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JUDUL: **PDA: Unit Converter with Health and Travel Toolkit**

SESI PENGAJIAN: **2007**

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(HURUF BESAR)


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Alamat tetap : _____

MARSSILA KAMALRUDIN

Nama Penyelia

Tarikh : 12/11/2007

Tarikh : 12/11/2007

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^ Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

PDA: UNIT CONVERTER WITH HEALTH AND TRAVEL TOOLKIT

ARVIN CHEAH

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

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITY TEKNIKAL MALAYSIA MELAKA
2007**

DECLARATION

I hereby declare that this project entitled
PDA: UNIT CONVERTER WITH HEALTH AND TRAVEL TOOLKIT

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

STUDENT:  DATE: 12/11/2007
(ARVIN CHEAH)

SUPERVISOR:  DATE: 12/11/2007
(PN MASSILA KAMALRUDIN)

DEDICATION

Specially dedicated to

My beloved Dad, Mum, brothers and friends who have
encourage, guided, helped and inspired me throughout the journey of success.

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The whole progress of thesis development was possible thanks to the cooperation and support of a number of people, who had enabled me to gain much more than what the scholastic and Projek Sarjana Muda (PSM) aspects of the program could have given. I would like to express my sincere appreciation to Pn. Massila Bt. Kamalrudin, the supervisor for my PSM. I am sincerely indebted to her for her trust and guidance during the thesis development and her willingness to impart her valuable knowledge, experience and skills. Finally, I would like to thank my family, who tolerated my absence when the thesis is being written. A warmest appreciation and thanks to my friends for their opinions and support.

ABSTRACT

The objectives of Personal Digital Assistant (PDA) on unit converter with health and travel toolkit is to introduce an inexpensive way of getting information, a user oriented device built in with real time information and to enhance the existing modules available on the PDA. This device is meant for any Malaysian Windows Mobile user who wishes to use the enhanced function for daily needs. Functions such as unit conversion, BMI index calculator, menu planner, non-halal ingredients estimation, toll fare calculator and travel dictionary are included in the toolkit to help the user of the PDA more flexible and convenient in finding information. Object-oriented approach is used as a project methodology for this project. The Rational Unified Process is chosen to aid in this application development based on the capabilities of this approach in smoothing the object-oriented software development process. Thus JavaScript is used as the core programming language together with HTML, AJAX and ActiveX to achieve the objectives and methodology of the project. Results from this application development is hoped to satisfy the user of the PDA in terms of functions that are value of money.

ABSTRAK

Objektif *Personal Digital Assistant (PDA) on unit converter with health and travel toolkit* ialah untuk memperkenalkan cara yang ekonomi untuk mendapatkan maklumat, alat yang berorientasikan pengguna dengan maklumat yang cepat dan untuk memperbaiki modul yang tersedia ada dalam PDA. Alat ini ditujukan kepada pengguna *Windows Mobile* Malaysia yang ingi menggunakan fungsi yang tersedia untuk kegunaan harian. Fungsi seperti penukaran unit, pengiraan BMI index, perancangan sajian makanan, pengenalpastian bahan makanan yang tidak halal, pengiraan tambang toll dan kamus pelancongan dibangunkan dalam alat bantuan ini untuk memudahkan pengguna dalam fleksibiliti mencari maklumat. Metodologi atau kaedah yang diguna pakai semasa pembangunan projek ini adalah berdasarkan kepada orientasi objek. *Rational Unified Process* telah di pilih untuk membantu proses pembangunan perisian ini. JavaScript digunakan sebagai bahasa pengaturcaraan utama dengan HTML, AJAX dan ActiveX untk mencapai objektif dan metodologi projek. Hasil daripada pembangunan projek ini, diharapkan dapat memuas hati pengguna PDA dari segi penalan fungsi yang berbaloi dengan harga pembelian PDA.

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LIST OF ABBREVIATIONS

PDA	Personal Digital Assistant
PC	Personal Computer
IA	Information Appliance
IE	Internet Explorer
EEC	European Economic Country
TDC	Tabular Data Control
GPS	Global Positioning System
BMI	Body Mass Index
MB	Mega Bytes
US	United States
RUP	Rational Unified Process
UML	Unified Modeling Language
HTML	Hyper Text Markup Language
AJAX	Asynchronous JavaScript and XML
OS	Operating System
XML	Extensible Markup Language
XP	eXPerience
ERD	Entity Relationship Diagram

