THESIS^ APPROVAL STATUS FORM

JUDUL: _____Intelligence Questioner System (IQS)_____

SESI PENGAJIAN: _____2003/04_____

Saya _____LOOI GAN TENG_____
(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis adalah hakmilik Kolej Universiti Teknikal Kebangsaan Malaysia.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. ** Sila tandakan (/)

_____ SULIT (Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

_____ TERHAD (Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

_____ TIDAK TERHAD

_____   _____
(TANDATANGAN PENULIS)   (TANDATANGAN PENYELIA)

Alamat tetap : 70, Jalan 56/26,_____   Pn. Maslita Abd. Aziz____
              Taman Sri Rampai,_____   Nama Penyelia
              53300, Kuala Lumpur._____

Tarikh : _____   Tarikh : _____

CATATAN: ** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.
           ^ Thesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

INTELLIGENCE QUESTIONER SYSTEM (IQS)

LOOI GAN TENG

This report is submitted in partial fulfillment of the requirements for the
Bachelor of Information Technology (Software Development).

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2004

ADMISSION

I admitted that this project title name of

INTELLIGENCE QUESTIONER SYSTEM (IQS)

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT   : _____   Date : _____
                         (LOOI GAN TENG)

SUPERVISOR   : _____   Date : _____
                         (PN. MASLITA ABD AZIZ)

DEDICATION

To my beloved parent, your love and support are my greatest inspiration.

To my friends, for your sacrifices, encouragement, and support towards project accomplishment.

To my lecturer, for being receptive and critical, and challenging me to be a better student.

ACKNOWLEDGEMENT

First of all, I would like to acknowledge KUTKM who held the Projek Sarjana Muda (PSM) to give me chances to learn on how to handle system individually and also enhance my skills in developing project.

I would also like to sincerely appreciate the extraordinary effort given by the AJK of PSM. They had arranged a briefing to explain on the PSM project and giving valuable information throughout the project.

A grand appreciation is given also to my supervisor, Pn. Zahriah Othman for her constructive guidance, tireless assistance, advice and patience in helping me to complete the PSM. Besides that, I especially appreciate to Pn. Maslita who had gives her time on supervising my project during the time Pn. Zahriah Othman was in maternity leaves.

I would like to special thanks to all friend who give out their superior idea and contribution effort during the development of this project.

Finally, I owe special thanks to my parents who always support me during the period I work on this project. For those whose name is not stated, I would like thanks all the help and support that give to me in performing the PSM.

ABSTRACT

Intelligence Questioner System (IQS) is a web-based survey application. It is a complete solution that intent to streamline and simplify the entire survey process from design of the questionnaire to the presentation of results. IQS is developed for the use of KUTKM students. Normally, students are using paper-based questionnaires to collect information for various fields. Questionnaire will be duplicated and distributed to the target respondents. Students will then collect the questionnaires to analyze and reporting results. The manual approach is time and effort consuming. With IQS, students can benefit from the system by easily creating questionnaire, conduct the survey and viewing valuable survey results using the simple functions provided. The completed questionnaire will be launched to get respondents attention. Respondents can answer the questionnaire and submit it. Moreover, the system is provided with templates that ideal for measuring information from various fields, ranging from employee satisfaction, understanding customer requirements, obtaining feedback to for improvement, market research, and so forth. The special feature that ship with IQS is it allows the creation of dynamic questionnaire. Students can arrange question sequence to provide each respondent a different sheet of questionnaire that relevant to them. This can ensure most precise result will be obtained from the survey. The system is developed using waterfall methodology. This methodology provides a very structured approach and the progress of the project will be evaluated at the end of each phase. Assessment will be made as to whether the project should proceed. Thus, this is an important approach to keep track of the development of IQS. As a conclusion, IQS is hoped to be turn out successfully as a useful and automate application that provide students easy effort to conduct questionnaire surveys.

