VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI-590018

A DBMS Mini Project Report On

“APARTMENT MANAGEMENT SYSTEM”

Submitted in the partial fulfilment of the requirements for the award of the Degree of

Bachelor of Engineering in Computer Science and Engineering

Submitted by

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Under the guidance of
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Project Guide

Department of Computer Science and Engineering

The Oxford College of Engineering

Hosur Road, Bommanahalli, Bengaluru-560068

2020-2021

THE OXFORD COLLEGE OF ENGINEERING

Hosur Road, Bommanahalli, Bengaluru – 560068

(Affiliated to Visvesvaraya Technological University, Belagavi)

Department of Computer Science and Engineering

CERTIFICATE

Certified that the project work entitled **"APARTMENT MANAGEMENT SYSTEM"** carried out by **NAVEEN G (1OX18CS049), PAVAN KUMAR P (1OX18CS055) , bonafide** students of The Oxford College of Engineering, Bengaluru in partial fulfilment for the award of the Degree of **Bachelor of Engineering in Computer Science and Engineering** of the **Visvesvaraya Technological University, Belagavi** during the year **2020-2021**. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said Degree.

Prof. Latha R	**Dr. R. Ch. A Naidu**	**Dr. G T Raju**
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Name of the Examiners **Signature with Date**

1. ____________________ ____________________

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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(Approved by AICTE, New Delhi, Accredited by NBA, NAAC, New Delhi & Affiliated to VTU, Belagavi)

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Department of Computer Science and Engineering

DECLARATION

We, the students of fifth semester B.E, in the Department of Computer Science and Engineering, **The Oxford College of Engineering**, Bengaluru declare that the Project work entitled **"APARTMENT MANAGEMENT SYSTEM"** has been carried out by us and submitted in partial fulfilment of the course requirements for the award of degree in **Bachelor of Engineering in Computer Science and Engineering** discipline of **Visvesvaraya Technological University, Belagavi** during the academic year 2**020-21**. Further, the matter embodied in the dissertation has not been submitted previously by anybody for the award of any degree or diploma to any other university.

NAVEEN G

PAVAN KUMAR P

Place: Bengaluru

Date:

ABSTRACT

With the advent of the internet and E-commerce applications, Real estate field has embraced both these technologies to leverage their service to a wider audience and market. Customers can now view and book a flat in apartment using a phone or computer. The technology now has been so advanced that everything happens with just a click.

This Application will be primarily used to manage all the short term and long term rental transactions for each of the apartment buildings managed under an Apartment Management company. This application is aimed to cater to the needs of both the Management Staff and the guest to manage apartments and apply for apartments respectively.

The Management Staffs will be able to use the application to update all the information regarding the apartment buildings such as type of Apartments, Number of units, Facilities available for each apartment and apartment booking status, the staffs would also be able to generate reports to find the availability of any specific apartment and details of guests residing at their apartment building. Staff’s would also be able to assign an available apartment to any new guest and on the other hand guest would also have an option to register and apply for an apartment based on the availability directly through the application. The guest would be able to manage their profile information such as Name, Contact Number, Contact Email Id

ACKNOWLEDGEMENT

A project is a job of great enormity and it can‟t be accomplished by an individual all by them. Eventually, we are grateful to a number of individuals whose professional guidance, assistance and encouragement have made it a pleasant endeavour to undertake this project.

It gives us great pleasure in expressing our deep sense of gratitude to our respected Founder Chairman **Late.Sri S. Narasa Raju,** and to our respected Chairman **Sri S.N.V.L Narasimha Raju ,** for having provided us with great infrastructure and well-furnished labs.

We take this opportunity to express our profound gratitude to our respected Principal **Dr. G T Raju** for his support.

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We are grateful to the Head of the Department **Dr. R.Ch. A Naidu,** for his unfailing encouragement and suggestion given to us in the course of our project work.

Guidance and deadlines play a very important role in successful completion of the project on time. We also convey our gratitude to our internal project guide, **Prof. Latha R ,** for having constantly guided and monitored the development of the project.

Finally, a note of thanks to the Department of Computer Science Engineering, both teaching and non-teaching staff for their co-operation extended to us.

We thank our parents for their constant support and encouragement. Last, but not the least, we would like to thank our peers and friends.

NAVEEN G

PAVAN KUMAR P

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CHAPTER 1

INTRODUCTION

The project named **"APARTMENT MANAGEMENT SYSTEM"**, a flat booking system is a computer-based application.

An Interactive application for managing data and bookings which helps in maintaining the records of all the bookings, the users also reduces the work of the staff in the company. The main aim of this application is to apply technology in order to book the flats in an apartment at the comfort of users from their home.

1.1 Preamble

Apartment Management System is the mini-project we have chosen. This project is mainly designed for the Management Staff working in the Rental or Flat Booking companies. We have designed with utmost care taking into consideration of all the possibilities. The website is too simple to use and user-friendly. Many options are provided to reduce our client's work. Registering a guest and adding an apartment and updating the booking status are few of the facilities we have provided. The requirements are discussed in detail below

1.2 Problem Statement

Currently, if a person needs to book a flat in an apartment, he needs to go voluntarily to that particular apartment and has to wait for all the processes to be done. So we are trying to reduce the amount of stress of the customers by booking the flats online. If they feel like cancelling the apartment they can do that. So we are providing the facilities for the customers to reserve the flats until they buy.

1.3 Proposed Solution

The main purpose of this study is to automate manual procedures of reserving a flat for any customer through an automated system so that the customers can book the flats by making a call to this company. The main objectives are:

- To provide a web-based flat booking function where a customer can reserve the flats through the online system without a need to go the site place and wait.

- Enabling customers to check the availability and types of flats online. Customer can check the vacant apartments by making a call.

CHAPTER 2

ANALYSIS AND SYSTEM REQUIREMENTS

2.1 Existing System

Seeing a flat in an apartment the customer if he wishes to buy, then he need to make phone calls and have to waste a lot of time only doing the same thing. Then the customer needs to pay a token of advance to block the booking. So these processes are very tedious.

2.1 Hardware & Software Requirements

Hardware requirements:

- A minimum hard disk space of 512 Gigabytes(GB).
- RAM size of 4 GB
- Intel core processor and AMD processor
- Keyboard

Software requirements:

- Windows operating system such as Windows 10, windows 8
- Software: Xampp
- Front end: PHP, HTML, CSS, JavaScript
- Back end: Mysql

CHAPTER 3

SYSTEM DESIGN AND MODELLING

3.1 Preliminary design

System design is an abstract representation of a system component and their relationship and which describe the aggregated functionally and performance of the system. It is also the overall plan or blueprint for how to obtain answer to the question being asked. The design specifies various type of approach.

