

**DEVELOPEMENT OF A WEB BASED NEWSPAPER ADVERTISEMENT
MANAGEMENT SYSTEM**

by
Nilufar Yeasmin

POST GRADUATE DIPLOMA IN INFORMATION AND COMMUNICATION
TECHNOLOGY



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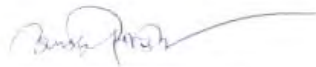
The project report titled "DEVELOPMENT OF A WEB BASED NEWSPAPER ADVERTISEMENT MANAGEMENT SYSTEM" submitted by Nilufar Yeasmin Roll No: 0412311025, Session April 2012, has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Postgraduate Diploma (ICT) held on 31 July, 2018.

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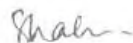
1. Dr. Md. Liakot Ali (Supervisor)
Professor
IICT, BUET, Dhaka

Chairman



2. Dr. Hossen Asiful Mustafa
Assistant Professor
IICT, BUET, Dhaka

Member



3. Dr. Shahin Akhter
Assistant Professor
IICT, BUET, Dhaka

Member

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It is hereby declared that this project report or any part of it has not been submitted elsewhere for the award of any degree or diploma.

Nilufar Yeasmin

Nilufar Yeasmin

Dedicated

To

My Parents and Son

Table of Contents

Title	Page No.
Board of Examiners	i
Candidate's Declaration	ii
Dedication	iii
Table of Contents	iv
List of Tables	viii
List of Figures	ix
List of Abbreviations	x
Acknowledgement	xi
Abstract	xii
Chapter 1 Introduction	1
1.1 Introduction	2
1.2 Objective with Specific Aims and Possible Outcome	2
1.3 Organization of the Project Report	3
Chapter 2 Requirement Analysis and Specification	4
2.1 Introduction	5
2.2 Requirements Gathering and Analysis	5
2.3 Software Requirements and Specification (SRS) Document	6
2.3.1 Functional Requirements	6
2.3.2 Non-Functional Requirements	6
2.3.3 Goals of Implementation	7
2.3.4 Problems without a SRS Document	7
2.3.5 Identification of Functional Requirements	7

2.3.6 Documentation of Functional Requirements	8
2.3.7 Properties of a Good SRS Document	8
2.4 Software System Attributes	9
2.4.1 Reliability	9
2.4.2 Availability	9
2.4.3 Security	9
2.4.4 Maintainability	9
2.4.5 Portability	10
2.5 Software Development Life Cycle (SDLC) Models	10
2.5.1 Waterfall Model	11
2.5.1.1 Advantages	11
2.5.1.2 Disadvantages	11
2.5.2 V-Model	11
2.5.2.1 Advantages of V-Model	12
2.5.2.2 Disadvantages of V-Model	12
2.5.3 Iterative Model	13
2.5.4 Rapid Application Development (RAD) Model	13
2.5.4.1 Advantages and Disadvantages of RAD Model	14
2.6 Summary	15
Chapter 3 Development of a Web Based Newspaper Advertisement Management System	16
3.1 Introduction	17
3.2 Important Features of the Web Based Newspaper Advertisement Management System	17
3.3 Architectural Overview	18
3.4 Required Hardware and Software to Implement the System	20
3.4.1 Hardware	20

3.4.2 Software	20
3.5 Communication Interfaces	22
3.6 Memory Constraints	22
3.7 Site Adoptions	22
3.8 Assumptions and Dependences	22
3.9 Testing	23
3.9.1 Unit Testing	23
3.9.2 Integration Testing	23
3.9.3 System Testing	23
Chapter 4 Results and Discussions	25
4.1 Introduction	26
4.2 Database Design	26
4.3. UML Diagram for a Web Based Newspaper Advertisement Management System	32
4.3.1 Use Case Diagram	32
4.3.1.1 Use Case Diagram of User	32
4.3.1.2 User Case Diagram of Client	33
4.4 System Features	34
4.4.1 Homepage of the System	35
4.4.2 Registration Process	35
4.4.3 Login	36
4.4.4 Main Page	36
4.4.5 Supliment	37
4.4.6 Specific Page	38
4.4.7 Advertisement booking	39
4.4.8 Payment method	40

Chapter 5 Conclusion	41
5.1 Conclusion	42
5.2 Suggestion for Future Work	42

List of Tables

Table No.	Table Caption	Page No.
Table 4.1	users	27
Table 4.2	ad_details	28
Table 4.3	ad_rates	28
Table 4.4	categories	29
Table 4.5	cities	29
Table 4.6	classified_ads	29
Table 4.7	districts	30
Table 4.8	migrations	30
Table 4.9	newspapers	30
Table 4.10	pages	31
Table 4.11	password_resets	31
Table 4.12	rates	32
Table 4.13	spot_ads	
Table 4.14	supplements	

List of Figures

Figure No.	Figure Caption	Page No.
Figure 2.1	Waterfall Model	11
Figure 2.2	V-Model	12
Figure 2.2	Iterative Model	13
Figure 2.3	RAD Model	14
Figure 3.1	Architectural Overview	19
Figure 4.1	Use Case Diagram for User	33
Figure 4.2	Use Case Diagram for Client	33
Figure 4.3	Use Case Diagram for Admin	34
Figure 4.4	Activity Diagram for Registration	35
Figure 4.5	Activity Diagram for Item Select, Bid and Subscribe	36
Figure 4.6	Homepage of the Newspaper Advertisement Management System	37
Figure 4.7	A Snapshot Showing Registration Button and Process	38
Figure 4.8	A Snapshot after the Completion of Successful Registration	38
Figure 4.9	A Snapshot Showing Item Searching in the Newspaper Advertisement Management System	39
Figure 4.10	A Snapshot Showing Item Advertisement	40
Figure 4.11	A Snapshot Showing Item Details	41
Figure 4.13	A Snapshot Showing Subscription for the Expected Item	43

List of Abbreviations

HTTP	HyperText Transport Protocol
PHP	Preprocessor HyperText
XML	Extensible Markup Language
HTML	HyperText Markup Language
ERD	Entity Relationship Diagram
UML	Unified Modeling Language
NAMS	Newspaper Advertisement Management System
SRS	Software Requirements and Specification

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ABSTRACT

With the widespread of Internet technology, the concept of e-marketing gets acceptance and popularity to the people. In this project, development of a web based software for Newspaper Advertisement Management System is presented. It is an efficient way for booking advertisement in a newspaper. It saves our valuable time. The system has many useful features like current price of newspaper advertisement, online payment option, contact information, login, registration, etc. It is also capable of giving payment successful message to its members using Short Message Service (SMS). PHP is used here for implementation and forming the main structure of the system. All transactions of data of the website are maintained in MySQL.

Chapter 1
Introduction

1.1 Introduction

A web application is an application that is accessed via web browser over a network such as the Internet or an intranet [1]. The ability to update and maintain web applications without distributing and installing software on potentially thousands of client computers is a key reason for their popularity [1-2]. There are different types of websites in our country but very few of them are related to Website Ad Booking Management System [3-5]. The existing websites mainly highlights the sales portion whereas rent portion is very limited. On the other hand, the systems have no price bidding facility and the tremendous power of Short Message Service (SMS) technology is not integrated with it. However, sale and Website Ad Booking Management services through websites are very popular in foreign countries. They use those websites to find any goods for sale, buy and other purposes [3]. So a research project can be conducted to develop a web based Newspaper Advertisement Management System which will address all the above mentioned limitations of the existing websites. The proposed system will help to improve the life style of the people and it also has a positive impact on the socio economic condition of the country.

1.2 Objectives with Specific Aims and Possible Outcome

The project has the following objectives:

- ❖ This project has the facilities for the clients to publish the Newspaper Ad.

1.3 Organization of the Project Report

- Chapter 1 describes the overview and objectives of the project.
- Chapter 2 describes about the project requirement and specification. Different types of software development models are also discussed in this chapter.

- Chapter 3 describes the methodology to develop the project. It includes the features of the system, description of the different functional modules and necessary hardware and software to develop the project.
- Chapter 4 describes the results and discussions of the project. It includes database design, UML diagram and different functional features of the project.
- Finally, conclusion and recommendations for future works are included in Chapter 5.

