Easy Meal

Meal On Wheels

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Chapter 1:

Introduction
Chapter 1: Introduction

1.1. Background

A restaurant is a business, which prepares and serves food and drink to customers for money, paid either before the meal, after the meal, or with an open account. Meals are generally served and eaten on premises, but many restaurants also offer take-out and food delivery services. Restaurants vary greatly in appearance and offerings, including a wide variety of the main chef's cuisines and service models.

Over the past few years. Since the start of this millennium, the world has seen the evolution of large and noticeable in the evolution of smart phones and became the best-selling device in the world and has become an integral part of the lives of people interested in what you offer, given smartphone services from other phones.

In order to problems faced by restaurant customers along Gaza Strip from the wait for receiving meal and the difficulty in finding vacant places in the restaurants and the distance between restaurants and customers.

This will limit the application of these problems and find the best solutions through EasyMeal due to lack of Gaza for such applications.

1.2. Research Motivation

From personal experience, I passed out when I wanted to book a table in a restaurant and faced several problems, including delays in meeting order and place reservation table, which does not fit with my desires sometimes that you want to sit inside the restaurant, so we decide to develop a mobile application, which can help solving this problem.
1.3. **Problem Statement**

Traditional restaurant allows users to go to a restaurant, asked orders and receiving meals from the restaurant, which leads to increased cost to the user in the case of order to bring home.

This project aims at developing a mobile application, which enables users to make orders through smartphone. The services provided by the application, table organization and place of the table as desired by the user and provides delivery service meals at a time determined by the user. The users can also pay bills automatically through payment cards. As well, this application provides the services provided by the restaurant free because it is through a smartphone.

1.4. **Research Question**

The main question of this project is “How to develop a mobile application which may be utilize to facilitate ordering meals from restaurant?”

1.5. **Research Objectives**

This study utilizes mobile technology for ordering and delivering meal. The objectives of the study are:

1. Develop Easy Meal, which is a mobile application for meals ordering.
2. To conduct user evaluation on Easy Meal.

1.6. **Research Significance**

The significance of this study are as follows:

1. Helps users to organize their time by setting the time to receive of the request.
ii. Reduce cost by helping the user to book and receive meals through the Internet.

iii. This application is a combination of the restaurant and a means of transportation to facilitate the user.

iv. The application provides a direct means of communication with the user through the Internet.

### 1.7. Research Scope

This study focuses on all people in Gaza Strip and it will be free in the market. It will be developed by Android community, the website will be developed on PHP program language and Microsoft SQL Server 2005 as the Relational Database Management System (RDMS).

### 1.8. Summary

This application was developed to help users to organize their time, reduce cost by helping the user to book and receive meals through the Internet this application is a combination of the restaurant and a means of transportation to facilitate the user.
Chapter 2:

Literature Review
Chapter 2: Literature Review

2.1. Introduction

At this stage, will resume the previous study related to EASY MEAL and explain how the system will request through the phone and how the table is booked by phone.

2.2. Definition and Concepts

2.2.1. Mobile Technology

Mobile technology has revolutionized the means by which we communicate with one another. It has dramatically altered areas such as finance, entrepreneurship, education, healthcare and politics. Mobile technology is the technology that is portable and it refers to any device that you can carry with you to perform a wide variety of “tasks”. It is the technology that allows those tasks to be performed via cellular phone, PDA, vehicles, laptops, etc. A standard mobile device has gone from being no more than a simple two-way pager to being a cellular phone, a GPS navigation system, a web browser, and instant messenger system, a video gaming system, and much more. It includes the use of a variety of transmission media such as radio wave, microwave, infrared, GPS and Bluetooth to allow for the transfer of data via voice, text, video, 2-dimensional barcodes and more.

Mobile technology has expanded dramatically around the world. According to the Cisco Visual Networking Index, global mobile data traffic has doubled for the fourth year in a row. In addition, looking toward the future, the report estimates that “global mobile data traffic will increase 18-fold between 2011 and 2016”. By the end of that period, it is projected that there will be 10 billion mobile devices in use around the world.
Along with 3G and 4G, these advances have had a huge impact on many lifestyles. The utilization of smart phones and tablets has transformed communications, commerce, and entertainment, among other fields. Their emergence has improved service delivery, empowered consumers, businesses, and entrepreneurs, and changed the way in which people access information and make transactions [1].

