Salon Management System

**List of Acronyms**

CRUD - Create Read Update Delete

ERD - Entity-Relationship Diagram

JSP – Java Server Pages

MS - Microsoft

OO – Object Orient

ORDBMS - Object-Relational Database Management System

OS – Operating System

SDLC – Software Development Life Cycle

UI - User Interfaces

**Introduction**

A beauty salon or beauty parlor is an establishment dealing with cosmetic treatments for men and women. Other variations of this type of business include hair salons and spas

**Motivation for the project**

Nowadays it is easy to find Salons at any hood and corner in this world, as beauty and fashion has become a great trend disregarding the age limit and gender. All the Salon Owners are relying on their Customers; who visits Salons to fulfill their own beauty needs. Therefore, it is important to value the loyalty and the time of those Customers. From the other side, to make the Salon services better and to enhance the good names of the salons, their Stylist’s/Employee’s satisfaction also needs to be fulfilled. Not only that the income earns by selling services to the clients should be able to monitor by the salon owners. Using manual procedures may pave the way for a variety of obstacles when satisfying Customers and Employees of the respective Salons. Valuable time and money of the Salon Owners, Employees and Customers get waste unnecessarily due to these manual dealings. These barriers make direct harms for the incomes and the good names of the Salons and for their Owners.

**Objectives Of The Project**

**Objectives of doing this project are to;**

• Eliminate the paper-based work use at the Salon premise such as, usage of diaries to note down appointment details, writing manual invoices for the payments done by the Customers etc.

• Eliminate the data redundancy; keeping appointment details at several places (Diary, mobile etc.) by several people (Owner, Employees, Customers etc.).

• Abolish the wastage of time, resources, efforts and money of the Employer, Employees and Customers (Stakeholders).

• Improve the efficient and effectiveness of the Salon management activities, services and processes like maintaining Customers, Employees, Appointments and Payments etc.

• Ease the management and decision making while improving Salons’ good name.

• Improve the Client satisfaction and Employee satisfaction.

• Enhance the Stakeholder integration.

**Scope of the Project**

• Providing the facility to registering Salon staff and maintaining their details.

• Providing the facility to registering regular Customers and maintaining their details.

• Facilitate appointment handling.

• View appointments leaves and holidays through an event calendar.

• Handling Salon Services along with their respective prices, hours etc.

• Providing Customer Payment handling option.

• Generating invoices through the system.

• Generating reports to support the higher managerial decisions.

• Maintaining an information center (dashboard).

• Reminder generating facility through emails

**The rest of this document is organized as follows.**

Analysis Provide a top-level use case diagram on the existing system; a review on two similar software of the proposed system; analysis on the requirement; and a brief description on the selected Software Development Life Cycle (SDLC) methodology.

Design How the project requirements are satisfied through the used alternatives was pointed out. Several User Interfaces (UIs) were included along with the main designed diagrams as to provide a clear picture on the system structure.

Implementation The major code and module structures were explained with a diagram to further clarify the interaction between modules of the system. In advance an explanation on implementation environment (hardware and software), reused code, development tools, and platform dependence were given.

Evaluation Through this chapter a comprehensive test plan that was used to verify and validate the system was provided along with the test results. Tools used for feedback collection also mentioned additionally.

**Analysis**

is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components? System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. Failures of Current System The manual procedure used by ‘Salon’ stakeholders before implementing the project, faced a lot of troubles at their day today work (at the salon). Salon owner was not used a software to manage her salon work load. So, all the stakeholders met with a lot of difficulties at following instances all the time.

**Salon Owner was faced the following problems:**

• Difficult to identify regular customers.

• Difficult to maintain her-own staff members and their leaves.

• Had to note down, cancel and change appointments along with their dates, times, services and payments regularly.

• Had to keep daily reminders on her mobile over clients’ appointment details.

• Had to allocate prices for services and update them from time to time in papers.

**Employees were faced the following problems:**

• They always had to turn the diary pages to search for appointment details.

• Had to always contact/ message the customers via a mobile to announce the appointment statuses.

• Mixed up with the shifts, leaves and holidays, as there was no proper way of managing them

**Cashier was faced the following problems**

• Met with difficulties when finding prices respective to each service.

• Manual bill issue. All the service details, prices etc. were written in it by hand.

• Totaling the bills manually with/ without using calculators was difficult to handle.

**Customers also met with certain difficulties as below;**

• Mostly had to visit the salon premises to make appointments (Specially the new clients).