Database design is one of the most important factors to keep in mind if you are concerned with application performance management. By designing your database to be efficient in each call it makes and to effectively create rows of data in the database, you can reduce the amount of CPU needed by the server to complete your request, thereby ensuring a faster application.

3.1.1 ER diagram

Entity-relationship diagram: This depicts relationship between data objects. The attribute of each data objects noted in the entity-relationship diagram can be described using a data object description.

Relationship: Data objects are connected to one another in a variety of different ways. We can define set of object relationship pairs that define the relevant relationships.

Cardinality ratio: The data model must be capable of representing the number of occurrences of objects in a given relationship. The cardinality of an object relationship pair is 1:N, 1:1, N:N, N:1.

Figure 3.1.1 describes the ER diagram of Apartment Management System.

It has 6 entities. The entities have attributes which are primary, foreign and composite attributes. The primary attributes are underlined.

ER Diagram

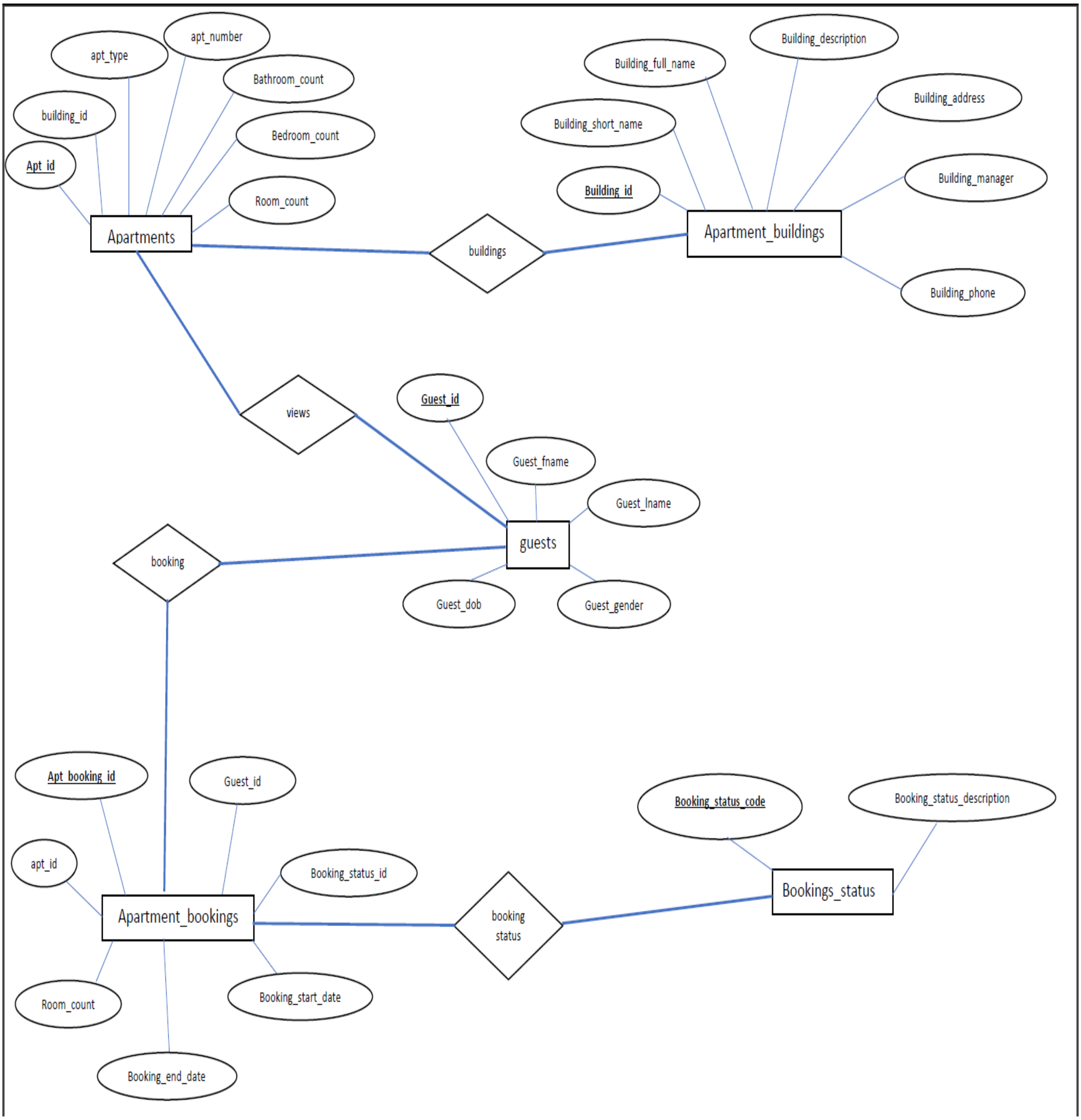


Figure 3.1.1 ER Diagram of Apartment Management System

Schema diagram

Database schema is described as database connections and constraints. It contains attributes. Every database has a state instance represent current set of database with values. There are different types of keys in a database schema.

A primary key is a table column that can be used to uniquely identify every row of the table. Any column that has this property, these columns are called candidate key. A composite primary key is a primary key consisting of more than one column. A foreign is a column or combination of columns that contains values that are found in the primary key of some table.

All the attributes of each table are interconnected by foreign key which is primary key in another column and composite key. Primary key cannot be null. The fact that many foreign key values repeat simply reflects the fact that its one-to-many relationship. In one-to-many relationship the primary key has the one value and foreign key has many values.

A relation schema is a named relation defined by a set of attributes. The term relation schema refers to a heading paired with a set of constraints defined in terms of that heading. A relation can thus be seen as an instantiation of a relation schema if it has the heading of that schema and it satisfies the applicable constraints. Schema diagram for placement management is shown in figure.

Entities

a. Apartment_buildings :

This is an entity where all the information related to buildings are present. The apartemet_buildings entity contains the following attributes as follows, building_id, building_short_name, building_full_name, building_address, building_manager, building_phone and building_description .

b. Apartments:

Apartments is an entity where the information related to a particular flat in a particular building are present. It contains the information such as number of rooms , number of bathrooms etc., The attributes in this entity are apt_id, building_id, apartment_number, room_count, bathroom_count.apartment_type_code.

c. Guests :

This entity contains all the information regarding the guests who register the apartments. It contains information such as guest's name, gender, DOB. The attributes in this entity are guest_id, guest_first_name, guest_last_name, guest_date_of_birth, guest_gender.

d. Apartment_bookings:

This entity mainly deals with the bookings of the apartments by the guests. It contains all the information regarding the bookings. The attributes in this entity are apt_booking_id , apt_id , guest_id , booking_status_id, booking_start_date, booking_end_date.