Mobile technologies include mobile phones; Personal Digital Assistants (PDA) and PDA phones (e.g., BlackBerry, Palm Pilot); Smartphones (e.g., iPhone); Enterprise Digital Assistants (EDA); portable media players (i.e., MP3-players and MP4-players, e.g., iPod); handheld video-game consoles (e.g., PlayStation Portable (PSP), Nintendo DS); and handheld and ultra-portable computers such as tablet PCs (e.g., iPad and Smart books). Mobile technology is a growing industry, and is set to become a $23 billion dollar worldwide industry by 2017 [2].

These devices have a range of functions from mobile cellular communication using text messages (SMS), photos and video (MMS), telephone, and World Wide Web access, to multimedia playback and software application support. Technological advances and improved computer processing power mean that single mobile devices such as smart phones and PDA phones are increasingly capable of high-level performance in many or all of these functions.

The features of mobile technologies that may make them particularly appropriate for improving service delivery processes relate to their popularity, their mobility, and their technological capabilities. The popularity of mobile technologies has led to high and increasing ownership of mobile technologies, which means services can be delivered to large
numbers of people. In 2009, more than two-thirds of the world’s population owned a mobile phone and 4.2 trillion text messages were sent [3]. In many high-income countries, the number of mobile phone subscriptions outstrips the population [4]. In low-income countries, mobile communication technology is the fastest growing sector of the communications industry and geographical coverage is high [5]–[8].

The mobility and popularity of mobile technologies means that many people carry their mobile phone with them wherever they go. This allows temporal synchronization of the delivery of the service and allows the service to claim people’s attention when it is most relevant.

The technological capabilities of mobile technologies are continuing to advance at a high pace. Current technological capabilities allow low cost services. There are potential economies of scale as it is technically easy to deliver a service to large populations (for example, mobile technology applications can easily be downloaded and automated systems can deliver text messages to large numbers of people at low cost). The technological features that have been used to provide a service include text messages (SMS), software applications, and multiple media (SMS, photos) interventions. The technology allows services to be personalized and interactive.

2.2.2. Mobile Application

A mobile application, most commonly referred to as an app, is an add-on software for handheld devices, such as smartphones and PDAs. Among the most popular are games, social networking, maps, news, business, weather and travel information. All of these leverage at least one of the device’s technical features: communications interfaces (Wi-Fi, WiBro/mobile
WiMAX, GSM/EDGE, W-CDMA/UMTS/HSPA and Bluetooth), audio and video processors, camera, sensors or GPS module [9].

Apps are usually available through application distribution platforms, which began appearing in 2008 and are typically operated by the owner of the mobile operating system, such as the Apple App Store, Google Play, Windows Phone Store, and BlackBerry App World, as shown in Table 2-1.

**Table 2-1: Characteristics of selected mobile platforms**

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Operating System (OS)</th>
<th>Programming Language</th>
<th>Application Store (launch date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>iPhone OS</td>
<td>Objective-C</td>
<td>iPhone App Store (07/08)</td>
</tr>
<tr>
<td>LiMo Foundation</td>
<td>LiMo Platform (Linux)</td>
<td>Java, native (C/C++)</td>
<td>not yet available</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Windows Mobile</td>
<td>Visual C#/C++</td>
<td>Windows Mobile Marketplace (09/09)</td>
</tr>
<tr>
<td>Open Handset Alliance</td>
<td>Android (Linux)</td>
<td>Java</td>
<td>Android Market (10/08)</td>
</tr>
<tr>
<td>Palm</td>
<td>Palm OS</td>
<td>C/C++</td>
<td>Palm App Catalog (06/09)</td>
</tr>
<tr>
<td></td>
<td>webOS (Linux)</td>
<td>JavaScript, HTML5</td>
<td></td>
</tr>
<tr>
<td>Qualcomm</td>
<td>BREW</td>
<td>C/C++</td>
<td>Plaza Retail (05/08)</td>
</tr>
<tr>
<td>RIM</td>
<td>BlackBerry OS</td>
<td>Java</td>
<td>BlackBerry App World (04/09)</td>
</tr>
<tr>
<td>Symbian Foundation</td>
<td>Symbian</td>
<td>C++</td>
<td>Nokia Ovi Store (05/09)</td>
</tr>
</tbody>
</table>

Some apps are free, while others users must pay to have these apps on their mobile phones. Usually, they are downloaded from the platform to a target device, such as an iPhone, BlackBerry, Android phone or Windows Phone, but sometimes they can be downloaded to laptops or desktop computers.

