



TUITION CENTRE INTERACTION SYSTEM (TCIS)

SIA CHONG JIAN

Report submitted in partial fulfilment of the requirements for the award of the degree of  
Bachelor of Computer Science (Software Engineering) with Honours

Faculty of Computer System & Software Engineering  
UNIVERSITI MALAYSIA PAHANG

9 DECEMBER 2014

## **ABSTRACT**

Nowadays, the operation of tuition centre system poses difficulty to users which include teachers, parents and students. For example, the use of paper to keep student attendance can pose a difficulty to the teacher to record and retrieve student's attendance. The student may skip the tuition class and their parents do not know this thing happen. Furthermore, the student may forget their homework given by the tuition centre, hence not finishing the homework after back from tuition class. From the problems mentioned above, a survey has been conducted to get all this information from the parents, student and tuition centre staff. In order to solve these problems, this project proposed a new paradigm of web site leveraging on web services named Tuition Centre Interaction System (TCIS), which overcomes all these problems. Besides that, the TCIS will provide both the teacher and parents with up-to-date information about their student/children in term of attendance and homework in the tuition centre. On the other hand, parents able to check their children attendance and homework in the tuition class with the TCIS. In relation with that, student performance can be improved. TCIS will be implemented within a centralized server whereby tuition centre can just subscribe to the services that they want. This may reduce the high maintenance cost and development cost.

## **ABSTRAK**

Sistem operasi pusat tuisyen kini menimbulkan kesukaran kepada pengguna termasuk guru, ibu bapa dan pelajar. Sebagai contoh, dengan penggunaan kertas untuk menyimpan record kehadiran pelajar boleh menimbulkan kesukaran kepada guru untuk mencatat dan mendapatkan record kehadiran pelajar. Pelajar boleh ponteng kelas tuisyen dengan senang dan ibu bapa mereka tidak akan tahu benda ini berlaku. Bukan itu sahaja, pelajar kini mudah melupakan kerja rumah mereka yang diberi oleh pusat tuisyen, oleh itu mereka tidak akan memyiapkan kerja rumah apabila balik dari pusat tuisyen. Dari masalah yang dinyatakan di atas, saya telah melakukan kajian untuk mendapatkan semua maklumat daripada ibu bapa, pelajar dan pusat tuisyen. Dalam usaha untuk menyelesaikan masalah-masalah ini, saya telah mencadangkan satu paradigma baru memanfaatkan laman web pada perkhidmatan web yang dinamakan Sistem Interaksi Pusat Tuisyen (TCIS), yang mengatasi semua masalah ini. Di samping itu, TCIS juga menyediakan maklumat terkini mengenai pelajar/anak-anak mereka dari segi kehadiran dan kerja rumah di pusat tuisyen. Ibu bapa dapat menyemak kerja rumah dan kehadiran pelajar/anak-anak mereka di pusat tuisyen setiap hari dengan menggunakan TCIS. Berhubung dengan itu, prestasi pelajar juga ditingkatkan. TCIS telah dilaksanakan dalam pelayan berpusat di mana pusat-pusat tuisyen boleh melanggan kepada perkhidmatan yang mereka mahu. Dengan ini, TCIS dapat mengurangkan kos penyelenggaraan yang tinggi dan kos pembangunan.