• Had to keep daily reminders on mobiles over appointment.

• Had to contact the salon via a mobile to know the appointment statuses.

• Had to wait a considerable time, till issuing the manual payment receipt.

Hence it was essential to automate the activities managed by the salon to improve Salon’ service quality and save their time while improving their Customers’ satisfaction.

**Requirements**

Basically, Non-functional requirements describe ‘how the system works’, while functional requirements describe ‘what the system should do’ [3]. Observations and Interviews were conducted as facts gathering methods at the requirement gathering phase in order to gather requirements.

**Functional Requirements**

A functional requirement document defines the functionality of a system or one of its subsystems. It also depends upon the type of software, expected users and the type of system where the software is used.

Functional user requirements may be high-level statements of what the system should do but functional system requirements should also describe clearly about the system services in detail

• Create salon staff and maintaining (Update/ Inactive) their details.

• Create regular customers and maintaining (Update/ Inactive) their details.

• Create salon services and maintaining (Update/ Delete) their details such as prices, hours etc.

• Maintain resources (Create/Update/ Delete) at the salon premise.

• Reminder generating facility provide through the system and send via mails for all the respective stakeholders.

• Maintain holidays and staff leaves.

• Facilitate appointment handling through an event calendar by the system.

• Providing customer payment handling option. o Enter payment details for the system. o View customers’ payment balance details. o View customers’ gross payment details.

• Generating invoices through the system.

• Generating reports to support the higher managerial decisions.

• Maintaining an information center to display crucial data charts.

**Non-Functional Requirements**

Basically, non-functional requirements relate to qualities of the system that cut across user facing features, such as security, reliability, and performance.

• Accessibility – The system is able to be access anywhere at any time by the authorized users.

• Accuracy – The correctness of data inputs to the system was ensured.

• Availability – System is available within working hours. But can be used at special occasions also. E.g.: - At a bridal dressing

• Efficiency – Users were given the facility to perform the salon management processes correctly through the salon sales record management system.

• Effectiveness – Users were given the facility to perform correct salon management processes via the suggesting system.

• Maintainability – This is a considerable factor especially for a non-technical user. Maintainability of the system is not more complex.

• Privacy – The confidentiality of the data inputs to the system has been assured.

• Reliability - Ability of the suggested system to function under stated conditions for a specified period of time has been assured.

• Robustness – When handling payments this function was considered.

• Security – The data feeds to the system has been protected by controlling the user access privileges

**System Users and their involvement at the system**

Mainly there are three system users who need to access the system. They are as follows:

1. System administrator

2. Stylist/ Employee

3. Cashier

**System Administrator**

• Allow creating Employees/ System Users.

• Allow creating regular Clients.  
 • Allow maintaining reference data.

• Allow allocating leaves for the staff members.

• Allow generating crucial Reports.

• Allow viewing crucial Reports.

• Allow viewing Information Centre.

• Allow viewing payment information.

• Allow viewing appointments, leaves and holidays calendar.

**Stylist/ Other Employee**

• Allow creating appointments.

• Allow maintain appointment details.

• Allow maintaining appointment statuses.

• Allow viewing appointments, leaves and holidays calendar.

**Cashier**

• Allow doing payments.

• Allow printing the invoices.

• Allow viewing appointments, leaves and holidays calendar.

**Selected Methodology**

Iterative Waterfall methodology is selected as the SDLC methodology of the project; as the major requirements of the whole system were gathered at the beginning and were able to define clearly.

Iterative waterfall methodology best fits for a project where “Major requirements must be defined; however, some functionalities or requested enhancements may evolve with time, and it consists with the following advantages;

• Some working functionalities were able to be developed quickly and early at the life cycle.

• Results were obtained early and periodically.

• Parallel development was able to be planned.

• Progress was able to be measured.

• It was less costly to change the scope/requirements.

• Testing and debugging during smaller iteration was easy to attempt.

**Design**

System design is the process of defining the elements of a system such as the architecture, modules and components, the different interfaces of those components and the data that goes through that system. It is meant to satisfy specific needs and requirements of a business or organization through the engineering of a coherent and well-running system. This chapter devotes factors on the designing phase of the developed project.

**Alternate Solutions**

There are free software systems designed specifically for salon management purposes can be found in the internet. They are able to download freely and use at the salon premises as an alternative solution. But those software are consisting with common and limited features. Customizations are not allowed by most of that software. Therefore, salon owner needs to be adapted according to the processes follows by the specific software neglecting their-own process of working.