Chapter 2

Requirement Analysis and Specification

Introduction

This chapter describes the literatures that help to understand this project. Main components here include the requirement analysis and specifications to develop a software system, system attributes and different types of software development models.

2.2 Requirements Gathering and Analysis

The goal of the requirements analysis and specification phase for developing a software system is to understand customer's requirements clearly and then, to organize these requirements in a specification document. This phase consists of the following two activities:

- i. Requirements gathering and analysis
- ii. Preparing specifications based on the requirements

The analyst starts requirements gathering and analysis activity by collecting all information from the customers. To obtain a clear and thorough understanding of the software to be developed, with a view to remove all ambiguities and inconsistencies from the initial customer's perception of the problem. The following basic questions pertaining to the project should be clearly understood by the analyst in order to obtain a good grasp of the problem such as

- i. Problem definition
- ii. Importance of the problem
- iii. Possible solutions of the problem
- iv. Inputs and outputs of the software to be developed
- v. Complexities involved in the development of the software
- vi. Protocols and formats for interfacing the software with external environment

After the analyst has understood the exact customer's requirements, he proceeds to identify and resolve the various requirement problems. The most important problems that the analyst has to identify and eliminate are the problems of anomalies, inconsistencies, and incompleteness. When the analyst detects any inconsistencies, anomalies or incompleteness in the gathered requirements, he resolves them by carrying out further discussions with the end-users and the customers.

2.3 Software Requirements and Specification (SRS) Document

The important parts of the SRS document are:

- i. Functional requirements of the system
- ii. Non-functional requirements of the system, and
- iii. Goals of implementation.

2.3.1 Functional Requirements

The part related to functional requirements discusses the functionalities required in the system. Here we list all high-level functions that the system should perform. Each high-level function is considered as a transformation of a set of input data to some corresponding output data. The user can get some meaningful piece of work done using a high-level function.

2.3.2 Non-Functional Requirements

Non-functional requirements deal with the characteristics of the system which cannot be expressed as functions - such as the maintainability of the system, portability of the system, usability of the system, etc.

Non-functional requirements may include:

- i. Reliability issues,
- ii. Accuracy of results,
- iii. Human-computer interface issues,
- iv. Constraints on the system implementation, etc.

2.3.3 Goals of Implementation

The goals of implementation are general suggestions regarding the development. These suggestions guide trade-off among design goals. The goals of implementation section include issues such as revisions to the system functionalities that may be required in future, new devices to be supported in future, reusability issues, etc. These are the items which the developers might keep in their mind during development so that the developed system may meet some aspects that are not required immediately.

2.3.4 Problems without an SRS Document

The important problems that an organization would face if it does not develop an SRS document are as follows:

- i. Without developing the SRS document, the system would not be implemented according to the customer's needs.
- ii. Software developers would not know whether what they are developing is what exactly is required by the customer.
- iii. Without SRS document, it will be very difficult for the maintenance engineers to understand the functionality of the system.
- iv. It will be very difficult for user document writers to write the users' manuals properly without understanding the SRS document.

2.3.5 Identification of Functional Requirements

The high-level functional requirements often need to be identified either from an informal problem description document or from a conceptual understanding of the problem. Each high-level requirement characterizes the usage of the system by some users to perform some meaningful piece of work. There can be many types of users of a system and their requirements in the system may be very different. So, it is often useful to identify the different types of users who might use the system and then to identify the requirements from each user's perspective.

2.3.6 Documentation of Functional Requirements

For documenting the functional requirements, we need to specify a set of functionalities supported by the system. A function can be specified by identifying the state at which the data is to be input to the system, its input data domain, the output data domain, and the type of processing to be carried on the input data to obtain the output data.

2.3.7 Properties of a Good SRS Document

The important properties of a good SRS document are the followings:

Concise: The SRS document should be concise and at the same time unambiguous, consistent, and complete. Verbose and irrelevant descriptions reduce readability and also increase error possibilities.

Structured: It should be well-structured. A well-structured document is easy to understand and modify. In practice, the SRS document undergoes several revisions to cope up with the customer's requirements. Often, the customer's requirements evolve over a period of time. Therefore, in order to make the modifications to the SRS document easy, it is important to make the document well-structured.

Conceptual integrity: It should show conceptual integrity so that the reader can easily understand it.

Response to undesired events: It should characterize acceptable responses to undesired events. These are called system response to exceptional conditions.

Verifiable: All requirements of the system as documented in the SRS document should be verifiable. This means that it should be possible to determine whether or not requirements have been met in an implementation.

2.4 Software System Attributes

2.4.1 Reliability

It is an important attributes for any system. The number of defects should not exceed 10 per function. Before the release of the final version, the system must be tested in case of the defects over 10 per function.

2.4.2 Availability

The availability of this software depends on the internet connection of the client. Since this is client-server related website, website shall be attainable all the time. User should have an account to enter the system, if user does not have an account; for the availability of this software user should sign up to the system by clicking the sign up link from the home page.

2.4.3 Security

The authorization mechanism of the system will block any unwanted attempts to the server and also let the system decide on which privileges may the user have. The system has different types of users so there are different levels of authorization. There will be also a firewall installed on the server so the incoming transactions can be filtered. Data integrity for critical variables will also be checked.

2.4.4 Maintainability

Maintainability is the ease with which a product can be maintained in order to (i) isolate defects or their cause, (ii) correct defects or their cause, (iii) meet new requirements, (iv) make future maintenance easier, or (v) cope with a changed environment.

In some cases, maintainability involves a system of continuous improvement learning from the past in order to improve the ability to maintain systems, or improve reliability of systems based on maintenance experience.

2.4.5 Portability

This software is an online service. So, anyone can use the service. One and only the server of the system must have the required software including MySQL, Apache.

2.5 Software Development Life Cycle (SDLC) Models

There are various SDLC models defined and designed which are used or employed during development process of software; these approaches are also referred as "Software Development Process Models". Each process model follows a particular life cycle in order to ensure success in the process of software development. Some important SDLC models are described below.

2.5.1 Waterfall Model

Waterfall approach was the first process model to be introduced and followed widely in Software Engineering to ensure success of the project. Figure 2.1 shows different steps of this model.

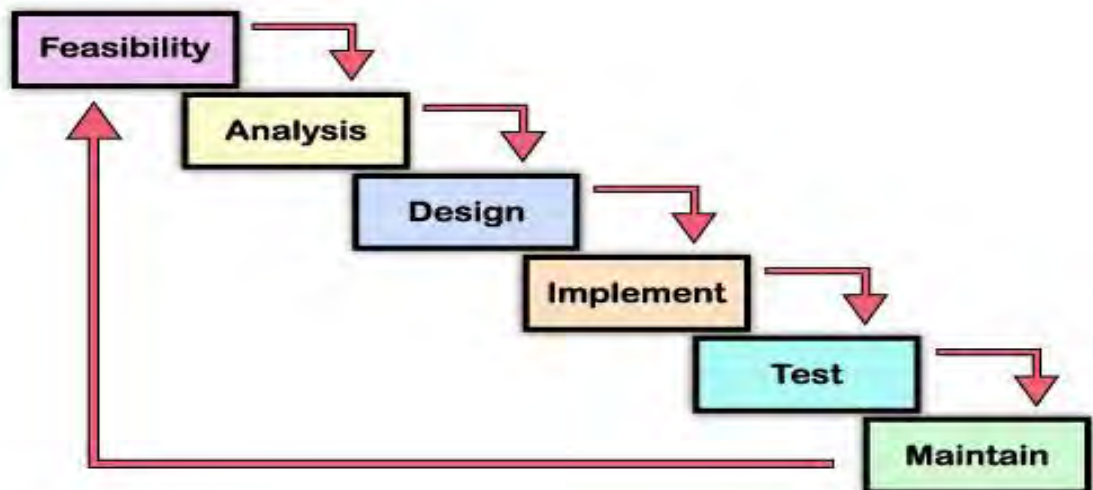


Figure 2.1: Waterfall Model

In "The Waterfall" approach, the whole process of software development is divided into separate process phases. The phases in Waterfall model are: Requirement Specifications phase, Software Design, Implementation, Testing and Maintenance. All these phases are cascaded to each other so that second phase is started as and when defined set of goals are achieved for first phase and it is signed off, so the name "Waterfall Model".