## **TABLE OF CONTENTS**

<b>CHAPTER</b>	<b>TITLE</b>	<b>PAGE</b>
	<b>TITLE OF PROJECT</b>	<b>I</b>
	<b>DECLARATION OF THESIS AND COPYRIGHT</b>	<b>II</b>
	<b>SUPERVISOR'S DECLARATION</b>	<b>III</b>
	<b>STUDENT'S DECLARATION</b>	<b>IV</b>
	<b>DEDICATION</b>	<b>V</b>
	<b>ACKNOWLEDGEMENT</b>	<b>VI</b>
	<b>ABSTRACT</b>	<b>VII</b>
	<b>ABSTRAK</b>	<b>VIII</b>
	<b>TABLE OF CONTENTS</b>	<b>IX</b>
	<b>LIST OF FIGURES</b>	<b>XII</b>
	<b>LIST OF TABLE</b>	<b>XIII</b>
<b>1</b>	<b>CHAPTER 1 INTRODUCTION</b>	
	1.1 INTRODUCTION	1
	1.2 PROBLEM STATEMENT	3
	1.3 OBJECTIVE	4
	1.4 SCOPE	4
	1.5 SIGNIFICANCE OF STUDY	6
<b>2</b>	<b>CHAPTER 2 EXISTING SYSTEM</b>	
	2.1 EXISTING SYSTEM ANALYSIS	7
	2.1.1 SJK(C) Chung Hwa, Sg Rambai	7
	2.1.2 Erican Tuition Centre Muar	9
	2.1.3 Simtrain Management System	10
	2.2 EXISTING SYSTEM COMPARISON	11
	2.3 CONCLUSION	11

<b>3</b>	<b>CHAPTER 3 METHODOLOGY</b>	
3.1	USER REQUIREMENT	12
3.1.1	Hardware Requirement	14
3.1.2	Software Requiremen	14
3.2	METHODOLOGY	15
3.3	TCIS MAIN INTERFACE	18
<b>4</b>	<b>CHAPTER 4 IMPLEMENTATION, TESTING AND RESULT DISCUSSION</b>	
4.1	INTRODUCTION	21
4.2	IMPLEMENTATION PROCESS	21
4.3	ADVANTAGES OF TCIS	24
4.4	TESTING PROCESS	25
4.4.1	Objective	25
4.4.2	Task	26
4.5	SCOPE	27
4.6	TESTING STRATEGIES	27
4.7	SYSTEM TESTING	28
4.7.1	Test Script	28
4.8	USER ACCEPTANCE TESTING	43
4.8.1	Participants	43
4.9	TESTING SEVERITY AND PRIORITY CATEGORY LEVEL	44
4.9.1	Severity List	44
4.9.2	Priority List	44
4.10	TESTING TOOLS	45
4.10.1	Hardware Requirements	45
4.10.2	Software Requirements	45
<b>5</b>	<b>CHAPTER 5 CONCLUSION</b>	
5.1	CONCLUSION	46
5.2	RESEARCH CONSTRAINT	47
5.3	FUTURE WORK	48

<b>REFERENCE</b>	<b>49</b>
<b>APPENDIX A GANTT CHART</b>	<b>50</b>
<b>APPENDIX B SOFTWARE REQUIREMENT                     SPECIFICATION (SRS)</b>	<b>54</b>
<b>APPENDIX C SOFTWARE DESIGN DOCUMENT (SDD)</b>	<b>78</b>
<b>APPENDIX D USABILITY TEST REPORT</b>	<b>129</b>

## **LIST OF FIGURES**

<b>FIGURE NO</b>	<b>TITLE</b>	<b>PAGE</b>
<b>1.1</b>	<b>Scope</b>	<b>4</b>
<b>3.1</b>	<b>Software Development Life Cycle Model</b>	<b>16</b>
<b>3.2</b>	<b>TCIS Home Page</b>	<b>18</b>
<b>3.3</b>	<b>TCIS Registration Page</b>	<b>19</b>
<b>3.4</b>	<b>TCIS View Homework Page</b>	<b>19</b>
<b>3.5</b>	<b>TCIS View Attendance Page</b>	<b>20</b>
<b>4.1</b>	<b>TCIS Web Service Architecture</b>	<b>22</b>
<b>4.2</b>	<b>TCIS Web Service Flow</b>	<b>23</b>

