

THESIS STATUS APPROVAL FORM
(BORANG PENGESAHAN STATUS TESIS)

JUDUL: THE DEVELOPMENT OF MALAY <-> ENGLISH BILINGUAL MOBILE
DICTIONARY FOR JAVA MOBILE PHONE

SESI PENGAJIAN: 2006/2007

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THE DEVELOPMENT OF MALAY <-> ENGLISH BILINGUAL MOBILE
DICTIONARY FOR JAVA MOBILE PHONE

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This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Software Development)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2007

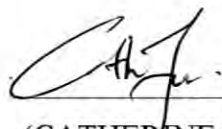
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ACKNOWLEDGEMENTS

I would like to take this opportunity to express my gratitude to all the people who have helped, supported and guided me throughout the completion of Projek Sarjana Muda.

First and foremost, my outmost gratitude goes to my project supervisor, Miss Anusuriya Devaraju for the continuous guidance and support given to me. Your constructive comments help me a lot in PSM1 and PSM2 and thanks for spending your precious time for the meeting despite your busy schedule and commitments.

Secondly, my extended thank you goes to Universiti Teknikal Malaysia Melaka (UTeM) for creating an opportunity for all final year students to carry out a final year project. With this final year project, I can apply all the knowledge learned in UTeM from the very first year till now. My most grateful thanks to my family members who gave me lots of moral and mental support which means a lot to me.

Last but certainly not the least; I would like to thank you, the reader for taking your time to read this report.

ABSTRACT

Mobile phones available in the market today provide number of advanced functions, among which possibilities of running mobile applications seems to be the most interesting feature. The proposed project to be developed is an enhancement of the initial Bilingual Mobile Dictionary (BMD) [3] called MEDict. MEDict is a mobile application that provides bilingual dictionary which supports Malay<->English dictionary for any Java enabled mobile phones. It is applicable to all J2ME mobile phones with GPRS connectivity. MEDict comprises of four components which are J2ME mobile client, dictionary database, dictionary service and web system. MEDict offer a great potential and benefits for users; it is a quick and easy-to-use and provides unlimited number of English <-> Malay translations lookup's 24 hours a day without any restrictions.

ABSTRAK

Telefon bimbit yang terdapat di pasaran kini membekalkan pelbagai fungsi yang canggih yang mana kebolehan untuk melaksanakan aplikasi mudah-alih menjadi tumpuan utama. Projek yang dicadangkan untuk dibangunkan adalah lanjutan daripada projek Bilingual Mobile Dictionary (BMD) [3] yang dinamakan MEDict. MEDict adalah suatu aplikasi mudah-alih yang menyediakan fungsi kamus dwibahasa Inggeris <-> Melayu bagi telefon bimbit yang menyokong aplikasi Java. Ia boleh diaplikasikan pada semua telefon bimbit J2ME yang mempunyai sokongan rangkaian GPRS. MEDict terdiri daripada empat komponen iaitu klien mobil J2ME, pangkalan data kamus, servis kamus dan sistem web. MEDict menawarkan potensi yang besar dan kelebihan kepada pengguna telefon bimbit yang mana ia adalah mudah dan cepat untuk digunakan dan mempunyai kandungan perkataan Inggeris <-> Melayu yang tidak terhad.

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LIST OF ABBREVIATIONS

BMD	-	Bilingual Mobile Dictionary
MEDict	-	Malay<->English Dictionary
GPRS	-	General Packet Radio Service
J2ME	-	Java2 Micro Edition
GSM	-	Global System for Mobile Communication
CD-ROM	-	Compact Disc read-only memory
LCD	-	Liquid Crystal Display
PDA	-	Personal Digital Assistant
JVM	-	Java Virtual Machine
J2SE	-	Java2 Standard Edition
API	-	Application Programming Interface
CLDC	-	Connected Limited Device Configuration
MIDP	-	Mobile Information Device Profile
WAP	-	Wireless Application Protocol
SMS	-	Short Messaging Service
MMS	-	Multimedia Messaging Service
FTP	-	File Transfer Protocol
OOAD	-	Object Oriented Analysis and Design
UML	-	Unified Modeling Language
JSP	-	Java Server Page
SQL	-	Structured Query Language
ERD	-	Entity Relationship Diagram

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CHAPTER I

INTRODUCTION

1.1 Project Background

A dictionary is an alphabetical listing of words with their meaning, spellings, variant forms, pronunciation, etymology, synonyms, antonyms as well as usage examples and usually in a single language [1]. In some languages, words can appear in many different forms, but only the lemma form appears as the main word or headword in most dictionaries. Dictionaries are most commonly found in the form of a books, electronic portable devices, CD-ROM or available online.

