



FC6P01- Final Project

**Cloud based Property Management
with Face Recognition System**

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Abstract

This is a final report for the project to design and implement a centralized Cloud based Property Management with Face Recognition System. Hotel Industry is one of the main compartments in Sri Lanka since it made a huge impact on the economy. Nowadays, having multiple hotels under one ownership is a strategy of successful businessmen. Yet, there is a less of interaction between all hotels and the management. Owner and the management have a huge challenge when it comes to manage the hotel chain. Management use the manual system for all the hotels and it occurred a huge problem of gathering information under one specific way. It is much time consuming and management need more staff and regular system for this purpose. When paying the attention on these several matters, suggesting a Property Management System is a great solution for this issue. This Property Management System supports to gather the information under one centralized cloud base with identification of Loyal Customers Face Recognition System. Through the FRS, management can easily continue a great connection between the hotel and the client as it easily identifies the customer and the given information of customers in cloud base. Author examined the existing system of the hotel and listed the advantages and disadvantages of it. Analyzed the drawbacks and author suggested to create a Cloud based Property Management with Face Recognition System. Since this system is a cloud-based software system, it can make a huge impact in the hotel field. With this new loyalty customer face recognition system hotel owners can widen their businesses and attract the customers towards their hotels since they served a better service. This will be a huge change to a modern technology system to explore the hotel field. From this system, it can centralize data and information securely and have the ability to customize efficiently.

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Abbreviations

AWS- Amazon Web Services

CSS- Cascading Style Sheets

FRS- Face Recognition System

HMS - Hotel Management System

HTML - Hypertext Markup Language

JS - JavaScript

JSP- JavaServer Pages

JSTL- JavaServer Pages Standard Tag Library

LBPH - Local Binary Patterns Histogram

MVC- Model, View, Controller

MYSQL - Its name is a combination of "My", the name of co-founder Michael Wideness's daughter, and "SQL", the abbreviation for Structured Query Language.

OpenCV- Open source computer vision

XML - Extensible Markup Language

1 Chapter 1 Introduction

Sri Lanka's hotel industry is a key driver of economy in growth in the island nation. It has witnessed unprecedented economic growth over the past 15 years. The tourism sector has emerged as frontrunner in Sri Lanka's economic activities.

The use of information technology in hotel management heading to a great contribution towards the hotel industry. Under this sector hotel chains appear to be as an emerging business by now. Though some are not recognized as hotel chains in Sri Lanka, people are more toward to expand their business with at least few small hotels in several places. Nowadays, the trend is having some number of hotels under a one ownership. A lot of benefits may be owned to the stakeholders of these hotels, but a critical situation may be also created within the hotels. The problem is "how to manage all of those hotels?" since they are under a one ownership there should be a interaction between all hotels and the management should be done properly.

With the progression of information technology, hotel industry plays a vital role due to the huge competition and the requirements of customers. Under this kind of circumstance, it is not rational to have a manual system in the hotel process. This situation mainly leads to reduction of customer base and miscommunication between hotels systems. This affects to a great loss within the group of hotels as well. So, it is really important to concentrate on these matters and conduct the companies to the next level with the technology.

1.1 Goals

- Identifying the Issues.
- Observe the Following Systems and explore about the competitive hotel systems.
- Creating a Cloud Based Property Management System.
- Creating the Loyal Customer Identify Face Recognition System.

1.2 Motivation

The main purpose of this project is to create a centralized cloud-based system with loyalty customer face recognition as to assist the management to administer their processes

and maintain the good name in the hotel field. Given below are some behooves that users can achieve through this system.

- Creating a cloud-based system led the users to function the system each time they required in anywhere they ambitious.
- Ability of controlling the multiple hotels, furthermore to collect and centralized the data from one main point to the system.
- Using the face recognition system, hotel management can effortlessly recognize the loyal customers and review their requirements and treat them well. This will please the clients and visit the hotel over again.

1.3 Method

Cloud based Property Management with Face Recognition System is a software system that custom to achieve the daily activities in the hotel, moreover it has an additional module of identifying the loyal customers of their hotel through face recognition. To progress this system, it was essential to study the up-to-date technical extents. Cloud based Property Management with Face Recognition System used the Java Spring framework to develop. Bootstrap, Data Table, Js Grid libraries used to create the user friendly front-end. OpenCV library has used to create the Face Recognition system. An extensive summary of the technologies is given below.

Spring

Spring MVC is a Java framework which used to build the web applications. It use the Model-View-Controller design pattern. It carries out all the elementary appearances of a core spring framework similarly Inversion of Control, Dependency Injection. There are numerous advantages of spring frameworks such as, Separate roles, Light-weight, Powerful Configuration, Rapid development, Reusable business code, Easy to test and Flexible Mapping. A Spring MVC delivers a dainty resolution to custom MVC in spring framework by the assistance of DispatcherServlet. Here, DispatcherServlet is a session that

obtains the incoming request and maps it to the right resources such as controllers, models, and views.

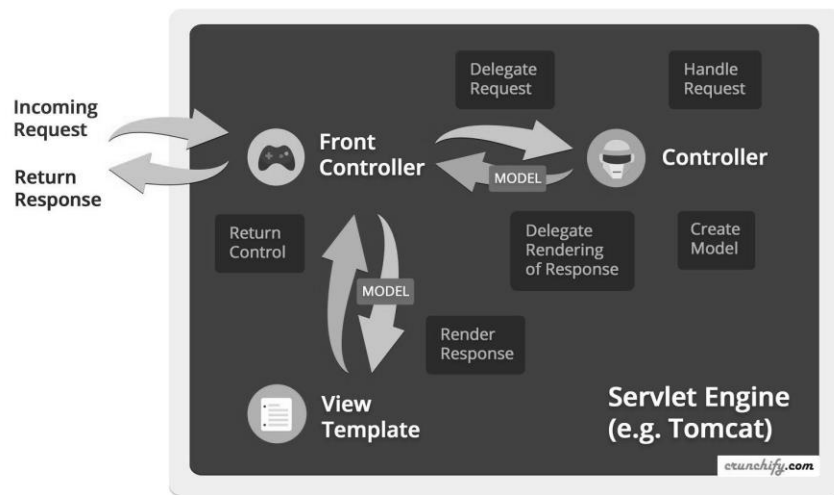


Figure 1: Spring MVC Design

- **Model** - A model comprises the data of the application. A data can be a solitary entity or a collection of entities
- **Controller** - A controller contains the business logic of an application. Here, the @Controller explanation is used to spot the period as the controller.
- **View** - A view represents the delivered information in a specific format. Usually, JSP+JSTL are used to generate a view page. Although spring also ropes other view technologies such as Apache Velocity, Thymeleaf and FreeMarker.

Bootstrap

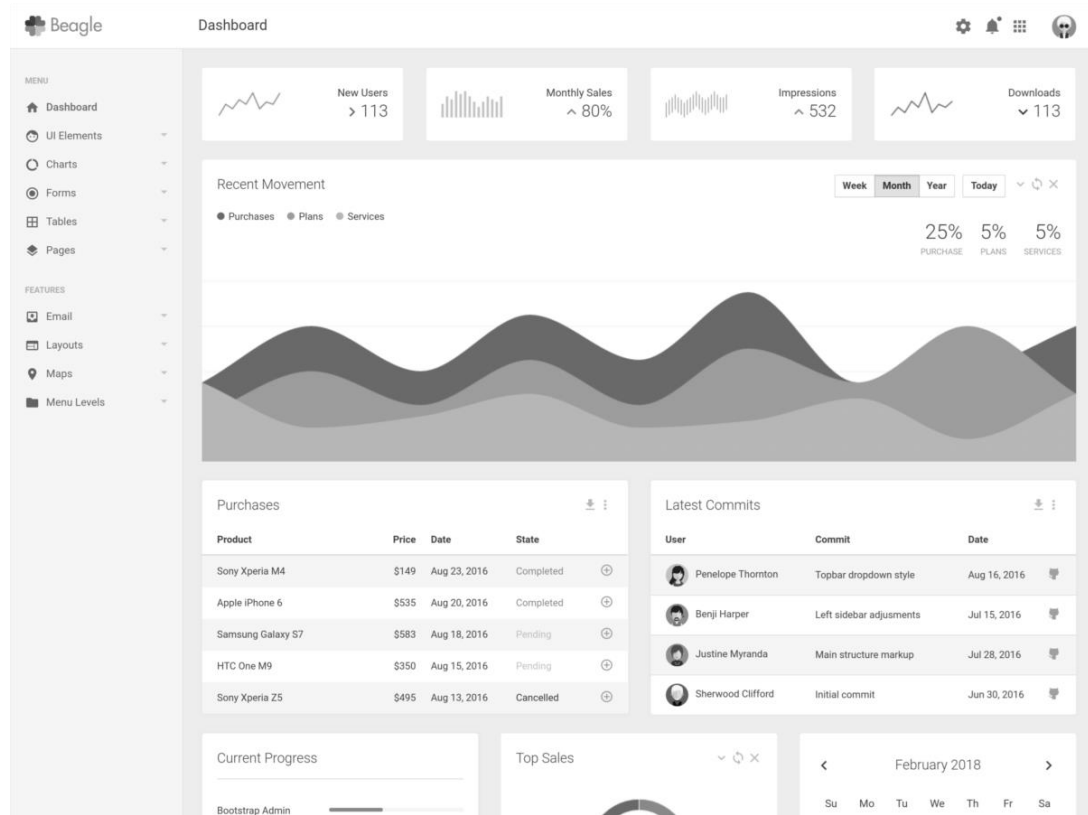












Figure 2: Bootstrap

Bootstrap is the most popular HTML, CSS, and JavaScript framework for developing responsive, Web System. It has many benefits from scratch for every web development project, and one such reason is the huge number of resources accessible for Bootstrap. It supports the responsive web design and dynamically adjusts the layout of web pages by considering the characteristics of the device used. There are several reasons helped in using Bootstrap such as: Easy to Use , Responsiveness, The Speed of the Development, Customizable, Consistency, Simple Integration, Pre-styled Components.