As to find the most suitable solution for the system to be developed, an evaluation was done in between several identified solutions.

**Web based Solutions:**

These are compatible with cross platforms, easily manageable and easy to update. It is possible to achieve a far greater level of interoperability between web applications than it is with isolated desktop systems. This type of solutions is able to access easily at anywhere by any time using a web browser.

**Standalone Solutions:**

This type of computer setup requires installing applications on individual machines. They need a considerable time to load the system application at the relevant machine. But standalone has no bandwidth problems as they need no internet usage. By analyzing these solutions it was decided to provide a ‘Web based system Solution’ for the client.

**Design Methodology**

Object Orientation concept has been used as the design methodology since objects and classes-based design diagrams like Use cases, Activity diagrams, Class diagrams and State diagrams are easy to understand.

**ER Diagram**

An entity-relationship (ER) diagram represents entities and their relationships graphically using the data within databases or information systems. represents the relationship between the entities at the database, which use to store all the relevant system data respectively.

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Use case diagram for cashier Perspective

cashier

use case diagram for customer perspective

USE CASE DIAGRAM FOR SYSYTEM USER PERSPECTIVE

Use case Diagrams

Use Case diagrams use to describe activities (use cases) performed by the system (subject) in collaborate with one or more external users of the system (actors).

the use case diagrams designed for the System Administrator, shows the use case designed for the System User perspective, use case designed for the Cashier perspective and use case designed for the Customer perspective accordingly.

User Interface Designs

When designing the user interfaces, it was focused on what users might need to do and ensured that the interface has elements that are easy to access, understand, and use to facilitate those actions. The designed UIs were a collaboration of interaction design, visual design, and information architecture concepts. Best practices on UI designing like;

• keeping the interface simple, using common UI elements and icons,

• maintaining color, light, contrast, and texture,

• using typography to create hierarchy and clarity were handled within the system up to the maximum

Activity Diagrams

Activity Diagrams used to display workflows of stepwise activities followed by the system at special occasions. Demonstrate the logic of an algorithm, describe the steps performed in a UML use case or illustrate a business process or workflow between users and the system via an Activity /diagram

Class Diagram

Class diagram describes the attributes, operations of a class and the constraints imposed on the system. The class diagrams are widely used in the modeling of object-oriented systems because they are the only UML diagrams, which can be mapped directly with object-oriented languages

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Implementation

Actually implementation phase considered as the lengthiest phase at SDLC.

This chapter proves how the implementation was done regard to the project.

Implementation Environment

The system implementation environment is of two separate parts as:

1. Hardware Environment

2. Software Environment

Hardware Requirements:

• Personal Computer or laptop with Core 2Duo CPU or above

• RAM: At least 2 GB

• Hard Disk Space: 30 GB or above

• Processor Speed: From 1.2 GHz

• Desktop or Laptop, Keyboard, Mouse and System Unit (only for a PC)

Software Requirements:

• OS: Windows improved version from 7

• Java development kit (JDK 7).

• IDE: Spring Tool Suite – version 3.5.1

• Apache Tomcat Application Server - version -7.0.42

• Database PostgreSQL Server - version 9.4.1

• Web browser – Google Chrome/ Firefox

• Visual Paradigm for UML - 8.0 Enterprise Edition

Development Tools

At the moment of developing the system, a variety of tools were used in order to improve the quality of the work and to speed up the work. Table 4.1 shown below provide an explanation on the used tools.

|  |  |
| --- | --- |
| Tool Used | Description |
| Spring Tool Suit | Provide a customized all-in-one Eclipse based distribution that makes application development easy. The tool suites provide ready-to-use combinations of language support, framework support, and runtime support, and combine them with the existing Java, Web and Java EE tooling from Eclipse |
| Database PostgreSQL Server | PostgreSQL is an ORDBMS based on POSTGRES, Version 4.2, developed at the University of California at Berkeley Computer Science Department. PostgreSQL is an open-source descendant of this original Berkeley code. It supports a large part of the SQL standard and offers many modern features like:  • complex queries  • foreign keys  • triggers  • updatable views  • transactional integrity  • multi-version concurrency control |
| Apache Tomcat Application Server | The Apache Tomcat® software is an open source implementation of the Java Servlet, Java Server Pages, Java Expression Language and Java Web Socket technologies |
| Nitro pro 8 | Used for the testing purpose of Invoice printing and to refer the project guide during the development phase. |