## **LIST OF TABLE**

<b>TABLE NO</b>	<b>TITLE</b>	<b>PAGE</b>
<b>2.1</b>	<b>Comparison with Existing System</b>	<b>11</b>
<b>3.1</b>	<b>Details of Hardware Requirement</b>	<b>14</b>
<b>3.2</b>	<b>Details of Software Requirement</b>	<b>15</b>
<b>4.1</b>	<b>Details of Test Case and Result 1</b>	<b>28</b>
<b>4.2</b>	<b>Details of Test Case and Result 2</b>	<b>29</b>
<b>4.3</b>	<b>Details of Test Case and Result 3</b>	<b>30</b>
<b>4.4</b>	<b>Details of Test Case and Result 4</b>	<b>31</b>
<b>4.5</b>	<b>Details of Test Case and Result 5</b>	<b>32</b>
<b>4.6</b>	<b>Details of Test Case and Result 6</b>	<b>33</b>
<b>4.7</b>	<b>Details of Test Case and Result 7</b>	<b>34</b>
<b>4.8</b>	<b>Details of Test Case and Result 8</b>	<b>35</b>
<b>4.9</b>	<b>Details of Test Case and Result 9</b>	<b>36</b>
<b>4.10</b>	<b>Details of Test Case and Result 10</b>	<b>37</b>
<b>4.11</b>	<b>Details of Test Case and Result 11</b>	<b>38</b>
<b>4.12</b>	<b>Details of Test Case and Result 12</b>	<b>39</b>
<b>4.13</b>	<b>Details of Test Case and Result 13</b>	<b>40</b>
<b>4.14</b>	<b>Details of Test Case and Result 14</b>	<b>41</b>
<b>4.15</b>	<b>Details of Test Case and Result 15</b>	<b>42</b>
<b>4.16</b>	<b>Details of Severity List</b>	<b>44</b>
<b>4.17</b>	<b>Details of Priority List</b>	<b>44</b>



## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 INTRODUCTION**

Nowadays, most of the tuition centre system is still using the manual system. The main problem with manual system is that it is difficult for parents to keep track of their children's attendance in tuition class. By using the manual system, parents are only able to know the date and time of the tuition class. This will cause their children have the opportunity to skip the tuition class because they do not know whether their children attend or not attend the tuition class. It is such for waste the parents' money to send their children to the tuition class.

Furthermore, the student may easily forget their homework given by the tuition class. Therefore, they would not finish the homework from the tuition class. Besides that, some of the student/children are deliberately not done their homework. Compared to other student who done their homework, they are wasting their time to attend the tuition class.

As such, in this final year project, the Tuition Centre Interaction System (TCIS) based on a web service approach, has been proposed to overcome the highlighted problem.

The TCIS is a system which is developed to help the tuition centre to manage the student attendance and homework given by the tuition class. In addition, the parents able to check their children's tuition class attendance and the homework given by the tuition centre using the TCIS.

## **1.2 PROBLEM STATEMENT**

The way of recording attendance by using a paper form and put in a file may not be safe and efficient because the records might be destroyed by the natural cause such as flood or unnatural missing filed like missing files. In the existing system, parents need to call the tuition centre or teacher or need to attend the tuition centre to know about their children's attendance record in tuition class. However, by using TCIS, parents can monitor their children's attendance and can avoid their children skip the tuition class.

Nowadays, student schedule is full with the extra class in school, some learning hobbies and much homework given by the school. Therefore, the student maybe will forget the homework given by the tuition class and unfinished it. This mean that the children waste their time to the tuition class and did not learn anything as compared to the other children who done their tuition class homework. Therefore, a homework checklist can help the parents to check their children's homework and also can prevent the forgetfulness.

If tuition centre use the manual registration system will cause inconvenience to the parent because parents nowadays are busy with their work, this mean that they maybe did not have the extra time to go the tuition centre for help their children do registration. With the TCIS, parents only need fill the online registration form to help their children do the registration and submit the registration form to the tuition centre by online system. Therefore, they no need waste their time to the tuition centre.

The TCIS is web based systems that will be developed to manage the system of the tuition centre. TCIS can help to solve the problem such as the way to take student attendance, homework management and the registration problem to the parent.

### 1.3 OBJECTIVE

- I. To create a web based system for which allow interaction between teacher, parent, and student.
- II. To create a web based system for teacher to record student attendance and assign homework to student.
- III. To create a web based system for parent help their children make registration if their children are applying study at the tuition class.
- IV. To create a web based system for student remembers done their homework.
- V. To create web based system for approach in keeping track of student's attendance, homework and student's performance.