Data Table

Show entries

Search:

Name	Position	Office	Age	Start date
 Airi Satou	Accountant	Tokyo	33	2008/11/28
 Angelica Ramos	Chief Executive Officer (CEO)	London	47	2009/10/09
 Ashton Cox	Junior Technical Author	San Francisco	66	2009/01/12
 Bradley Greer	Software Engineer	London	41	2012/10/13
 Brenden Wagner	Software Engineer	San Francisco	28	2011/06/07
 Brielle Williamson	Integration Specialist	New York	61	2012/12/02
 Bruno Nash	Software Engineer	London	38	2011/05/03
 Caesar Vance	Pre-Sales Support	New York	21	2011/12/12
 Cara Stevens	Sales Assistant	New York	46	2011/12/06
 Cedric Kelly	Senior Javascript Developer	Edinburgh	22	2012/03/29

NamePositionOfficeAgeStart date

Showing 1 to 10 of 57 entries

Previous

1

2

3

4

5

6

Next

Figure 3: Data Table

Data Tables is a plug-in for the jQuery JavaScript library. It is an extremely flexible implement, based upon the fundamentals of progressive improvement, which will enhance progressive collaboration controls to any HTML table. End users need to be able to gain beneficial information from the table as hastily as possible and for this Data Tables has built in features such as ordering, searching and paging. Even though the end user incompetent to comprehend the guidance given to use the documentation, it can effortlessly manage by doing a self-study.

Js Grid

Name	Age	Address	Country	Is Married	+
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
Adria Beach	29	P.O. Box 183, 2717 Nunc Avenue	Canada	<input checked="" type="checkbox"/>	<input type="text"/>
Adria Todd	68	1889 Tincidunt Road	China	<input type="checkbox"/>	<input type="text"/>
Akeem Conrad	60	282-495 Sed Ave	Canada	<input checked="" type="checkbox"/>	<input type="text"/>
<input type="text" value="Alexis Clements"/>	<input type="text" value="69"/>	<input type="text" value="P.O. Box 176, 5107 Proin Rd."/>	<input type="text" value="Brazil"/>	<input type="checkbox"/>	<input checked="" type="text"/> <input checked="" type="text"/>
Alfreda Mcdaniel	38	745-8221 Aliquet Rd.	Russia	<input checked="" type="checkbox"/>	<input type="text"/>
Allegra Hull	22	245-8891 Donec St.	France	<input checked="" type="checkbox"/>	<input type="text"/>
Amelia Rich	56	P.O. Box 734, 4717 Nunc Rd.	France	<input type="checkbox"/>	<input type="text"/>
Arthur Gay	20	5497 Neque Street	Russia	<input type="checkbox"/>	<input type="text"/>
Arthur Olsen	74	887-5080 Eget St.	Brazil	<input type="checkbox"/>	<input type="text"/>
Austin Andrews	55	P.O. Box 274, 5505 Sociis Rd.	Russia	<input type="checkbox"/>	<input type="text"/>
Bree Johnston	31	372-5942 Vulputate Avenue	Canada	<input type="checkbox"/>	<input type="text"/>
Breanna Rodriguez	77	2627 Imperdiet Av.	China	<input checked="" type="checkbox"/>	<input type="text"/>

Pages: 1 2 3 4 5 ... Next Last 1 of 7

Figure 4: Js Grid

JsGrid is a lightweight client-side data grid regulate based on jQuery. It supports elementary grid processes like inserting, editing, filtering, deleting, sorting, and paging. The JsGrid module allows modifying its form and its subcomponents.

- Filtering: supports data filtering by different criteria.
- Data Editing: allows to add new records, update, and remove data rows.
- Paging: has a flexible pager allowing to paginate data on the client and on the server side.
- Fields: provides different column types: text, numeric, select, checkbox and more.
- Data Sources: works with any type of data source from static javascript array to REST-service.
- Sorting: supports sorting with user interaction and with API
- Validation: allows to validate inserting and editing data.
- Callbacks: provides plenty of callbacks to control and customize behavior.

Open CV

The face recognition is customized in this project as the biometric method to recognize the guests by their face. It is capable of classifying the exclusive or confirming the guests by associating shapes based on the guest's facial curves. A guest's face shapes guides in helping the uniqueness and verifying. In order, this face recognition is consummate various valuable procedures. It can detect the guest's face and have the capability of analyzing the previous records of the guests. Face recognition configuration can be shown in the below.

As per this project, it has used Java open source libraries for face detection purpose. The most general Java library that is used is OpenCV. Basically, OpenCV is an open source library that has many modules like object detection, face recognition and amplified authenticity. Face detecting can be acknowledged by using OpenCV library. LBPH algorithm used to spot the variations amid faces. LBPH algorithm recognizes both front and side face. This LBPH algorithm is used to face recognition in this system.

AWS Cloud Computing

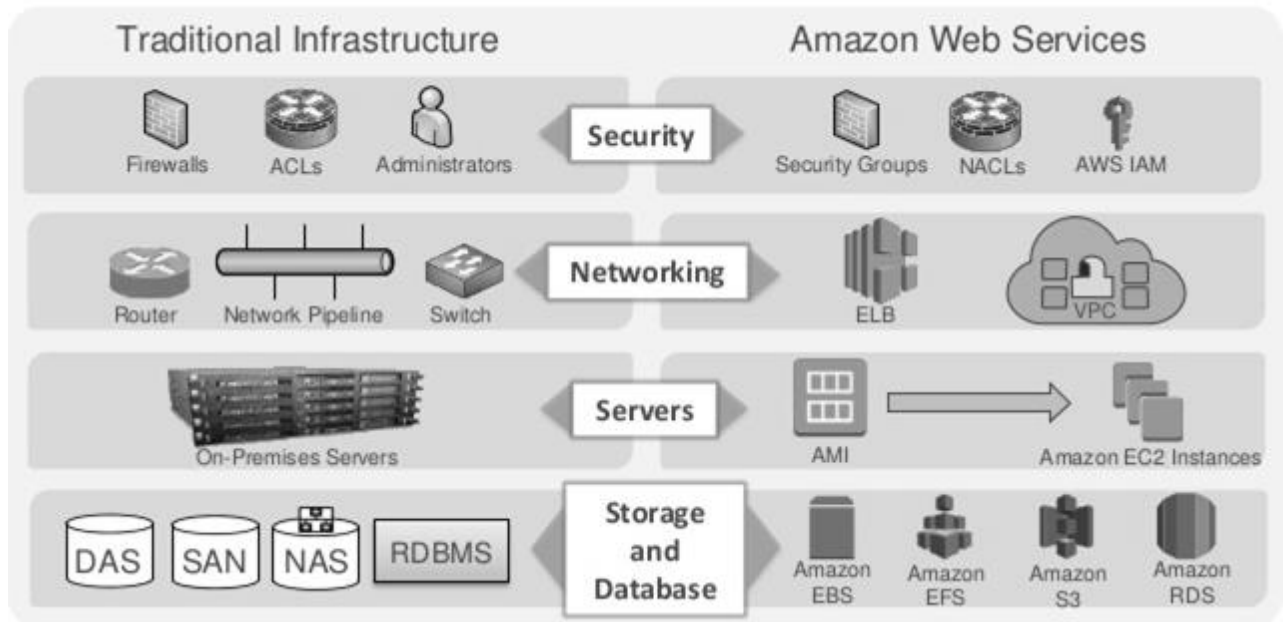


Figure 5: AWS Core Infrastructure and Services

Cloud based Property Management System used AWS Clod Computing. Essentially, cloud computing is a kind of outsourcing of software, data storage, and processing. Users access applications and files by logging in from any device that has an internet connection. Information and programs are hosted by outside parties and reside on a global network of secure data centers instead of on the user's hard drive. This frees up processing power, facilitates sharing and collaboration, and allows secure mobile access regardless of where the user is or what device is being used.

1.4 Overview

When creating this system, it has used the latest technology. Cloud technology used for the Property Management System and biometric has used for face recognition technology. For cloud technology, it selected the AWS windows cloud service and installed the MySQL database and the wildly server to run the required configurations. To improve the quality of the system, the most appropriate spring framework for enterprise application is used. It uses the Model-View-Controller design pattern. Bootstraps are used to create a user-friendly interface. Datatable and Jsgrid have been used to further enhance it. For face recognition, it used the openCV source library. To identify the guest's face the LBPH been used and moreover it easily recognizes the faces accurately.

2 Chapter 2 Background and Problem Statement

In small hotels, all the information is recorded in a file manually. They are stored in a special specific record within those folders. As a result of that, there is a higher percentage to damage those files. When the guests visit the hotel again and again, a new file is created for each time he visited. It effects for increasing of files and wastage of physical space. When a top-level person of the management asks for specific details such as number of tourists visit their hotel last year, staff will face massive issues. It may take hours to get through file and to gather the required detail. This is time consuming and can't assure the accuracy of the calculations. Mainly, it was referred some two similar hotel management systems and one face recognition system. Analyzing those systems led towards of creating the Cloud based Property Management with Face Recognition System.

