FINAL EXAMINAT ISING MICROSOFT

ADRIAN YONG WENG HOONG

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FACULTY OF COMPUTER SYSTEM & SOFTWARE ENGINEERING
UNIVERSITI MALAYSIA PAHANG

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ABSTRACT

The Final Examination Question Paper Generator is developed to assists lecturers of Faculty of Computer System & Software Engineering, Universiti Malaysia Pahang to be more efficient in producing a high quality final examination question paper, able to identify the Bloom's Taxonomy cognitive level of questions and producing a question paper that complies with Universiti Malaysia Pahang's final examination question paper format. This project is to develop a functional Final Examination Question Paper that complies with Universiti Maaysia Pahang's final examination question paper specifications. The system developed is an add-in to Microsoft Word 2010 which is developed using Rapid Application Development model. By using this model fast prototypes and various tests can be made. This system is developed using Visual Basic for Application which is sub-language of Visual Basic but is tailored to further extend the functionalities of Microsoft's application. In conclusion, this project is a Final Examination Question Paper Generator which is able to produce high quality final examination question paper in terms of formatting and questions

ABSTRAK

Penjana Kertas Peperiksaan Akhir dibangunkan untuk membantu pensyarah Fakulti Sistem Komputer & Kejuruteraan Perisian, Universiti Malaysia Pahang untuk menjadi lebih effisen dalam menghasilkan kertas soalan peperiksaan akhir yang berkualiti tinggi, mengenalpasti tahap kognitif Taksonomi Bloom dalam soalan dan menghasilkan kertas soalan yang mematuhi format kertas soalan peperiksaan akhir Universiti Malaysia Pahang. Projek ini adalah untuk membangunkan satu penjana kertas soalan peperiksaan yang mematuhi spesifikasi kertas soalan peperiksaan akhir Universiti Maaysia Pahang. Sistem yang dibangunkan adalah "add-in" untuk Microsoft Word 2010 yang dibangunkan menggunakan model "Rapid Application Development". Dengan menggunakan model ini, prototaip pantas dan pelbagai ujian boleh dibuat. Sistem ini dibangunkan dengan menggunakan "Visual Basic untuk Application" yang merupakan sub-bahasa pengaturan Visual Basic tetapi disesuaikan untuk melanjutkan lagi fungsi permohonan Microsoft. Kesimpulannya, projek ini merupakan Peperiksaan Akhir Soalan Kertas Generator yang mampu untuk menghasilkan berkualiti tinggi kertas soalan peperiksaan akhir dari segi format dan soalan

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CHAPTER 1

INTRODUCTION

Examinations are one of the assessment methods to evaluate the knowledge of students. In preparing the students for examination lecturers have to prepare the examination paper by themselves. However the lecturers have other responsibilities other than to prepare examination question paper like prepare teaching material for students, research, administrative duties and also to teach students.

The current situation for lecturers in preparing the final examination question paper is to manually format after keying in the question paper. Even a proper template this process can be a lengthy process. The time taken for preparing question paper can be shortened so that lecturers can have more time for other responsibilities. The lecturers also have to determine whether the questions as defined in teaching plan follow Bloom's Taxonomy.

Bloom's taxonomy consists of cognitive, affective and psychomotor domains of a learning process. Cognitive domain of learning consists of 6 categories namely: knowledge, comprehension, application, analysis, synthesis and evaluation. While psychomotor domain consists of 7 categories: perception, set, guided response, mechanism, complex overt response, adaptation, and origination. Evaluators commonly will evaluate students based these levels to grasp their level of learning.

With this system, lecturers can produce high quality format questions paper faster. This system will be implemented at a pilot stage which is at a faculty level of institution of higher learning.

1.1 PROBLEM STATEMENT AND OBJECTIVE

A generator allows lecturer to be more efficient in producing high quality format question papers within a shorter time compare to the manual method.

A generator that complies with the university's question paper format specification allows question paper to be more presentable for reviewers.

This system will also allow lecturer to identify the level of difficulty of the questions and examination paper in general.

