIHAN ANDA MENGIKUT KEUTAMAAN : PILIHAN 5****BELUM/TIDAK BEKERJA : 4. KAEDAH UTAMA YANG ANDA GUNA BAGI MENDAPATKAN MAKLUMAT KEKOSONGAN/PELUANG PEKERJAAN :****BELUM/TIDAK BEKERJA : 4. KAEDAH UTAMA YANG ANDA GUNA BAGI MENDAPATKAN MAKLUMAT KEKOSONGAN/PELUANG PEKERJAAN : LAIN-LAIN SILA NYATAKAN****BELUM/TIDAK BEKERJA : 5. BILAKAH ANDA MULA AKTIF MENCARI PEKERJAAN PERTAMA, SELEPAS MENAMATKAN PENGAJIAN DI IPT?****BELUM/TIDAK BEKERJA : 5. BILAKAH ANDA MULA AKTIF MENCARI PEKERJAAN PERTAMA, SELEPAS MENAMATKAN PENGAJIAN DI IPT? LAIN-LAIN SILA NYATAKAN****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 1****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 2****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 3****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 4****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 5****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 6****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 7****BELUM/TIDAK BEKERJA : 6. KRITERIA YANG ANDA GUNA BAGI MEMILIH PEKERJAAN (SUSUN MENGIKUT KEUTAMAAN ANDA) : PILIHAN 8****BELUM/TIDAK BEKERJA : 7. BERAPAKAH GAJI YANG ANDA HARAPKAN?****5 RECODE STATUS PEKERJAAN****TARIKH SELESAI MENJAWAB KAJIAN****STATUS PENYERTAAN DALAM SKPG1 KPM****SEBAB UTAMA BELUM / TIDAK BEKERJA****Kod Keterangan**

- 1 Melanjutkan pengajian
- 2 Chamerbing bagi pelajar Undang-undang tanpa elaun

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**Kod Keterangan**

- 1 Ya
- 2 Tidak



**BERAPA KALI MENGHADIRI TEMUDUGA**

Kod	Keterangan
1	1 kali
2	2 kali

**SEKTOR PEKERJAAN PILIHAN MENGIKUT KEUTAMAAN**

Kod	Keterangan
1	Kerajaan
2	Badan berkanun

**KAEDAH UTAMA MENDAPAT MAKLUMAT KEKOSONGAN PEKERJAAN**

Kod	Keterangan
1	Internet
2	Media cetak/Iklan

**KRITERIA MEMILIH PEKERJAAN (MENGIKUT KEUTAMAAN)**

Kod	Keterangan
1	Gaji tinggi
2	Jaminan pekerjaan (job security)

**GAJI YANG DIHARAPKAN**

Kod	Keterangan
3	RM1001 - RM1500
4	RM1501 - RM2000

**STATUS PEKERJAAN**

Kod	Keterangan
1	Bekerja
2	Melanjutkan Pengajian

**STATUS PENYERTAAN DALAM SKPG1 KPM**

Kod	Keterangan
1	Sertai
2	Tidak sertai
3	Tidak lengkap

**APPENDIX B**  
**SAMPLE APPENDIX 2**

*Predicted Job Selection 2019*

inst#	Actual	predicted	error	prediction
1	1:'Jurutera Elektrik '	85:Jurutera Rangkaian	+	0.018
2	2:'Jurutera Aplikasi Komputer'	85:Jurutera Rangkaian	+	0.018
3	2:'Jurutera Aplikasi Komputer'	85:Jurutera Rangkaian	+	0.018
4	3:'Pekerja Am'	65:Software Engineer (Sharepoint)(IT)	+	0.018
5	1:?	85:Jurutera Rangkaian		0.018
6	4:'System Technical Writer'	85:Jurutera Rangkaian	+	0.018
7	1:?	85:Jurutera Rangkaian		0.018
8	1:?	85:Jurutera Rangkaian		0.018
9	5:'Pengurus Jualan dan Pemasaran'	65:Software Engineer (Sharepoint)(IT)	+	0.018
10	5:'Pengurus Jualan dan Pemasaran'	85:Jurutera Rangkaian	+	0.018
11	6:'Jurutera Automasi Industri'	85:Jurutera Rangkaian	+	0.018
12	7:'Pembantu Teknologi Maklumat'	65:Software Engineer (Sharepoint)(IT)	+	0.018
13	8:'Jurutera Komputer '	65:Software Engineer (Sharepoint)(IT)	+	0.018
14	9:'Jurutera Teknologi Maklumat '	65:Software Engineer (Sharepoint)(IT)	+	0.018
15	10:'Ketua Pegawai Teknologi Maklumat'	65:Software Engineer (Sharepoint)(IT)	+	0.018
16	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
17	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
18	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
19	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
20	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
21	9:'Jurutera Teknologi Maklumat '	85:Jurutera Rangkaian	+	0.018
22	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
23	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
24	11:'Pengurus Sistem Maklumat '	85:Jurutera Rangkaian	+	0.018

25	12:'Pengurus Kewangan '	65:Software Engineer (Sharepoint)(IT)	+	0.018
26	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
27	13: Pengurus	85:Jurutera Rangkaian	+	0.018
28	14:'Eksekutif Kontrak'	85:Jurutera Rangkaian	+	0.018
29	13: Pengurus	85:Jurutera Rangkaian	+	0.018
30	15:'Anggota Komunikasi'	85:Jurutera Rangkaian	+	0.018
31	16:'Pengurus Hal Ehwal Am'	85:Jurutera Rangkaian	+	0.018
32	17:'Jurutera Rangkaian Data'	85:Jurutera Rangkaian	+	0.018
33	18:'Jurutera Teknologi Teknikal'	85:Jurutera Rangkaian	+	0.018
34	19:'Penolong Jurutera'	85:Jurutera Rangkaian	+	0.018
35	20:'Ketua Pegawai Eksekutif'	65:Software Engineer (Sharepoint)(IT)	+	0.018
36	21:'Jurutera Operasi'	65:Software Engineer (Sharepoint)(IT)	+	0.018
37	22:'Jurutera Perisian Komputer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
38	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
39	23:'Computer-Aided Design (CAD) Design Automation Engineer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
40	24:'Pembantu Tadbir'	65:Software Engineer (Sharepoint)(IT)	+	0.018
41	25:'Guru Taska '	85:Jurutera Rangkaian	+	0.018
42	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
43	26:'Pereka Grafik'	65:Software Engineer (Sharepoint)(IT)	+	0.018
44	22:'Jurutera Perisian Komputer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
45	22:'Jurutera Perisian Komputer'	85:Jurutera Rangkaian	+	0.018
46	22:'Jurutera Perisian Komputer'	85:Jurutera Rangkaian	+	0.018
47	26:'Pereka Grafik'	65:Software Engineer (Sharepoint)(IT)	+	0.018
48	26:'Pereka Grafik'	65:Software Engineer (Sharepoint)(IT)	+	0.018
49	27:'Juruanalisis Data'	85:Jurutera Rangkaian	+	0.018
50	28:'Jurutera Perkakasan Komputer'	85:Jurutera Rangkaian	+	0.018
51	29:'Kerani Kawalan Dokumen'	65:Software Engineer (Sharepoint)(IT)	+	0.018
52	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
53	1:?	65:Software Engineer (Sharepoint)(IT)		0.018