2.1 Introduction

The current system is presently being an undeveloped form and the manual procedure of the overall system is too clumsy and complicated. The clients in the real time consultancy system can be too thick and may need many capitals to be used upon the system. There is no computerized system to manage all systems of the small hotels and the main hotel. It is much more difficult to do those by a manual system besides there is no specific way to identify the loyalty customers of the hotels. It reveals the weakness of defensive mechanism in these hotels.

2.2 Literature Review

Author has to refer the domain in different ways to create the system. To create the Cloud based Property Management with Face Recognition System, author studied about hotel industries and referred the daily management activities in the hotel chain. Author had to concern about different paths to select the most appropriate biometric technology to create the identification of loyal customer face recognition.

2.2.1 Similar Project

Hotelogix HMS

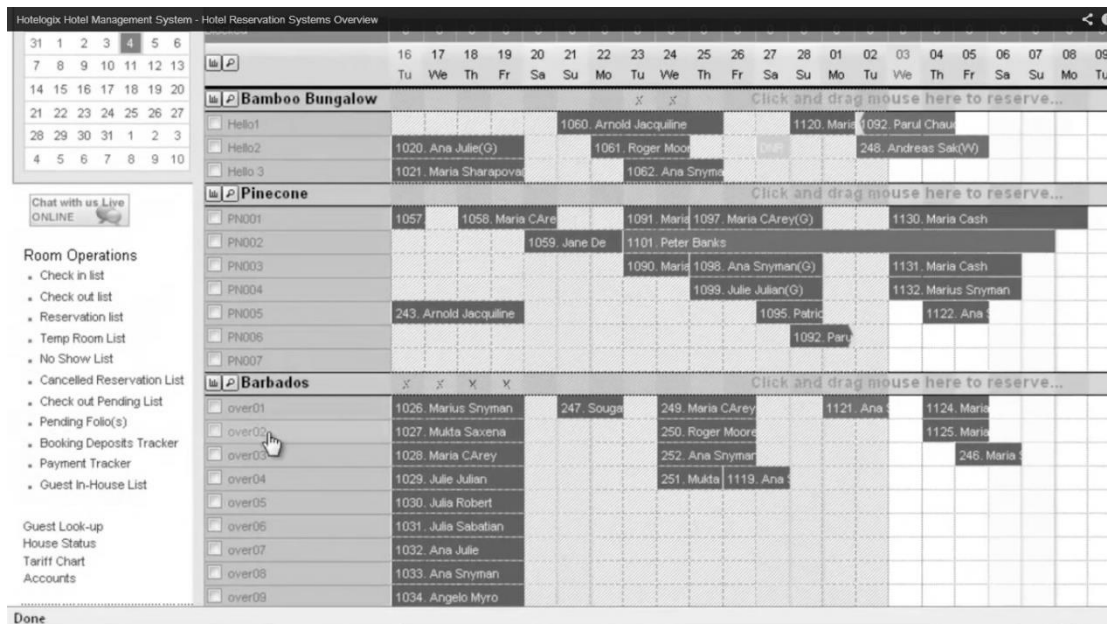


Figure 6: Hotelogix HMS Screen

Hotelogix- In HMS infoTech is a flexible, instinctive hotel management solution that incorporate every application a small or medium-sized hospitality business want to be victorious in today's competitive market. This robust, cloud-based solution is ideally suited for growing individualistic hotels, lodges, resorts and other property types that are seeking cost effective system that can be setup swiftly and effortlessly, without any large upfront investment

Censorious applications contain robust front desk operations, housekeeping, point of sale and more. Sketched using the latest web-based technologies, the system's friendly and graphical user interface clarify the streamlines common quotidian task. It's also exceptionally user friendly, so hotel management staff can be up and running rapidly with little or no free time

At the core of the system is a comprehensive Property Management System (PMS) that supports for both multiple properties and currencies, making this a prominent fit for business with various geographical footprints. With the help of this centralized hub users

can then effortlessly access the other modules, reservations or dining services, and also the hotel website, all from a single merged platform.

Features

- Involvement in the power and simplicity centralized dashboards for theThe inventory sales through all the accessible mediums of sales and distribution.
- Generate rates centrally through a Powerful Rate Manager and vend across distributing networks with rate equally.
- Sell across all sources of distributing without blocking the room-night. Obtain real time updates across all channels, at front desk.
- Organize all hotel operations (i.e-check-ins, checkouts etc.) seamlessly through a comprehensive property management system at the core.

HoteloPro HMS



Figure 7: HoteloPro HMS Screen

HoteloPro Company comes with an eventual transformation in Hotel Management; to control more than one construction from the same application with multi-property management. This online web-based solution is not only a tool for superior online reservations, it is an application which supply some features, including invoices, accessible

reports of accommodation's unit and the chance of advertising hotel services through various channels like SMS, Facebook, Twitter etc..

Features

- Direct access to all reservations through a robust reservations dashboards.
- Comprehensive reports that give an understandable clear picture of "what's going on with the properties".
- Online widget that permit the clients to make reservations through company websites.
- Create invoices and receipts for clients.
- Explain and control services and products like restaurant, mini bar, spa, travel etc...
- Marketing tools permit easily to issue promotions and marketing messages, so it can comfortably obtain new clients and build the existing ones in return.
- Flexible pricing management (i.e-setup room prices in advance either modify them on the fly.)

Allgovision - Face Recognition System

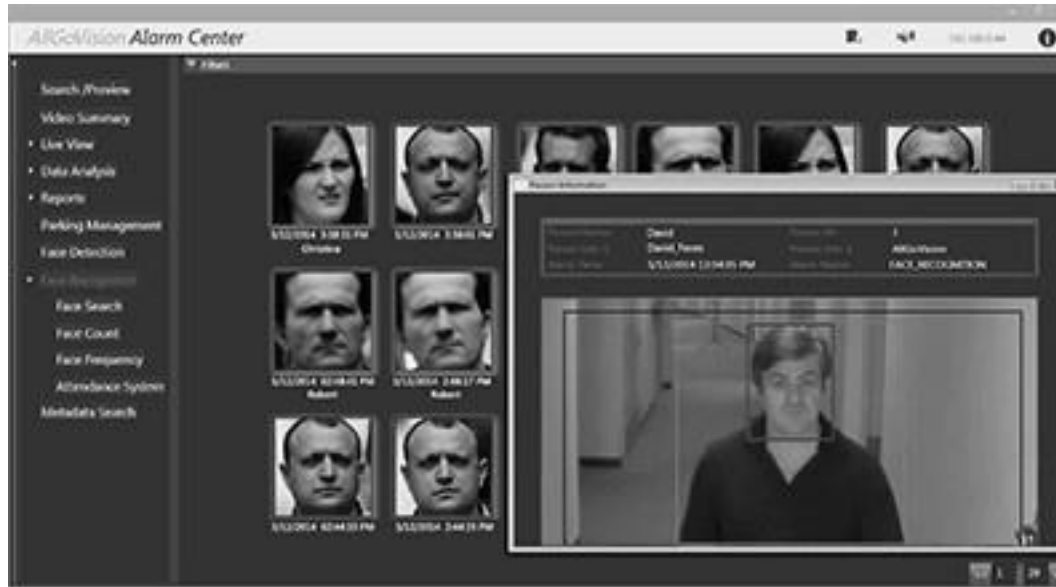


Figure 8: Allgovision - Face Recognition System

Face Detection/Face Capture

Notice and track the human face in the camera view. Besides, captures the face image and stores it in database for upcoming references. Example: initiation of alarms or systems (to be integrated) which require operation on appearances of any person. This detected and capture faces are utilized for evidence/observing.

Face Recognition & Face Verification

Matches the Face detected in the camera view with the registered faces in the database and sends alarms corresponding to match or mismatch. Example: Face recognition & verification is used in multiple applications such as VIP identification, Black List alarm, Forensic Face Search, People Authentication, Attendance Recording & Reporting, and can be integrated with Access Control.

Face Frequency Face Frequency

Detects how frequently any recognized face appeared in the camera and provides the plot of frequency distribution for recognized persons. Example: Customer Retention information by analyzing the frequency of visit by VIP Guests / Loyalty Customers etc.

Features

- People face should be visible in front of the camera. The people who are walking towards camera are recognized.
- The recognized person details are displayed in real time.
- The detection time is 1-3 sec.
- The face registration is done with 1-10 face images per person.
- Works simultaneously with video analytics for other cameras.
- Application can run as a service.
- Black Listed People Recognition
- VIP Identification or White list people identification
- Facial Recognition based automatic Attendance System

2.3 The Intention Is Very Clear

It is very necessary to continue the cordiality between the management and the clients. From cloud base system, it is easily centralized the database and systems in multiple organizations under one management system. This process will lead the management to conduct the relationship and goodwill among clients.

In face recognition system, management notice and track the human face in the camera view. So, it saves in the database for future references. This system can use for VIP identification. FRS accomplish the management to serve a better service and customer satisfaction.

2.4 Problem Statement

The current system is in an undeveloped form and the manual process of the overall system is too clumsy and complicated to maintain. Accordingly, it is much time consuming to update the records daily and at times client's faces more uncomfortable as it takes much time to verify the details. Sometimes clients will not be satisfied with the service they have been experiencing. Management needs to take a huge process to gather all records into one main center. Moreover, it has no way to identify loyal customers in their hotel chain. It reveals the weakness of defensive mechanism in these hotels. By studying these issues in the current system, the main intention of this project is to provide a mechanism which will help to the management of this hotel by managing all hotels in a computerized cloud system. In addition, assist management to discover their loyalty customers by owning a face recognition system.

3 Chapter 5 design

Design is one of the main key facts to consider when creating a system. Network system design used to display the working process of the system. There is a clear list of software and hardware used to develop the system. In this chapter the system has been evaluated.