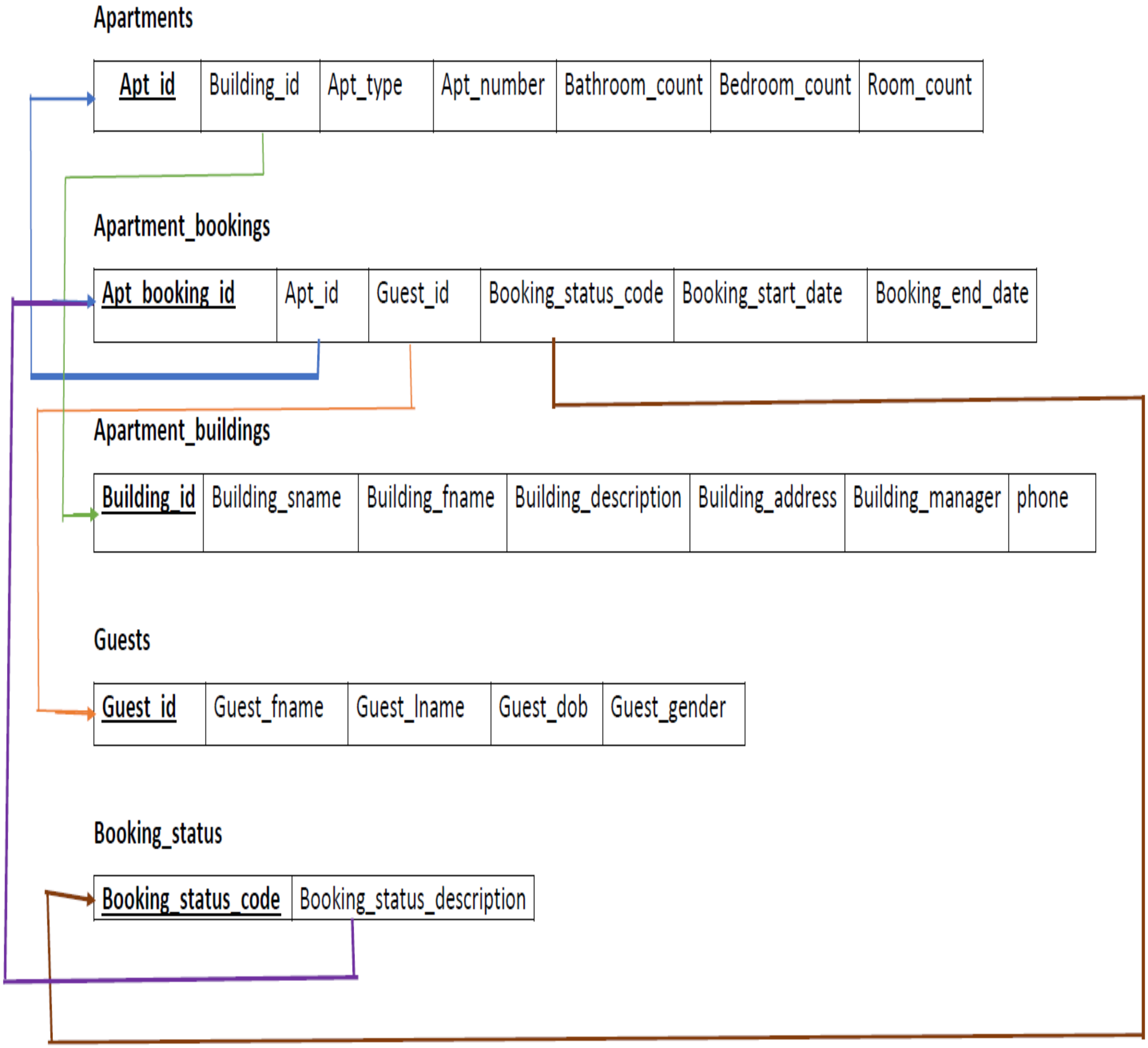
e. Booking_status:

Here it contains the booking status codes and its description. The attributes are booking_status_code, booking_status_description.

f. Members:

This entity is only for the management staff to login and make changes. This entity has nothing to do with the main database. The attributes here are id, username, password, email.

SCHEMA DIAGRAM



Apartments

Apt_id	Building_id	Apt_type	Apt_number	Bathroom_count	Bedroom_count	Room_count

Apartment_bookings

Apt_booking_id	Apt_id	Guest_id	Booking_status_code	Booking_start_date	Booking_end_date

Apartment_buildings

Building_id	Building_sname	Building_fname	Building_description	Building_address	Building_manager	phone

Guests

Guest_id	Guest_fname	Guest_lname	Guest_dob	Guest_gender

Booking_status

Booking_status_code	Booking_status_description

Figure 3.1.2 Schema Diagram of Apartment Management System

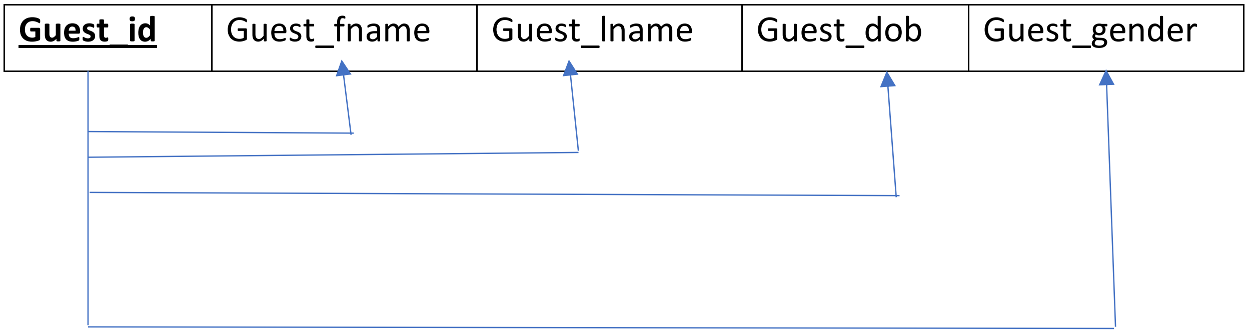
3.1 Normalization

Normalization is a process of organizing the data in database to avoid data redundancy, insertion anomaly, update anomaly & deletion anomaly. Let's discuss about anomalies first then we will discuss normal forms with examples.

Anomalies in DBMS : There are three types of anomalies that occur when the database is not normalized. These are – Insertion, update and deletion anomaly.

3.1.1 First normal form (1NF)

As per the rule of first normal form, an attribute (column) of a table cannot hold multiple values. See the guests table.



Guest_id	Guest_fname	Guest_lname	Guest_dob	Guest_gender

CHAPTER 4

IMPLEMENTATION

4.1 Implementation Operations:

Adding a guest: Here admin can add a new guest to the booked list who wants to do booking.

Updating booking details: If admin wants to update, booking details, he can update the same by using the update button and can potentially update any information.

Updating records: Admin can update the records, and can do so by using update button.