ABSTRAK

Intelligence Questioner System (IQS) merupakan satu aplikasi web yang dibangunkan bertujuan untuk menyelaras dan memudahkan proses soal selidik, yang merangkumi dari rekabentuk senarai soal selidik ke paparan laporan. Projek ini adalah dibangunkan untuk kegunaan pelajar-pelajar KUTKM. Pada kebiasaannya, pelajar menyediakan senarai soal selidik dalam bentuk kertas dan membuat salinan untuk disebarkan kepada sasaran responden. Seterusnya, pelajar dikehendaki mengumpul semula senarai soal selidik dan menganalisa keputusan yang diperhatikan. Proses soal selidik secara manual adalah merumitkan dan memenatkan. Dengan itu, aplikasi IQS diyakin dapat memyenangkan pelajar dalam menjalankan soal selidik dan menghasilkan paparan laporan melalui fungsi-fungsi yang terdapat dalam aplikasi IQS. Senarai soal selidik yang direkabentuk akan dilancarkan ke web untuk mendapatkan reaksi responden yang mengunjung ke laman IQS. Bagi memudahkan para pelajar, aplikasi IQS turut menyediakan panduan senarai soal selidik yang merangkumi banyak bidang, contohnya tinjauan kepuasan pekerja, kehendak pengguna, maklum balas, pasaran, dan sebagainya. Satu ciri-ciri utama bagi aplikasi IQS adalah para pelajar dapat membina dinamik senarai soal selidik. Pelajar dibenarkan menentukan urutan soalan untuk menyediakan senarai soal selidik yang berbeza dan berkaitan kepada sasaran responden yang tertentu. Dengan itu, adalah lebih dijaminkan untuk mendapat keputusan yang lebih tepat. Aplikasi IQS adalah dibangunkan dengan menggunakan waterfall metodologi. Metodologi ini memberi pendekatan yang tepat dan perkembangan projek dapat dinilai pada penghujung setiap tahap pembangunan projek untuk menentukan samada projek harus diteruskan. Dengan itu, metodologi adalah sangat penting untuk memerhatikan seluruh pembangunan IQS. Kesimpulannya, aplikasi IQS diharapkan dapat dibangunkan dengan berjayanya dan merupakan aplikasi yang bebar-benar dapat membantu para pelajar dalam usaha soal selidik yang dijalankan kelak.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
KUTKM	Kolej Unversiti Teknikal Kebangsaan Malaysia
IQS	Intelligence Questioner System
PSM	Projek Sarjana Muda
ASP	Active Server Pages
PC	Personal Computer
SQL	Sequential Query Language
API	Application Program Interface
RPC	Remote Procedure Call
HCI	Human Computer Interaction
HTML	Hypertext Markup Language
PERT	Project Evaluation and Review Technique
WBS	Work Breakdown Structure
GUI	Graphic User Interface
IDE	Integrated Development Environment
DMX	Dreamweaver MX
MS	Microsoft
IIS	Internet Information Services
HTTP	Hypertext Transfer Protocol
DBMS	Database Management System
OS	Operating System
Mhz	Mega Hertz
GB	Giga Byte
RAM	Random Access Memory
ERD	Entity Relationship Diagrams

LIST OF APENDICES

CHAPTER I

INTRODUCTION

1.1   Overview

The proposed project is to develop a web-based survey software which is called Intelligence Questioner System (IQS) to serve the use of KUTKM students. The project will be an online application that emphasized on simplifying the questionnaire creation process whereby students can utilize functions provided to generate standard and effective questionnaires for their course work.

The project is also intent to distribute questionnaires widely through web to collect responses automatically and getting more reliable information regarding the survey area. The responses will be analyze and report in charts and tables.

1.2   Problem statements

Based on the research conducted by interviewing some of the students, there seem still many students conduct questionnaire survey manually. They often create questionnaires using any words processing editor such like Microsoft Word or Text Pad. The questionnaire created is normally not standard questionnaire and is according their own preference. Students need to duplicate, distribute the questionnaires, collecting responses, and reporting results. Therefore, it will be a long and effort consuming process to conduct questionnaire survey manually.

Several existing survey tools software also have been studied on. It seems that most of those systems do not provide a user-friendly environment for user to perform their work easily. Those systems often emphasize on the functions provided and the interface design also not attractive.

Another major obstacle in current survey environment is all respondents are required to follow the same sheet of standard questionnaire provided. There will be situation in which respondent will simply answer or skip to ignore any irrelevant question to them. Thus, the results collected will not be precise results that contribute to the questioner needs.