3.1 Introduction your choice of proposed network system

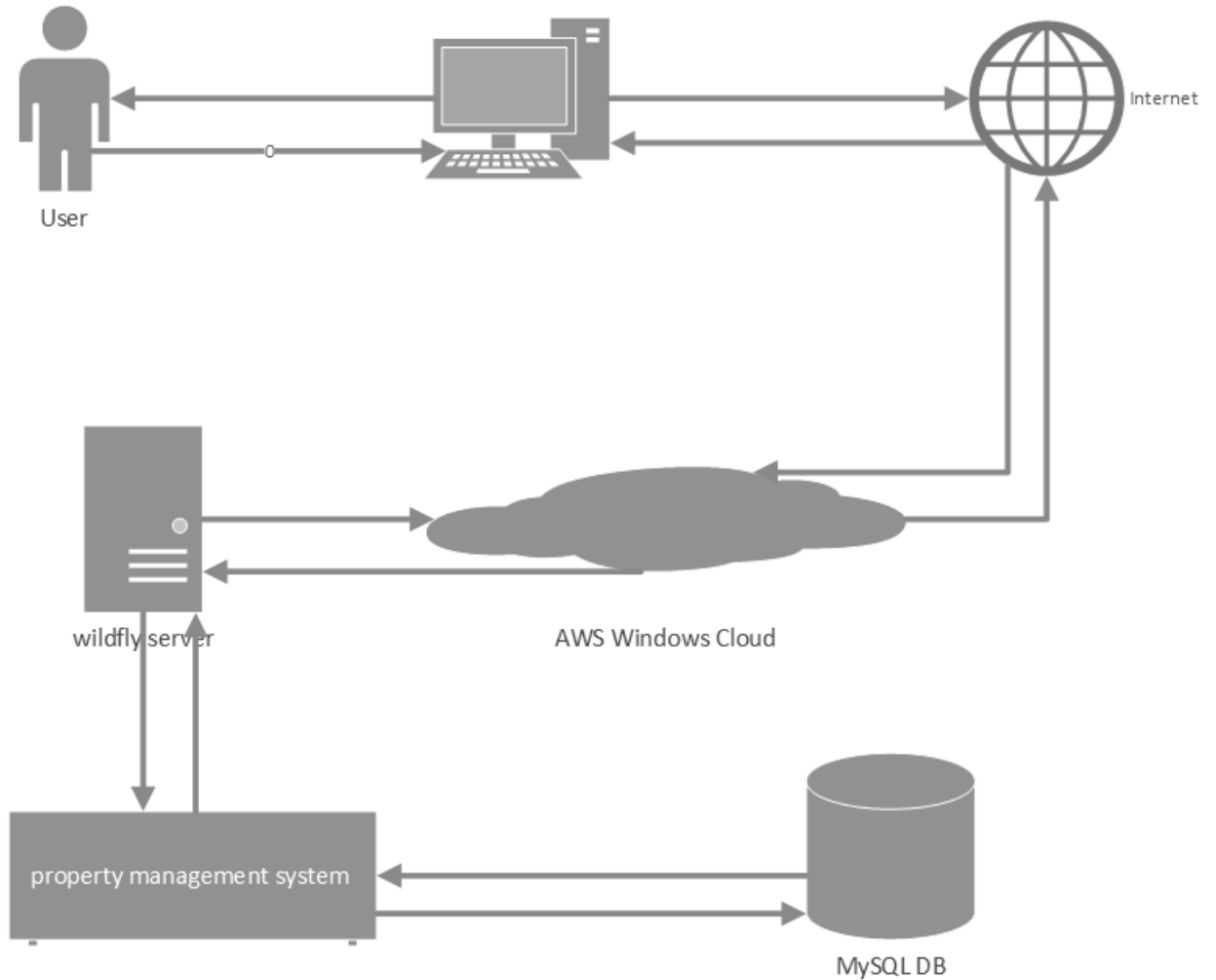


Figure 9: Network system

3.2 ER Diagram – Master File

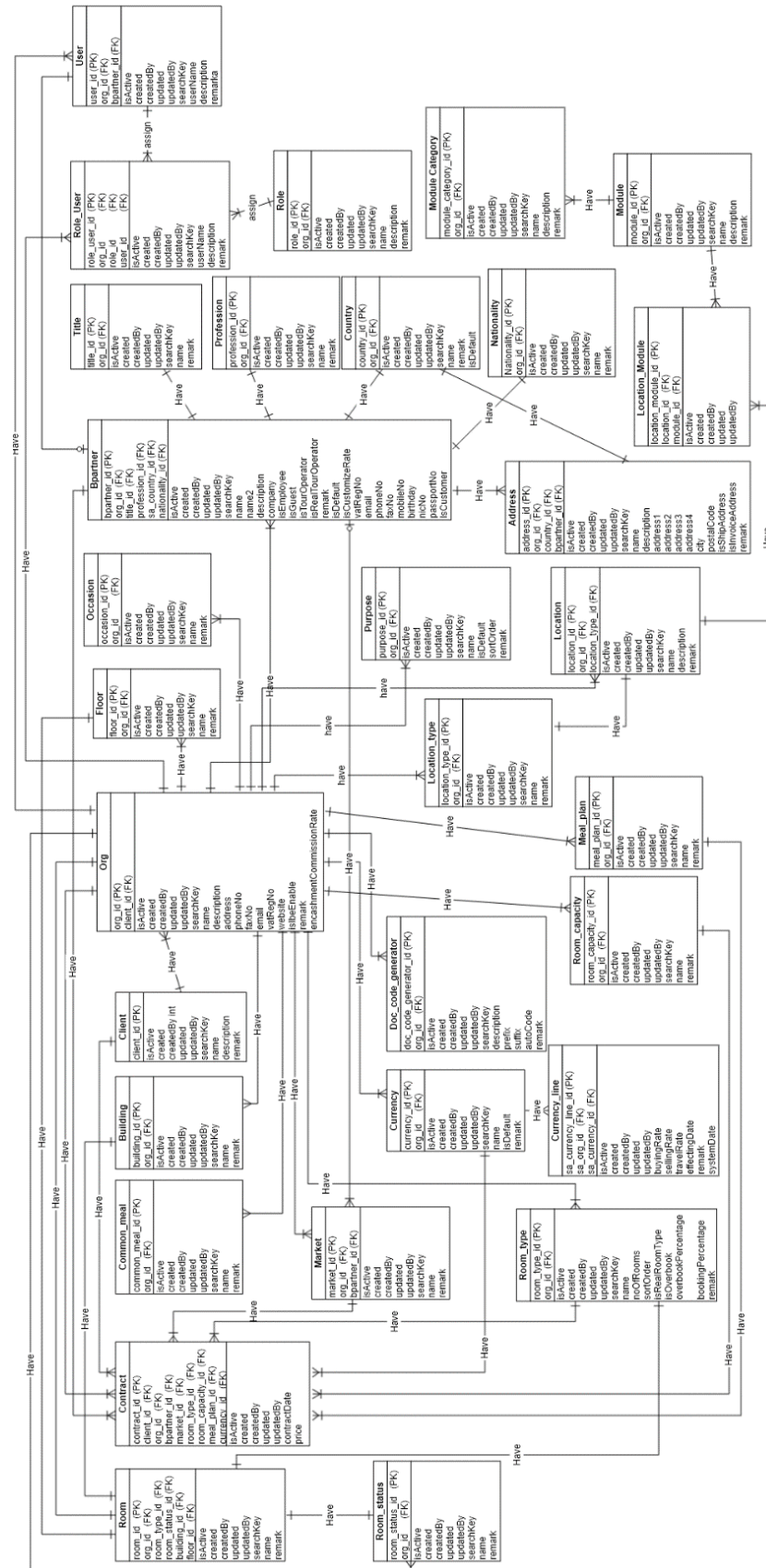
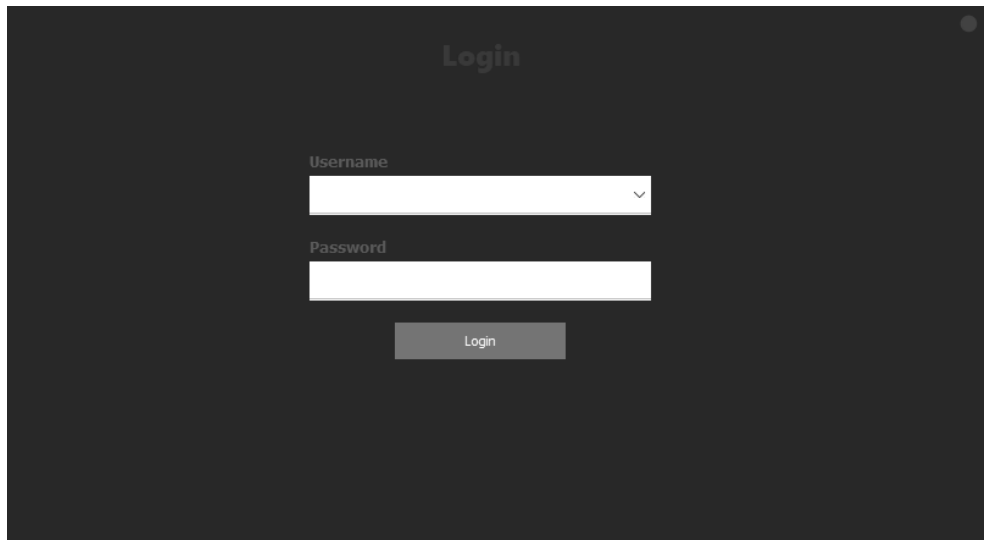


Figure 10: ER Diagram - Master File

3.3 User Interface - Face Recognition Module

Login Page - Face Recognition Module

This is the Login for the Loyalty Customer Identification System.