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CHAPTER I

INTRODUCTION

1.1 Project Background

Information access has no longer becomes a barrier in wireless networking and internet technology. According to Rong et al. (2007), with the massively booming of internet, Information Appliance (IA) has become a part of daily routine in the new internet population and thus making it to the market as a demanding device. Similarly, Wang et al. (2004) also highlighted the importance of IA roles in information technology. Personal Digital Assistant (PDA) is expected as a portable device incorporated into education and management, enriching the user's personal information, routine planner, organizer, and personal toolkit in order to convey the information required. Based on the research on the American website K12 Handhelds (2002), currently United State (US) is the main market of PDA, dominating the market around seventy percent indicating that PDA is globally welcome to be practically used in daily activities. According to Rong et al. (2007), currently there is no accurate definition of the IA but based on the existing related goods, any device which has network advantage and communication capabilities with other or another IA device can be describe as IAs. Where else Gessler and Kotulla (2004) define handheld as a computerized or electronic devise that is designed to be fit on palm. Thus, PDA is one of the well known IA or so called handhelds or palmtops which has evolved through the years to equip its user with

administrative applications, communication and collaboration applications, and teaching and learning applications. Gessler and Kotulla support that PDAs are programmable especially for expert users to download programs from internet to be added in PDA as applications. Besides that, PDA enables connectivity to the internet to act as a Global Positioning system (GPS) and multimedia software. During a project, a medical student gave a comment on the importance of existence of PDA in the information sharing community.

“Our team carried out a detailed study of how radiology is taught and practiced. One clear finding was that trainees have very little spare time. They can’t take the time to sit in the libraries or computer labs, and so any computer- based learning must fit into the gaps in their busy schedule- in the hospital, at home, when traveling- which means a personal and portable system.” (Sharples, 2000)

Sharples has highlighted that, in any situation either a busy routine, travel or even in an emergency, a portable device is a must for any person who wish to access information for basic knowledge and research. Some users even highlighted that PDA should be applied practically as soon as possible whenever it is necessary that is

“unobtrusive and neat and that could be ready at hand.” (Waycott et al., 2002)

In this section, the importance of PDAs and its existence is highlighted. In the following section, the programs in the PDA are highlighted to be enhanced and improve.

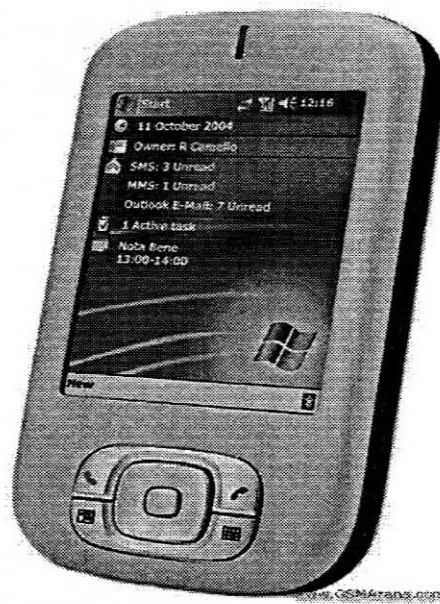


Fig. 1.1: Vertical PDA (Samstores, 2005)

The figure above illustrates an example of vertical PDA in its original context on the page <http://www.samstores.com/NEWPRODS.asp?PageNo=23&PrNew=1> copyright under Samstores.



Fig. 1.2: Horizontal PDA (eCoustics, 2007)

The figure on the previous page illustrates an example of horizontal PDA in its original context on the page <http://news.ecoustics.com/bbs/messages/10381/356865.html> copyright under eCoustics.

1.2 Problem Statement(s)

According to an article in the Chronicle of Higher Education (2002), as a comparison with Personal Computer (PC) or laptop, PDA is more portable and easier to tote around anywhere. In the article Mr. James acting of the dean of the College of Science and Engineering at the University of Minnesota supports this statement as below

“There’s a real barrier with those laptops open, with that black rectangle in front of everybody.” (James, 2002)

Using a program such as converter in the PC or laptop is complicated, as it restricts the user’s mobility. Where else using a PDA to use these functions would be better and the user is able to perform their required functions in any movements such as sitting or traveling.

Based on a mini project report in The Higher Education Academy (2005), established by the team of Engineering Subject Center from the University of Glasgow; software used in desktop applications are very costly compared to PDA which cost only around £5 to £30. Besides that, the team also emphasize that freeware are also available for PDA together with source code and hence allowing the expert user to modify them into their desirable application.