1.3   Objectives

Before starting the development for IQS, several drawbacks have been identified through the research conducted. Hence, IQS is planned to develop to reduce drawbacks and ensuring a useful system is created that will meet predefined objectives and requirements.

The project aims are: -
i. Conduct survey faster and cost less than paper-based questionnaire, with immediate delivery to any number of people simultaneously and the responses come back in an electronic format.
ii. Simplify the survey process by providing some questionnaire template to aid user in creating their questionnaire and automatically produce result report by analyzing the collected responses.
iii. Create a standard questionnaire structure that is easy for a subject to navigate and encourage people to provide all the responses you want.

iv. Reduce irrelevant questions that need to be answer by respondents by creating dynamic questionnaire. The question sequence and its flow can be arranged and controlled. Option that respondent are selected for each question will direct respondent to different question accordingly.

v. Make sure questionnaire physical design should be pleasing and inviting to participants, and crystal clear in its instructions, especially for a self-administered survey, such as those deployed on the Web.

1.4 Scopes

The IQS system is an web-based application which is developed to facilitate KUTKM students in the conducting survey using questionnaire. The delivered system is planned to be cover usage within the intranet of KUTKM campus but it can also be accessed by outsiders through the internet.

There will be four main basic functions to be built on IQS which include Create Surveys, Dynamic Surveys, Launch Surveys, and Generating Survey Results.

The system is intended to develop using ASP is the core programming language and Microsoft Access to support the database storage. Microsoft Window XP Professional will be the most suitable platform for the development of IQS.

1.5 Contributions

The delivery of this project will mainly contribute for the internal use of KUTKM students to help them gather relevant information to be used in their course

work. On the other hand, since it is an online application as well, users from the outside world will also benefit from the system.

After careful consideration on the pros and cons of existing system, IQS is developed in such a way that it will be equipped with the basic functions that are available in any existing system and enhance it with some additional features.

IQS is a web-based application which students can access anywhere and anytime through online once they have been registered as user for the system. It will be a very useful survey tools for creating and distributing questionnaires, collecting responses, and reporting results with just play of click. Students can utilize this system to conduct questionnaire survey for their course work.

IQS is a best way to gather vast amount of valuable information. The questionnaires that distributed on the web will attract many interested respondents to give their responses on the surveys according his interests and preferences.

On the other hand, IQS is also enhanced with the dynamic questionnaire function. The dynamic questionnaire generated using the system can obtain more relevant results compare to the conventional static questionnaire. The question flow will subject to the respondents' option for each question. This can eliminate irrelevant questions have to be answered for every respondent that is likely to happen in static questionnaire.

1.6   Expected Output

At the final stage of this project, IQS is expected to be delivered as a web-based survey application. The system is aimed to allow students create and customize questionnaires using functions and templates provided in IQS.

There are four main functions which is planned to be developed in the system. The modules are Create Surveys, Dynamic Surveys, Launch Surveys, and Survey Results.

In Create Surveys function, students will be able to create a new blank questionnaire from scratch. Apart from that, students also can apply the templates provided and customize it by adding new questions into the existing template. This is very important for students to customize their own questionnaire for different purposes. Furthermore, students are allowed to edit their existing questionnaire that they have been created previously.

The templates provided with the system will be divided into seven main categories which are Attitude Measurement, Course Evaluation, Customer Satisfaction, Employee Satisfaction, Feedback Surveys, Market Research and Membership Survey. For each particular category, different type of templates will be provided to support any unique survey purpose.

When customizing the questionnaire, students can add a new question, select the types of questions, and state the answer set for each question. Normally, there are three types of questions in a standard questionnaire which are Option Button, Check Box, and Text.

Dynamic Surveys function is a special feature that will be highlighted in IQS. It is intended to enable the creation of a dynamic questionnaire. Questioner can provide different sheet of questionnaire to every respondents by controlling the flow of questions based on the option that the respondents selected. The system will keep track of the option that is selected by the respondent for each question and prompt more relevant subsequent question for the respondent to answer. This is a more consistent way to ensure the survey is getting more relevant and precise results.

