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MOBILE PHOTO PRINTING

LAI CHEE CHUN

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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ABSTRAK

Projek ini dibangunkan dengan harapan untuk memberi perkhidmatan mencetak gambar kepada pengguna peralatan telapak mudah alih (*handheld devices*). Dalam erti kata lain, ia merupakan *kiosk* pencetak gambar mudahalih menggunakan penyambungan tanpa talian (*wireless*). Dengan kemajuan teknologi tanpa talian dan penggunaan luas peralatan telapak pada masa kini, penawaran perkhidmatan kepada golongan pengguna ini amat dialu-alukan. Atas sebab ini, *kiosk* ini hanya dapat digunakan dengan adanya *infrared* dan *WiFi*. Kajian dijalankan adalah bertujuan untuk mengumpul maklumat dan mendalami logik pembangunan sistem *kiosk* ini. Penggunaan metodologi yang sesuai dapat menghasilkan produk yang berkualiti, dari aspek piawaian dokumentasi, kesesuaian kepada pengguna, kebolehkekalan dan konsistensi perisian tersebut. Metodologi *Object-Oriented Analysis and Design* (*OOAD*) telah digunakan dalam proses pembangunan sistem *kiosk* ini. Sistem ini mengandungi empat modul, iaitu pemilihan cara penghantaran, penghantaran gambar atau imej, pembayaran dan pengesahan permintaan. Penggunaan empat modul ini adalah atas sebab untuk menawarkan perkhidmatan yang mudah dan pantas pemprosesan gambar tanpa menyusahkan dan mengurangkan interaksi pengguna. *Kiosk* ini boleh diperbaiki untuk tujuan komersial dengan penambahan fungsi-fungsi yang lebih canggih pada masa hadapan.

ABSTRACT

The Mobile Photo Printing is a service provider that offers an alternative way of printing for handheld devices' users. In other word, it is a kiosk for photo printing using wireless connectivity. With the advancement in wireless technology and the wide usage of mobile handheld devices, the need to provide services to this group of user is most welcomed. For this reason, the kiosk is accessible only through wireless connectivity, namely infrared and WiFi. The purpose of this research being conducted is to collect information and a better understanding of the business logic. The use of correct methodology helps to produce a better quality product, in terms of documentation standards, acceptability to the user, maintainability and consistency of software. The Object-Oriented Analysis and Design (OOAD) methodology will be deployed for this system development process. The system consists of four modules, which are selecting interface, sending image, payment and confirm request. The reason behind this system is to provide an easy, user-friendly and faster processing of photo printing and minimize user input. The kiosk can be enhanced to become a commercial kiosk with better features and improvement in the future.

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ABBREVIATION		DEFINITION
AUT	-	Application Under Test
CD	-	Compact Disc
CF	-	Compact Flash
CPU	-	Centre Processing Unit
FTMK	-	Faculty of Information and Communication Technology
GPRS	-	General Packet Radio Service
GUI	-	Graphical User Interface
HCI	-	Human Computer Interface
ICT	-	Information and Communication Technology
IEEE	-	Institute of Electrical and Electronics Engineers
IrDA	-	Infrared Data Association
IrLAP	-	Link Access
IrLMP	-	Link Management
KUTKM	-	Kolej Universiti Teknikal Kebangsaan Malaysia
LAN	-	Local Area Network
LCD	-	Liquid Crystal Display
LLC	-	Logical Link Control
MAC	-	Media Access Control
MMC	-	Multimedia Memory Card
MMS	-	Multimedia Messaging Service
OOA	-	Object-Oriented Analysis
OOAD	-	Object-Oriented Analysis and Design
OOD	-	Object-Oriented Design
PC	-	Personal Computer
PDA	-	Personal Digital Assistant

PHY	-	Physical
SD	-	Secure Data
SDLC	-	System Development Life Cycle
SM	-	Smart Media
SSADM	-	Structured System Analysis Design Model
UML	-	Unified Model Language
WBS	-	Work Breakdown Structure
WiFi	-	Wireless Fidelity

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CHAPTER I

INTRODUCTION

1.1 Project Introduction

In this new era of information technology, the advancement of technology has eased our daily routine. The Mobile Photo Printing is an intelligent kiosk, which enable mobile devices (e.g. handheld devices like PDA and camera phone) to print photo directly. But nevertheless the devices should have some form of communication gateway like infrared and Wireless Fidelity (WiFi) connectivity to transfer the file or data to the kiosk for printing.