### 1.4 SCOPE

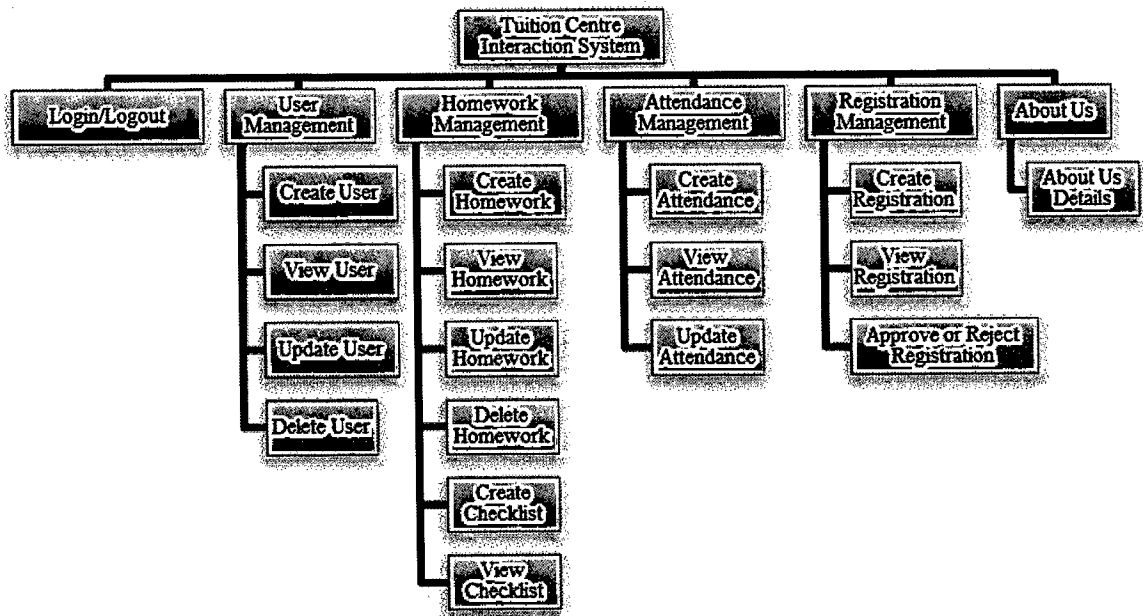


Figure 1.1: Scope

The TCIS is developed for Mr.Tan from Sungai Rambai Tuition Centre.

The scopes of TCIS are teacher, parents and student. Every user requires having a username and password to log into their profile. Every user can only view and edit own details.

#### **I. Teacher/Admin**

TCIS will ease teacher to take student's tuition class attendance and update the homework to the system. Teacher can do the both create, view update and delete functions for the homework function.

#### **II. Parents**

TCIS allow parents to keep track of their children's attendance, homework and also able to help their children make registration if their children are applying study at the tuition class. Parent can view their own children's profile under user management.

#### **III. Student**

Student can view their own attendance record and check their homework and able to add the homework to the check list after his/her homework is done. Student can only view and update their own profile.

## **1.5 SIGNIFICANCE OF STUDY**

The TCIS is a system which is developed to help the tuition centre manages the student attendance more effectively. Furthermore, the TCIS also can prevent the natural and unnatural disaster such as fire and flood.

Good in arrangement the student attendance history and easy to find the previous record also is one of the advantage with using the TCIS. Because the student's parents also can log in the system, so they may check their children's tuition class attendance and the homework given by tuition class teacher.

Besides that, the parents easy to help their children registration if their children are applying study at the tuition class with using the registration management function. The TCIS also can prevent the student forget done their homework and prevent the student skip the tuition class.

## **CHAPTER 2**

### **EXISTING SYSTEM**

#### **2.1 EXISTING SYSTEM ANALYSIS**

##### **2.1.1 SJK(C) Chung Hwa, Sg Rambai**

Manual way to take attendance is very common way use by tuition centre and school until today. The data, records, information of school are stored in the file with the paper form. These mean that school teacher use a piece of paper to takes student's attendance every class and keep it in the file. The SJK(C) Chung Hwa, Sg Rambai is using the manual method to record student attendance.