54	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
55	1:?	85:Jurutera Rangkaian		0.018
56	30:'Koordinator Jualan'	85:Jurutera Rangkaian	+	0.018
57	31:'Penolong Pegawai Tadbir Gred N27 '	65:Software Engineer (Sharepoint)(IT)	+	0.018
58	32:'Pengawal Dokumen'	85:Jurutera Rangkaian	+	0.018
59	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
60	33:'Wakil Insurans'	65:Software Engineer (Sharepoint)(IT)	+	0.018
61	34:Pelayan	85:Jurutera Rangkaian	+	0.018
62	35:'Eksekutif Perniagaan'	65:Software Engineer (Sharepoint)(IT)	+	0.018
63	36:'Pegawai Khidmat Pelanggan'	65:Software Engineer (Sharepoint)(IT)	+	0.018
64	37:'Jurutera Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
65	36:'Pegawai Khidmat Pelanggan'	85:Jurutera Rangkaian	+	0.018
66	1:?	65:Software Engineer (Sharepoint)(IT)		0.018
67	38:'Juruanalisis Sistem Komputer '	85:Jurutera Rangkaian	+	0.018
68	39:'Pekerja Makanan dan Minuman'	65:Software Engineer (Sharepoint)(IT)	+	0.018
69	40:'.NetApplication Consultant'	65:Software Engineer (Sharepoint)(IT)	+	0.018
70	41:'Perunding Teknologi Maklumat'	65:Software Engineer (Sharepoint)(IT)	+	0.018
71	42:'Pereka Sistem Komputer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
72	43:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
73	44:'Information Technology Specialist(Java)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
74	45:'Juruanalisis Perniagaan Teknologi Maklumat '	65:Software Engineer (Sharepoint)(IT)	+	0.018
75	46:'Juruanalisis Sistem Maklumat Pengurusan (MIS)'	85:Jurutera Rangkaian	+	0.018
76	47:'Information Technology Security Analyst'	85:Jurutera Rangkaian	+	0.018
77	48:'Technical Specialist (.Net)'	85:Jurutera Rangkaian	+	0.018
78	49:'JuruJual Kaunter Promoter'	65:Software Engineer (Sharepoint)(IT)	+	0.018
79	47:'Information Technology Security Analyst'	85:Jurutera Rangkaian	+	0.018

80	50:'Information Technology System Analyst (JDE)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
81	51:'.NetProgrammer Analyst'	85:Jurutera Rangkaian	+	0.018
82	52:'Jurutera Aplikasi Jualan ICT'	85:Jurutera Rangkaian	+	0.018
83	53:'Juruanalisis QA (IT)'	85:Jurutera Rangkaian	+	0.018
84	54:'Operator Sistem'	65:Software Engineer (Sharepoint)(IT)	+	0.018
85	55:'Juruanalisis Teknikal Meja Bantu'	85:Jurutera Rangkaian	+	0.018
86	37:'Jurutera Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
87	56:'Pengaturcara Java '	65:Software Engineer (Sharepoint)(IT)	+	0.018
88	57:'Security Analyst(IT)'	85:Jurutera Rangkaian	+	0.018
89	57:'Security Analyst(IT)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
90	37:'Jurutera Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
91	37:'Jurutera Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
92	37:'Jurutera Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
93	39:'Pekerja Makanan dan Minuman'	85:Jurutera Rangkaian	+	0.018
94	58:'Jurutera Perisian (.Net)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
95	58:'Jurutera Perisian (.Net)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
96	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
97	59:'Web Programmer (PHP)'	85:Jurutera Rangkaian	+	0.018
98	60:'Cobol Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
99	61:'Pembangun Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
100	61:'Pembangun Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
101	61:'Pembangun Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
102	57:'Security Analyst(IT)'	85:Jurutera Rangkaian	+	0.018
103	50:'Information Technology System Analyst (JDE)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
104	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
105	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
106	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018

107	62:'Information Technology Executive (RPG)'	85:Jurutera Rangkaian	+	0.018
108	61:'Pembangun Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
109	61:'Pembangun Perisian'	85:Jurutera Rangkaian	+	0.018
110	37:'Jurutera Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
111	58:'Jurutera Perisian (.Net)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
112	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
113	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
114	63:'Hypertext Preprocessor (PHP) Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
115	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
116	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
117	59:'Web Programmer (PHP)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
118	64:'Enterprise Systems Specialist (IT)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
119	63:'Hypertext Preprocessor (PHP) Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
120	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
121	62:'Information Technology Executive (RPG)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
122	66:'Artificial Intelligence Programmer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
123	67:'Pengaturcara Teknikal '	85:Jurutera Rangkaian	+	0.018
124	68:'Software Analyst'	65:Software Engineer (Sharepoint)(IT)	+	0.018
125	68:'Software Analyst'	65:Software Engineer (Sharepoint)(IT)	+	0.018
126	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
127	68:'Software Analyst'	65:Software Engineer (Sharepoint)(IT)	+	0.018
128	69:'Pembantu Jualan'	65:Software Engineer (Sharepoint)(IT)	+	0.018
129	68:'Software Analyst'	65:Software Engineer (Sharepoint)(IT)	+	0.018
130	69:'Pembantu Jualan'	65:Software Engineer (Sharepoint)(IT)	+	0.018
131	7:'Pembantu Teknologi Maklumat'	85:Jurutera Rangkaian	+	0.018
132	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018

133	65:'Software Engineer (Sharepoint)(IT)'	85:Jurutera Rangkaian	+	0.018
134	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
135	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
136	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
137	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
138	69:'Pembantu Jualan'	65:Software Engineer (Sharepoint)(IT)	+	0.018
139	69:'Pembantu Jualan'	65:Software Engineer (Sharepoint)(IT)	+	0.018
140	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
141	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
142	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
143	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
144	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
145	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
146	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
147	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
148	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
149	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
150	65:'Software Engineer (Sharepoint)(IT)'	85:Jurutera Rangkaian	+	0.018
151	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
152	70:'Pembangun Laman Web '	65:Software Engineer (Sharepoint)(IT)	+	0.018
153	71:'Sharepoint Technical Specialist (IT)'	85:Jurutera Rangkaian	+	0.018
154	70:'Pembangun Laman Web '	65:Software Engineer (Sharepoint)(IT)	+	0.018
155	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
156	70:'Pembangun Laman Web '	65:Software Engineer (Sharepoint)(IT)	+	0.018
157	72:'Juruteknik Komputer'	85:Jurutera Rangkaian	+	0.018