With the current trend of mobile gadgets with images capture ability, the captured images are only stored in the devices itself or transfer to computer using a designated cable which sell separately. Many users will not willing to opt to transfer the data into personal computer because they still need a printer for printing. With the introduction of this smart kiosk with printing ability, it made easy for user to print it out and spare some space in their devices.

The goal of this project is to offer an alternative for mobile users. The usage of above mentioned multi devices are getting popular and have become part of daily necessity. Thus, this kiosk is a service provider to print photo on the fly.

1.2 Problem Statement

The Mobile Photo Printing as it name suggest is a kiosk, which offered printing facilities. But the printing is limited to handheld devices that have infrared and WiFi-enabled. The major problem with camera phone is the captured image cannot be printed directly because the image is stored in the phone memory. The only option is user transfers it into a personal computer using a cradle, which sells separately with the phone. Thus, the problems that have been identified are as follow:

a. *Cannot print the image captured* – camera phone captured images are usually stored in memory or electronically. The only method to get it printed is transferring the images to personal computer. Then, burn into CD (compact disc) for processing in photo shop or using personal printer. The cost and effort in getting a printout is significance. In addition, not every camera phone owner does have a personal computer or the phone cradle/cable. Thus, many users are restricted to store and replaced the image when running out of memory space.

b. *Running out of memory space* – the current camera phones have a limited storage space and even the Personal Digital Assistant (PDA) cannot allocate all it space for images. The available solution currently is to save it in a web-based server, either free of charge (small storage space) or have to subscribe (what you pay is what you get). But saving in server required (Multimedia Messaging Service) MMS or General Packet Radio Service (GPRS) subscription to transferred file into remote server. The storage spaces are even more useful when the user is traveling abroad or out station.

c. *The mass usage of handheld devices especially camera phone* – market research shown that the sales of camera phone and other digital devices are increasing. But the services available to cater the usage are limited or still in development.

d. *Unable to share the captured image with family and friend* – storing image in the handheld devices is not a good idea and sharing with family and friend are even harder and impossible. A printout would be an appropriate way for sharing.

1.3 Objectives

The Mobile Photo Printing can be placed in a strategy location for ease of use. With easy access and effortless printing process, the kiosk will be a hit among mobile users especially those who intended to print their photos. With the digital ages of technology, everything is just a click away.

The objectives of the project are:

- To ease photo printing
  Unlike conventional or digital camera, mobile photo printing means there is no photo shop required in order to have photo images printed. No negatives or other digital storage devices, just one of the above-mentioned connectivity to interact with the kiosk.

- Instant photo
  Users just need to send the photo to be printed and collect it instantly. Unlike conventional methods where one needs to collect it from the photo shop, the kiosk offers an instant printed photo.

- Easy sharing of photo
  Instead of passing around the mobile devices to share the images captured, a printed photo offer a more convenience way of sharing with family and friends.

- An alternative of photo storage

There are limitation of storage space in mobile devices, thus printout of photo can free some storage space for other usages.

- To cope with the current trend and demand
  With the wide range of handheld products that have images capture ability, the demand have the photo processed are great and the current market trend is focusing on digital images.

1.4 Project Scope

This project will be focusing on the connectivity of the handheld devices with the kiosk itself, namely the infrared and WiFi. This project will be developed based on the above-mentioned interface as the core for the kiosk to interact.

The infrared is the pioneer in wireless technology and the infrared is targeted at mobile phone users since infrared port is common in mobile phones. The WiFi interface is targeted on PDAs, which most current model will have it built-in for easy access to the net. For other interfaces, it can be expanded in the future to support more handheld devices. The system will not facilitate in printing of email or any other type of office documents, as the kiosk is focus on photo printing.

The targeted group of users is those who have handheld devices with above-mentioned connectivity. The kiosk is available for general public and it is a service provider. The users are not specific and anyone can use it as it is made public.

The system will run on a Windows based operating system and Windows XP is highly recommended. The kiosk will need other devices like printer, infrared adapter and WiFi-enabled. The kiosk is a stand-alone system and no network connection is required. The use of Windows XP is to enable common devices to be identified by the operating system without requiring any driver.

1.5 Contributions

This project is to offer another type of services for the conveniences of handheld devices users. This system can help ease the time and effort for photo printouts. The kiosk can be placed at strategy places such as shopping complex, public places or places that can have people attention.