2.5.1.1 Advantages

The advantage of waterfall development is that it allows for departmentalization and has good managerial control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process like a car in a carwash, and theoretically, be delivered on time. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up with operation and maintenance. Each phase of development proceeds in strict order, without any overlapping or iterative steps.

2.5.1.2 Disadvantages

The disadvantage of waterfall development is that it does not allow for much reflection or revision. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage.

2.5.2 V-Model

The V-model is a software development model which is considered as the extension of the waterfall model. Instead of moving down in a linear way, the process steps are bent upwards after the coding phase, to form the typical V shape. Figure 2.2 demonstrates the relationships between each phase of the development life cycle and its associated phase of testing.

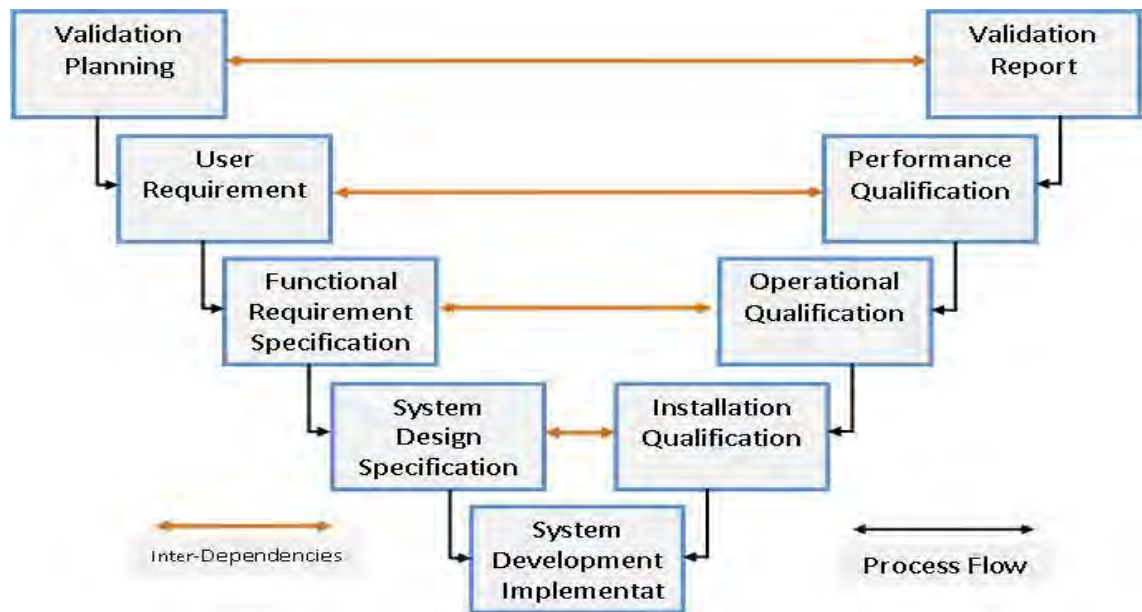


Figure 2.2: V-Model

2.5.2.1 Advantages of V-Model

The main advantages of V-Model are

- i. Proactive defect tracking i.e defects are found at early stages even may be in the development phase before application is tested.
- ii. It avoids the downward flow of the defect
- iii. It reduces the cost for fixing the defect since defects will be found in early stages
- iv. It is a fast method

2.5.2.2 Disadvantages of V-Model

It has the following disadvantages

- i. It requires more people to work
- ii. It needs an established process to implement.

2.5.3 Iterative Model

An iterative lifecycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which can then be reviewed in order to identify further requirements. This process is then repeated, producing a new version of the software for each cycle of the model. Figure 2.3 shows an iterative lifecycle model which consists of repeating the following four phases in sequence:

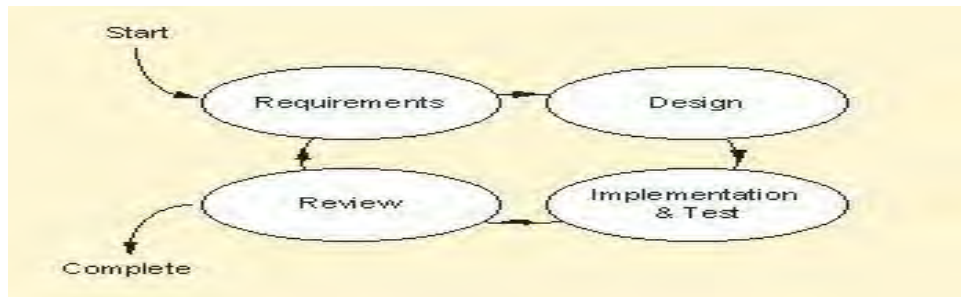


Figure 2.3: Iterative Model

In the requirements phase, requirements for the software are gathered and analyzed. Iteration should eventually result in a requirements phase that produces a complete and final specification of requirements. In the design phase, software solution to meet the requirements is designed. This may be a new design, or an extension of an earlier design. In the implementation and test phase, the software is coded, integrated and tested. In the review phase, the software is evaluated, the current requirements are reviewed, and changes and additions to requirements are proposed. For each cycle of the model, a decision has to be made as to whether the software produced by the cycle will be discarded, or kept as a starting point for the next cycle.

2.5.4 Rapid Application Development (RAD) Model

RAD is a concept that products can be developed faster and of higher quality through

- i. Gathering requirements using workshops or focus groups
- ii. Its prototyping is very easy and user testing of design is re-iterative.
- iii. The re-use of software components

Figure 2.4 shows the steps of the RAD model

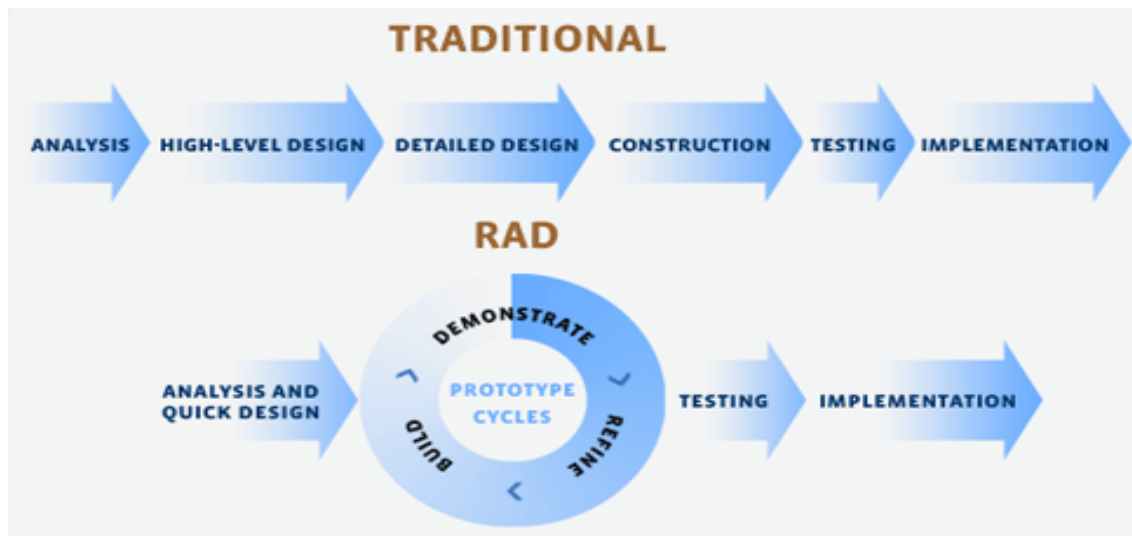


Figure 2.4: RAD Model

Some companies offer products that provide some or all of the tools for RAD software development. The concept can be applied to hardware development as well. These products include requirements gathering tools, prototyping tools, computer-aided software engineering tools, language development environments such as those for the Java platform, groupware for communication among development members, and testing tools. RAD usually embraces object oriented programming methodology, which inherently fosters software re-use. The most popular object-oriented programming languages, C++ and Java, are offered in visual programming packages.