In addition, because of the limitation of space and prevent overflow of the store, the school will dumped the old data to arrange the space for the new data.

Since the files are all stored in a cabinet or store room, the school will face problems as below:

1. The files will loss.
2. The cabinet or store will overflow.
3. No good in arrangement of file cause difficult in finding the record.
4. The record are difficult to find because too many files.
5. Waste time for finding the record in the store or cabinet.
6. Only one backup file in the store or cabinet.
7. Natural and unnatural disaster such as flood and fire.



### **2.1.2 Erican Tuition Centre Muar**

The Tuition Centre Muar Erican is using the computerized method to record student attendance. This mean that the computerized method Erican Tuition Centre used is storing all the data in the Excel file, and save it in a computer hard disk for the tuition centre review. The teacher in every class will give a laptop to record student attendance and then pass up the Excel file to the office to gather the attendance files and save it in the computer.

Since the files are all store in the computer, the tuition centre will face the problems as below:

1. Failure or malfunction of the computer.
2. The disk lost easily.
3. No user authentication.
4. Difficulty to interpret data to statically information.
5. Limit the access to the system (not web base system).
6. Natural and unnatural disaster such as flood and fire.

### **2.1.3 Simtrain Management System**

The Simtrain Management System (2014 SIMIT GROUP) is using computerized method to record the student attendance. Every student in the Simtrain Management System has their own barcode for scan to takes their attendance. Before go in the tuition class, students are asks to scan their barcode to hardware which is the barcode scanner connecting to a computer to take their attendance. The records are saved in the database. The administrator of the tuition centre will back up the attendance file to specific use computer. The system database only can check by the administrator of tuition centre.

Since the records are all store in computer, the Simtrain Management System will face the problems as below:

1. There is no attendance will be record when the student forget to bring their barcode.
2. When the power cut is happen, the attendance will not being recorded.
3. The barcode scanner maybe will breakdown and this will cause the attendance not being recorded.
4. The barcode scanner cost money and it is high maintenance cost.
5. The student will skip the tuition class after scan their barcode to the hardware.
6. The student may help their friend take attendance with using their friend barcode.
7. The teacher has to ask the administrator for help only can check the attendance.
8. Not web based system, so there is limitation to access the system.

## 2.2 EXISTING SYSTEM COMPARISON

Table 2.1: Comparison with Existing System

	<b>SIK(C) Chung Hwa Sg Rambai</b>	<b>Erican Tuition Centre Muar</b>	<b>Simtrain Management System</b>	<b>TCIS</b>
<b>Attendance Management System</b>	✓	✓	✓	✓
<b>Homework Management System</b>				✓
<b>Backup files and data</b>		✓	✓	✓
<b>Prevent from being harmed by natural or unnatural disaster</b>			✓	✓
<b>User Authentication</b>			✓	✓
<b>Easiness in finding data</b>				✓
<b>Web based system</b>				✓

## 2.3 CONCLUSION

In conclusion, we have discussed the existing system in this chapter. There are pro and cons and I had started a few comparisons in between the different types of methods. Based on the comparison, it could help us to make the best solution and decision for develop the system.

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 USER REQUIREMENT**

TCIS is a system that will be developed to ease help increase the interaction between student, parent and teacher. In order to achieve the main goal which is avoid the student skip the tuition class and remind them to complete their homework. Nowadays, there are few requirements functions had to be developed.

The first requirement function that must be had in the TCIS is the security. This means that before to the main page the user must login the system by using their username and password. Every parent will be given an identification (ID) number for the username. While for the student and teacher in the tuition centre, ID will be used as their username. In addition, the username and the password are saved in the database of the system.

The second requirement function is to allow the Staff manipulates and record the student attendance to the tuition class. The Staff includes the system administrator and the tuition class teacher. Only the Staff can use this function by using their Staff ID account while the parent and student do not have the authorize access to manipulate the attendance management function. Furthermore, the parents are allowed to view their own children attendance by login to their account.