The functions that we can see today in PDAs are limited especially for traveling purpose. Based on the article in the Chronicle of Higher Education (2002), Mr. Donald C. Dahlin the acting president of the University of South Dakota, he says

that the programs available in the PDAs should be enhanced in order to be value for money. Each PDA can cost a user from \$200 up to \$500 depends on the quality and functionality available in the PDAs. Mr. Dahlin's statements is therefore very reasonable that why PDAs should be enhanced and upgrade for its existing module itself.

Therefore a web based converter such as available in Malaysian TollPlus website should apply and enhance its functionalities into a cheaper software application such as PDA. The user of the TollPlus website might not able to access the net to estimate the actual cost of toll rate between the two specified location, especially when the user is in the middle of highway and a converter is urgent for them at that time. Even though PDAs are able to access internet and allowing the user to browse the website but however if the location of the user does not cover internet coverage then the user will have to face several difficulties. Besides that, PDAs are attractive handhelds device which are less disruptive to movement and traveling and convenient on the user's pockets than laptops and Personal Computers (PC). Those small sizes portable device are lighter to bring on almost anywhere as desired by the user.

In the health perspective, Diabetes or obese patient especially needs to be aware of their daily calories intake and BMI measurement in order for them to control their daily routine meal intake. Such simple request if only available on PDAs then it will make the diabetes patient's life easier without having to always refer to internet or calculation tools to get their necessary information manually. Thus the user is able to estimate his or her BMI index without having to calculate them self manually. These functions if only included in PDAs, then the user will benefit a lot in terms of health information.

In the religious perspective, PDAs should include function such as non- halal ingredients assessment. Muslim followers needs to be alert of non- halal ingredients containment especially when they travel to foreign countries when there are no special halal label statements for foods. Things can be easier to manage when they can personally check or search for non- halal containments especially when they are skeptical of the food or product's ingredients.

User finds it hard when they need to perform different tasks at different location. For an example getting toll rate from internet, calculating length, weight, BMI, temperature, volume, velocity, concentration, angle and area manually from calculator or internet, and surfing net for non- halal ingredients. An all in one function should be included in a program to be referred whenever as possible.

In the tourism perspective, PDAs should assist and help the user to learn simple or common traveling language in order to allow the user to fit in into an environment. Tourist may find hard to speak a certain language especially when they want to ask or speak a simple sentences. Hospitality could not be practiced when both the tourist and the local residents do not even greet each other. In terms of emergency, tourist might face several difficulties especially to request for help.

1.3 Objective

- a) To introduce an inexpensive way of getting information

The user needs not download expensive software in PDA as the functions of conversion and guidance is built in into the PDA. Besides that, user needs not to access internet to get all these functions such as getting the toll rate for certain distance.

- b) To introduce a consumer oriented devise

The user is able to perform all the desired function in an all in one function in the converter and guidance system. Hence user is able to be more self-oriented.

- c) To introduce a simple, and convenient device built in with real time information

The user is able to get information such as unit conversion, BMI index, toll rate, total calories in daily intake, travel dictionary and halal definition on the spot without having to use complicated manual machines such as calculator or access to internet. Information is able to convey in a more effective way.

- d) To enhance the existing modules available on the PDA

The current PDA does not have all the complete functions. PDA lacks of toll rate estimation, non- halal ingredients definition, traveling dictionary and menu planner to assist in daily food intake.

1.4 Scope

The target user for the project involvement shall be any Malaysian user of the Windows Mobile (PDA) devices who wish to use the enhanced functions to meet their daily desired needs and unit conversion. The project comprises of the following modules in the PDA as a standalone built- in functions:

- a) Conversion value

The conversion value will cover length, weight, volume, velocity, temperature, concentration, angle and area. The length estimation will be based on inputs type from user selected from an option list to be converted into a desired value which the value type also selected by the user from an option list. The weight estimation will be based on inputs type from user selected from an option list to be converted into a desired

value which the value type also selected by the user from an option list. Volume, velocity, temperature, concentration, angle and area will follow the same input such as option list or text box. Convert type will be given to the user to select their desired conversion.

b) BMI index

The BMI index will be based on the user inputs such as height, weight, and body measurements to get the accurate BMI index. Type of measurements such as centimeters and inches will be given option for the user. The result of BMI index will give the user options of healthy planning or menu planner such as guidance on food when the user is calculated as obese or overweight.

c) Menu planner

The calories estimation will be based on inputs of foods and portion. Data regarding correct calories selected by the user will be display based on all the inputs gathered from user.

d) Non- halal food ingredients estimation

Users are able to search for skeptical ingredients based on the data captured in the PDA. Non- halal ingredients if matched will be alarmed to the user. This module acts more like a search engine to retrieve desired data.

e) Toll rate estimation