SQL statements:

Insert statement:

The INSERT INTO statement is used to insert new records in a table. The INSERT INTO syntax would be as follows:

INSERT INTO *table_name* VALUES (*value1*, *value2*, *value3*, ...);

The following SQL statement inserts a new record in the users1 table:

INSERT INTO apartment_buildings (building_id, building_short_name, building_full_name, building_description, building_address, building_manager, building_phone) VALUES
(1, 'paramount', 'paramount pilatus', 'A very good apartment', 'Arakere', 'Ujval', 9453227721);

Update statement: An SQL UPDATE statement changes the data of one or more records in a table. Either all the rows can be updated, or a subset may be chosen using a condition. The UPDATE syntax would be as follows: UPDATE *table_name* SET *column_name =value* , *column_name*=*value*... [WHERE *condition*].

UPDATE USERS SET guest_id =1 WHERE NAME=”sanjay”;

Delete statement: The DELETE statement is used to delete existing records in a table. The DELETE syntax would be as follows:

DELETE FROM *table_name* WHERE *condition*;

The following SQL statement deletes a record in the guests: delete from guests where guest_fname=”Pavan”;

Create statement: The CREATE TABLE Statement is used to create tables to store data. Integrity Constraints like primary key, unique key, foreign key can be defined for the columns while creating the table. The CREATE syntax would be as follows:

CREATE TABLE table_name(column1 datatype, column2 datatype, column3 datatype, column datatype, PRIMARY KEY(one or more columns));

The following SQL statement creates a table guests:

```
CREATE TABLE   guests (
guest_id         INT                     NOT NULL,
guest_fname      VARCHAR (30)            NOT NULL,
guest_lname      VARCHAR (30)            NOT NULL,
guest_dob        DATE                    NOT NULL,
guest_gender    VARCHAR (3)              NOT NULL,
PRIMARY KEY (guest_id)
);
```

4.1.1 Explanation with Pseudo code in to system

1. Start system
2. Enter login name and password
3. On clicking the login button
4. Connect to database
5. Query database to know whether user credentials are correct
6. If not, deny access and return login page with an error message
7. If correct, allow login
8. Re-direct user to user home page

ADDING A NEW Guest

1 Click on Add New button

2 Enter guest details(only admin can)

3 Display successfully updated

UPDATING RECORDS

1 Go to a specific tab which needs updation

2 Click on update button

3 And fill in the necessary details to be updated And save it

CHAPTER 5

TESTING

This chapter gives the outline of all the testing methods that are carried out to get a bug free application. Quality can be achieved by testing the product using different techniques at different phases of the project development.

5.1 Testing process

Testing is an integral part of software development. Testing process, in a way certifies, whether the product, that is developed, compiles with the standards, that it was designed to. Testing process involves building of test cases, against which, the product has to be tested. In some cases, test cases are done based on the system requirements specified for the product/software, which is to be developed.

5.2 Testing objectives

The main objectives of testing process are as follows:

- Testing is a process of executing a program with the intent of finding an error.
- A good test case is one that has high probability of finding an as yet undiscovered error.
- A successful test is one that uncovers an as yet undiscovered error.

5.3 Levels of Testing

Different levels of testing are used in the testing process; each level of testing aims to test different aspects of the system. The basic levels are unit testing, integration testing, system testing and acceptance testing.

5.3.1 Unit Testing

Unit testing focuses verification effort on the smallest unit of software design the module. The software built, is a collection of individual modules.

In this kind of testing exact flow of control for each module was verified. With detailed design consideration used as a guide, important control paths are tested to uncover errors within the boundary of the module.

Table 5.1:Negative test case for adding Guest

Function Name	Input	Expected Output	Error	Resolved
Add a guest	Ashwini123 as first name	Must take only Ashwini as input	Numbers are being taken as input for name	Add_guest()

Table 5.2:Positive test case for adding customer

Function Name	Input	Expected Output	Error	Resolved
Add a guest	Ashwini as first name	Expected output is seen	-	-

Table 5.3:Negative test case for input phone number

Function Name	Input	Expected Output	Error	Resolved
Input dob	12/07/1947	Must take only Dates after 1997	-	Add_guest

Table 5.4:Positive test case for input phone number

Function Name	Input	Expected Output	Error	Resolved
Input dob	1201/2000	Expected output is seen	-	-

5.3.1 Integration testing

The second level of testing is called integration testing. In this, many class-tested modules are combined into subsystems, which are then tested. The goal here is to see if all the modules can be integrated properly. We have are identified and debugged.

Table 5.5 Test case on basics of booking of flat

Function Name	Input	Expected Output	Error	Resolved
Cancelling of booking	Shashi	This guest did not book a apartment	Output not seen	Apartment_bookings()
Booking of flat	Ashwini	Yes this guest booked an flat	- -	- -

5.3.1 System testing

Here the entire application is tested. The reference document for this process is the requirement document, and the goal is to see if the application meets its requirements. Each module and component of ethereal was thoroughly tested to remove bugs through a system testing strategy. Test cases were generated for all possible input sequences and the output was verified for its correctness.

Table 5.6: Test cases for the project

Steps	Action	Expected output
Step1: choice	The screen appears when the users runs the program 1.If admin logs in	A page with different tabbed panes appears. Admin panel opens user panel opens
Step2:	The screen appears when the admin logs in and selects any one of the tabbed panes from the click of the mouse	A window for checking the list of booked flats, scheduling new buses and it also contains guests list, bookings l list and updating options in each is available here.
Selection1	1. view apartments 2.add apartments 3.view bookings	
Step2.1:	The screen appears when the user logs in and select any one of the tabbed panes from the click of the mouse	A window of checking available flats, and its schedule appears. Then the user can proceed to book the required flats.

6. CONCLUSION

The project entitled Apartment Management System has been successfully completed. The system has been developed with much care and free of errors and at the same time it is efficient and less time consuming.

During the course of this project, we learnt a lot of the work and best practices that go into creating a database, the rules to construct a good ER diagram, How to come up with relational schema mapping from the ER diagram, deriving the functional dependencies and how to normalize the relational schema. We learnt on how to design a system from Database perspective and how to efficiently store and manipulate data.