158	73:'Pengaturcara Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
159	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
160	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
161	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
162	64:'Enterprise Systems Specialist (IT)'	85:Jurutera Rangkaian	+	0.018
163	74:'Penguji Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
164	75:'Pengendali Web'	65:Software Engineer (Sharepoint)(IT)	+	0.018
165	76:'Auditor Komputer'	85:Jurutera Rangkaian	+	0.018
166	77:'Jurutera Kualiti (IT)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
167	78:'Pengaturcara Aplikasi'	65:Software Engineer (Sharepoint)(IT)	+	0.018
168	73:'Pengaturcara Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
169	73:'Pengaturcara Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
170	65:'Software Engineer (Sharepoint)(IT)'	85:Jurutera Rangkaian	+	0.018
171	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
172	77:'Jurutera Kualiti (IT)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
173	79:'Jurutera Sistem (IT)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
174	74:'Penguji Perisian'	65:Software Engineer (Sharepoint)(IT)	+	0.018
175	80:'Pakar Teknikal (IT) '	85:Jurutera Rangkaian	+	0.018
176	80:'Pakar Teknikal (IT) '	85:Jurutera Rangkaian	+	0.018
177	1:?	85:Jurutera Rangkaian		0.018
178	81:'Jurumasak Pastri'	65:Software Engineer (Sharepoint)(IT)	+	0.018
179	70:'Pembangun Laman Web '	65:Software Engineer (Sharepoint)(IT)	+	0.018
180	82:'Structured Query Language (SQL) Database Administrator'	65:Software Engineer (Sharepoint)(IT)	+	0.018
181	83:'Pengaturcara Sistem '	65:Software Engineer (Sharepoint)(IT)	+	0.018
182	84:'Jurutera Jaminan Kualiti Produk (IT)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
183	85:'Jurutera Rangkaian'	85:Jurutera Rangkaian		0.018
184	85:'Jurutera Rangkaian'	85:Jurutera Rangkaian		0.018



185	65:'Software Engineer (Sharepoint)(IT)'	65:Software Engineer (Sharepoint)(IT)		0.018
186	86:'Pengajar Am'	65:Software Engineer (Sharepoint)(IT)	+	0.018
187	85:'Jurutera Rangkaian'	85:Jurutera Rangkaian		0.018
188	87:Juruwang	65:Software Engineer (Sharepoint)(IT)	+	0.018
189	88:'Jurutera Sistem Rangkaian IT'	85:Jurutera Rangkaian	+	0.018
190	87:Juruwang	65:Software Engineer (Sharepoint)(IT)	+	0.018
191	87:Juruwang	65:Software Engineer (Sharepoint)(IT)	+	0.018
192	89:'System Engineer (Oracle)'	65:Software Engineer (Sharepoint)(IT)	+	0.018
193	89:'System Engineer (Oracle)'	85:Jurutera Rangkaian	+	0.018
194	85:'Jurutera Rangkaian'	85:Jurutera Rangkaian		0.018
195	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
196	91:'Juruteknik Keselamatan Rangkaian ICT '	65:Software Engineer (Sharepoint)(IT)	+	0.018
197	92:'Juruwang Kafeteria'	65:Software Engineer (Sharepoint)(IT)	+	0.018
198	93:'Eksekutif Teknologi Maklumat '	85:Jurutera Rangkaian	+	0.018
199	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
200	94:'Jurutera QA Perisian '	65:Software Engineer (Sharepoint)(IT)	+	0.018
201	95:'Jurutera Sokongan Komputer '	85:Jurutera Rangkaian	+	0.018
202	96:'Inbound Technical Support Representative (IT)'	85:Jurutera Rangkaian	+	0.018
203	96:'Inbound Technical Support Representative (IT)'	85:Jurutera Rangkaian	+	0.018
204	93:'Eksekutif Teknologi Maklumat '	85:Jurutera Rangkaian	+	0.018
205	97:'Pembantu Kedai'	65:Software Engineer (Sharepoint)(IT)	+	0.018
206	97:'Pembantu Kedai'	85:Jurutera Rangkaian	+	0.018
207	98:'Administrator, Electronic Data Processing (PDE)'	85:Jurutera Rangkaian	+	0.018
208	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
209	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
210	99:'Juruwang Restoran'	85:Jurutera Rangkaian	+	0.018
211	100:'Penolong Pegawai Keselamatan Gred KP27'	85:Jurutera Rangkaian	+	0.018
212	85:'Jurutera Rangkaian'	85:Jurutera Rangkaian		0.018

213	85:'Jurutera Rangkaian'	85:Jurutera Rangkaian		0.018
214	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
215	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
216	90:'Web and Mobility Developer'	65:Software Engineer (Sharepoint)(IT)	+	0.018
217	97:'Pembantu Kedai'	65:Software Engineer (Sharepoint)(IT)	+	0.018
218	97:'Pembantu Kedai'	65:Software Engineer (Sharepoint)(IT)	+	0.018
219	97:'Pembantu Kedai'	65:Software Engineer (Sharepoint)(IT)	+	0.018
220	101:'Penolong Pegawai Pendaftaran/Pegawai Pendaftaran Gred KP27'	85:Jurutera Rangkaian	+	0.018
221	102:'Tukang Emas'	65:Software Engineer (Sharepoint)(IT)	+	0.018
222	103:'Pekerja Sokongan Teknologi Maklumat'	85:Jurutera Rangkaian	+	0.018
223	104:'Operator Pengeluaran Produk Elektronik'	85:Jurutera Rangkaian	+	0.018
224	105:'Penyunting Filem dan Video '	85:Jurutera Rangkaian	+	0.018
225	106:'Penyambut Tetamu Front Office'	65:Software Engineer (Sharepoint)(IT)	+	0.018
226	107:'Penghantar Cepat'	85:Jurutera Rangkaian	+	0.018
227	108:'Kerani Kaunter Wang Tunai'	85:Jurutera Rangkaian	+	0.018
228	109:'Pembantu Perkhidmatan Pelanggan '	65:Software Engineer (Sharepoint)(IT)	+	0.018
229	109:'Pembantu Perkhidmatan Pelanggan '	65:Software Engineer (Sharepoint)(IT)	+	0.018
230	110:'Pembantu Rumah'	85:Jurutera Rangkaian	+	0.018
231	111:'Pembantu Gudang'	85:Jurutera Rangkaian	+	0.018
232	112:'Pembantu Stor'	65:Software Engineer (Sharepoint)(IT)	+	0.018
233	113:'Perunding Sistem IT'	85:Jurutera Rangkaian	+	0.018
234	38:'Juruanalisis Sistem Komputer '	65:Software Engineer (Sharepoint)(IT)	+	0.018
235	1:?	65:Software Engineer (Sharepoint)(IT)		0.018