This project hopes to fulfil the following objectives:

a) To developer a functional examination paper generator that complies with Universiti Malaysia Pahang's exam question specification while able to evaluate question into its taxonomy category.

b) To obtain the requirement to fulfil final examination paper specification.

c) To test the system for future deployment within the faculty

1.2 REVIEW OF PREVIOUS WORK

a) Problem-Attic

Problem-Attic was developed by EducAide Software. This proprietary software is able to access over 90,000 questions of various subjects and topics from a variety of sources. It allows user to manage question paper, format question paper according to type of questions (multiple choice question, essay, short answers) and also print question papers. (EduAid software, 2013)

This system is able to obtain questions from storage (question bank). This system also allows pictures to be added into the system.

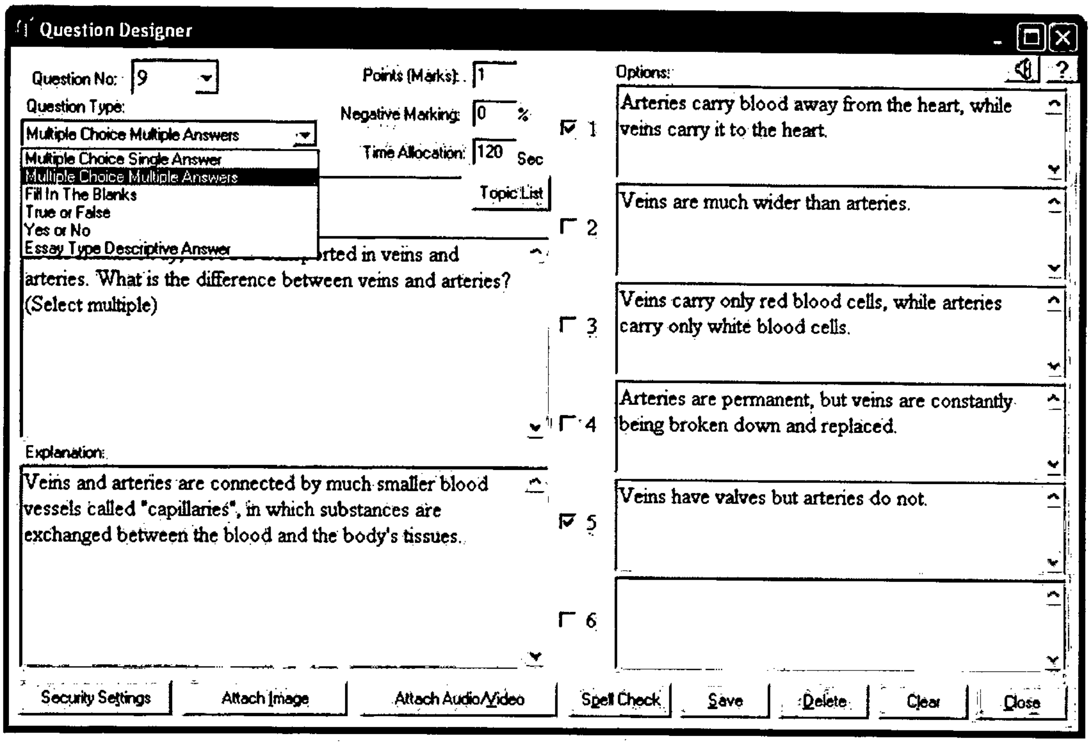
b) Examview assessment suite

Examview assessment suite was developed by Turning Technologies. This proprietary software contains question banks and more than 10,000 textbooks from over 65 publishers. It also supports Optical Character Recognition for converting hardcopy to softcopy. It also can generate tests from random questions stored in its database. It also allows online test using their CPS student response system and formats test papers. This system also can dynamically change the values in a question but maintain its concept. (eInstruction, 2014)

This system does not have optical character recognition function. It also does not evaluate the Bloom taxonomy category of the questions made.

c) Exam Software Test Engine

Exam Software Test Engine is a freeware test management software. It supports Multilanguage and is ideal for competitive exams whereby examinee have to answer multiple choice questions. Parents can keep track of their child's performance easily while teachers can conduct assessment easily. Exam Software test engine allows teachers to set the marking system of the assessment. It allows teachers to include graphics, audio and video in the question. It also has email notification facility. It also encrypts its file in .exm format. (Exam-software.com, 2013)



Question No: 9

Points (Marks): 1

Question Type: Multiple Choice Multiple Answers

Negative Marking: 0 %

Time Allocation: 120 Sec

…rted in veins and arteries. What is the difference between veins and arteries? (Select multiple)

Explanation:

Veins and arteries are connected by much smaller blood vessels called "capillaries", in which substances are exchanged between the blood and the body's tissues.