REFERENCES

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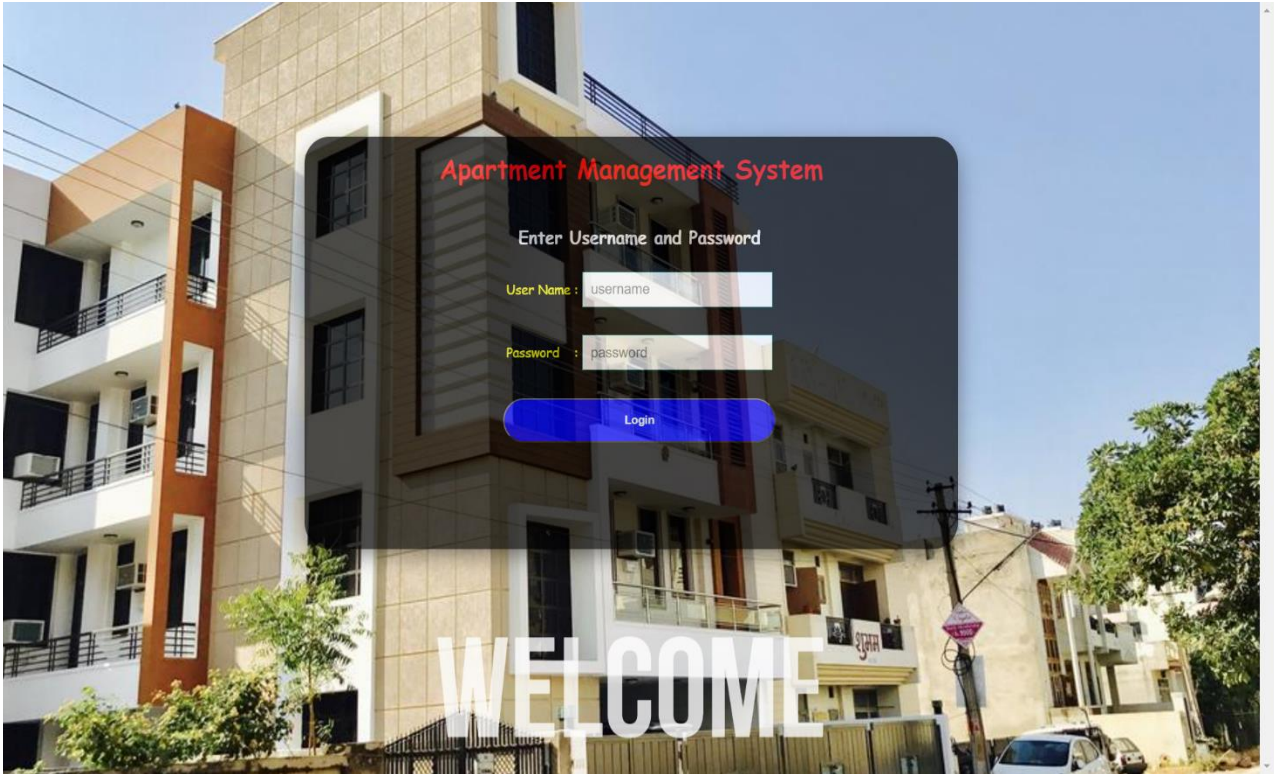
6. http://www.w3schools.com

7. https://www.tutorialspoint.com

Appendix A

The following will be the snapshots of the Front-end part.