***Predicted Job Selection 2020***

inst#	actual	predicted	error	prediction
1	1:'Web Programmer (PHP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
2	2:'Penolong Pegawai Teknologi Maklumat '	11:Information Technology Security Analyst	+	0.022
3	3:'Jurutera Sistem Rangkaian IT'	11:Information Technology Security Analyst	+	0.022
4	4:'Eksekutif Pemasaran '	11:Information Technology Security Analyst	+	0.022
5	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
6	6:'Juruwang. Pembantu'	11:Information Technology Security Analyst	+	0.022
7	7:'Juru analisis QA (IT)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
8	8:'RPG System Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
9	9:'Pembangun Laman Web '	10:Software Engineer (Sharepoint)(IT)	+	0.022
10	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
11	11:'Information Technology Security Analyst'	11:Information Technology Security Analyst		0.022
12	12:'Juruwang	10:Software Engineer (Sharepoint)(IT)	+	0.022
13	13:'Jurutera Perisian Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
14	14:'Jurutera Rangkaian'	11:Information Technology Security Analyst	+	0.022
15	15:'Web and Mobility Developer'	11:Information Technology Security Analyst	+	0.022
16	16:'Jurutera Sistem Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
17	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
18	9:'Pembangun Laman Web '	10:Software Engineer (Sharepoint)(IT)	+	0.022
19	17:'System Engineer (Oracle)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
20	18:'Pereka Web'	11:Information Technology Security Analyst	+	0.022
21	19:'Pekerja Am'	10:Software Engineer (Sharepoint)(IT)	+	0.022
22	20:'Software Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
23	21:'Jurutera Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022

24	1:'Web Programmer (PHP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
25	22:'Hypertext Preprocessor (PHP) Developer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
26	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
27	23:'Guru Taska '	10:Software Engineer (Sharepoint)(IT)	+	0.022
28	1:?	11:Information Technology Security Analyst		0.022
29	9:'Pembangun Laman Web '	10:Software Engineer (Sharepoint)(IT)	+	0.022
30	24:'Information Technology Executive (RPG)'	11:Information Technology Security Analyst	+	0.022
31	25:'Jurujual Internet'	11:Information Technology Security Analyst	+	0.022
32	16:'Jurutera Sistem Komputer'	11:Information Technology Security Analyst	+	0.022
33	26:'Juruteknik Kejuruteraan Automobil'	10:Software Engineer (Sharepoint)(IT)	+	0.022
34	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
35	27:'Pegawai Sokongan Teknologi Maklumat'	10:Software Engineer (Sharepoint)(IT)	+	0.022
36	28:'Inbound Technical Support Representative (IT)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
37	29:'Structured Query Language (SQL) Database Administrator'	11:Information Technology Security Analyst	+	0.022
38	10:'Software Engineer (Sharepoint)(IT)'	11:Information Technology Security Analyst	+	0.022
39	30:'SAP Application Administrator'	11:Information Technology Security Analyst	+	0.022
40	31:'Pekerja Singkat Harian (PSH) (Awam)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
41	1:'Web Programmer (PHP)'	11:Information Technology Security Analyst	+	0.022
42	21:'Jurutera Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
43	1:'Web Programmer (PHP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
44	9:'Pembangun Laman Web '	10:Software Engineer (Sharepoint)(IT)	+	0.022
45	10:'Software Engineer (Sharepoint)(IT)'	11:Information Technology Security Analyst	+	0.022
46	32:'Guru Sekolah Rendah'	10:Software Engineer (Sharepoint)(IT)	+	0.022

47	27:'Pegawai Sokongan Teknologi Maklumat'	11:Information Technology Security Analyst	+	0.022
48	33:'Pembantu Jualan'	10:Software Engineer (Sharepoint)(IT)	+	0.022
49	34:'Jurutera Teknologi Teknikal'	11:Information Technology Security Analyst	+	0.022
50	35:'Jurutera Sistem (Kecuali Komputer)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
51	13:'Jurutera Perisian Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
52	36:'Java Programmer Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
53	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
54	37:'.NetProgrammer Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
55	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
56	38:'Officer-in-charge. Weather station'	10:Software Engineer (Sharepoint)(IT)	+	0.022
57	19:'Pekerja Am'	10:Software Engineer (Sharepoint)(IT)	+	0.022
58	1:'Web Programmer (PHP)'	11:Information Technology Security Analyst	+	0.022
59	39:'Guru Pengajian Agama'	11:Information Technology Security Analyst	+	0.022
60	40:'Pekerja Sokongan Teknologi Maklumat'	10:Software Engineer (Sharepoint)(IT)	+	0.022
61	41:'Perangkawan Gred E41'	10:Software Engineer (Sharepoint)(IT)	+	0.022
62	42:'Eksekutif Logistik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
63	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
64	43:'Ketua Projek'	11:Information Technology Security Analyst	+	0.022
65	24:'Information Technology Executive (RPG)'	11:Information Technology Security Analyst	+	0.022
66	16:'Jurutera Sistem Komputer'	11:Information Technology Security Analyst	+	0.022
67	44:'Security Analyst(IT)'	11:Information Technology Security Analyst	+	0.022
68	45:'Eksekutif Pengeluaran'	11:Information Technology Security Analyst	+	0.022
69	46:'Enterprise Resource Planning (ERP) Technical Specialist (IT)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
70	47:'Pembantu Eksekutif Pentadbiran'	11:Information Technology Security Analyst	+	0.022

71	48:'Eksekutif Sistem Komputer'	11:Information Technology Security Analyst	+	0.022
72	1:?	10:Software Engineer (Sharepoint)(IT)		0.022
73	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
74	27:'Pegawai Sokongan Teknologi Maklumat'	10:Software Engineer (Sharepoint)(IT)	+	0.022
75	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
76	49:'Pengaturcara Perisian (.Net)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
77	21:'Jurutera Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
78	20:'Software Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
79	3:'Jurutera Sistem Rangkaian IT'	11:Information Technology Security Analyst	+	0.022
80	24:'Information Technology Executive (RPG)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
81	50:'Juruanalisis Perniagaan Teknologi Maklumat '	10:Software Engineer (Sharepoint)(IT)	+	0.022
82	51:'Kerani Pemasaran '	10:Software Engineer (Sharepoint)(IT)	+	0.022
83	52:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
84	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
85	53:'Climate Service Technician'	11:Information Technology Security Analyst	+	0.022
86	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
87	21:'Jurutera Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
88	54:'Project Administrator (IT)'	11:Information Technology Security Analyst	+	0.022
89	55:'Pembangun Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
90	56:'Penyunting Filem dan Video '	10:Software Engineer (Sharepoint)(IT)	+	0.022
91	57:'Pemeriksa Kualiti Produk'	10:Software Engineer (Sharepoint)(IT)	+	0.022
92	16:'Jurutera Sistem Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
93	58:'Ilustrator Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022