2.5.4.1 Advantages and Disadvantages of RAD Model

RAD reduces the development time and reusability of components help to speed up the development. All functions are modularized. So, it is easy to work with. For large projects RAD requires highly skilled engineers in the team. Both end customers and developer should be committed to complete the system in a much abbreviated time frame. If commitment is lack, RAD will fail. RAD is based on Object Oriented approach and if it is difficult to modularize the project the RAD may not work well.

2.6 Summary

The techniques discussed in this chapter for requirement gathering can be used to develop a software system systematically. Among the SDLC models, it is found that V-model has a tot of advantages in developing software system.

Chapter 3

Development of a Web Based Newspaper Advertisement Management System

3.1 Introduction:

This chapter describes the methodology to develop the proposed Development of Online Newspaper Advertisement Management System software in the project. To develop the system, existing similar systems have been reviewed and figured out the limitations. Then the main features of the system have been determined. The V-model has been chosen to implement the system due to its a number of nice features as mentioned earlier. The following sections present the main features, architecture of the system and necessary hardware and software to implement the system.

3.2 Important Features of the Development of a Web Based Newspaper Advertisement Management System

Login to the System: A person will be able to login or perform registration to the system through the first page of the application by using a mobile number. He will also be able to change the password or pin code after logging or registration into the system, create a new login or registration for accessing the price bidding facility, create a new login or registration for accessing the subscription facility.

SMS Facility: A SMS will be sent to the concerned person/user to provide the information related to the published items in the system. The login or registration Id (mobile number) and password will be sent to the details mobile number while a new account is created. The user will be able to browse his desired items with ease and comfort. The user will be able to see the bid details in the website. He will be able to view short details of the items by just a click. The system will display only available items in the website. The system will provide subscription confirmation to the customers through SMS. In addition, it will also provide some relevant information including price, payment schedule and important and announcements.

3.3 Architectural Overview

Figure 3.1 shows the architectural overview or functional block diagram of the proposed Online Newspaper Advertisement Management System. The fundamental requirement of the

project is a web server with built in Apache, MySQL and PHP. It has two parts: One is the server system and the other one is client site. The client access the Online Newspaper Advertisement Management System software which is in server system through the internet. The operation of both systems is described below:

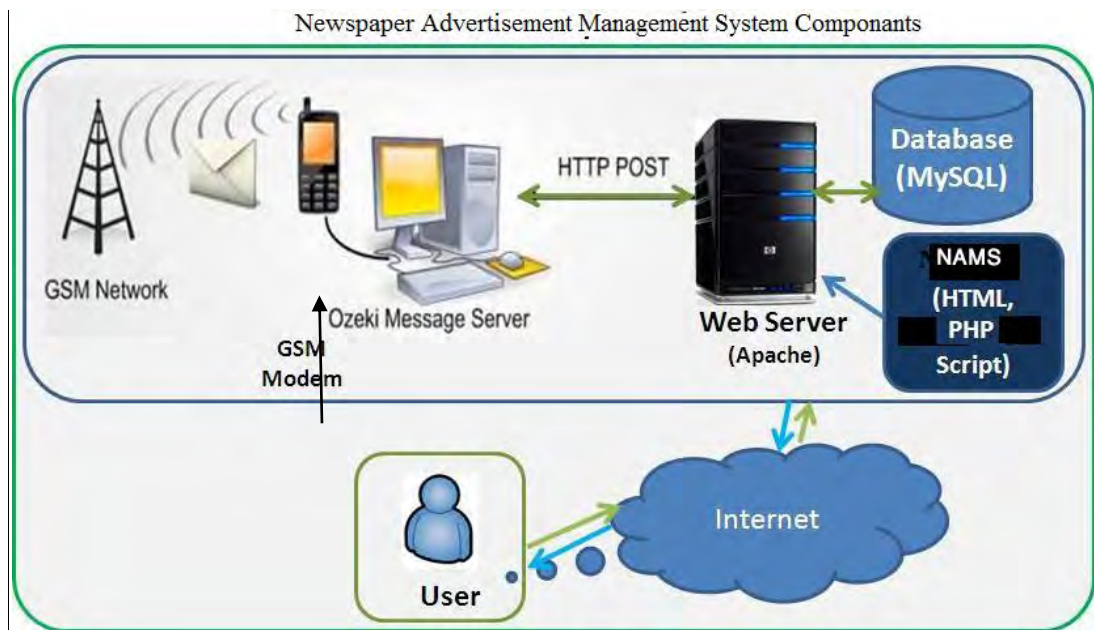


Figure 3.1: Architectural Overview

The Server System: Almost all of the works of web application take place on the server. A specific application, named as web server, is responsible for communicating with the browser. Web server contains the proposed Online Newspaper Advertisement Management System software and a database. The Online Newspaper Advertisement Management System is developed with HTML, PHP and Java Script Code.

The Online Newspaper Advertisement Management System software is connected with a database through an application server which runs in the web server. The application server is also called middleware. It provides the requested resources on the web server. It works closely with the web server to interpret the request made by the client through the internet process. This request interacts with other program on the server to fulfill the request and enable the web server for exactly what to serve for the clients.

SMS Server:

A computer has been configured as a SMS server using the third party **OnnoRokom SMS Service** software. To activate the **OnnoRokom SMS Service** software, the GSM modem is essential. GSM modem is connected with the SMS server. SMS server is connected with the web server through HTTP port. The client sends a request for registration with this system by key-in the client's mobile number. The application server received the request and sends it to the SMS server for further process. After processing, it stored in the database. PHP script is allowed to run in the application server that find the database to process the client's information for further processing and it is stored in the database. The SMS server retrieves the data from the database and sends the registration code to the client's mobile number through SMS.

The User System: The user needs a computer or a mobile phone to access the Online Newspaper Advertisement Management System software through the internet. User can advertise his Ad through the website.

3.4 Required Hardware and Software to Implement the System

3.4.1 Hardware

Online Newspaper Advertisement Management System is implemented in a server computer. The server computer must have a minimum 2.4 GHz processor clock speed, 512 MB RAM, 80 GB Free hard disk drive. A GSM mobile system and some other supported devices are also required. A web server is configured in the server computer. A database server and OnnoRokom SMS Service Gateway software are also configured in the server computer. In the client side, the user needs a computer or mobile with internet connection that supports a browser to access the system.

3.4.2 Software

1. Name: Microsoft Internet Explorer

Version number: 6 or later

Source: Microsoft Corporation

Purpose: The web browser as mentioned above is required as the container of the client software at the client site.

Definition of the Interface: Microsoft Internet Explorer is the software which provides a flexible and reliable browsing experience with enhanced Web privacy features for all users.

2. Name: Apache HTTP Server

Source: The Apache Software Foundation

Purpose: In order to execute the client site of this software, the web server as mentioned earlier is required as the provider of the client software at the server site.

Definition of the Interface: Apache HTTP Server is for developing and maintaining an open-source HTTP server that supports for modern operating systems including UNIX and Windows XP. The goal is to provide a secure, efficient and extensible server that provides HTTP services in synchronous with the current HTTP standards.

3. Name: PHP

Version number: 5.5 or heigher

Source: PHP Group.

Purpose: It is used for building web pages which work with MySQL database and Apache server.

Definition of the Interface: PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML.

4. Name: Macromedia Dreamweaver

Version number: CS6

Source: Macromedia Inc.

Purpose: The web development tool as mentioned above is required for designing and coding the project.

Definition of the Interface: Macromedia Dreamweaver is the industry-leading web development tool, enabling users to efficiently design, develop and maintain standard websites and applications.

5. Name: MySQL

Version number: 5.5.52

Source: MySQL.

Purpose: It is required as database server.

Definition of the Interface: MySQL is the world's most popular open source database software, with over 100 million copies of its software downloaded or distributed throughout its history. With superior speed, reliability, and ease of use, MySQL has become the preferred choice of corporate IT Managers because it eliminates the major problems associated with downtime, maintenance, administration and support.

7. Name: OnnoRokom SMS Gateway

Version Number: 2.2

Source: <https://onnorokomsms.com/>

Purpose: It is used to manage the SMS server with database. It controls sending operation of SMS and then updates the database.