☑ 1 Arteries carry blood away from the heart, while veins carry it to the heart.

□ 2 Veins are much wider than arteries.

□ 3 Veins carry only red blood cells, while arteries carry only white blood cells.

□ 4 Arteries are permanent, but veins are constantly being broken down and replaced.

☑ 5 Veins have valves but arteries do not.

□ 6

Figure 1-1: Question designer in Exam-software test engine

This system does not have encryption function and the questions are not able to be evaluated automatically into its Bloom taxonomy category.

1.3 CURRENT SYSTEM AND ITS LIMITATION

There is no such system to format the examination papers in Microsoft Word; lecturers have to manually format the papers using Microsoft Word. Manually formatting the question according to the guidelines can be a tricky process as some configuration can affect whole paper's layout. With this system lecturers can optimise their time for other activities such as administrative work, research and also lecture preparation.

1.4 TERMINOLOGY

Abbreviation	Definition
FSKKP	'Fakulti Sistem Komputer dan Kejuruteraan Perisian'
GB	Gigabyte
GHz	Giga Hertz
IEEE	Institute of Electrical and Electronics Engineering, Inc.
RAD	Rapid Application Development
SDD	Software Design Description
SRS	Software Requirement Specification
UML	Unified Modelling Language

1.5 METHODS OF APPROACH

Table 1.1 shows the comparison of several software development lifecycle models.

Source	Model name	Stages	Scenario	Comments
Ritting house, 2004	Rapid Application Developmet (RAD)	1. Requirement analysis 2. Design 3. prototyping 4. Development 5. Integration 6. Testing	Small & medium projects	To provide a prototype for the client. An iterative development process. Continuous engagement with client
Boehm 1988	Spiral model	1. Determine objective, 2. Evaluate, identify, resolve risks 3. Develop 4. Plan next phase	High risk project	Allow for continuous risk assessment for lesser bugs. Mainly for high risk projects such as atm system
Schawaber & Sutherland, 2013	Scrum	1. Sprint planning 2. Daily scrum 3. Sprint review 4. Sprint retrospective	Complex but low risk project	Uses an iterative, incremental approach to optimize predictability and control risk in a software project
Royce,	Waterfall	1. System	For large	Lack of

1970	model	requirements 2. Software requirement 3. Analysis 4. Program design 5. Coding 6. Testing 7. operations	systems	backtracking incases of errors in one of the stages

Table 1-1: Software development lifecycle model

As mentioned above Rapid Application development is a methodology which allows client's to see a prototype of the system. This helps in requirements elicitation and also as a milestone for the project. Waterfall model when compared to RAD, waterfall does not allow the backtracking of one stage to the previous stage while RAD is a continuous iteration of the process till a finished product is produced. But when compared to spiral model, RAD lacks in the risk assessment management of the project. Spiral model allows bugs and errors to be continuously resolved. For scrum model, it is more suitable for project which progress is predictable. The scrum models does not cope to risk better than spiral model, it need scrum team member to communicate often to track progress and to solve problem that the team members could not solve individually.

For this project Rapid Application Development model will be used. This is because the project scale is within the small- medium range. The prototypes developed in this project can be used as a milestone to track its progress and be used as a next module requirement aid. By using prototypes it allows the developer to engage with the client continuously to obtain feedback mostly on usability. Tests are run at the end of each module production to ensure compatibility between modules and lower the risk of bugs and error. This model allows the progress to speed up the development process as the goals become clearer.

1.6 SCOPE

The scope of this project is defined as below:

User

a) The users of this system will be the lecturers from FSKKP

System

a) A system of the Microsoft Word using visual basic for application (VBA) extension
b) A system that allows Microsoft word user to produce a properly formatted final examination paper which complies with UMP examination guidelines.
c) Contains a module to determine the category of questions based on Bloom's Taxonomy using brute force string matching.