94	40:'Pekerja Sokongan Teknologi Maklumat'	10:Software Engineer (Sharepoint)(IT)	+	0.022
95	48:'Eksekutif Sistem Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
96	5:'Pereka Grafik'	10:Software Engineer (Sharepoint)(IT)	+	0.022
97	59:'Inspektor Kawalan Kualiti'	10:Software Engineer (Sharepoint)(IT)	+	0.022
98	24:'Information Technology Executive (RPG)'	11:Information Technology Security Analyst	+	0.022
99	60:'Kerani Am Pejabat '	10:Software Engineer (Sharepoint)(IT)	+	0.022
100	61:'Jurutera Komputer '	10:Software Engineer (Sharepoint)(IT)	+	0.022
101	12:Juruwang	10:Software Engineer (Sharepoint)(IT)	+	0.022
102	1:?	10:Software Engineer (Sharepoint)(IT)		0.022
103	11:'Information Technology Security Analyst'	11:Information Technology Security Analyst		0.022
104	62:'Ejen Hartanah'	11:Information Technology Security Analyst	+	0.022
105	28:'Inbound Technical Support Representative (IT)'	11:Information Technology Security Analyst	+	0.022
106	12:Juruwang	11:Information Technology Security Analyst	+	0.022
107	63:'Jurutera Aplikasi Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
108	1:'Web Programmer (PHP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
109	64:'Juruwang. Kedai'	10:Software Engineer (Sharepoint)(IT)	+	0.022
110	13:'Jurutera Perisian Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
111	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
112	20:'Software Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
113	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
114	65:'Information Technology Consultant (Java)'	11:Information Technology Security Analyst	+	0.022
115	66:'Pengaturcara Multimedia '	10:Software Engineer (Sharepoint)(IT)	+	0.022
116	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022

117	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
118	67:'Pembantu Pengaturcaraan Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
119	33:'Pembantu Jualan'	10:Software Engineer (Sharepoint)(IT)	+	0.022
120	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
121	11:'Information Technology Security Analyst'	11:Information Technology Security Analyst		0.022
122	68:'Pegawai Teknologi Maklumat Gred F41'	10:Software Engineer (Sharepoint)(IT)	+	0.022
123	44:'Security Analyst(IT)'	11:Information Technology Security Analyst	+	0.022
124	69:'Application Specialist Support (Navision)'	11:Information Technology Security Analyst	+	0.022
125	70:'Eksekutif Perkhidmatan Pelanggan'	11:Information Technology Security Analyst	+	0.022
126	1:?	11:Information Technology Security Analyst		0.022
127	71:'Operator Pengeluaran'	10:Software Engineer (Sharepoint)(IT)	+	0.022
128	72:'Kerani Teknikal'	11:Information Technology Security Analyst	+	0.022
129	73:'Pengurus Sistem Maklumat '	10:Software Engineer (Sharepoint)(IT)	+	0.022
130	17:'System Engineer (Oracle)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
131	74:'Pengaturcara Perisian'	11:Information Technology Security Analyst	+	0.022
132	75:'Pembantu Front Office'	11:Information Technology Security Analyst	+	0.022
133	76:'Juruteknik Laman Web'	10:Software Engineer (Sharepoint)(IT)	+	0.022
134	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
135	52:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
136	77:'Jurujual Jualan Langsung'	10:Software Engineer (Sharepoint)(IT)	+	0.022
137	11:'Information Technology Security Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
138	15:'Web and Mobility Developer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
139	21:'Jurutera Perisian'	11:Information Technology Security Analyst	+	0.022



140	78:'Graphics Creator'	10:Software Engineer (Sharepoint)(IT)	+	0.022
141	13:'Jurutera Perisian Komputer'	10:Software Engineer (Sharepoint)(IT)	+	0.022
142	1:'Web Programmer (PHP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
143	24:'Information Technology Executive (RPG)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
144	79:'Pegawai Pentadbiran '	10:Software Engineer (Sharepoint)(IT)	+	0.022
145	80:'Kerani Pejabat'	10:Software Engineer (Sharepoint)(IT)	+	0.022
146	81:Jurujual	10:Software Engineer (Sharepoint)(IT)	+	0.022
147	82:'Information Technology Consultant (.Net)'	11:Information Technology Security Analyst	+	0.022
148	83:'Kerani Personel'	10:Software Engineer (Sharepoint)(IT)	+	0.022
149	1:?	10:Software Engineer (Sharepoint)(IT)		0.022
150	1:?	11:Information Technology Security Analyst		0.022
151	55:'Pembangun Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
152	55:'Pembangun Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
153	21:'Jurutera Perisian'	10:Software Engineer (Sharepoint)(IT)	+	0.022
154	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
155	4:'Eksekutif Pemasaran '	10:Software Engineer (Sharepoint)(IT)	+	0.022
156	84:'Pembantu Kedai'	11:Information Technology Security Analyst	+	0.022
157	71:'Operator Pengeluaran'	10:Software Engineer (Sharepoint)(IT)	+	0.022
158	1:'Web Programmer (PHP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
159	85:'Pakar Teknikal (IT) '	10:Software Engineer (Sharepoint)(IT)	+	0.022
160	80:'Kerani Pejabat'	10:Software Engineer (Sharepoint)(IT)	+	0.022
161	86:'Jurutera Automasi Industri'	10:Software Engineer (Sharepoint)(IT)	+	0.022
162	41:'Perangkawan Gred E41'	10:Software Engineer (Sharepoint)(IT)	+	0.022
163	27:'Pegawai Sokongan Teknologi Maklumat'	10:Software Engineer (Sharepoint)(IT)	+	0.022

164	87:'Jurutera Sistem '	10:Software Engineer (Sharepoint)(IT)	+	0.022
165	88:'Pengaturcara Permainan Komputer '	11:Information Technology Security Analyst	+	0.022
166	11:'Information Technology Security Analyst'	11:Information Technology Security Analyst		0.022
167	20:'Software Analyst'	10:Software Engineer (Sharepoint)(IT)	+	0.022
168	10:'Software Engineer (Sharepoint)(IT)'	10:Software Engineer (Sharepoint)(IT)		0.022
169	52:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
170	9:'Pembangun Laman Web '	10:Software Engineer (Sharepoint)(IT)	+	0.022
171	89:'Information Technology System Analyst (JDE)'	10:Software Engineer (Sharepoint)(IT)	+	0.022
172	14:'Jurutera Rangkaian'	11:Information Technology Security Analyst	+	0.022