3.5 Communication Interfaces

The default communication protocol for data transmission between server and the client is Transmission Control Protocol/ Internet Protocol (TCP/IP). At the upper level Hyper Text Transfer Protocol (HTTP, default port=80, default of apache port=8080) will be used for communication between the web server and client.

3.6 Memory Constraints

Only the web server has the storage memory and the database storage technology.

3.7 Site Adoptions

The Server is required to operate PHP scripts, Apache Web server 2.0.5.5 with PHP 5.2.6

3.8 Assumptions and Dependences

The user must have the ability to connect and use the internet and mobile.

TCP/IP protocol must be installed to communicate through HTTP messages.

The accuracy of the information of users is the responsibility of all users.

3.9 Testing

3.9.1 Unit Testing

Unit testing is a method by which individual units of source code are tested to ensure the proper functionality. A unit is the smallest testable part of an application. Unit test is implemented in the every part of the system. The different module like MSM module, item search, online bidding, admin panel, Subscription module and the registration process of the system are tested several times. The purpose is to verify the internal logic code by testing every possible branch within the function, also known as test coverage. Static analysis tools are used to facilitate in this process, where variations of input data are passed to the function to test every possible case of execution.

3.9.2 Integration Testing

In integration testing of the Online Newspaper Advertisement Management System, the separate modules are tested together to expose faults in the interface and in the interaction between integrated components. Testing is usually black box testing as the code is not directly checked for errors.

3.9.3 System Testing

At the end, a test runs of the Online Newspaper Advertisement Management System is arranged in the dummy website. The system functions well and the website will be launched for public use very soon. System testing will compare the system specifications against the actual system. After the integration test is completed, the next test level is the system test. System testing checks are arranged after the integrated product meets the specified requirements.

Chapter 4

Results and Discussions

4.1 Introduction

This chapter presents the results achieved from the project work. It describes different tables used to develop the system and the UML diagram of the project. Lastly, a number of snapshots resulted from the functional operation of the proposed system are also presented.

4.2 Database Design

Database design is a process of modeling an enterprise in the real world. In fact, a database itself is a model of the real world that contains selected information needed by the enterprise. Different tables used in the database of the project are described below:

1. **users:** Table 4.1 is regarding register user who can browse all advertisement and book any Ad. It contains the id of the user which is unique or primary key. It also contains the user name, email, phone no, password, remember_token, created_at, updated_at, stripe_active, stripe_id, stripe_subscription, stripe_plan, last_four, trial_ends_at, subscription_ends_at, card_brand, card_last_four.
2. **categories:** Table 4.2 stores the categories of advertisement. This table also contains Ad id, type, name, description, created_at, updated_at.
3. **newspapers:** Table 4.3 is used to store the newspaper id, name, fixed_rate, etc.
4. **supplements:** Table 4.4 is used to store the supplement id, newspaper_id, name, etc.
5. **pages:** Table 4.5 is used to store the id, with the relation of newspaper_id, title, section_id, page_category unit, fixed_rate, etc.
6. **spot_ads:** Table 4.6 is used to store the id, with the relation of newspaper_id, page_title, rate, etc.
7. **classified_ads:** Table 4.7 is used to store the id, with the relation of newspaper_id, rate, etc.

8. **ad_details:** Table 4.8 is used to store the id, with the relation of newspaper_id, with the relation of page_id, with the relation of ad_category_id, with the relation of display_category_id, ad, payment_method, total_price, ad_file, etc.

9. **ad_rates:** Table 4.9 is used to store the id, with the relation of newspaper_id, page_title, rate, spot, etc

10. **password_reset:** Table 4.10 is used to store name, email, token, etc.

11. **cities:** Table 4.11 is used to store id, name, created_at, etc.

12. **rates:** Table 4.12 is used to store the id, with the relation of newspaper_id, with the relation of page_id, ad_category, display_category, fixed_rate, first_page, last_page, rate_from_first_page, rate_from_last_page, etc.

Table 4.1: users

Field	Type	Description
id	int(10)	This is the primary key of this table that contains the user id.
name	varchar(255)	Contains user name.
email	varchar(255)	Contains user email id.
phone_number	varchar(50)	Contains user phone no.
password	varchar(60)	User's password
remember_token	varchar(100)	Contains user token no.
created_at	timestamp	Date and time when user registered.
updated_at	timestamp	Date and time when user update his account
stripe_active	tinyint(4)	
stripe_id	varchar(255)	Payment id
stripe_subscription	varchar(255)	Detailed description of the stripe payment
stripe_plan	varchar(100)	
last_four	varchar(4)	Last four digit of card
trial_ends_at	timestamp	
subscription_ends_at	timestamp	
card_brand	varchar(200)	Visa or master card
card_last_four	varchar(100)	Last four digit of card

Table 4.2: categories

Field	Type	Description
id	int(10)	Primary key for ad category
type	enum('ad_category', 'display_category')	Type of advertisement.
name	char(30)	Category name.
description	Text	Category description
created_at	timestamp	Date and Time when a category created.
updated_at	timestamp	Date and Time when a category updated.

Table 4.3: newspapers

Field	Type	Description
id	int(10)	Newspaper id
name	varchar(255)	Newspaper name where we want to book advertisement.
fixed_rate	Double(8,2)	Rate of newspaper ad
created_at	timestamp	Date and Time when a newspaper created.
updated_at	timestamp	Date and Time when a newspaper updated.

Table 4.4: supplements

Field	Type	Description
id	int(11)	Primary key for supplements
newspaper_id	int(11)	Foreign key for table 4.3
name	varchar(100)	Supplement name
created_at	timestamp	Date and Time when a supplements created.
updated_at	timestamp	Date and Time when a supplements updated.

Table 4.5: pages

Field	Type	Description
id	int(11)	Primary key for pages
newspaper_id	int(11)	Foreign key for table 4.3
title	varchar(255)	Title of Pages.
section_id	int(11)	Main Paper, Supplement
page_category	enum('1', '2', '3', '')	Special, Spot, Text Classified
unit	tinyint(30)	Minimum Per Inch per Column
fixed_rate	Double(8,2)	Price of per inch per column
created_at	timestamp	Date and Time for pages created
updated_at	timestamp	Date and Time for pages updated

Table 4.6: spot_ads

Field	Type	Description
id	int(11)	Primary key of this table
newspaper_id	int(11)	Foreign key for table 4.3
page_title	varchar(100)	Spot Ad page title
rate	float	Rate of each spot page
created_at	timestamp	Date and Time for Spot Ad page create
updated_at	timestamp	Date and Time for Spot Ad page

Table 4.7: classified_ads

Field	Type	Description
id	int(11)	Primary key of this table
newspaper_id	int(11)	Foreign key for table 4.3
rate	float	Rate of each Classified page
created_at	timestamp	Date and Time for Classified Ad page create
updated_at	timestamp	Date and Time for Classified Ad page update

Table 4.8: ad_details

Field	Type	Description
id	int(10)	Primary key of this table
newspaper_id	int(10)	Foreign key for table 4.3
page_id	int(10)	Foreign key for table 4.5
ad_category_id	int(10)	Foreign key for table 4.2
display_category_id	int(10)	Foreign key for table 4.2(display category id-3)
ad	text	Ad details from client
publish_at	Datetime	Date of Ad publish for newspaper
withdraw_at	Datetime	
payment_method	Int(10)	Payment method Strip(id-1)
total_price	Int(10)	Calculated price for registered user
ad_file	Varchar(100)	Word file which user upload for advertisement booking
created_at	Datetime	Date and Time when user booked advertisement at
updated_at	Datetime	Date and Time when user updated already booking advertisement

Table 4.9: ad_rates

Field	Type	Description
id	smallint(6)	Primary key of this table
newspaper_id	smallint(6)	Foreign key for table 4.3
page_title	varchar(100)	Page Title of main newspaper
color	bit(1)	
rate	float	Price of Main Paper page per inch column
spot	float	
created_at	Datetime	Date and Time when advertisement rate created
updated_at	Datetime	Date and Time when advertisement rate updated

Table 4.10: rates

Field	Type	Description
id	int(10)	Primary key of this table
newspaper_id	int(10)	Foreign key for table 4.3
page_id	int(10)	Foreign key for table 4.5
ad_category	int(10)	Category of advertisement
display_category	int(10)	Category of advertisement
fixed_rate	double(8,2)	Fixed rate of advertisement
first_page	double(8,2)	First page of newspaper
last_page	double(8,2)	Last page of newspaper
rate_from_first_page	double(8,2)	Rate of first page of newspaper
rate_from_last_page	double(8,2)	Rate of last page of newspaper
created_at	timestamp	Date and Time when rates created
updated_at	timestamp	Date and Time when rates updated

4.3 UML Diagram for Web Based Newspaper Advertisement Management System

The Unified Modeling Language (UML) is a standard language for specifying, visualizing, constructing, and documenting the artifacts of software systems, as well as for business modeling and other non-software systems. The UML represents a collection of best engineering practices that have proven successful in the modeling of large and complex systems. The components of UML diagram are described below:

4.3.1 Use Case Diagram

A use case is a set of scenarios that describe an interaction between a user and a system. A use case diagram displays the relationship among actors and use cases. The two main components of a use case diagram are use cases and actors.