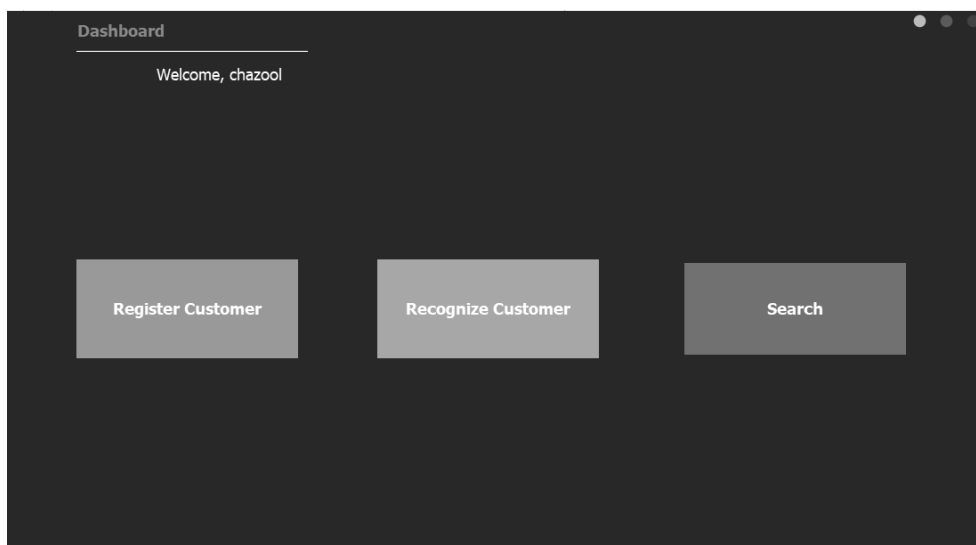


The image shows a dark-themed login window titled "Login". It features two input fields: "Username" with a dropdown arrow and "Password". Below these fields is a "Login" button.

Figure 11: UI- Login Page - Face Recognition Module

Dashboard

Dashboard ables to navigate the system



The image shows a dark-themed dashboard window titled "Dashboard". It displays a welcome message "Welcome, chazool". Below the message are three buttons: "Register Customer", "Recognize Customer", and "Search".

Figure 12: UI- Face Recognition Module Dashboard

Restaurant Customer Registration

In this, it saves the details of customers, preferences and photos to the system


The image shows a 'Customer Registration' form with a dark background. At the top left is the title 'Customer Registration' and at the top right is 'ID Face 4'. Below the title is a large video feed area showing a man's face with a white rectangular bounding box around it. Below the video feed, the form is divided into two main sections: 'Personal Information' and 'Food Preference'. The 'Personal Information' section contains four input fields: 'First Name', 'Last Name', 'Phone Number' (with a '()' placeholder), and 'Profession'. The 'Food Preference' section contains four dropdown menus: 'Eating Lifestyle', 'Spicy Taste', 'Sugar Taste', and 'Menu Type'. At the bottom center is a 'Register' button, and below it is a progress indicator showing '00/25'.

Figure 13: UI - Restaurant Customer Registration

Recognize Face

Using Face Recognition technology can identify the customer and view the details of past records.

Recognize Face



ID Face 1

Fullname: Chazool Kaweesha	
Phone: (077) 9526283	Profession: Software ENG
Eating Lifestyle : Vegetarian	Spicy Taste : Medium
Sugar Taste : Mild	Menu Type : Indian Food

Send Message to (077) 9526283

Figure 14: UI- Recognize Face

Send Whatsapp Message

Able to send messages through whatsapp for customers.

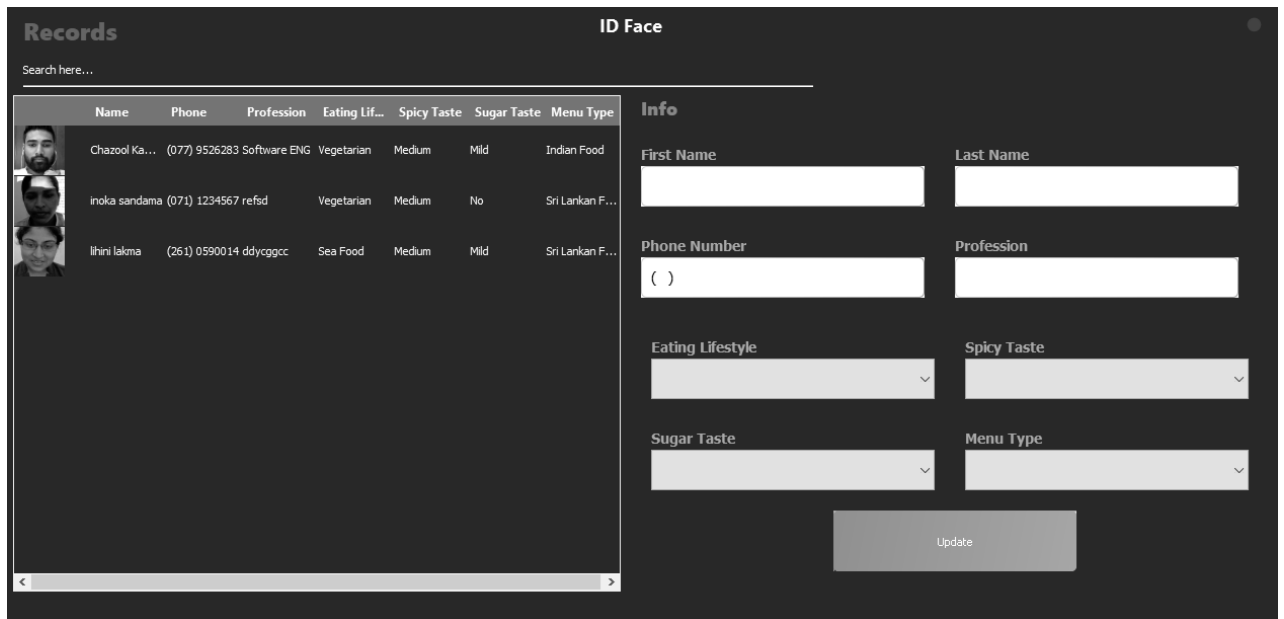


The image shows a dark-themed UI for sending a WhatsApp message. At the top, it says "Send SMS" in a light gray font. Below this is a form with two main sections. The first section is labeled "Phone Number:" and contains a text input field with the value "(077) 9526283". The second section is labeled "Message:" and contains a larger text area with the value "Chazool!Thank You!". At the bottom of the form, there is a character count "0 caracteres" on the left and two buttons, "Cancel" and "Send", on the right.

Figure 15: UI - Send Whatsapp Message

Search Records

This can search the details of the customers in the system and able to update if required.



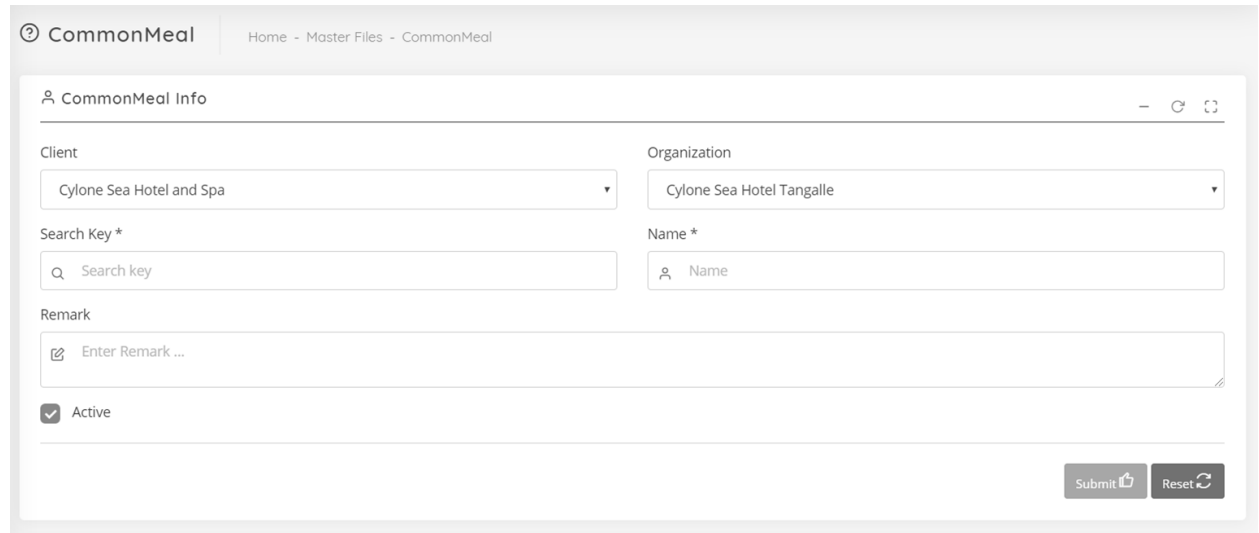
The image shows a dark-themed UI for searching and updating customer records. The title bar at the top says "Records" and "ID Face". Below the title bar is a search bar with the placeholder text "Search here...". The main content area is divided into two sections. The left section is a table with the following columns: Name, Phone, Profession, Eating Lif..., Spicy Taste, Sugar Taste, and Menu Type. The table contains three rows of data, each with a small profile picture icon to the left of the name. The right section is labeled "Info" and contains several form fields: First Name, Last Name, Phone Number, Profession, Eating Lifestyle, Spicy Taste, Sugar Taste, and Menu Type. Each field has a corresponding input box or dropdown menu. At the bottom right of the "Info" section is an "Update" button.