1.7 OUTLINE

This document consists of four (4) parts: introduction, system specifications, system design and conclusion. The specifications and system design description will be discussed in chapter 2 and chapter 3 respectively and the project's fulfilment condition will be stated in part 4, conclusion.

For requirements specification, it will specify what the system will do. This deliverable of this phase will be a Software Requirements (SRS). Interviews sessions will be held with the FSKKP lecturers to obtain the problem faced without this system and their functions they hope be included in this system. A survey is done to investigate the problems in formatting the final examinations paper and also additional requirements from the stakeholders (Lecturer) of this project. Also a document analysis will be done in order to study the examination format guideline set by the university. Once the requirement has been collected and compiled in the SRS, the client will need to sign an agreement as a proof of agreement on the contents stated in the SRS. In the SRS, flowcharts will be used to depict the functionality of the system. UML diagrams such as Use Case diagram and Use Case description will be used to represent the functionalities of the system graphically.

For design description, it will specify how the system will work. The deliverable of this phase will be a Software Design Document (SDD). The SDD will be the main reference used during the development phase of this project. In SDD, the data dictionary, variable and also equations of the system will be shown. The hardware and software used by this system will be shown.

Chapter 4 will include the condition of the project fulfilment, system results. The objective of this project will be revised and concluded. The limitations of this project will also be stated along with the possibilities future enhancement to the project

CHAPTER 2

USER REQUIREMENTS

In this chapter, the user requirements for Final Examination Questions Generator will be discussed. The purpose of the chapter is to identify the functionalities, users and the environment where this system will be deployed.

2.1 System functions

This system shall:

a) Allow users to create the front page of the final examination question paper

b) Allow users to select existing questions from a question bank to be included the final examination question paper

c) Allow users to insert/ create new examination questions into the question bank

d) Evaluates the questions based on Bloom's Taxonomy(cognitive)

e) Calculate the total marks of the created question paper

f) Allow users to review the summary of the created final examination question paper

g) Allow users to manage the lecturer database, course database

2.2 Context Diagram

Figure 2-1 shows the context diagram of the Final Examination Question Generator system.