An actor is represents a user or another system that will interact with the system you are modeling. A use case an external view of the system that represents some action the user might perform in order to complete a task. Figures 4.1 and 4.2 show the use cases for the user.

4.3.1.1 Use Case Diagram of User

Figure 4.1 shows the use case diagram for user. User can search items, select items and view the detailed information of the items.

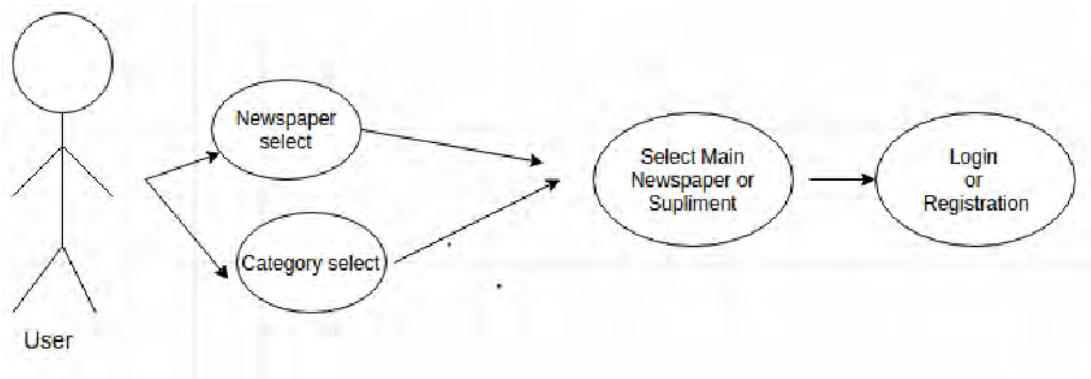


Figure 4.1: Use Case Diagram for User

4.3.1.2 Use Case Diagram of Client

Figure 4.2 shows the use case diagram for user. User can login their account to book the information of their advertisement, compose and pay for Ad. User can also logout from the account.

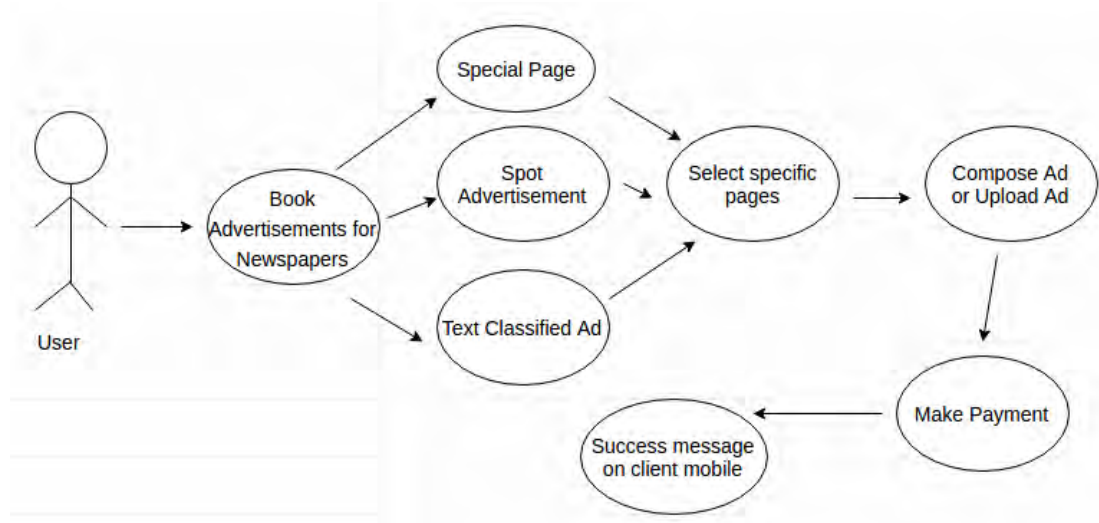


Figure 4.2: Use Case Diagram for Book Advertisements for Newspapers

4.4 System Features

Newspaper Advertisement Management System is developed with all the essential features. The programming code for different pages or module is provided in Appendix. Snapshot of some of the main features are shown below.

4.4.1 Homepage of the System

Figure 4.6 shows the homepage of the Newspaper Advertisement Management System. Homepage of the system contains two parts: (i) Main Newspaper (ii) Supplement. It shows the different menus of the system such as View Rates and Offers, Home button, Log-in option, Registration button, About Us button, contact us button. Some of the links are also shown in this page. The subscription part becomes active after log-in to this system. The homepage also shows the current date and time. Any user can access the system. A registered user can enjoy all the facilities of the Newspaper Advertisement Management System while a non-registered user can access the Newspaper Advertisement Management System and view rates and details.



Figure 4.6: Homepage of the Newspaper Advertisement Management System

4.4.2 Registration Process

The clients or the users who want to get the full access like see the advertisement of newspaper, book the advertisement of the newspaper, he needs registration in the system. To register in this system, the user needs to provide his mobile number. When the registration button is clicked, the registration window will be in new tab and asks to put the name, mobile number, email address, password, password confirmation as shown in Figure 4.7. Then the registration is successfully completed and the user gets the full access of the system. The email id will be the Login id and password will be considered as the password for further Log-in into the system.

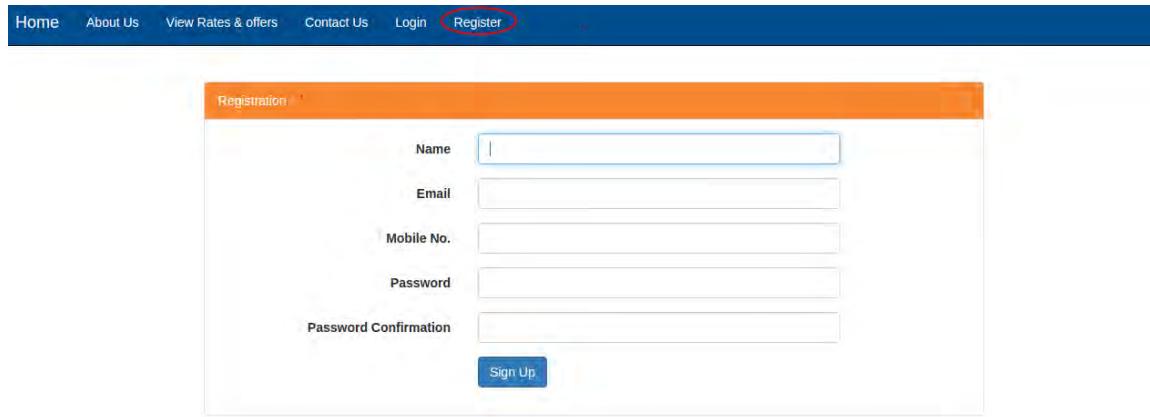


Figure 4.7: A snapshot showing registration button and process

4.4.3 Login

User can book advertisement about his expected. For browse and book the advertisement in the main newspaper and supplement, he gets a window that contains the login box. For login he needs email id and password. After login, he can browse the main and supplement advertisement and book their advertisement by online payment system and will get a successfully payment message in his mobile.