A bilingual dictionary is a dictionary that translates words or phrases from one language to another. Bilingual dictionaries can be either *unidirectional*, meaning it translates only from language A to language B, or can be *bidirectional*, translating to and from both languages [2]. The bi-directional bilingual dictionary usually groups words of one language alphabetically, with corresponding translations, in one section of the dictionary, dedicating the other section to the other language.

The dictionary is an indispensable utility for each and every individual. However, the convenience is compromised when one is expected to carry the paper dictionary or gadget around in order to have a quick access to words and their corresponding meaning.

Besides that, by using paper dictionary, it can be such a hassle to flip through it page by page to search for a specific word.

Mobile phones available in the market today provide number of advanced functions, among which possibilities of running mobile applications seems to be the most interesting feature. Bilingual Mobile Dictionary (BMD) is an initial mobile application that provides bilingual dictionary [3]. BMD is a mobile-based application which supports Malay<->English dictionary for any Java enabled mobile phones.

MEDict is an enhancement to the initial BMD which is a mobile-based Malay <->English dictionary with new added features. MEDict is believed to provide more user-friendly interface and advanced features for users to use the mobile dictionary effectively.

1.2 Problem statement

There are a few problems and weaknesses identified in the current dictionary and the initial BMD system. The problems are listed as follows:

1.2.1 Lack of interactivity

The traditional dictionary or paper-based dictionary can only be searched by headword, which means user need to flip through the dictionary page by page until the exact word is found. It will be much easier if the word can be searched by using only keyword. With this method, much more information will be displayed.

1.2.2 Lack of word readability

The BMD word entries are displayed only in one colour formatted. Although it can be read clearly, however, it is difficult to differentiate each part, for example in English word entries, there are word class, translations and the word usage. Multi-colour formatted word entries can be applied to enhance the readability of the content.

1.2.3 Limited search function

In the initial BMD, user needs to enter the correct spelling of a word in order to get the exact word translation. It would not be a problem if user knows the exact word to search. But if user is not certain on the word spelling, it will become a problem. This problem can be solved by providing sophisticated search using wildcards. Besides that, user is able to access quickly for the words that are previously looked up by using the search history function.

1.2.4 Limited translation content in administrator webpage

The initial mobile bilingual dictionary administrator page contains only the word entry, abbreviation and meaning of words for word listing. While for add, update and delete word functions, it can only manipulate the abbreviation and meaning of words. The content can be added to provide more clear translation of a word such as phonetic and example usage of a word.

1.2.5 No proper guidance for word phonetic

Some paper-based dictionary provides phonetic transcriptions which helps user to learn and pronounce the word accurately. However, BMD does not provide this function,

which user only knows the corresponding word translations without knowing the proper word pronunciation. A word pronunciation is very important especially if it is meant for speaking so that both parties involve in the conversation understand each other.

1.3 Goal Statement and Objectives

1.3.1 Goal Statement

The goal of MEDict is to develop a mobile bilingual dictionary that supported Malay<->English on Java enabled mobile phones.

1.3.2 Objectives

The objectives for the MEDict to be achieved are listed as below.

1.3.2.1 Conducting an initial study on existing mobile dictionaries

An initial study is conducted to provide preliminary analysis for MEDict. Study on the mobile bilingual dictionary available in the market as well as the initial BMD provides initial guidelines in developing MEDict. Requirements such as user requirements and functional requirements are captured and analyze for further development.