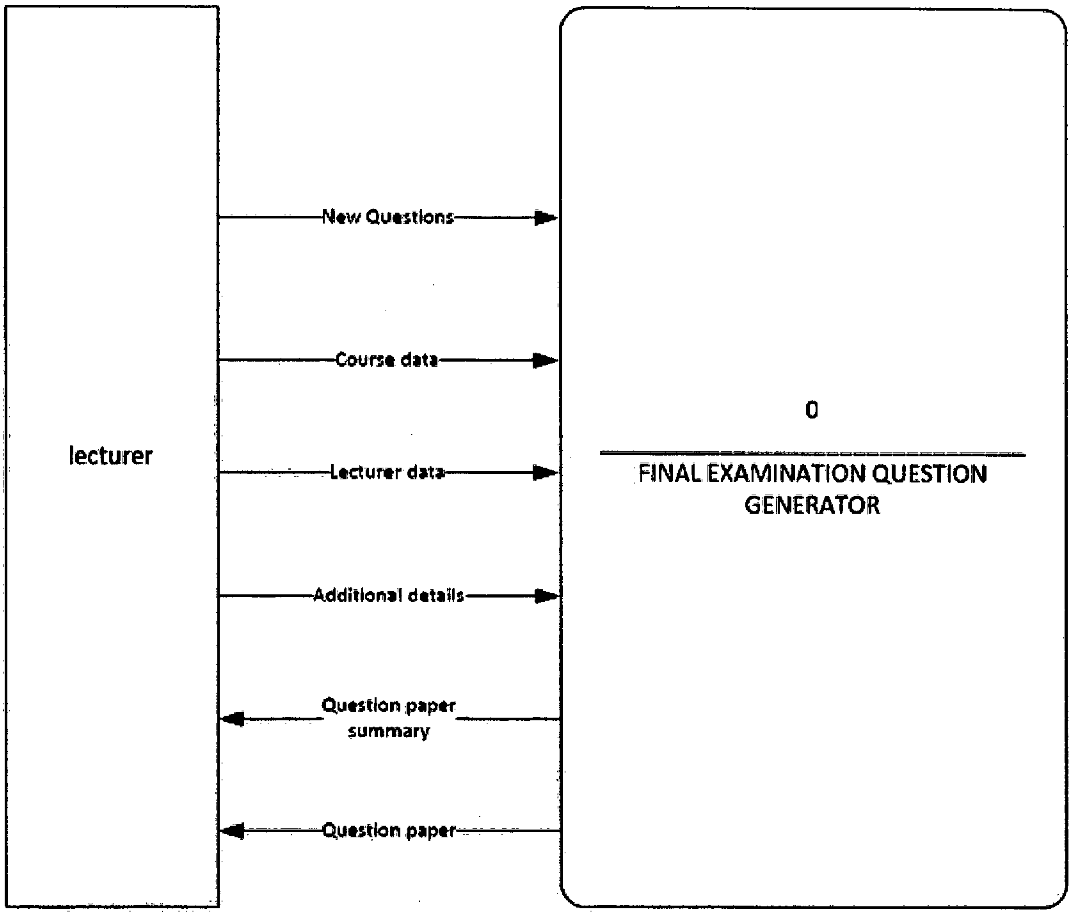


Figure 2-1: Context diagram of Final Examination Question Paper Generator

2.3 Data Flow Diagram Level-0

Figure 2-2 shows the data flow diagram level-0 of Final Examination Question Generator.