Handset manufacturers, mobile network operators and suppliers of mobile operating systems are opening storefronts on-line in attempts to capitalize on growing consumer
demand. High-end devices that are able to run mobile apps need an attractive and expanding range of these apps if they are to generate hardware sales and network revenues.

2.2.1. Android

Android operating system is one of the most widely used mobile Operating System these days. Android mobile operating system is based on the Linux kernel and is developed by Google and it is primarily designed for smartphones and tablets. Since Android is an open source, it has become the fastest growing mobile operating system. Due to its open nature, it has become favorite for many consumers and developers.

Moreover, software developers can easily modify and add enhanced feature in it to meet the latest requirements of the mobile technology. Android users download more than 1.5 billion applications and games from Google Play each month. Due to its Powerful development framework, users as well as software developers are able to create their own applications for wide range of devices [10].

Some of the key features of Android operating system are: Application Framework, Dalvik virtual machine, Integrated browser, Optimized Graphics, SQLite, Media Support, GSM Technology, Bluetooth, Edge, 3G, Wi-Fi, Camera and GPS etc. To help the developers for better software development Android provides Android Software development kit (SDK). It provides Java programming Language for application development. The Android software development kit includes a debugger, libraries, a handset emulator based on QEMU (Quick Emulator), documentation, sample code and tutorials.
Android operating system is a stack of software components. The main components of Android Operating system Architecture or Software Stack are Linux kernel, native libraries, Android Runtime, Application Framework and Applications, as shown in Fig. 2-1 [11].

**Figure 2-1: Android Architecture**

2.2.2. Android Studio

Android Studio is an intuitive, feature-rich, and extremely forgiving Integrated Development Environment (IDE). This IDE is more productive and easier to use for your Android app creations than Eclipse. Android Studio (shown in Fig. 2-2) is the IDE for Android that was announced in May 2013 at the Google I/O developers’ event, and is intended as an alternative to Eclipse. Prior to that time, we had both been using Android Developer Tools (ADT) both professionally and in the classroom. ADT is an Android development environment built upon the open source integrated development environment (IDE) called Eclipse [12].
Android Studio is a collaboration between JetBrains and Google. Android Studio is built atop JetBrains's IntelliJ, and so its functionality is a superset of IntelliJ. Most anything you can do with IntelliJ, you can also do in Android Studio. Android Studio is revolutionary because it streamlines the Android development process and makes Android development far more accessible than it has previously been. Android Studio is now the official IDE for Android [12], [13].

2.2.3. Panorama

The word “panorama” was coined in the 18th century to denote a new kind of entertainment. Artists and publishers were quick to seize on the popularity of the idea, offering the public “panoramic” scenes on canvas, in prints and in an assortment of formats, many of which are on display in this magnificent show [14].
As shown in Fig. 2-3, a panorama is an unusually wide picture that shows at least as much width-ways as the eye is capable of seeing. The earliest panoramas were made by placing two or more daguerreotype plates side-by-side. In the late nineteenth century, cameras were manufactured specifically for producing panoramas. These cameras were either swing-lens cameras, where the lens rotated while the film remained stationary, or 360-degree rotation cameras, where both the camera and the film rotated.

![Gaza Strip panorama photo](https://billvoelker.wordpress.com/2013/06/10/gaza-paranoma/)

**Figure 2-3: Gaza Strip panorama photo**

*Source: The photo was taken by: Bill Voelker, [https://billvoelker.wordpress.com/2013/06/10/gaza-paranoma/](https://billvoelker.wordpress.com/2013/06/10/gaza-paranoma/)*

The most common techniques in panoramic photography are "scanning" and "fixed lens". With the scanning technique the lens is rotating around its rear nodal point (the optical point from which the focal length is measured) opposite a curved film plane. This method gives a very wide angle of view, similar to that of the fisheye lens, but without the extreme distortion of lines within the image. On the other hand, in a fixed lens panoramic camera, the lens achieves a wide view angle optically [14], [15].
2.2.4. Internet

The Internet has revolutionized the computer and communications world like nothing before. The invention of the telegraph, telephone, radio, and computer set the stage for this unprecedented integration of capabilities. The Internet is at once a worldwide broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location [16].