The kiosk required minimal personnel supervision. The system just needs to be service at an appropriate interval time. The ability to provide service 24-7 is an advantage over the conventional photo shop. Print anywhere at anytime is the main idea of this kiosk in providing photo-printing services.

This system has a commercial value, as this kiosk can be a business-oriented machine, which can generate profit. This project also fully utilise the wireless technologies.

1.6 Expected Output

The expected output of the Mobile Photo Printing will be successful printout of the image sent by user through he/she handheld device. The kiosk is able to receive image file from handheld devices that support infrared and WiFi. The system can stand-alone and is not network dependent.

The system is design in such away as to minimize user input and this can help eliminate user mistakes. And the system is programmed to handle any possible error that a user could make or prone to make.

The usage of the system is restricted to those users who have purchase a prepaid coupon meant for the kiosk. Users will be required to enter the number before he/she can print a photo.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

Before starting the project, researches are essential to identify and better understand the business and concept of the system. This system is meant for offering a photo printing services in a kiosk. So, the requirements are very vast and the system itself approaches different individuals.

Beside this, finding information through the Internet is an effective way to better understand the idea that we have in mind. It even gave us a better view of the possibility to develop the proposed system and how to better enhance it.

Throughout this research, developers have gather information and user requirements about the needs of a systematic system to help the staff in handling their tasks. With these requirements, decision had been made is to build some functions in system to solve their problems.

Preliminary requirements and scopes can be retrieved from the research. Scope defines the size of the project, estimate the time and budget for system development and prepare a schedule or timetable to complete the project.

Apart from this, developers also understand the concept of the wireless technology, architecture of the wireless system and learn more wireless programming language.

2.2 Fact-finding

Fact-finding is a simplest method in obtaining user requirements. In this part, the fact-finding will be focusing on the available system in the market and analysis to determine what the proposed system to be. The fact-finding process can take a long time and will be affected by the resources available.

2.2.1 Research on Methodology

Methodology is a collection of components, which include planning, procedures, techniques, tools and documentation aids that will help the developer to develop the system. There is a lot of methodology available to choose, namely, Structured System Analysis Design Model (SSADM), System Development Life Cycle (SDLC) and Object-Oriented Analysis and Design (OOAD).

A system development methodology is a very formal and precise planning tool that defines a set of activities, methods, best practices and automated tools for system developments. This method will be the guidelines for projects manager monitor and evaluate most information systems and software. The flow of the project is a one-way traffic, which means there will be no turning back once a phase is completed.

OOAD methodologies divided into two types, ternary and unary. The ternary or three-pronged type is the natural evolution of existing structured methods and has three separate notations for data, dynamics, and process. The unary type asserts that because objects combine processes and data, thus one notation. The unary type is considered to be more object-like and easier to learn from scratch, but has the disadvantage of producing output from analysis that may be impossible to review with users.

Object-Oriented Programming is a programming language model organized around "objects" rather than "actions" and data rather than logic. The programming challenge was seen as how to write the logic, not how to define the data. Object-oriented programming takes the view that what really matters are the objects that need to be manipulated rather than the logic required to manipulate them. After researching, OOAD methodology is chosen as the guideline and implement plan during the system development process.

2.2.2 Research on Concept and Technology

i. Infrared (IrDA)

IrDA is short for Infrared Data Association, a group of device manufacturers that developed a standard for transmitting data via infrared light waves. Increasingly, computers and other devices (hand phone and PDA) come with IrDA ports. This enables data transferred from one device to another without any cables (wireless). For example, if both the laptop and printer have IrDA ports, one can simply print the specified document without a cable connecting both the hardware.

IrDA ports support roughly the same transmission rates as traditional parallel ports. The only restrictions on the usage are that the two devices must be within a few feet of each other and there must be a clear line of sight between them.

There are two basic standard for IrDA; IrDA-Data and IrDA-Control. The IrDA-Data defines the standard for the wireless, two-way infrared data transmission between two devices and consists of a set of mandatory protocols: PHY (Physical), IrLAP (Link Access), and IrLMP (Link Management). This is the standard that will be implemented in the system.

Meanwhile, the IrDA-Control is the infrared standard that allows wireless peripherals such as keyboards, mouse, game pads, joysticks, and other pointing devices to interact with many types of host devices. Host devices include PCs, home