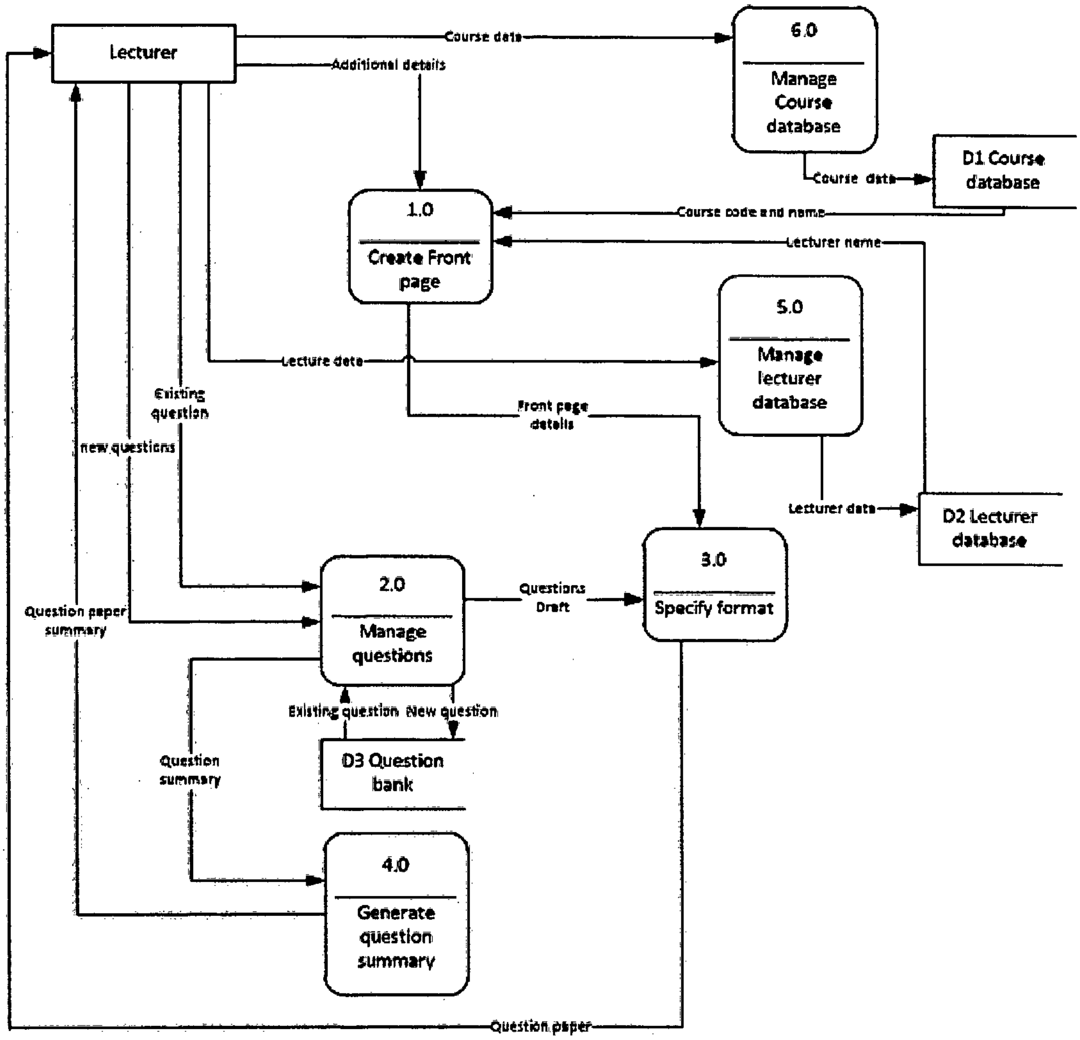


Figure 2-2: Data flow diagram Level-0 of Final Examination Question Paper Generator

2.4 Data Flow Diagram Level-1

Create front page module will allow lecturers to create front page using data stored in lecturer and course database. Refer to Figure 2-3.

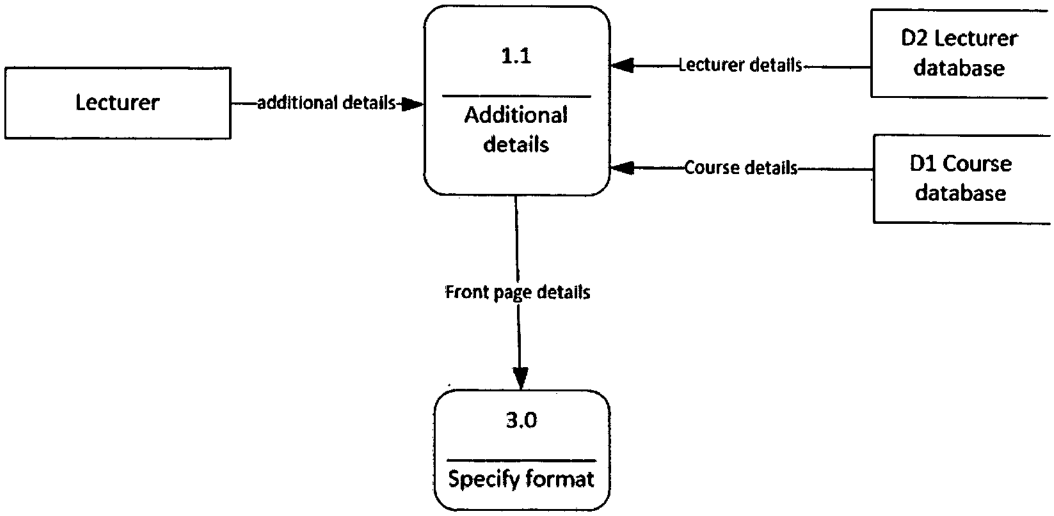


Figure 2-3: Data flow diagram level-1(create front page)

The generate question module allow users to select existing question from question bank or create a new question which will be store in the question bank later. The created/ selected question will then be evaluated based on taxonomy category and its summary which includes evaluation results and marks will be sent to review question summary module. The question details will then be sent to format specification module for draft creation later. Refer to Figure 2-4.