1.3.2.2 Creating a user-friendly and simple user interface

A simple to use and user-friendly user interface is created for MEDict. The interface that runs on Java-enabled mobile phones provides dual mode function namely English-Malay and Malay-English dictionary for user to choose from. User will then prompted to enter a word for translation and the correspondent translation will be displayed in a few seconds. Anyone from all walks of life can use MEDict with ease as it is easy to navigate and provide simple instructions to follow.

1.3.2.3 Improving translation contents by displaying phonetic transcription and usage example

The initial bilingual mobile dictionary displays only the word, abbreviation and meaning of a word entry. The translation content is improved by adding phonetic transcription and usage example of a word entry. Phonetic transcription provides guidance for user to pronounce a word correctly, while usage example enable user to understand the usage of the word in a sentence.

1.3.2.4 Enhancing the current admin web system to update dictionary contents

Besides the abbreviation and meaning of a word entry in the initial bilingual dictionary, the translation content is enhanced by adding phonetic transcription and usage example of a word entry. Administrator is able to view, add, edit and delete the phonetic transcription and usage example where the translations content will always be updated with the latest and reliable content.

1.4 Scope

Scope describes the limitation or boundaries for MEDict. The three main scopes for MEDict are data, user and functionality.

1.4.1 Data

The application of MEDict is divided into two parts; which are Malay \leftrightarrow English and English \leftrightarrow Malay dictionary. It involves the translations of words from English to Malay and vice versa according to the word entry from user. Each main entry for English word is explained with word class, such as *noun*, *verb*, *adjective* or *adverb* as well as the correspondent phonetic transcriptions. The content of MEDict is based on the *Oxford Fajar Inggeris-Melayu/ Melayu-Inggeris Dictionary* [4] and the phonetic transcription for English word is based on *Oxford Advanced Learner's Dictionary* [5].

1.4.2 User

MEDict is aimed to be used by various levels of user who wants to learn or master both English and Malay language. It is suitable for beginner, intermediate and as well as experts. The user may vary from students, language learners, native speakers, travelers as well as business professionals. Anyone can use MEDict as long as she/ he have a Java-enabled mobile phone together with GPRS service.

1.4.3 Functionality

1.4.3.1 Easy to use

The main functionality of MEDict is to provide an easy to use bilingual dictionary on Java enabled mobile phones. The interface is created to be user-friendly for non-professional computer user. The user interface of MEDict dictionary is available in two languages that are Malay and English to satisfy the user needs.

1.4.3.2 Content

The dictionary contains the exact word translations with usage example, abbreviations as well as phonetic transcription. Phonetic transcription (or phonetic notation) is the visual system of symbolization of the sounds occurring in spoken human language. The most common type of phonetic transcription uses a phonetic alphabet (such as the International Phonetic Alphabet) [6].

1.5 Project Significance

One of the main reasons for developing MEDict is to provide mobile-based Malay-English and English-Malay dictionary for Java enabled mobile phones, which is still lacking in today's market.

MEDict is believed to provide easy-to-use English<->Malay dictionary yet it is able to cater the needs of user from various levels. It will be an assistive tool when studying language, traveling, communicating with others and in many other situations.

MEDict is convenient to use as it can be accessed anywhere at anytime as long as user has a Java enabled mobile phone provided with GPRS service. It is also portable as user only needs to carry a mobile phone which is definitely weight lighter than paper-based dictionary.

1.6 Expected Output

The expected output from this project will be a mobile bilingual dictionary (Malay↔English translation) that runs on any Java enabled mobile phones. It will ideally suit all phones supporting J2ME (Java2 Platform Micro Edition). It provides user a bilingual dictionary as a translation tool that can be used anywhere at anytime with mobile phones.

The mobile phone must be GPRS (General Packet Radio Service) service enabled phone in order to obtain the translation from dictionary server. GPRS is part of the GSM (Global System for Mobile Communications) standard. It delivers 'always-on' wireless packet data services to GSM customers [7].

1.7 Conclusion

As a conclusion, MEDict offer a great potential and benefits for users; it is a quick and easy-to-use and provides unlimited number of translations lookup's 24 hours a day without any restrictions. It benefits all, who do not want to carry heavy bilingual Malay ↔English dictionary but just a light-weighted Java enabled mobile phone.