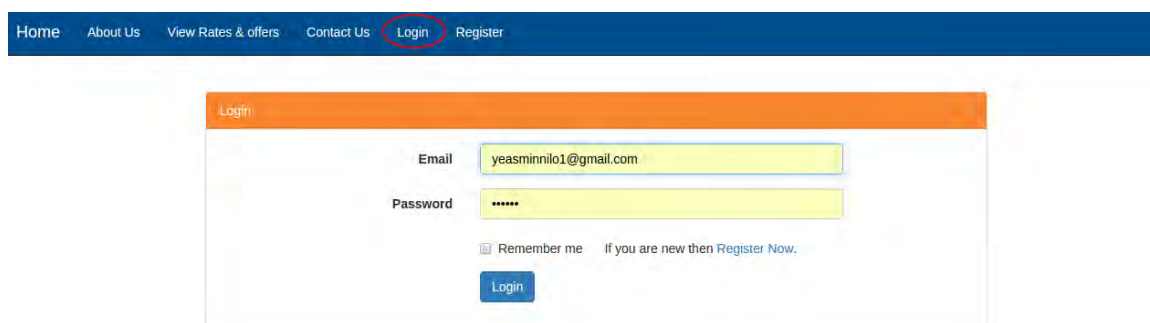


Figure 4.9: A snapshot showing Login

4.4.4 Main page

The client who wants to advertise their Ad must need to make registration first. The existing user must log-in in the system and then select the main or supplement newspaper, select the specific page where he wants to give advertisement, and the compose the ad or upload their ad and finally select payment system which he wants to pay. Figure 4.10 shows the snapshot.

Book Advertisements for Newspapers Instantly!

<p>WANTED BRIDES NRI Divorcee, 55, Hindu, Young & Good Looking, Slim Build, Well Settled Businessman, Planning to settle in India. Internationally Travelled. Caste no Bar. Photo (a.rubmanar@btinternet.com)</p> <p>BUSINESS PROPOSAL AUTO parts export mfg facility, a rec export house, is looking for take-over, merger etc! scale of operations. If parties should buy immediately. Send Prop aggr@2009@gmail.com</p> <p>EDUCATION BRILLIANT Provides 100% Guaranteed Home Tutors. Any Class/Subject/Level/ESS/CHS/IB/IGCSE/IT/RE/MS-CET -26108293</p> <p>ACCOMMODATION CHENNAI Book Now</p> <p>Special Pages are:</p> <ul style="list-style-type: none"> Economical, Charges per line/word Ad appearing in simple running text Enhance with Tick, Border & Bold <p>Book Special Page</p>	<p>WANTED BRIDES NRI Divorcee, 55, Hindu, Young & Good Looking, Slim Build, Well Settled Businessman, Planning to settle in India. Internationally Travelled. Caste no Bar. Photo (a.rubmanar@btinternet.com)</p> <p>BUSINESS PROPOSAL AUTO parts export mfg facility, a rec export house, is looking for take-over, merger etc! scale of operations. If parties should buy immediately. Send Prop aggr@2009@gmail.com</p> <p>EDUCATION BRILLIANT Provides 100% Guaranteed Home Tutors. Any Class/Subject/Level/ESS/CHS/IB/IGCSE/IT/RE/MS-CET -26108293</p> <p>ACCOMMODATION CHENNAI Book Now</p> <p>Spot Advertisements are:</p> <ul style="list-style-type: none"> Expensive (Rs.10,000+). Used by Businesses for Large Advertising Spends Customize Ad Width, Height & Page Choice Ad appears beside editorial content <p>Book Spot Advertisement</p>	<p>WANTED BRIDES NRI Divorcee, 55, Hindu, Young & Good Looking, Slim Build, Well Settled Businessman, Planning to settle in India. Internationally Travelled. Caste no Bar. Photo (a.rubmanar@btinternet.com)</p> <p>BUSINESS PROPOSAL AUTO parts export mfg facility, a rec export house, is looking for take-over, merger etc! scale of operations. If parties should buy immediately. Send Prop aggr@2009@gmail.com</p> <p>EDUCATION BRILLIANT Provides 100% Guaranteed Home Tutors. Any Class/Subject/Level/ESS/CHS/IB/IGCSE/IT/RE/MS-CET -26108293</p> <p>ACCOMMODATION CHENNAI Book Now</p> <p>Text Classified Ads are:</p> <ul style="list-style-type: none"> More Visible & Expensive Use images/logos + formatting Rate charged on per sq.cm basis <p>Book Text Classified Ad</p>
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Figure 4.10: A snapshot showing newspaper advertisement in different types.

4.4.5 Supplement

A newspaper supplement, often a weekly section of its parent, usually has a tabloid or Sunday magazine format and covers wide-ranging and less time-critical subjects. User can easily select any supplement and then he can see its short summery. By clicking any pages the user can see the details of the page with booking page. Figure 4.11 shows the page details snapshot.

Home About Us View Rates & offers Contact Us Logout

Select Supplement

<p>অধুনা:</p> <p>Front Page Per Inch-Column (Color)-6,500/-</p> <p>Back Page Per Inch-Column (Color)-5, 000/-</p> <p>Inner Page Per Inch-Column (Color)-3,500/- Book ছুটির দিনে</p>	<p>আনন্দ:</p> <p>Front Page Per Inch-Column (Color)-6,500/-</p> <p>Back Page Per Inch-Column (Color)-5, 000/-</p> <p>Inner Page Per Inch-Column (Color)-3,500/- Book ছুটির দিনে</p>	<p>গোলাছুট:</p> <p>Gollachut Page Per Inch-Column (Color)-5,000/- Book ছুটির দিনে</p>	<p>চাকরি বাকরী:</p> <p>Front Page Per Inch-Column (Color)-6,500/-</p> <p>Back Page Per Inch-Column (Color)-5, 000/-</p> <p>Inner Page Per Inch-Column (Color)-4,500/-</p> <p>Inner Page Per Inch-Column (B&W)- 4,000/- Book ছুটির দিনে</p>
<p>ছুটির দিনে:</p> <p>Front Page(Per Inch Column - Color) - Tk. 6500 /=-</p> <p>Back Page(Per Inch Column - Color) - Tk. 5000 /=-</p> <p>Inner Page(Per Inch Column - Color) - Tk. 3500 /=-</p>	<p>নকশা:</p> <p>Front Page Per Inch-Column (Color)-12,000/-</p> <p>Back Page Per Inch-Column (Color)-11, 000/-</p> <p>Third Page Per Inch-Column (Color)-10,000/-</p>	<p>বন্ধুসভা:</p> <p>Bandhushava Per Inch-Column (Color) Tk.3500/- Book ছুটির দিনে</p>	<p>বিশেষ সংখ্যা:</p> <p>Front Page Per Inch-Column (Color)-10,000/-</p> <p>Back Page Per Inch-Column (Color)-8, 000/-</p> <p>Inner Page Per Inch-Column (Color)-6,000/-</p>

Figure 4.11: A snapshot showing item details

4.4.6 Specific Page

Only registered user can use this facility. The user selects an page then he can go to the

booking page. He also can see the price of the pages. Figure 4.12 shows the snapshot for specific pages of the main pages.