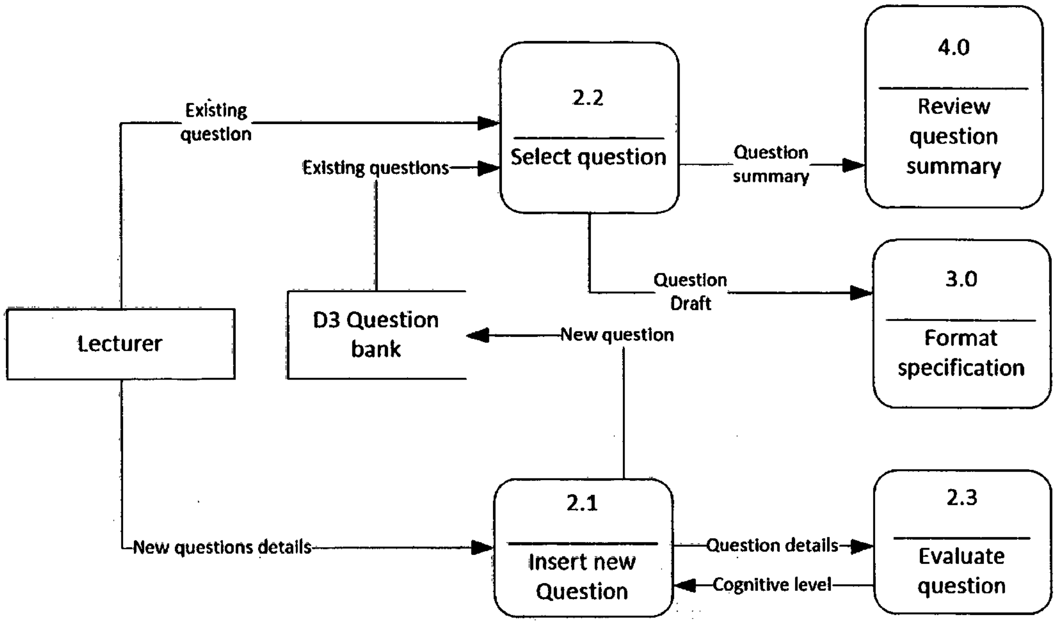


Figure 2-4: Data flow diagram level-1(manage questions)

The specify format module will generate the examination question paper based on the inputs from the manage question module and create front page module. Refer Figure 2-5.