*Prediction Job Selection 2019 IT only*

inst#	actual	predicted	error	prediction
1	1:'Jurutera Aplikasi Komputer'	62:Jurutera Rangkaian	+	0.027
2	1:'Jurutera Aplikasi Komputer'	62:Jurutera Rangkaian	+	0.027
3	2:'System Technical Writer'	62:Jurutera Rangkaian	+	0.027
4	3:'Pembantu Teknologi Maklumat'	44:Software Engineer (Sharepoint)(IT)	+	0.027
5	4:'Jurutera Komputer '	44:Software Engineer (Sharepoint)(IT)	+	0.027
6	5:'Jurutera Teknologi Maklumat '	44:Software Engineer (Sharepoint)(IT)	+	0.027
7	6:'Ketua Pegawai Teknologi Maklumat'	44:Software Engineer (Sharepoint)(IT)	+	0.027
8	5:'Jurutera Teknologi Maklumat '	62:Jurutera Rangkaian	+	0.027
9	7:'Pengurus Sistem Maklumat '	62:Jurutera Rangkaian	+	0.027
10	8:'Jurutera Rangkaian Data'	62:Jurutera Rangkaian	+	0.027
11	9:'Jurutera Teknologi Teknikal'	62:Jurutera Rangkaian	+	0.027
12	10:'Penolong Jurutera'	62:Jurutera Rangkaian	+	0.027
13	11:'Jurutera Operasi'	44:Software Engineer (Sharepoint)(IT)	+	0.027
14	12:'Jurutera Perisian Komputer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
15	13:'Computer-Aided Design (CAD) Design Automation Engineer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
16	14:'Pereka Grafik'	44:Software Engineer (Sharepoint)(IT)	+	0.027
17	12:'Jurutera Perisian Komputer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
18	12:'Jurutera Perisian Komputer'	62:Jurutera Rangkaian	+	0.027
19	12:'Jurutera Perisian Komputer'	62:Jurutera Rangkaian	+	0.027
20	14:'Pereka Grafik'	44:Software Engineer (Sharepoint)(IT)	+	0.027
21	14:'Pereka Grafik'	44:Software Engineer (Sharepoint)(IT)	+	0.027
22	15:'Juruanalisis Data'	62:Jurutera Rangkaian	+	0.027
23	16:'Jurutera Perkakasan Komputer'	62:Jurutera Rangkaian	+	0.027
24	17:'Kerani Kawalan Dokumen'	44:Software Engineer (Sharepoint)(IT)	+	0.027
25	18:'Pengawal Dokumen'	62:Jurutera Rangkaian	+	0.027
26	19:'Jurutera Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
27	20:'Juruanalisis Sistem Komputer '	62:Jurutera Rangkaian	+	0.027
28	21:'.NetApplication Consultant'	44:Software Engineer (Sharepoint)(IT)	+	0.027

29	22:'Perunding Teknologi Maklumat'	44:Software Engineer (Sharepoint)(IT)	+	0.027
30	23:'Pereka Sistem Komputer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
31	24:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
32	25:'Information Technology Specialist(Java)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
33	26:'Juruanalisis Perniagaan Teknologi Maklumat '	44:Software Engineer (Sharepoint)(IT)	+	0.027
34	27:'Juruanalisis Sistem Maklumat Pengurusan (MIS)'	62:Jurutera Rangkaian	+	0.027
35	28:'Information Technology Security Analyst'	62:Jurutera Rangkaian	+	0.027
36	29:'Technical Specialist (.Net)'	62:Jurutera Rangkaian	+	0.027
37	28:'Information Technology Security Analyst'	62:Jurutera Rangkaian	+	0.027
38	30:'Information Technology System Analyst (JDE)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
39	31:'.NetProgrammer Analyst'	62:Jurutera Rangkaian	+	0.027
40	32:'Jurutera Aplikasi Jualan ICT'	62:Jurutera Rangkaian	+	0.027
41	33:'Juruanalisis QA (IT)'	62:Jurutera Rangkaian	+	0.027
42	34:'Operator Sistem'	44:Software Engineer (Sharepoint)(IT)	+	0.027
43	19:'Jurutera Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
44	35:'Pengaturcara Java '	44:Software Engineer (Sharepoint)(IT)	+	0.027
45	36:'Security Analyst(IT)'	62:Jurutera Rangkaian	+	0.027
46	36:'Security Analyst(IT)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
47	19:'Jurutera Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
48	19:'Jurutera Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
49	19:'Jurutera Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
50	37:'Jurutera Perisian (.Net)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
51	37:'Jurutera Perisian (.Net)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
52	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
53	38:'Web Programmer (PHP)'	62:Jurutera Rangkaian	+	0.027
54	39:'Cobol Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
55	40:'Pembangun Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027

56	40:'Pembangun Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
57	40:'Pembangun Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
58	36:'Security Analyst(IT)'	62:Jurutera Rangkaian	+	0.027
59	30:'Information Technology System Analyst (JDE)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
60	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
61	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
62	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
63	41:'Information Technology Executive (RPG)'	62:Jurutera Rangkaian	+	0.027
64	40:'Pembangun Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
65	40:'Pembangun Perisian'	62:Jurutera Rangkaian	+	0.027
66	19:'Jurutera Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
67	37:'Jurutera Perisian (.Net)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
68	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
69	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
70	42:'Hypertext Preprocessor (PHP) Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
71	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
72	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
73	38:'Web Programmer (PHP)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
74	43:'Enterprise Systems Specialist (IT)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
75	42:'Hypertext Preprocessor (PHP) Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
76	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
77	41:'Information Technology Executive (RPG)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
78	45:'Artificial Intelligence Programmer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
79	46:'Pengaturcara Teknikal '	62:Jurutera Rangkaian	+	0.027
80	47:'Software Analyst'	44:Software Engineer (Sharepoint)(IT)	+	0.027
81	47:'Software Analyst'	44:Software Engineer (Sharepoint)(IT)	+	0.027

82	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
83	47:'Software Analyst'	44:Software Engineer (Sharepoint)(IT)	+	0.027
84	47:'Software Analyst'	44:Software Engineer (Sharepoint)(IT)	+	0.027
85	3:'Pembantu Teknologi Maklumat'	62:Jurutera Rangkaian	+	0.027
86	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
87	44:'Software Engineer (Sharepoint)(IT)'	62:Jurutera Rangkaian	+	0.027
88	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
89	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
90	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
91	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
92	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
93	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
94	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
95	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
96	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
97	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
98	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
99	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
100	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
101	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
102	44:'Software Engineer (Sharepoint)(IT)'	62:Jurutera Rangkaian	+	0.027
103	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
104	48:'Pembangun Laman Web '	44:Software Engineer (Sharepoint)(IT)	+	0.027
105	49:'Sharepoint Technical Specialist (IT)'	62:Jurutera Rangkaian	+	0.027
106	48:'Pembangun Laman Web '	44:Software Engineer (Sharepoint)(IT)	+	0.027