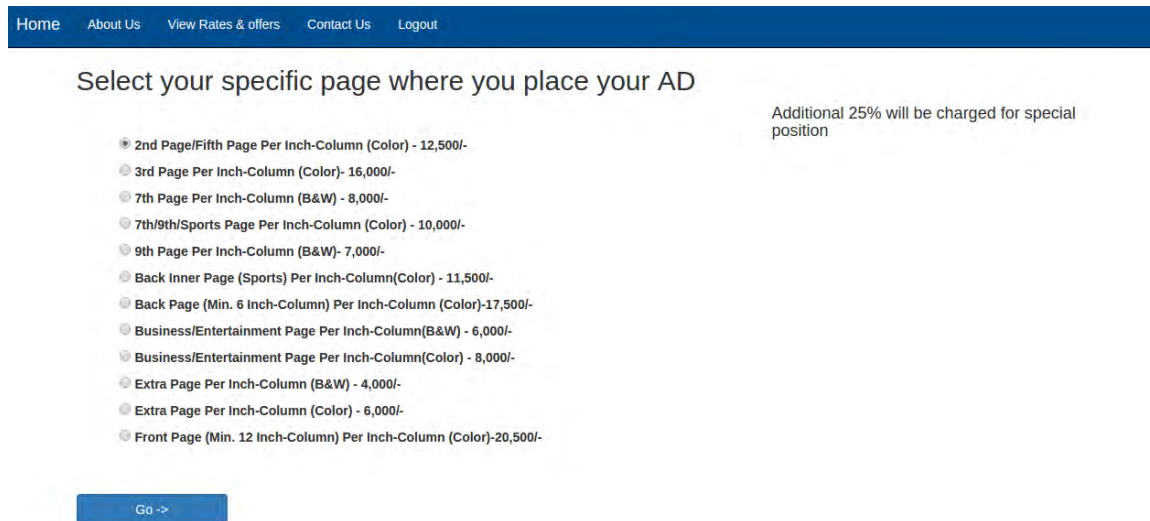


Figure 4.12: A snapshot showing for specific pages of the main pages

4.4.7 Advertisement booking

This facility can be enjoyed by the registered users only. If a user needs book an ad, he can go to the homepage of the Newspaper Advertisement Management System. Then, he select the main page or supplement. If he select main page, then select specific page with price. Then compose ad or upload ad. Then, go the payment system and select specific payment method which he wants to pay and give the curd number and date. Once payment is complete, he will get a success message through SMS. Figure 4.13 presents a snapshot showing the compose Ad of the system for booking a Ad through the Newspaper Advertisement Management System.

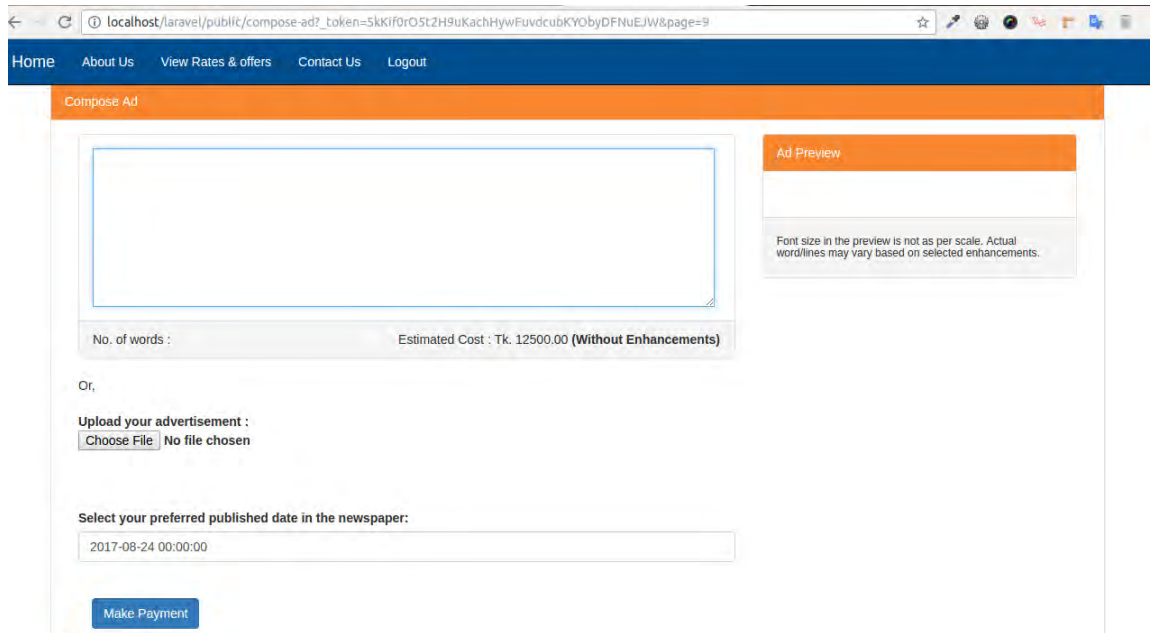
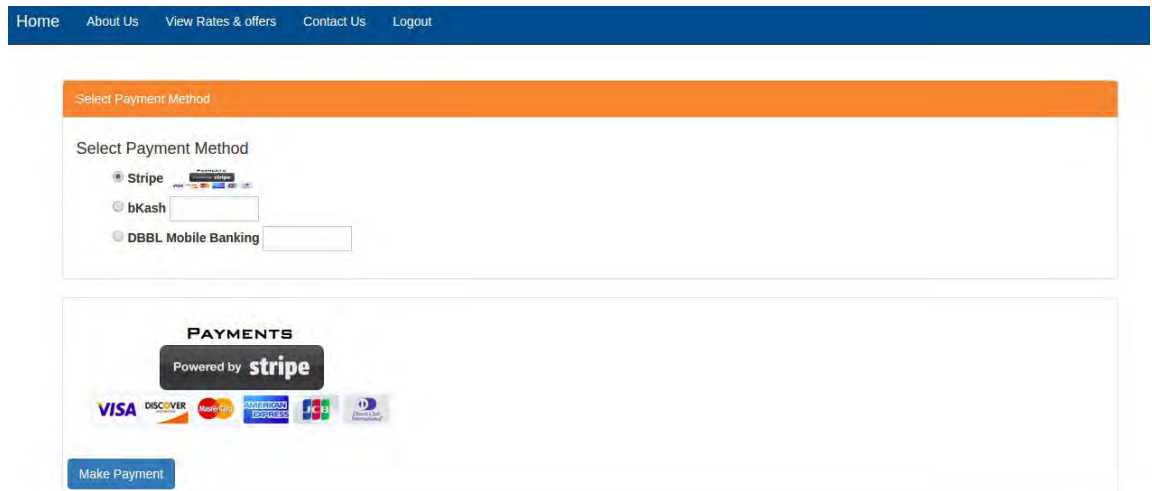


Figure 4.13: A snapshot showing subscription for the expected item

4.4.8 Payment method




Pay with Card

Demo Site

Total Price 12500.00 tk

yeasmirnilo@gmail.com [Log out](#)



Chapter 5

Conclusion

5.1 Conclusion

Web Based Newspaper Advertisement Management System is a popular concept of business using modern technology. The objective of this project was to develop a web based Newspaper Advertisement Booking Management System with different types of advanced features such as different types of newspaper ad , payment for newspaper ad and integrating of SMS facility as in the system. The system presented in this project overcomes the limitations of the similar system available now. Due to the different types of advanced features, it is more user friendly to the customers. The system is self descriptive. Customer's can easily access the system and browse the information they need. The customers registrar with the system and can booked their ad and get successfully message through the SMS option of their mobile phone. The system is expected to improve the lifestyle of the people in terms of booked their ad.

5.2 Suggestion for Future Work

The following suggestion for future enhancement of the proposed project

- i) The Web Based Newspaper Advertisement Management System presented in this report can be sent to different communities for evaluation and then based on their feedback, it can be enhanced and some more new features can be added. Then it can be launched commercially.

References

- [1] <https://www.entrepreneur.com/encyclopedia/newspaper-advertising>; accessed on July 2016
- [2] www.metroclassified.co.uk/how-to-advertise; accessed on July 2016
- [3] <https://en.wikipedia.org/wiki/Newspaper>; accessed on July 2016
- [4] www.magicwebsolutions.co.uk/web-based-software; accessed on July 2016
- [5] <http://project-management.com/what-is-web-based-software-and-cloud-apps/>; accessed on July 2016
- [6] <https://laravel.com/docs/5.2>; accessed on July 2016
- [7] Stauffer, M., "Laravel: Up & Running A Framework for Building Modern PHP Apps", O'Reilly Media, March 2016.
- [8] Welling, L., Thomson, L., "PHP and MySQL Web Development (5th Edition) (Developer's Library) 5th Edition", Addison-Wesley Professional, 2015.
- [9] Bagui S., Earp R., "Database Design Using Entity-Relationship Diagrams, Second Edition", Auerbach Publications, September 7, 2011.