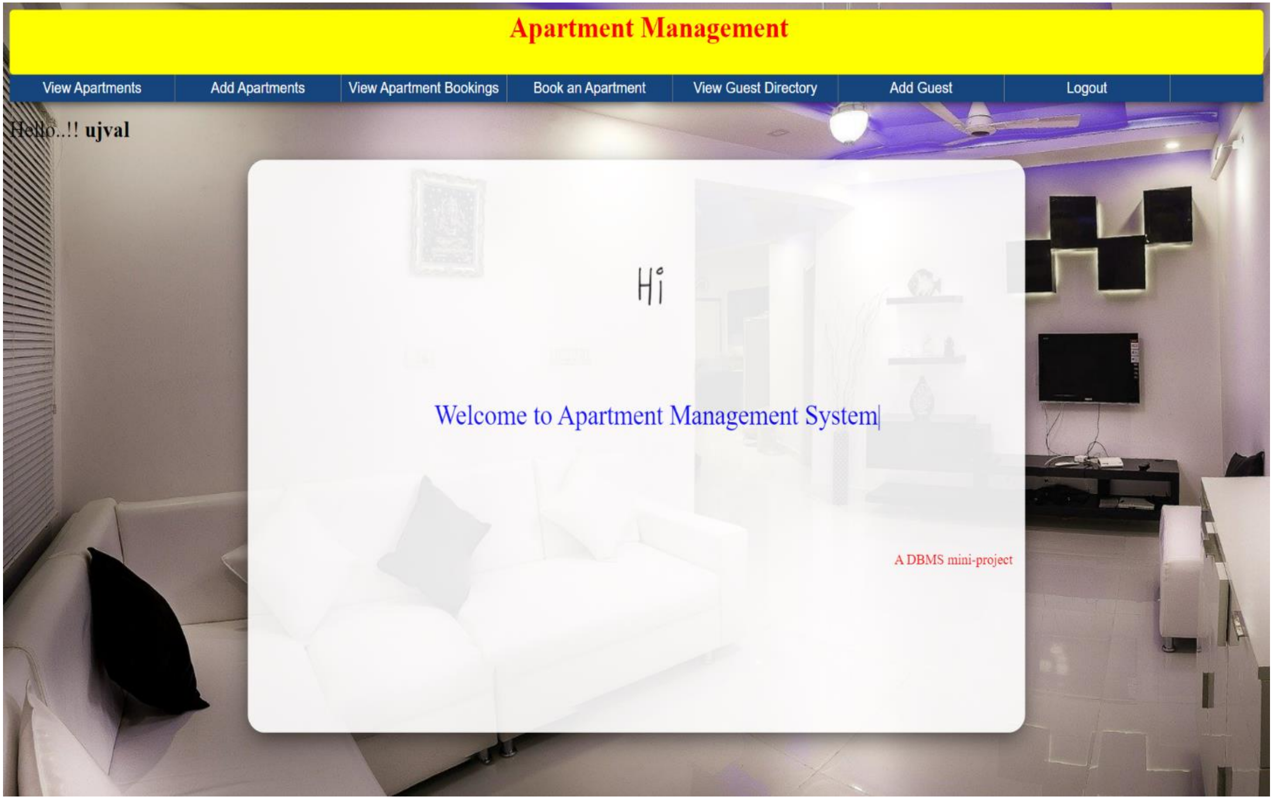
1. LOGIN Page



Apartment Management System

Enter Username and Password

2. HOME Page



Apartment Management

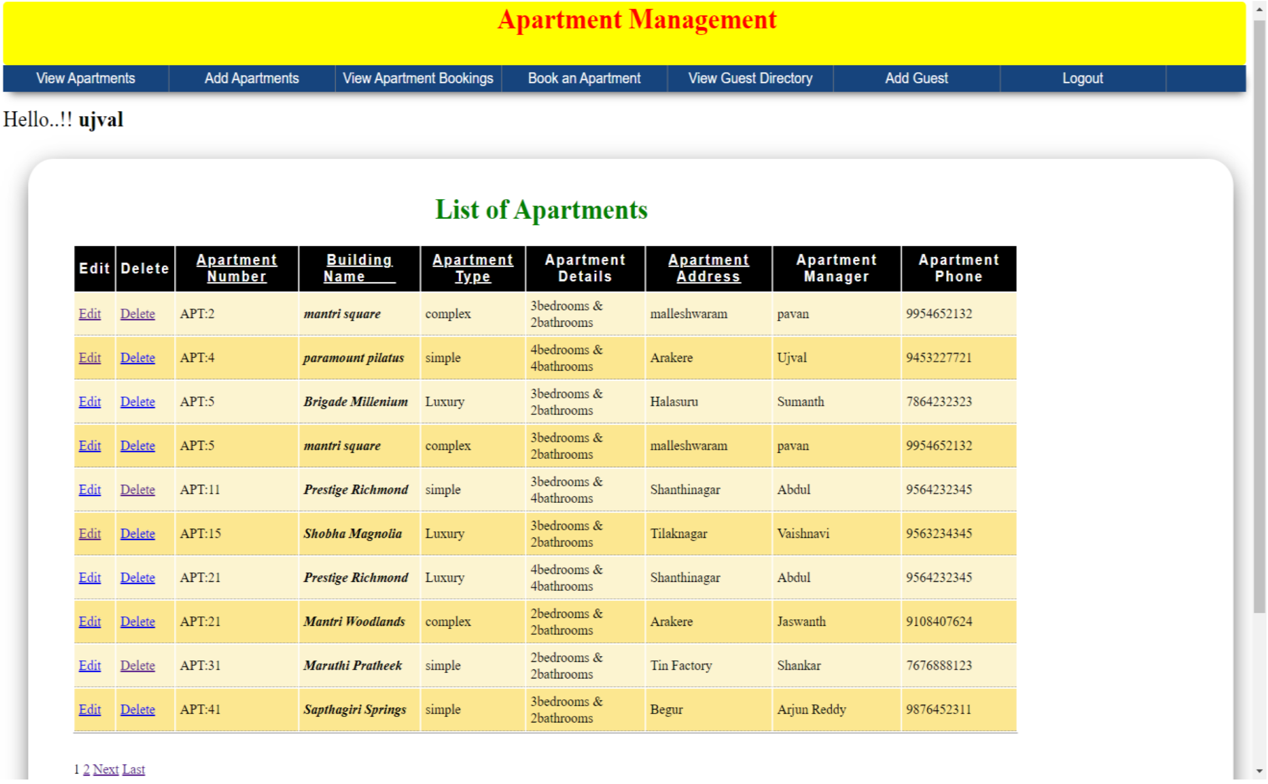
Hello..!! ujval

Hi

Welcome to Apartment Management System

A DBMS mini-project

1. View Apartments Page



Apartment Management

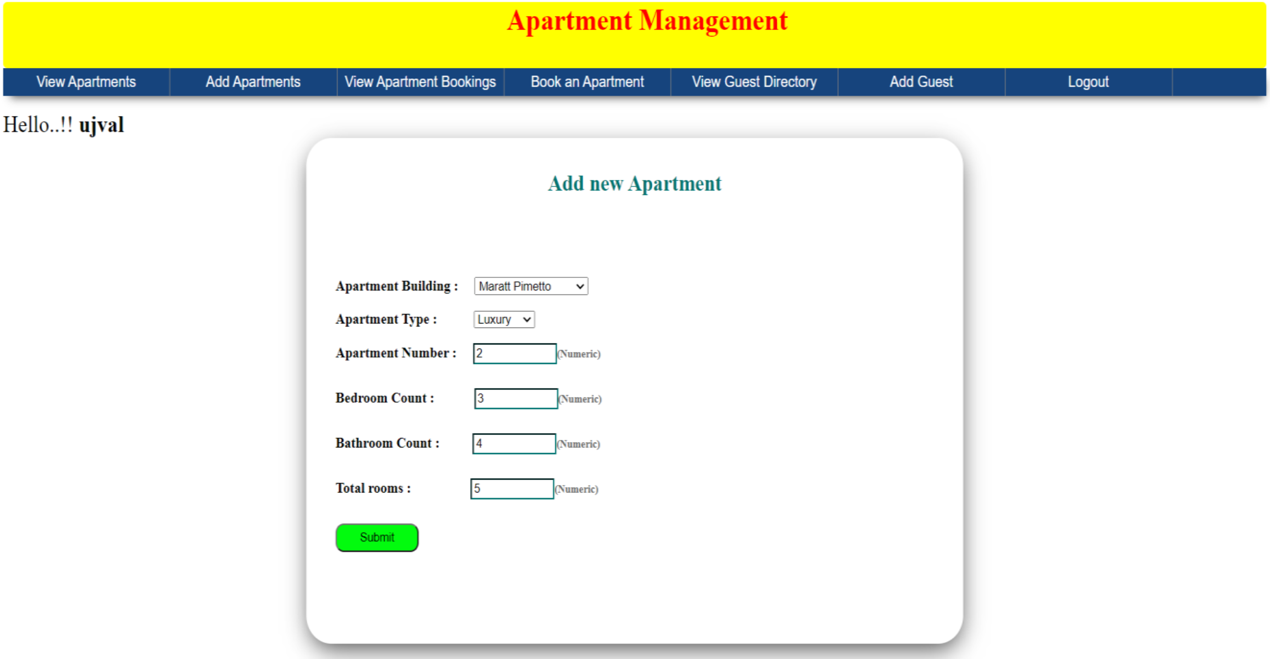
Hello..!! **ujval**

List of Apartments

Edit	Delete	Apartment Number	Building Name	Apartment Type	Apartment Details	Apartment Address	Apartment Manager	Apartment Phone
Edit	Delete	APT:2	*mantri square*	complex	3bedrooms & 2bathrooms	malleshwaram	pavan	9954652132
Edit	Delete	APT:4	*paramount pilatus*	simple	4bedrooms & 4bathrooms	Arakere	Ujval	9453227721
Edit	Delete	APT:5	*Brigade Millenium*	Luxury	3bedrooms & 2bathrooms	Halasuru	Sumanth	7864232323
Edit	Delete	APT:5	*mantri square*	complex	3bedrooms & 2bathrooms	malleshwaram	pavan	9954652132
Edit	Delete	APT:11	*Prestige Richmond*	simple	3bedrooms & 4bathrooms	Shanthinagar	Abdul	9564232345
Edit	Delete	APT:15	*Shobha Magnolia*	Luxury	3bedrooms & 2bathrooms	Tilaknagar	Vaishnavi	9563234345
Edit	Delete	APT:21	*Prestige Richmond*	Luxury	4bedrooms & 4bathrooms	Shanthinagar	Abdul	9564232345
Edit	Delete	APT:21	*Mantri Woodlands*	complex	2bedrooms & 2bathrooms	Arakere	Jaswanth	9108407624
Edit	Delete	APT:31	*Maruthi Pratheek*	simple	2bedrooms & 2bathrooms	Tin Factory	Shankar	7676888123
Edit	Delete	APT:41	*Sapthagiri Springs*	simple	3bedrooms & 2bathrooms	Begur	Arjun Reddy	9876452311