The third requirement function is to allow the teacher to record homework given to the student for every tuition class into the homework management function. When the tuition class teacher uploaded the homework, they will be required choose the tuition class name, homework and the due date of the particular homework into this function. Therefore the student can check their homework from tuition class and parents can know whether the tuition class had given out the homework to their children or not. Only the system administrator and the teacher are allowed to manipulate the function such as create the homework detail, edit the homework detail, and delete the homework. While the student and parent are not allowed to manipulate this function and they only can view the homework detail.

The next requirement function is to allow the parents to make registration to the tuition centre by using the registration management. The parents can use TCIS to help their children registration if their children are applying study at the tuition class. After that, the admin or teacher can retrieve the information from applicant and reply to the applicant which is either approve, reject or still in the pending status with update the application status.

In addition to the functions stated above, the last requirement functions is to allow the all user which are student, parent, teacher and system administrator to manipulated their own profile detail. The user is required to insert their personal detail which includes name, contact number, email address, and home address. This data is saved in the Tuition Centre Interaction System database.

### 3.1.1 Hardware Requirement

In order to develop the TCIS, it is important to choose the hardware to for development of the system. The hardware specification for the system is based on the system requirement of the chosen development tools. The hardware that will be used for development of the TCIS is:

Table 3.1: Details of Hardware Requirement

No	Hardware	Specifications	Purpose
1	Laptop (Toshiba Qosmio F60)	Intel Core i3 CPU 4GB RAM 64 bit Operating System	To develop the system software part.
2	Printer	Canon PIXMA MP287	To print out the documentation of the system.
3	External Hard Disk	Western Digital 1TB	To back up all the documentation and the data.

### 3.1.2 Software Requirement

In order to develop the TCIS, it is important to choose the software to development the system. The Tuition Centre Interaction System is a system that requires a personal computer or laptop with access the internet. After a depth of research of choosing which languages is better to develop the system and there are some software are involve to develop the TCIS. The software chooses for develop the TCIS are:

Table 3.2: Details of Software Requirement

No	Software	Specifications	Purpose
1	Microsoft Office 2010	Words, Project and Power Point.	For the documentation, presentation slide, and gantt chart.
2	Window7 Home Premium	-	The operating system for develop the system.
3	Google Chrome and Mozilla Firefox.	-	To find the information.
4	PHPMyAdmin(MySQL), Web Application, HTML5, PHP and Java Script.	-	To develop the system.

### 3.2 METHODOLOGY

The meaning of the software development methodology is an example of software development work into distinct phases including activities with the aim of perfect planning and management. There are many type of methodologies to use for organization software development process, for example, the Waterfall, Prototype Model, Agile Software Development, Rapid Application Development, and Extreme Programming. These methodologies are very common software development process.

In this project Software Development Life Cycle methodology will be used to develop the TCIS. The reason is because it produces many intermediate products that can be reviewed to see whether it meets the requirement from the customer or not. These can be further worked on if the customers need require tweaks to be made, to ensure to fulfill the needs from customers.

Furthermore, this methodology can make sure the system requirements can be traced back to stated business requirements with this documentation. Therefor the TCIS can be matched appropriately with the requirement from the customer.

In addition, when the error or fault is found at one of the stage, it can be solved immediately. In this way, it will not disturb the system development and can proceed to the next stage. With that the development of the system can be carried out smoothly. Software development life cycle have five main phases in its cycle as shown by the figure below.

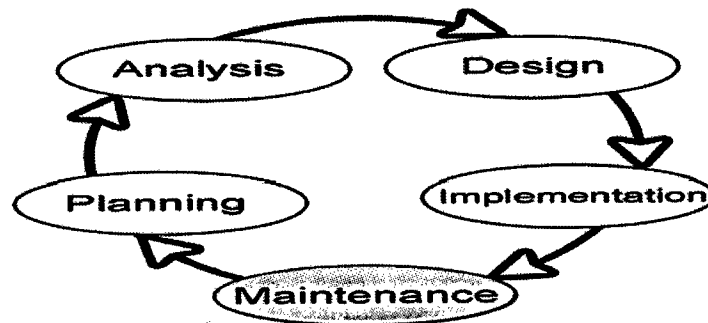


Figure 3.1: Software Development Life Cycle Model