107	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
108	48:'Pembangun Laman Web '	44:Software Engineer (Sharepoint)(IT)	+	0.027
109	50:'Juruteknik Komputer'	62:Jurutera Rangkaian	+	0.027
110	51:'Pengaturcara Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
111	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
112	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
113	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
114	43:'Enterprise Systems Specialist (IT)'	62:Jurutera Rangkaian	+	0.027
115	52:'Penguji Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
116	53:'Pengendali Web'	44:Software Engineer (Sharepoint)(IT)	+	0.027
117	54:'Auditor Komputer'	62:Jurutera Rangkaian	+	0.027
118	55:'Jurutera Kualiti (IT)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
119	56:'Pengaturcara Aplikasi'	44:Software Engineer (Sharepoint)(IT)	+	0.027
120	51:'Pengaturcara Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
121	51:'Pengaturcara Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
122	44:'Software Engineer (Sharepoint)(IT)'	62:Jurutera Rangkaian	+	0.027
123	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
124	55:'Jurutera Kualiti (IT)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
125	57:'Jurutera Sistem (IT)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
126	52:'Penguji Perisian'	44:Software Engineer (Sharepoint)(IT)	+	0.027
127	58:'Pakar Teknikal (IT) '	62:Jurutera Rangkaian	+	0.027
128	58:'Pakar Teknikal (IT) '	62:Jurutera Rangkaian	+	0.027
129	48:'Pembangun Laman Web '	44:Software Engineer (Sharepoint)(IT)	+	0.027
130	59:'Structured Query Language (SQL) Database Administrator'	44:Software Engineer (Sharepoint)(IT)	+	0.027
131	60:'Pengaturcara Sistem '	44:Software Engineer (Sharepoint)(IT)	+	0.027
132	61:'Jurutera Jaminan Kualiti Produk (IT)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
133	62:'Jurutera Rangkaian'	62:Jurutera Rangkaian		0.027
134	62:'Jurutera Rangkaian'	62:Jurutera Rangkaian		0.027

135	44:'Software Engineer (Sharepoint)(IT)'	44:Software Engineer (Sharepoint)(IT)		0.027
136	62:'Jurutera Rangkaian'	62:Jurutera Rangkaian		0.027
137	63:'Jurutera Sistem Rangkaian IT'	62:Jurutera Rangkaian	+	0.027
138	64:'System Engineer (Oracle)'	44:Software Engineer (Sharepoint)(IT)	+	0.027
139	64:'System Engineer (Oracle)'	62:Jurutera Rangkaian	+	0.027
140	62:'Jurutera Rangkaian'	62:Jurutera Rangkaian		0.027
141	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
142	66:'Juruteknik Keselamatan Rangkaian ICT '	44:Software Engineer (Sharepoint)(IT)	+	0.027
143	67:'Eksekutif Teknologi Maklumat '	62:Jurutera Rangkaian	+	0.027
144	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
145	68:'Jurutera QA Perisian '	44:Software Engineer (Sharepoint)(IT)	+	0.027
146	69:'Jurutera Sokongan Komputer '	62:Jurutera Rangkaian	+	0.027
147	70:'Inbound Technical Support Representative (IT)'	62:Jurutera Rangkaian	+	0.027
148	70:'Inbound Technical Support Representative (IT)'	62:Jurutera Rangkaian	+	0.027
149	67:'Eksekutif Teknologi Maklumat '	62:Jurutera Rangkaian	+	0.027
150	71:'Administrator, Electronic Data Processing (PDE)'	62:Jurutera Rangkaian	+	0.027
151	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
152	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
153	62:'Jurutera Rangkaian'	62:Jurutera Rangkaian		0.027
154	62:'Jurutera Rangkaian'	62:Jurutera Rangkaian		0.027
155	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
156	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
157	65:'Web and Mobility Developer'	44:Software Engineer (Sharepoint)(IT)	+	0.027
158	72:'Pekerja Sokongan Teknologi Maklumat'	62:Jurutera Rangkaian	+	0.027
159	73:'Operator Pengeluaran Produk Elektronik'	62:Jurutera Rangkaian	+	0.027
160	74:'Penyunting Filem dan Video '	62:Jurutera Rangkaian	+	0.027
161	75:'Perunding Sistem IT'	62:Jurutera Rangkaian	+	0.027
162	20:'Juruanalisis Sistem Komputer '	44:Software Engineer (Sharepoint)(IT)	+	0.027



*Predicted Job Selection 2020 IT only*

inst#	actual	predicted	error	prediction
1	1:'Web Programmer (PHP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
2	2:'Penolong Pegawai Teknologi Maklumat '	9:Information Technology Security Analyst	+	0.03
3	3:'Jurutera Sistem Rangkaian IT'	9:Information Technology Security Analyst	+	0.03
4	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
5	5:'Juruanalisis QA (IT)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
6	6:'RPG System Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
7	7:'Pembangun Laman Web '	8:Software Engineer (Sharepoint)(IT)	+	0.03
8	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
9	9:'Information Technology Security Analyst'	9:Information Technology Security Analyst		0.03
10	10:'Jurutera Perisian Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
11	11:'Jurutera Rangkaian'	9:Information Technology Security Analyst	+	0.03
12	12:'Web and Mobility Developer'	9:Information Technology Security Analyst	+	0.03
13	13:'Jurutera Sistem Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
14	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
15	7:'Pembangun Laman Web '	8:Software Engineer (Sharepoint)(IT)	+	0.03
16	14:'System Engineer (Oracle)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
17	15:'Pereka Web'	9:Information Technology Security Analyst	+	0.03
18	16:'Software Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
19	17:'Jurutera Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
20	1:'Web Programmer (PHP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
21	18:'Hypertext Preprocessor (PHP) Developer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
22	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
23	7:'Pembangun Laman Web '	8:Software Engineer (Sharepoint)(IT)	+	0.03

24	19:'Information Technology Executive (RPG)'	9:Information Technology Security Analyst	+	0.03
25	20:'Jurujual Internet'	9:Information Technology Security Analyst	+	0.03
26	13:'Jurutera Sistem Komputer'	9:Information Technology Security Analyst	+	0.03
27	21:'Juruteknik Kejuruteraan Automobil'	8:Software Engineer (Sharepoint)(IT)	+	0.03
28	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
29	22:'Pegawai Sokongan Teknologi Maklumat'	8:Software Engineer (Sharepoint)(IT)	+	0.03
30	23:'Inbound Technical Support Representative (IT)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
31	24:'Structured Query Language (SQL) Database Administrator'	9:Information Technology Security Analyst	+	0.03
32	8:'Software Engineer (Sharepoint)(IT)'	9:Information Technology Security Analyst	+	0.03
33	25:'SAP Application Administrator'	9:Information Technology Security Analyst	+	0.03
34	1:'Web Programmer (PHP)'	9:Information Technology Security Analyst	+	0.03
35	17:'Jurutera Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
36	1:'Web Programmer (PHP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
37	7:'Pembangun Laman Web '	8:Software Engineer (Sharepoint)(IT)	+	0.03
38	8:'Software Engineer (Sharepoint)(IT)'	9:Information Technology Security Analyst	+	0.03
39	22:'Pegawai Sokongan Teknologi Maklumat'	9:Information Technology Security Analyst	+	0.03
40	26:'Jurutera Teknologi Teknikal'	9:Information Technology Security Analyst	+	0.03
41	27:'Jurutera Sistem (Kecuali Komputer)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
42	10:'Jurutera Perisian Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
43	28:'Java Programmer Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
44	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
45	29:'.NetProgrammer Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
46	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
47	30:'Officer-in-charge. Weather station'	8:Software Engineer (Sharepoint)(IT)	+	0.03