1 2 Next Last

2.Add Apartments Page



Apartment Management

Hello..!! **ujval**

Add new Apartment

Apartment Building : Maratt Pimetto

Apartment Type : Luxury

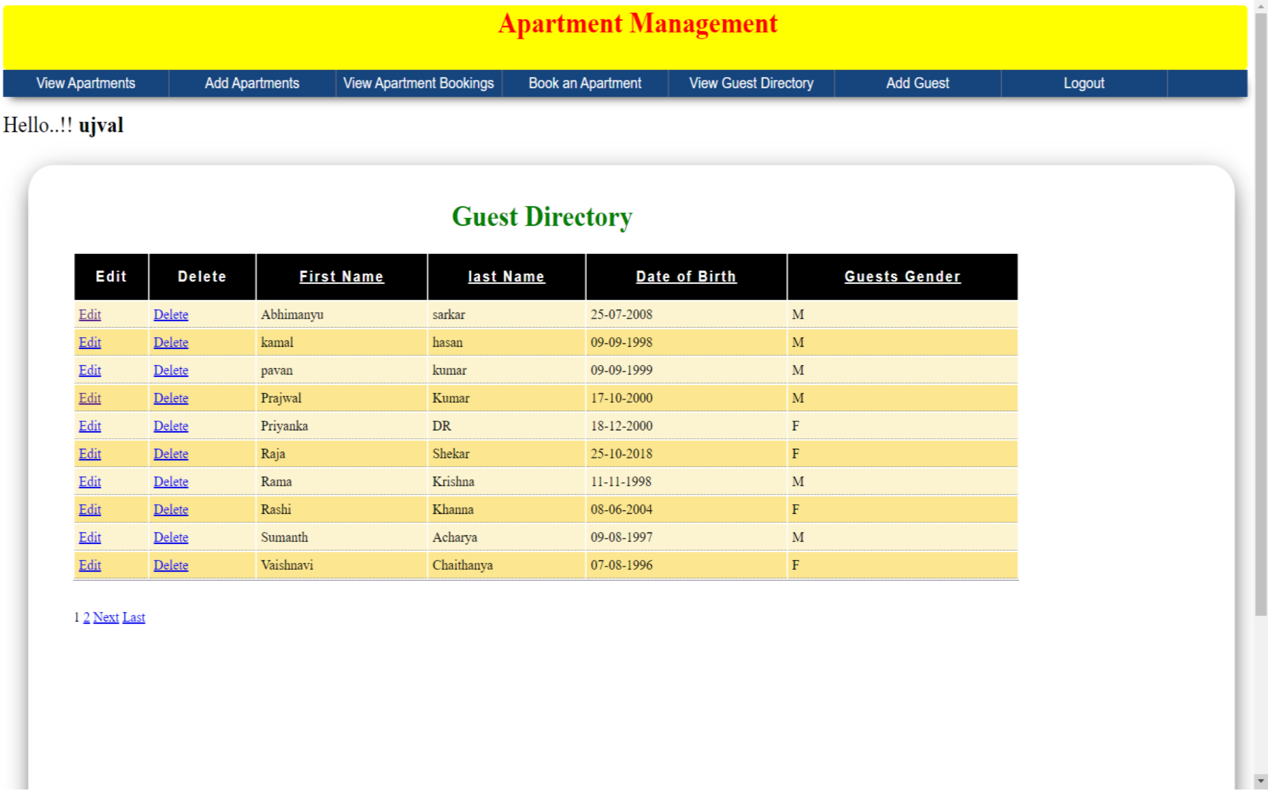
Apartment Number : 2 (Numeric)

Bedroom Count : 3 (Numeric)

Bathroom Count : 4 (Numeric)

Total rooms : 5 (Numeric)

3.View Guest Directory Page



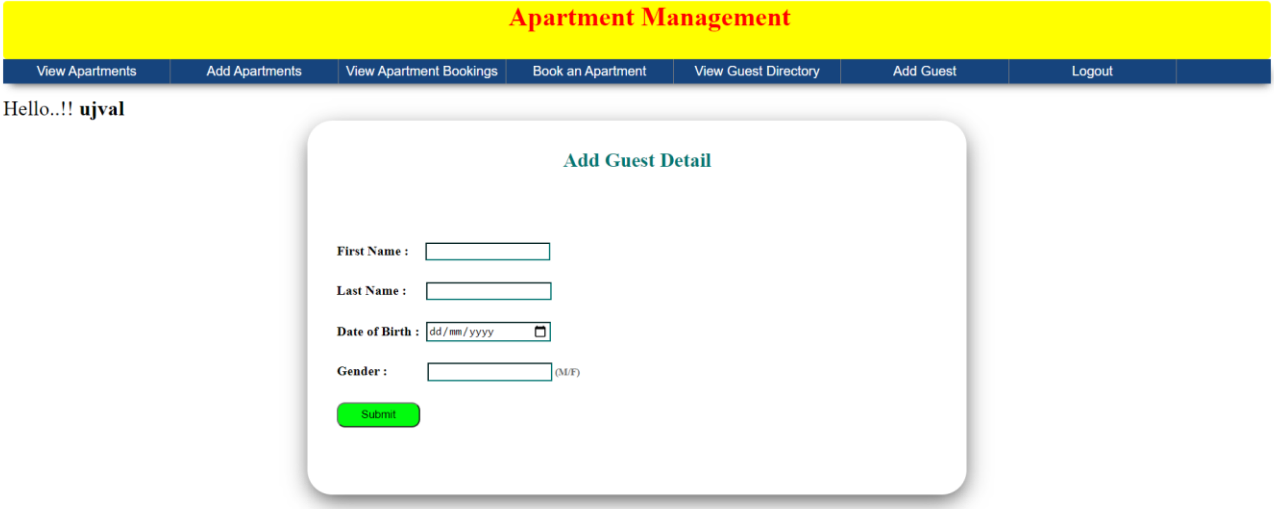
Hello..!! **ujval**

Guest Directory

Edit	Delete	First Name	last Name	Date of Birth	Guests Gender
Edit	Delete	Abhimanyu	sarkar	25-07-2008	M
Edit	Delete	kamal	hasan	09-09-1998	M
Edit	Delete	pavan	kumar	09-09-1999	M
Edit	Delete	Prajwal	Kumar	17-10-2000	M
Edit	Delete	Priyanka	DR	18-12-2000	F
Edit	Delete	Raja	Shekar	25-10-2018	F
Edit	Delete	Rama	Krishna	11-11-1998	M
Edit	Delete	Rashi	Khanna	08-06-2004	F
Edit	Delete	Sumanth	Acharya	09-08-1997	M
Edit	Delete	Vaishnavi	Chaithanya	07-08-1996	F