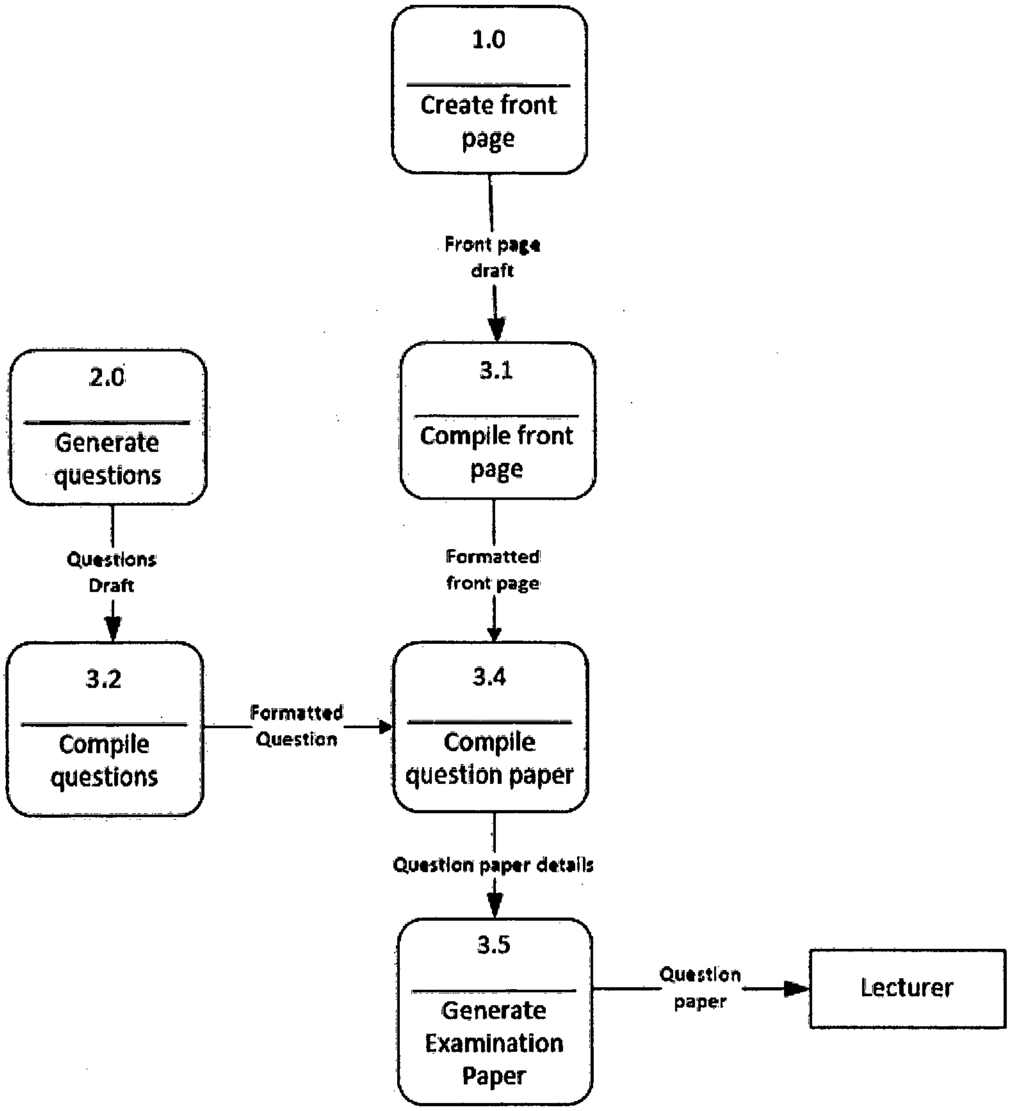


Figure 2-5: Data flow diagram level-1(specify format)

The review question summary allows lecturers to view the final examination question paper draft and the question summary (taxonomy category and marks). Refer to Figure 2-6.

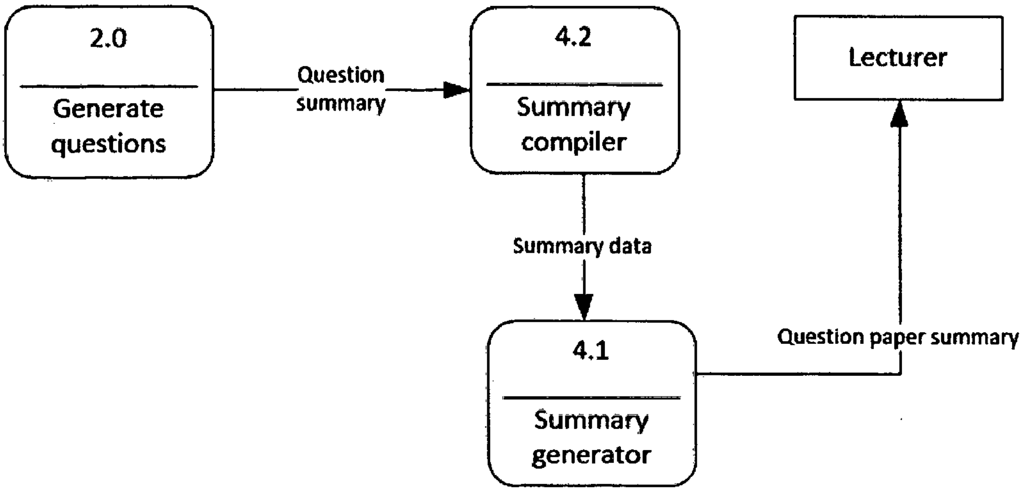


Figure 2-6: Data flow diagram level-1(generate question summary)

The manage lecturer database module allows lecturers to manage (add, delete, update) lecturer data in lecturer database for this system's use. Refer to Figure 2-7.

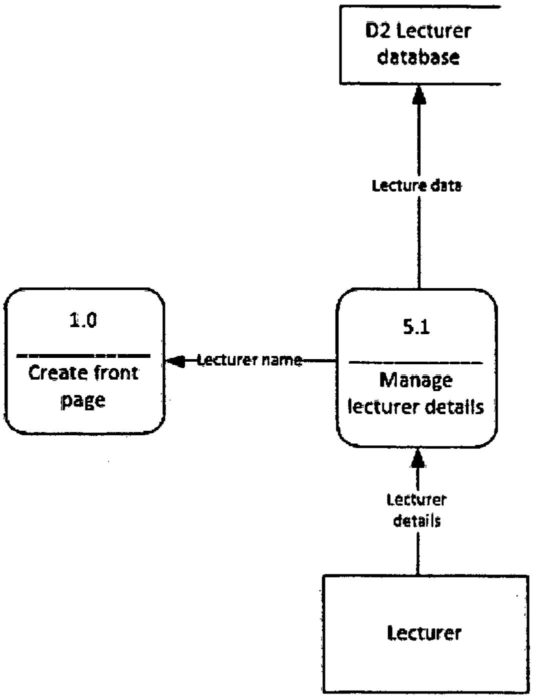


Figure 2-7: Data flow diagram level-1 (manage lecturer database)