Name	Phone	Profession	Eating Lif...	Spicy Taste	Sugar Taste	Menu Type
Chazool Ka...	(077) 9526283	Software ENG	Vegetarian	Medium	Mild	Indian Food
inoka sandama	(071) 1234567	refsd	Vegetarian	Medium	No	Sri Lankan F...
lihini lakma	(261) 0590014	ddycggcc	Sea Food	Medium	Mild	Sri Lankan F...

Figure 16: UI- Search Record

3.4 User Interface – Property Management Module

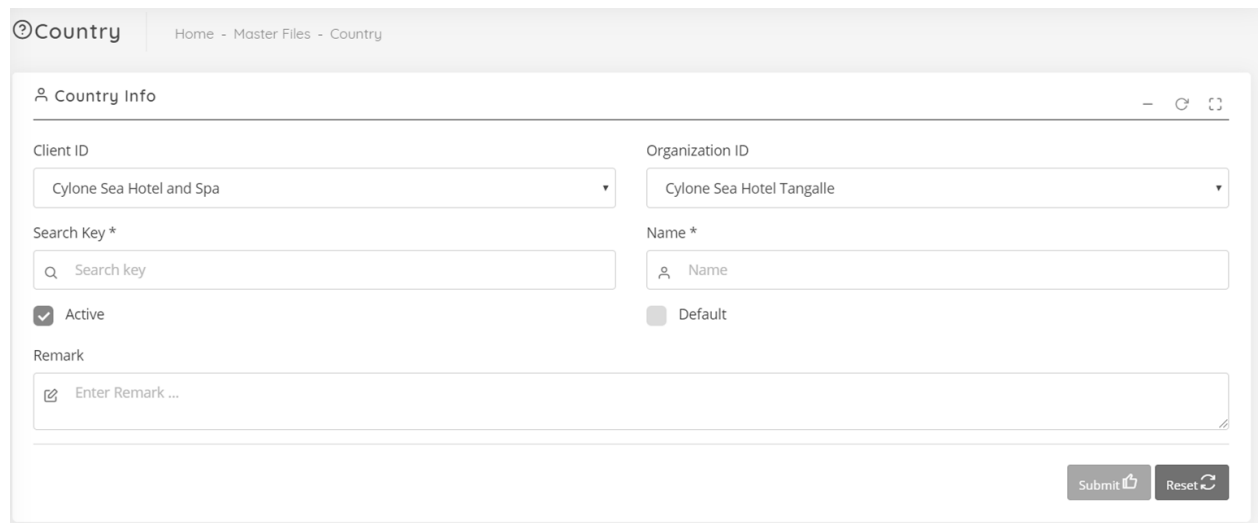
Common Meal: kinds of meal plan preferences offered to guests at Checked in.



The screenshot shows the 'CommonMeal' form within a web application. The breadcrumb trail is 'Home - Master Files - CommonMeal'. The form title is 'CommonMeal Info'. It contains several input fields: 'Client' (dropdown menu with 'Cylone Sea Hotel and Spa'), 'Organization' (dropdown menu with 'Cylone Sea Hotel Tangalle'), 'Search Key *' (text input with a search icon), and 'Name *' (text input with a person icon). There is a 'Remark' section with a text area and a 'Enter Remark ...' placeholder. An 'Active' checkbox is checked. At the bottom right, there are 'Submit' and 'Reset' buttons.

Figure 17: UI- Common Meal

Country: It can insert all countries and the country which use this system can set as default. If management need, they can set the countries active either deactivate to visible



The screenshot shows the 'Country' form within a web application. The breadcrumb trail is 'Home - Master Files - Country'. The form title is 'Country Info'. It contains several input fields: 'Client ID' (dropdown menu with 'Cylone Sea Hotel and Spa'), 'Organization ID' (dropdown menu with 'Cylone Sea Hotel Tangalle'), 'Search Key *' (text input with a search icon), and 'Name *' (text input with a person icon). There are two checkboxes: 'Active' (checked) and 'Default' (unchecked). There is a 'Remark' section with a text area and a 'Enter Remark ...' placeholder. At the bottom right, there are 'Submit' and 'Reset' buttons.

Figure 18: UI- Country

Currency: What type of currency is guest using for transaction in the hotel premises.

Home - Master Files - Currency

②Currency

Currency Info

Client
Cylone Sea Hotel and Spa

Search Key *
Search key

☒ Active

Remark
Enter Remark ...

Organization
Cylone Sea Hotel Tangalle

Name *
Name

☐ Default

Submit
Reset

Figure 19: UI- Currency

Currency Line: Currency rates can be changed and currency line is used for calculating the changing rates according to the particular currency.

Home - Master Files - Currency Line

②Currency Line

Currency Line Info

Client
Cylone Sea Hotel and Spa

Currency *
-- Select Currency --

Selling Rate
\$ 1.0

Effecting Date

Remark
Enter Remark ...

☒ Active

Organization
Cylone Sea Hotel Tangalle

Buying Rate
\$ 1.0

Travel Rate
\$ 1.0

Submit
Reset

Figure 20: UI- Currency Line

Doc Code Generator: Doc Code Generator can be generated as there are so many unique identities for processes to identify each processes one by one.

Doc Code Generator
Home - Master Files - Doc Code Generator

Doc Code Generator Info

Client ID
Cylone Sea Hotel and Spa

Organization ID
Cylone Sea Hotel Tangalle

Search Key *
Search key

AutoCode *
0

Prefix
Prefix

Suffix
Suffix

☒ Active

Description
Enter Description

Remark
Enter Remark ...

Submit
Reset

Figure 21: UI- Doc Code Generator

Floor: It contains all the floors of buildings in the hotel.

Floor
Home - Master Files - Floor

Floor Info

Client
Cylone Sea Hotel and Spa

Organization
Cylone Sea Hotel Tangalle

Search Key *
Search key

Name *
Name

Remark
Enter Remark ...

☒ Active

Submit
Reset

Figure 22: UI- Floor

Location: There are some departments of the hotel can be identified as locations.

Home - Master Files - Location

Location

Location Info

Client

Cylone Sea Hotel and Spa

Location Type *

-- Select Location Type --

Name *

Name

Remark

Enter Remark ...

☒ Active

Organization

Cylone Sea Hotel Tangalle

Search Key *

Search key

Description

Description

Submit Reset

Figure 23: UI- Location

Location Type: All the Locations Categorized In To Several Types And Each And Every Location Is Linked With Each Other

Location Type Home - Master Files - Location Type

Location Type Info

Client ID

Cylone Sea Hotel and Spa

Search Key *

Search key

Remark

Enter Remark ...

☒ Active

Organization ID

Cylone Sea Hotel Tangalle

Name *

Name

Submit Reset

Figure 24: UI- Location Type

Market: This contains according to the tour operator of other countries.

Market
Home - Master Files - Markets

Market Info

Client

Cylone Sea Hotel and Spa

Organization

Cylone Sea Hotel Tangalle

Search Key *

Search key

Name *

Name

Tour Operator *

-- Select Tour Operator --

Remark

Enter Remark ...

☒ Active

Submit
Reset

Figure 25: UI-Market

Nationality: Nationality of the client is added in this.

Nationality
Home - Master Files - Nationality

Nationality Info

Client

Cylone Sea Hotel and Spa

Organization

Cylone Sea Hotel Tangalle

Search Key *

Search key

Name *

Name

Remark

Enter Remark ...

☒ Active

Submit
Reset

Figure 26: UI- Nationality

Meal Price: Prices for the preference meal plans client selected during the check-in.

The screenshot shows the 'MealPrice' form within the application. The header includes a help icon, the title 'MealPrice', and a breadcrumb trail 'Home - Master Files - MealPrice'. The form is titled 'MealPrice Info' and contains several input fields: 'Client' (dropdown menu with 'Cylone Sea Hotel and Spa'), 'Organization' (dropdown menu with 'Cylone Sea Hotel Tangalle'), 'Common Meal' (dropdown menu with '-- Select Common Meal --'), 'Currency' (dropdown menu with '-- Select Currency --'), 'Start Date & End Date' (two date input fields), and 'Rate' (text input field with '\$ 0.0'). There is a 'Remark' section with a text area and a 'Remark' label. At the bottom, there is a checkbox labeled 'Active' which is checked. The form has 'Submit' and 'Reset' buttons at the bottom right.

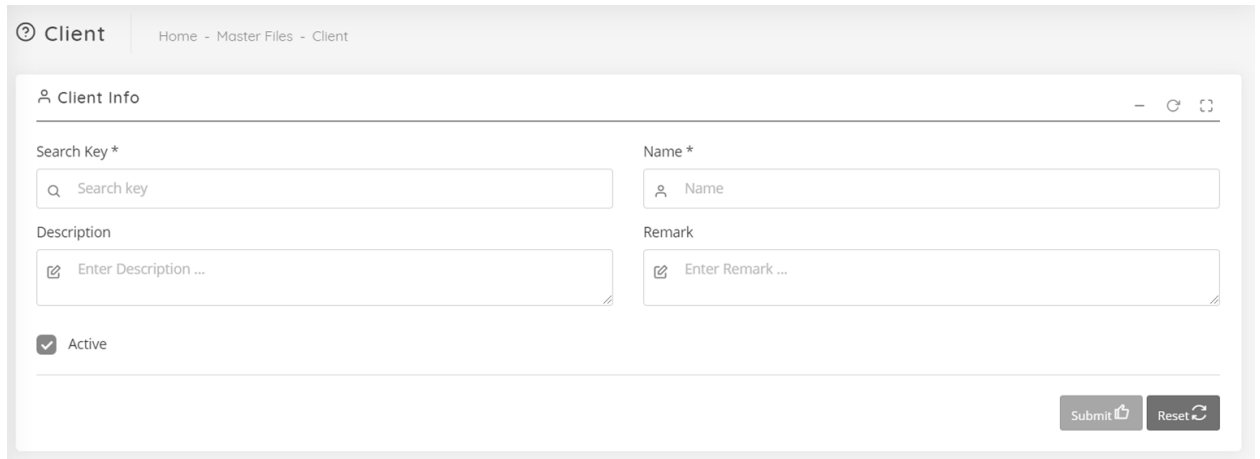
Figure 27: UI- Meal Price

Offer: In here, management can include the offers and promotions that hotel gives to the clients.