The Internet represents one of the most successful examples of the benefits of sustained investment and commitment to research and development of information infrastructure. Beginning with the early research in packet switching, the government, industry and academia have been partners in evolving and deploying this exciting new technology. Today, terms like “bleiner@computer.org” and “http://www.acm.org” trip lightly off the tongue of the random person on the street [16], [17].

The origins of the Internet date back to research commissioned by the United States government in the 1960s to build robust, fault-tolerant communication via computer networks. While this work, together with work in the United Kingdom and France, led to important precursor networks, they were not the Internet. There is no consensus on the exact date when the modern Internet came into being, but sometime in the early to mid-1980s is considered reasonable. From that point, the network experienced decades of sustained exponential growth as generations of institutional, personal, and mobile computers were connected to it.
The funding of a new U.S. backbone by the National Science Foundation in the 1980s, as well as private funding for other commercial backbones, led to worldwide participation in the development of new networking technologies, and the merger of many networks. Though the Internet has been widely used by academia since the 1980s, the commercialization of what was by the 1990s an international network resulted in its popularization and incorporation into virtually every aspect of modern human life. As of June 2012, more than 2.4 billion people—over a third of the world’s human population—have used the services of the Internet; approximately 100 times more people than were using it in 1995. Internet use grew rapidly in the West from the mid-1990s to early 2000s and from the late 1990s to present in the developing world. In 1994 only 3% of American classrooms had access to the Internet while by 2002 92% did.

Most traditional communications media including telephone, music, film, and television are being reshaped or redefined by the Internet, giving birth to new services such as voice over Internet Protocol (VoIP) and Internet Protocol television (IPTV). Newspaper, book, and other print publishing are adapting to website technology, or are reshaped into blogging and web feeds. The Internet has enabled and accelerated new forms of human interactions through instant messaging, Internet forums, and social networking. Online shopping has boomed both for major retail outlets and small artisans and traders. Business-to-business and financial services on the Internet affect supply chains across entire industries.

The Internet has no centralized governance in either technological implementation or policies for access and usage; each constituent network sets its own policies. Only the overreaching definitions of the two principal name spaces in the Internet, the Internet Protocol address space and the Domain Name System, are directed by a maintainer.
organization, the Internet Corporation for Assigned Names and Numbers (ICANN). The technical underpinning and standardization of the core protocols (IPv4 and IPv6) is an activity of the Internet Engineering Task Force (IETF), a non-profit organization of loosely affiliated international participants that anyone may associate with by contributing technical expertise [17].

2.3. Usability Evaluation

“The usability considers an important attribute of software quality. It is concerned with making systems easy to learn and easy to use. The term is used to describe the quality of a user’s experience when interacting with a system whether a website, a software application, mobile technology, or any other human operated device. A usable system is one which enables users to perform their job effectively and efficiently” [18].

2.4. User Evaluation

User evaluation conducts to determine user’s perception on the usability aspect of the prototype. Despite user evaluation based on the scores of evaluation instrument, the success results not from high post test scores but from effective behavior [19].

i. Save time: help users to organize their time by setting the time to receive of the request.

ii. Delivery: help users to book and receive meals to home through the Internet.

iii. Reservation: help users to book meals and table in any restaurant through the Internet.
2.5. Summary

This chapter discussed a background of the research that did about mobile web applications are a successful example in restaurant reservation. That has identified the approaches to be used for developing a Mobile web interface to help user to reservation a table in restaurant and delivery service.
Chapter 3:

Research Methodology
Chapter 3: Research Methodology

3.1. Introduction

This chapter describes the methodology, which used in our project and its developed phases.

3.2. Prototype Model

“The Prototyping Model is a systems development method (SDM) in which a prototype (an early approximation of a final system or product) is built, tested, and then reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed. This model works best in scenarios where not all of the project requirements are known in detail ahead of time. An iterative, trial-and-error process takes place between the developers and the users” [20].

The original purpose of a prototype is to allow users of the software to evaluate developers' proposals for the design of the eventual product by actually trying them out, rather than having to interpret and evaluate the design based on descriptions. Prototyping can also be used by end users to describe and prove requirements that developers have not considered, and that can be a key factor in the commercial relationship between developers and their clients. Interaction design in particular makes heavy use of prototyping with that goal.