When students have completed create the questionnaire, the Launch Survey function will enable them to preview the questionnaire in web browser and launch it to the web by just a simple click. The questionnaire after launch will be displayed in a list and allowed anyone interested to give response on it. This function can guarantee the surveys can be distributed broadly in order to get more reliable responses.

For Charting and Analysis function, students can view the results collected from the questionnaire survey. Number of responses and the response ratio for every question will be calculated by the system. The results will be display in charts.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter outlines approaches used for research and fact finding. Relevant case studies performed over the similar existing system are also will be documented in this section along with the valuable results observed. Theories and concepts that are related to the project development are also being studied here in order to solicit wise idea on building this project.

2.2 Fact and Finding

This section will discuss on the fact finding techniques that have been adopted to gather relevant information to be used in project development. The significance and contributions of conducting research on the related survey areas are also outlined.

2.2.1 Fact Finding Techniques

System analysis is one of the important tasks in the system development. Research will be conducted at this stage. Any related information is collected using the fact-finding techniques, to gathering information on the system problem, opportunities

and directives. This information is very important to determine the business and functional requirement of the system at the early phase. The system design phase will base on these requirements.[1]

The fact-finding techniques that used in this project are interviewing the target user, sampling of existing documentation on similar system, and observation on current system.

Interviewing the target user that is among KUTKM student is the most effective way to gather user requirements and their expectation on the new system. The information will be used as blueprint to develop a complete and functional system.

Sample documentations of similar system are collected through online. Those documents are primarily white papers, journal, and thesis. It is one of the effective ways to study, analyze, and conclude on those documents. The good practices will be applied into this project.

It is also crucial to obtain clearer view on existing system by observe on the similar system to this project. Observations can provide better understanding of system requirements and resources needed to develop this project. Three online survey tool systems have been studied on their functions and tools provided. Besides that, observation on different kind of survey application is also very essential where the type of question and format commonly used can be easily identified. Thus, this knowledge gained can be used to create well-designed templates for the system.

2.2.2 The Significance of Research

The significance and contributions of project research in helping the development of this project revealed no doubts. By conducting research and study, the

initial concepts and objectives for developing IQS can easily gained and the developer will has more clearer view on the system yet to be developed.

Furthermore, knowledge on the questionnaire design and the survey process also are essential for developing this project. On the other hand, problem solving method learned from previous research can be applied into this project to facilitate better functionality into the system.

Besides that, research on similar software to this project also provide us better ideas on how to develop a system that have business value and meet user requirements. The basic functions needed in survey software and the limitation found in existing system will also be documented. All those facts can be used as guideline to apply the appropriate functions needed into this project and find solutions to enhance current system.

2.3 Case Studies

This section will discuss the research done on the theories and concepts relevant to the project development. The theories and concepts include are Questionnaire Design concept, Client/Server Architecture concept, and theory of Human Computer Interaction (HCI). Case studies also have been performed on three existing system compared to observe and examine their strengths and weaknesses. The research result will also be documented in this section.

2.3.1 Theories And Concepts

There are three main concepts or theories that have been applied in developing this project. The following is the discussion on the questionnaire design concept, client/server architecture concept and theory of Human-Computer Interaction.

A full understanding in the design of questionnaire is required in order to develop an effective survey application. Only a well-designed questionnaire can achieve the survey purposes. The knowledge on how to generate well-designed questionnaire will be used to determine the appropriate functions built into the system and also help in designing useful questionnaire templates.

The understanding of client/server architecture concept is also important because this project will be an online survey application. Full understanding on the underlying architecture of web based technology is a need to justify the appropriate architecture type to be applied into the new system.

2.3.1.1 Questionnaire Design Concept

A well designed questionnaire is one which elicits the information required with the maximum efficiency in terms of the time and effort required (this implies a sufficient number of questions to achieve the result required, remembering that a minimum of questions will normally achieve a high response rate) and the quality of information (the information obtained should be as accurate, complete and unbiased as possible).[5]

Questionnaires are an inexpensive way to gather data from a potentially large number of respondents.[5] Often they are the only feasible way to reach a number of reviewers large enough to allow statistically analysis of the results. A well-designed questionnaire that is used can gather information effectively.[5]