The screenshot shows the 'Offer' form within the application. The header includes a help icon, the title 'Offer', and a breadcrumb trail 'Home - Master Files - Offer'. The form is titled 'Offer Info' and contains several input fields: 'Client' (dropdown menu with 'Cylone Sea Hotel and Spa'), 'Organization' (dropdown menu with 'Cylone Sea Hotel Tangalle'), 'Search Key *' (text input field with a search icon), 'Name *' (text input field with a search icon), 'Start Date *' (date input field with a calendar icon), and 'End Date *' (date input field with a calendar icon). There is a 'Description' section with a text area and a 'Description' label. There is a 'Remark' section with a text area and a 'Remark' label. At the bottom, there is a checkbox labeled 'Active' which is checked, and a checkbox labeled 'Tour Operator Wise' which is unchecked. The form has 'Submit' and 'Reset' buttons at the bottom right.

Figure 28: UI- Offer

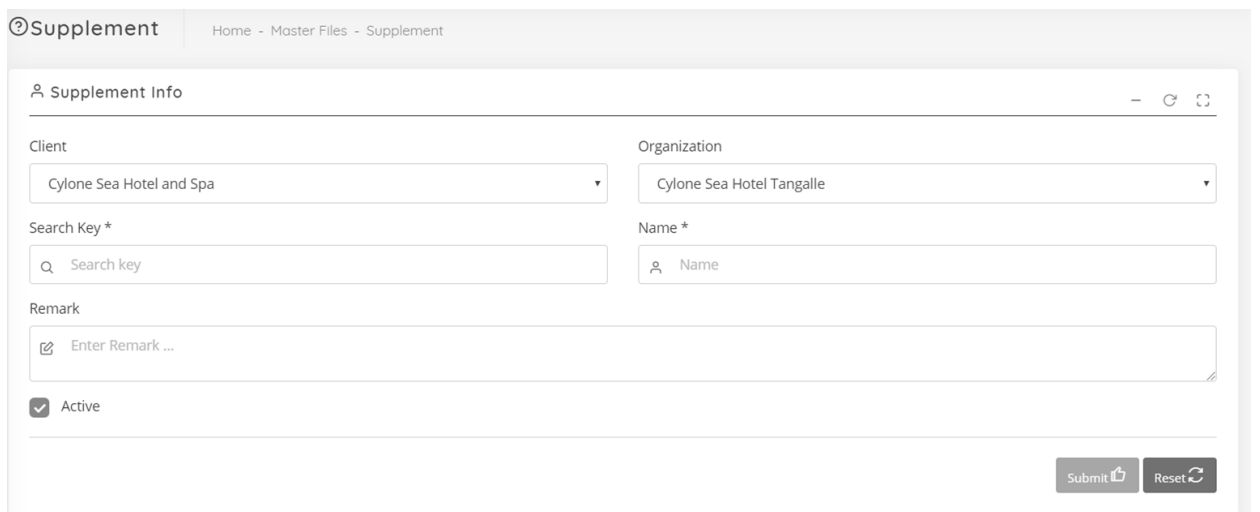
Client: Should define new client in the system. The client is the highest level of an independent business entity. Each client will have, one or more organizations



The 'Client' form is titled 'Client Info' and is located under the breadcrumb 'Home - Master Files - Client'. It contains the following fields: 'Search Key *' with a search icon and placeholder 'Search key'; 'Name *' with a person icon and placeholder 'Name'; 'Description' with a notepad icon and placeholder 'Enter Description ...'; 'Remark' with a notepad icon and placeholder 'Enter Remark ...'; and an 'Active' checkbox which is checked. At the bottom right are 'Submit' and 'Reset' buttons.

Figure 29: UI- Client

Supplement: This contains when guest wants other required items.



The 'Supplement' form is titled 'Supplement Info' and is located under the breadcrumb 'Home - Master Files - Supplement'. It contains the following fields: 'Client' dropdown menu with 'Cylone Sea Hotel and Spa' selected; 'Organization' dropdown menu with 'Cylone Sea Hotel Tangalle' selected; 'Search Key *' with a search icon and placeholder 'Search key'; 'Name *' with a person icon and placeholder 'Name'; 'Remark' with a notepad icon and placeholder 'Enter Remark ...'; and an 'Active' checkbox which is checked. At the bottom right are 'Submit' and 'Reset' buttons.

Figure 30: UI- Supplement

Organization: It is only part of the client one or more.

Organization

Home - Master Files - Organization

Organization Info

Client *

Cylone Sea Hotel and Spa

Search Key *

Search key

Name *

Name

Address *

Enter Address ...

Description

Description

Vat Registration Number *

Vat Registration Number

Encashment Commission Rate

0.0

Phone Number *

Fax Number

Web Site

Email

Remark

Enter Remark ...

Upload small Logo

Drop or Browse Image

Upload medium Logo

Drop or Browse Image

Upload large Logo

Drop or Browse Image

☒ Active

☐ IBE Enable

Submit

Reset

Figure 31: UI- Organization

Payment Mode: Can select the payment methods through this.

Home - Master Files - Payment Mode

Payment Mode

Payment Mode Info

Client: Cylone Sea Hotel and Spa

Organization: Cylone Sea Hotel Tangalle

Search Key *: Search key

Doc Code Search Key *: -- Select Search Key --

Description *: Description

POS Active: ☐ Active: ☒

Remark: Enter Remark ...

Submit Reset

Figure 32: UI- Payment Mode

Pickup Method: Can get an idea about the pick-up details of the guest.

Pickup Method

Pickup Method Info

Client: Cylone Sea Hotel and Spa

Organization: Cylone Sea Hotel Tangalle

Search Key *: Search key

Name *: Name

Remark: Enter Remark ...

Active: ☒

Submit Reset

Figure 33: UI- Pickup Method

Profession: This can get an image of guest's professional background.

Home - Master Files - Profession

Profession Info

Client: Cylone Sea Hotel and Spa

Organization: Cylone Sea Hotel Tangalle

Search Key *: Search key

Name *: Name

Remark: Enter Remark ...

☒ Active

Submit Reset

Figure 34: UI- Profession

Purpose: It is easy to know the reasons of staying the guests.

Home - Master Files - Purpose

Purpose Info

Client: Cylone Sea Hotel and Spa

Organization: Cylone Sea Hotel Tangalle

Search Key *: Search key

Name *: Name

Sort Order *: 1

☒ Active ☐ Default

Remark: Enter Remark ...

Submit Reset

Figure 35: UI- Purpose

Room Capacity: Number of guests can stay in that particular room.

The screenshot shows a web application interface for 'Room Capacity'. At the top, there is a header bar with a question mark icon and the text 'Room Capacity', followed by a breadcrumb trail 'Home - Master Files - Room Capacity'. Below this is a form titled 'Room Capacity Info' with a close, refresh, and full-screen icon in the top right corner. The form contains several input fields: 'Client' (a dropdown menu with 'Cylone Sea Hotel and Spa' selected), 'Organization' (a dropdown menu with 'Cylone Sea Hotel Tangalle' selected), 'Search Key *' (a text input field with a magnifying glass icon and the placeholder 'Search key'), 'Name *' (a text input field with a person icon and the placeholder 'Name'), and 'Remark' (a large text area with a pencil icon and the placeholder 'Enter Remark ...'). There is also a checkbox labeled 'Active' which is checked. At the bottom right of the form are two buttons: 'Submit' with a checkmark icon and 'Reset' with a circular arrow icon.

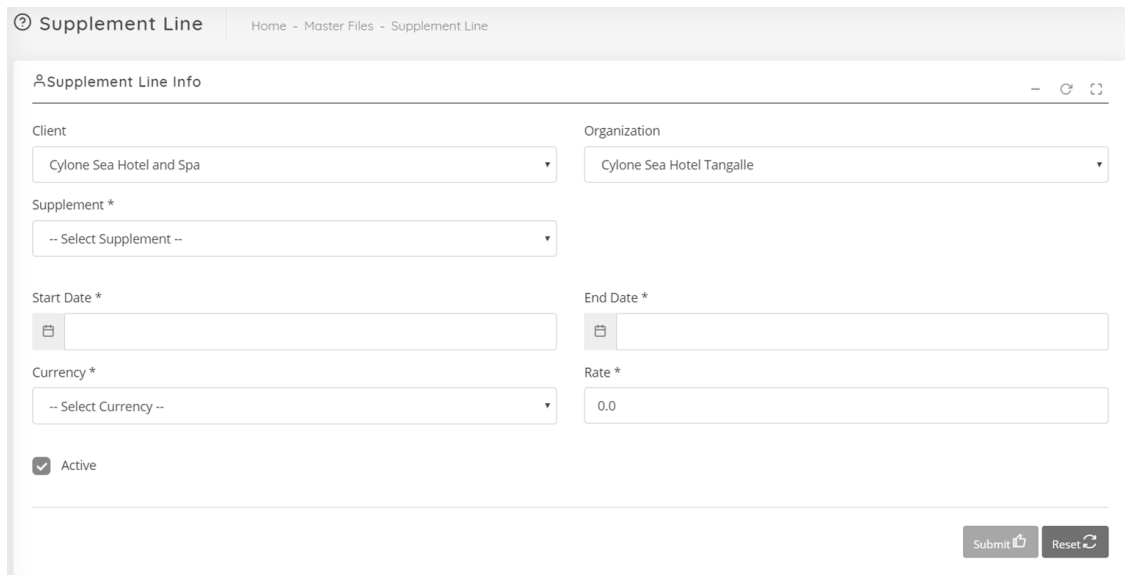
Figure 36: UI- Room Capacity

Room: This can easily identify the preferences of the guest's requirement.