Using the prototype, the client can get an actual feel of the system. Therefore, this case of model is beneficial in the case when requirements cannot be freeze initially. This prototype is developed based on the currently known requirements. Development of the prototype obviously undergoes design, coding, and testing, but each of these phases is not done very formally or thoroughly. By using this prototype, the client can get an actual feel of the system,
because the interactions with the prototype can enable the client to better understand the requirements of the desired system [20], [21].

- **Advantages of Prototype**
  
i. Provides a working model to the user early in the process, enabling early assessment and increasing user's confidence.

  ii. The developer gains experience and insight by developing a prototype there by resulting in better implementation of requirements.

  iii. The prototyping model serves to clarify requirements, which are not clear, hence reducing ambiguity and improving communication between the developers and users.

  iv. There is a great involvement of users in software development. Hence, the requirements of the users are met to the greatest extent.

  v. Helps in reducing risks associated with the software.

- **Disadvantage of Prototype**

  i. If the user is not satisfied by the developed prototype, then a new prototype is developed. This process goes on until a perfect prototype is developed. Thus, this model is time consuming and expensive.

  ii. The developer loses focus of the real purpose of prototype and hence, may compromise with the quality of the software. For example, developers may use some inefficient algorithms or inappropriate programming languages while developing the prototype.
iii. Prototyping can lead to false expectations. For example, a situation may be created where the user believes that the development of the system is finished when it is not.

iv. The primary goal of prototyping is speedy development, thus, the system design can suffer as it is developed in series without considering integration of all other components.
3.3. Prototype Model Phases

The prototype model includes several phases as shown in Fig. 3-1.

![Diagram of Prototype Model Phases](image)

*Figure 3-1: Phases of the Prototype Model*

3.3.1. Requirements Gathering Phase

A prototyping model begins with requirements analysis and the requirements of the system are defined in detail. The user is interviewed in order to know the requirements of the system.

3.3.2. Quick Design Phase

When requirements are known, a preliminary design or quick design for the system is created. It is not a detailed design and includes only the important aspects of the system, which gives an idea of the system to the user. A quick design helps in developing the prototype.
3.3.3. Build Prototype Phase
Information gathered from quick design is modified to form the first prototype, which represents the working model of the required system.

3.3.4. User evaluation phase
Next, the proposed system is presented to the user for thorough evaluation of the prototype to recognize its strengths and weaknesses such as what is to be added or removed. Comments and suggestions are collected from the users and provided to the developer.

3.3.5. Refining Prototype Phase
Once the user evaluates the prototype and if he is not satisfied, the current prototype is refined according to the requirements. That is, a new prototype is developed with the additional information provided by the user. The new prototype is evaluated just like the previous prototype. This process continues until all the requirements specified by the user are met. Once the user is satisfied with the developed prototype, a final system is developed on the basis of the final prototype.

3.3.6. Design
In the design phase the interface designer formally defines the application and re checks to ensure all bases are covered, we consider all the parameters necessary for building a successful application including design concepts, functionality and timeline. We create static mock ups of most screens for the client before entering the application development phase.

3.3.7. Implementation
Application development phase begins with designing the user Interface (UI) and then coding it in minimum time. The prototypes of the application are subject to client approval.
on a regular basis. Server component must be involved, in parallel engage resources to improve development efficiency. As quality assurance is a critical factor, we deploy several techniques from code level to usability.

3.3.8. Testing
Throughout the whole development phase, the project team follows testing process to check our application’s functionality. They keep in touch with the client during development phase to facilitate monitoring of the project. They have to healthy competition amongst the other terms which strives to achieve quality beyond client requirements.

3.3.9. Maintenance
After the clients and end users approve the final product, it is fully put into operation. The most important procedure by this phase is the maintenance process to ensure the software runs without errors. In addition, we will consider having upgrades and additional feature onto software. If there are new challenges to be tackled by the software, it is advisable to incorporate them at the maintenance phase. Whereas there are so many variable along the software development life cycle, it is, the maintenance phase that ensures the software runs on new operating systems. Just like in other life cycles, software programs get to their final phase where they are overhauled in for our newer products.

3.4. Conclusion
Finally Easy Meal application offer the delivery service and reservation service in the restaurant this application was developed by Android technology using the eclipse program and the web site was developed by Asp.net program language.
REFERENCES