1 2 Next Last

Add Guests Page



Hello..!! **ujval**

Add Guest Detail

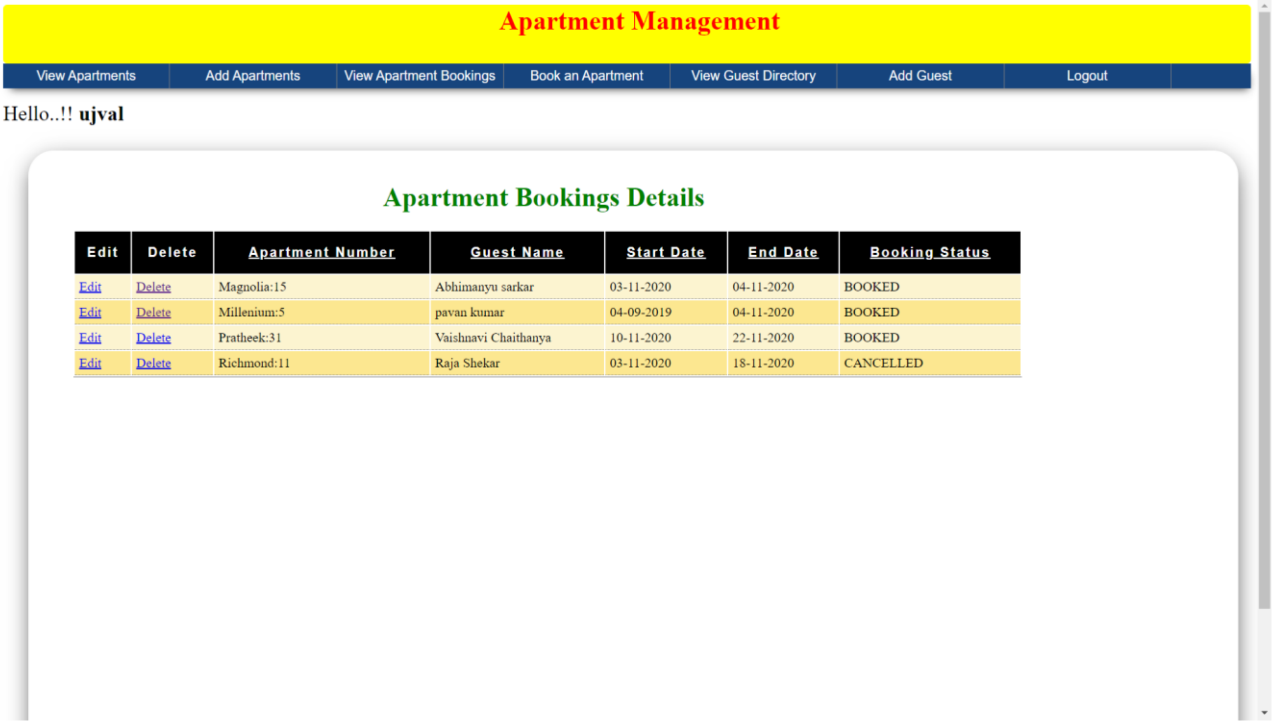
First Name :

Last Name :

Date of Birth : dd/mm/yyyy

Gender : (M/F)

3. View Apartments Booking Page

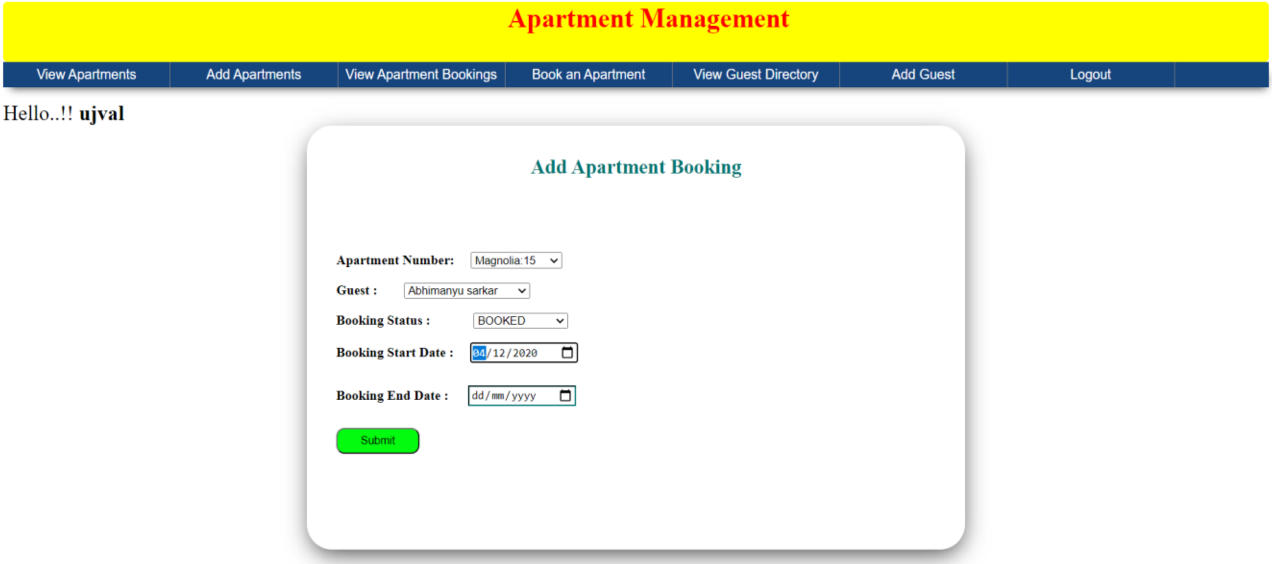


Hello..!! **ujval**

Apartment Bookings Details

Edit	Delete	Apartment Number	Guest Name	Start Date	End Date	Booking Status
Edit	Delete	Magnolia:15	Abhimanyu sarkar	03-11-2020	04-11-2020	BOOKED
Edit	Delete	Millenium:5	pavan kumar	04-09-2019	04-11-2020	BOOKED
Edit	Delete	Pratheek:31	Vaishnavi Chaithanya	10-11-2020	22-11-2020	BOOKED
Edit	Delete	Richmond:11	Raja Shekar	03-11-2020	18-11-2020	CANCELLED

4. Add Apartments Booking Page



Hello..!! **ujval**

Add Apartment Booking

Apartment Number: Magnolia:15

Guest : Abhimanyu sarkar

Booking Status : BOOKED

Booking Start Date : 04/12/2020

Booking End Date : dd/mm/yyyy