48	1:'Web Programmer (PHP)'	9:Information Technology Security Analyst	+	0.03
49	31:'Pekerja Sokongan Teknologi Maklumat'	8:Software Engineer (Sharepoint)(IT)	+	0.03
50	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
51	32:'Ketua Projek'	9:Information Technology Security Analyst	+	0.03
52	19:'Information Technology Executive (RPG)'	9:Information Technology Security Analyst	+	0.03
53	13:'Jurutera Sistem Komputer'	9:Information Technology Security Analyst	+	0.03
54	33:'Security Analyst(IT)'	9:Information Technology Security Analyst	+	0.03
55	34:'Eksekutif Pengeluaran '	9:Information Technology Security Analyst	+	0.03
56	35:'Enterprise Resource Planning (ERP) Technical Specialist (IT)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
57	36:'Eksekutif Sistem Komputer'	9:Information Technology Security Analyst	+	0.03
58	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
59	22:'Pegawai Sokongan Teknologi Maklumat'	8:Software Engineer (Sharepoint)(IT)	+	0.03
60	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
61	37:'Pengaturcara Perisian (.Net)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
62	17:'Jurutera Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
63	16:'Software Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
64	3:'Jurutera Sistem Rangkaian IT'	9:Information Technology Security Analyst	+	0.03
65	19:'Information Technology Executive (RPG)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
66	38:'Juruanalisis Perniagaan Teknologi Maklumat '	8:Software Engineer (Sharepoint)(IT)	+	0.03
67	39:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
68	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
69	40:'Climate Service Technician'	9:Information Technology Security Analyst	+	0.03

70	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
71	17:'Jurutera Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
72	41:'Project Administrator (IT)'	9:Information Technology Security Analyst	+	0.03
73	42:'Pembangun Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
74	43:'Penyunting Filem dan Video '	8:Software Engineer (Sharepoint)(IT)	+	0.03
75	44:'Pemeriksa Kualiti Produk'	8:Software Engineer (Sharepoint)(IT)	+	0.03
76	13:'Jurutera Sistem Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
77	45:'Ilustrator Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
78	31:'Pekerja Sokongan Teknologi Maklumat'	8:Software Engineer (Sharepoint)(IT)	+	0.03
79	36:'Eksekutif Sistem Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
80	4:'Pereka Grafik'	8:Software Engineer (Sharepoint)(IT)	+	0.03
81	46:'Inspektor Kawalan Kualiti'	8:Software Engineer (Sharepoint)(IT)	+	0.03
82	19:'Information Technology Executive (RPG)'	9:Information Technology Security Analyst	+	0.03
83	47:'Jurutera Komputer '	8:Software Engineer (Sharepoint)(IT)	+	0.03
84	9:'Information Technology Security Analyst'	9:Information Technology Security Analyst		0.03
85	23:'Inbound Technical Support Representative (IT)'	9:Information Technology Security Analyst	+	0.03
86	48:'Jurutera Aplikasi Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
87	1:'Web Programmer (PHP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
88	10:'Jurutera Perisian Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
89	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
90	16:'Software Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
91	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
92	49:'Information Technology Consultant (Java)'	9:Information Technology Security Analyst	+	0.03
93	50:'Pengaturcara Multimedia '	8:Software Engineer (Sharepoint)(IT)	+	0.03

94	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
95	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
96	51:'Pembantu Pengaturcaraan Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
97	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
98	9:'Information Technology Security Analyst'	9:Information Technology Security Analyst		0.03
99	52:'Pegawai Teknologi Maklumat Gred F41'	8:Software Engineer (Sharepoint)(IT)	+	0.03
100	33:'Security Analyst(IT)'	9:Information Technology Security Analyst	+	0.03
101	53:'Application Specialist Support (Navision)'	9:Information Technology Security Analyst	+	0.03
102	54:'Eksekutif Perkhidmatan Pelanggan'	9:Information Technology Security Analyst	+	0.03
103	55:'Kerani Teknikal'	9:Information Technology Security Analyst	+	0.03
104	56:'Pengurus Sistem Maklumat '	8:Software Engineer (Sharepoint)(IT)	+	0.03
105	14:'System Engineer (Oracle)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
106	57:'Pengaturcara Perisian'	9:Information Technology Security Analyst	+	0.03
107	58:'Juruteknik Laman Web'	8:Software Engineer (Sharepoint)(IT)	+	0.03
108	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
109	39:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
110	9:'Information Technology Security Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
111	12:'Web and Mobility Developer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
112	17:'Jurutera Perisian'	9:Information Technology Security Analyst	+	0.03
113	59:'Graphics Creator'	8:Software Engineer (Sharepoint)(IT)	+	0.03
114	10:'Jurutera Perisian Komputer'	8:Software Engineer (Sharepoint)(IT)	+	0.03
115	1:'Web Programmer (PHP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
116	19:'Information Technology Executive (RPG)'	8:Software Engineer (Sharepoint)(IT)	+	0.03

117	60:'Kerani Pejabat'	8:Software Engineer (Sharepoint)(IT)	+	0.03
118	61:'Information Technology Consultant (.Net)'	9:Information Technology Security Analyst	+	0.03
119	42:'Pembangun Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
120	42:'Pembangun Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
121	17:'Jurutera Perisian'	8:Software Engineer (Sharepoint)(IT)	+	0.03
122	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
123	62:'Eksekutif Pemasaran '	8:Software Engineer (Sharepoint)(IT)	+	0.03
124	63:'Operator Pengeluaran'	8:Software Engineer (Sharepoint)(IT)	+	0.03
125	1:'Web Programmer (PHP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
126	64:'Pakar Teknikal (IT) '	8:Software Engineer (Sharepoint)(IT)	+	0.03
127	22:'Pegawai Sokongan Teknologi Maklumat'	8:Software Engineer (Sharepoint)(IT)	+	0.03
128	65:'Jurutera Sistem '	8:Software Engineer (Sharepoint)(IT)	+	0.03
129	66:'Pengaturcara Permainan Komputer '	9:Information Technology Security Analyst	+	0.03
130	9:'Information Technology Security Analyst'	9:Information Technology Security Analyst		0.03
131	16:'Software Analyst'	8:Software Engineer (Sharepoint)(IT)	+	0.03
132	8:'Software Engineer (Sharepoint)(IT)'	8:Software Engineer (Sharepoint)(IT)		0.03
133	39:'Enterprise Resource Planning (ERP) Programmer Analyst (ABAP)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
134	7:'Pembangun Laman Web '	8:Software Engineer (Sharepoint)(IT)	+	0.03
135	67:'Information Technology System Analyst (JDE)'	8:Software Engineer (Sharepoint)(IT)	+	0.03
136	11:'Jurutera Rangkaian'	9:Information Technology Security Analyst	+	0.03