The screenshot shows a web application interface for 'Room'. At the top, there is a header bar with a question mark icon and the text 'Room', followed by a breadcrumb trail 'Home - Master Files - Room'. Below this is a form titled 'Room Info' with a close, refresh, and full-screen icon in the top right corner. The form contains several input fields: 'Client' (a dropdown menu with 'Cylone Sea Hotel and Spa' selected), 'Organization' (a dropdown menu with 'Cylone Sea Hotel Tangalle' selected), 'Search Key *' (a text input field with a magnifying glass icon and the placeholder 'Search key'), 'Name *' (a text input field with a person icon and the placeholder 'Name'), 'Room Type *' (a dropdown menu with '-- Select Room Type --' selected), 'Room Status *' (a dropdown menu with '-- Select Room Status --' selected), 'Building *' (a dropdown menu with '-- Select Building --' selected), and 'Floor *' (a dropdown menu with '-- Select Floor --' selected). There is also a 'Remark' text area with a pencil icon and the placeholder 'Enter Remark ...', and a checked 'Active' checkbox. At the bottom right of the form are two buttons: 'Submit' with a checkmark icon and 'Reset' with a circular arrow icon.

Figure 37: UI- Room

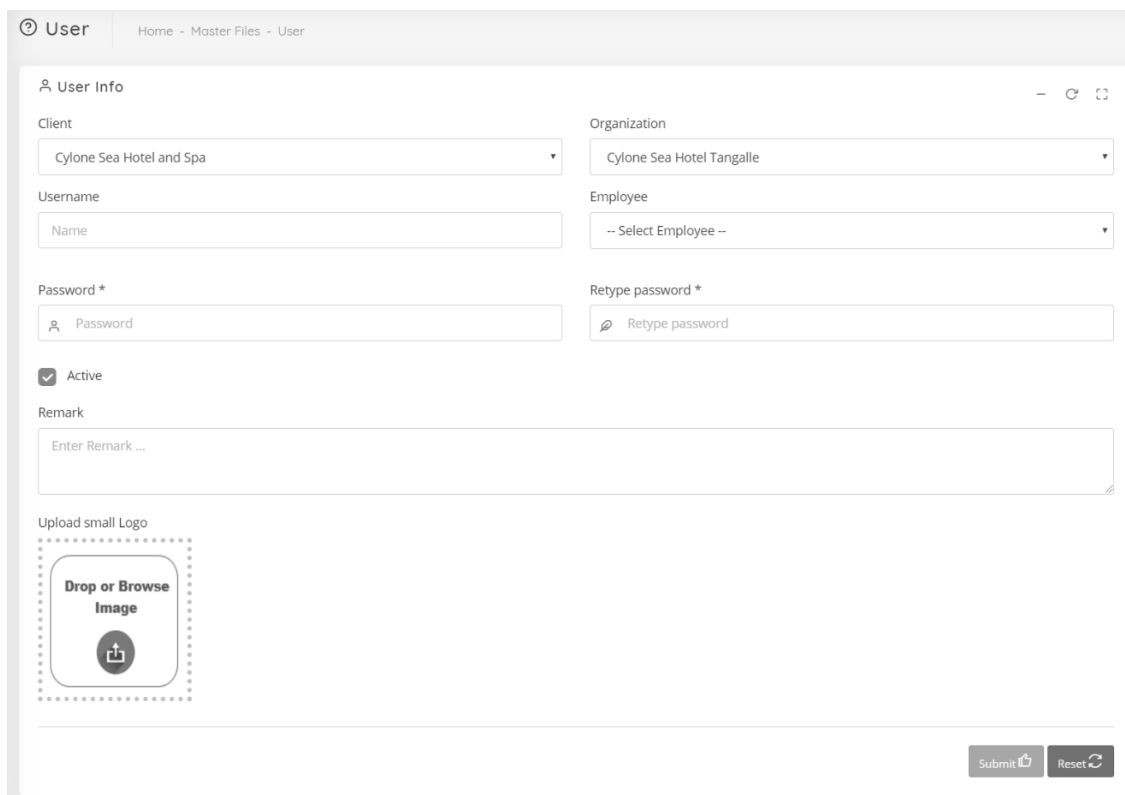
Supplement Line: Issues the duration of the requested supplement.



The 'Supplement Line' form is titled 'Supplement Line' with a breadcrumb 'Home - Master Files - Supplement Line'. It contains the following fields: 'Client' (dropdown with 'Cylone Sea Hotel and Spa'), 'Organization' (dropdown with 'Cylone Sea Hotel Tangalle'), 'Supplement *' (dropdown with '-- Select Supplement --'), 'Start Date *' (calendar icon and input field), 'End Date *' (calendar icon and input field), 'Currency *' (dropdown with '-- Select Currency --'), and 'Rate *' (input field with '0.0'). There is a checked 'Active' checkbox. At the bottom right are 'Submit' and 'Reset' buttons.

Figure 38: UI- Supplement Line

User: System Admin can create a new user account for employees to access the system.



The 'User' form is titled 'User' with a breadcrumb 'Home - Master Files - User'. It contains the following fields: 'Client' (dropdown with 'Cylone Sea Hotel and Spa'), 'Organization' (dropdown with 'Cylone Sea Hotel Tangalle'), 'Username' (input field with 'Name'), 'Employee' (dropdown with '-- Select Employee --'), 'Password *' (password icon and input field), and 'Retype password *' (password icon and input field). There is a checked 'Active' checkbox and a 'Remark' text area with placeholder 'Enter Remark ...'. Below is an 'Upload small Logo' section with a 'Drop or Browse Image' button and a file upload icon. At the bottom right are 'Submit' and 'Reset' buttons.

Figure 39: UI- User



Tour Operator: A company that makes arrangements for travel and places to stay, often selling these together as package holidays.

Figure 40: UI- Tour Operator

4 References

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5 Appendices



**BSc. (Hons) Computing/BEng. (Hons) Networking / BEng. (Hons)
Software Engineering**

Project Proposal Approval Form

Name in Full : Chazool Kaweesha I PUNCHI Heewage


Registration No : GAL/B-000007 LMU No:

Batch No : LMU-T-BENG-SW-FEB/2019-001

Course : BEng. (Hons) Software Engineering

Project Topic : Cloud based property management
System with face recognition

Supervisor Comments :
do some further literature on the
PMS domain & expand domain wise functionalities
do some further literature on the
associated technologies
Be specific on project related objectives.
Try to do some analysis on the Social media
content of customers & identify their preferences
using NLP.

Approved by the Supervisor : Approved Student's Signature: 

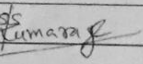
Date Collected : 30/03/2019 Supervisor's Signature: 

Figure 41: Project Proposal Approval Form

Meeting	Criteria	Suggestions	Actions	Date	Signature
<i>Proposal Stage</i>					
1.	Project topic approval	Project topic is suggested to refined in order to describe the tools & technologies used.	Project topic is refined as follows cloud based property management system with face recognition	30/03/2015	S. Kumara
2.	Project proposal approval	Project proposal approved with the Supervisor comments including in the proposal approval form.	Further lit review done done	30/03/2015	S. Kumara
<i>Interim & Final Stage</i>					
3.	Literature review (Gathered resource documents)	Literature reviews has to be further extended. not presented in a document format	existing systems & special functions, further improvements, further working more interactive system.		S. Kumara

Figure 42: Supervisor Log

4.	Literature review (Report)	facts were not collected using reliable sources.	advised to read journal articles, write papers & literature review research papers.		Sammy
5.	Approach (Users, Input, Output, Technologies Used)	only the draft and business process is implemented	Suggested to use cloud technologies or docker based deployment		Sammy
6.	Project Design	functions. Project design is not complete & comprehensive.	Project design has to be extended according to the suggested functions & deployment methods.		Sammy
7.	Implementation (Algorithms, Flow charts, System, etc.)	has to be adhered to the java coding standards define proper algorithms & flow charts for the proposed functions.	Follow java coding standards.		Sammy
8.					

9.					
10.	Evaluation (Testing evidence)	proper test plans were not prepared. proper test cases were not prepared. (cover all test cases)	follow the prepare proper test plans or test cases.		summary
11.	Conclusion (Result interpretation, Achievement of objectives, Limitations) & Further work	cloud deployment was not done. innovative nothing incorporated is to the project	deploy the project in the cloud incorporate some something innovative to the project		summary
12.	Guidance for the final viva	prepare the complete the promised functionalities in the proposal. pre do proper documentation in the source code (comments) algorithm used it should be able to explain all the source codes	explain main functionalities promised in the proposal explain the data structures & explain the tools & technologies used.		summary