**EXAM HALL SEATING ARRANGEMENT**

A Major Project Submitted to Thiagarajar College (Autonomous)

Affiliated to Madurai Kamaraj University

In partial fulfillment of the requirement for the award of the degree

**BACHELOR OF COMPUTER APPLICATION**

Submitted By

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**DEPARTMENT OF COMPUTER APPLICATION**

**AND**

**INFORMATION TECHNOLOGY**

**THIAGARAJAR COLLEGE (AUTONOMOUS)**

(Re-Accredited with “A++” Grade by NAAC)

(Ranked 15th in NIRF 2024)

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**BONAFIDE CERTIFICATE**

This is to certify that our Major Project work entitled **“EXAM HALL SEATING ARRANGEMENT”** submitted by **J JEFFRIN SANJITH** **(22SUCA08)**, **A.K. KARTHICK RAJA**(**22SUCA09)** and students of Bachelor of Computer Application degree course in the Department of Computer Application and Information Technology, Thiagarajar College (Autonomous), Madurai, affiliated to Madurai Kamaraj University, Madurai is a bonafide record of work carried out by them, under my guidance and supervision as a partial fulfillment of the course.

It is further certified that to the best of my knowledge our Project report or any other part of our project has not submitted in this university or else where for any other degree or diploma.

Submitted for Viva – Voce held on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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**External Examiner**

**DECLARATION**

**DECLARATION**

Our Major Project work entitled **“EXAM HALL SEATING ARRANGEMENT”** has been carried out by us in the Department of Computer Application and Information Technology, Thiagarajar College (Autonomous) Madurai, affiliated to Madurai Kamaraj University, Madurai in partial fulfillment of the requirements for the Degree of Bachelor of Computer Application.

We further declare that our project work or part of our work has not been submitted in this university or elsewhere for any other degree or diploma.

Date: Signature

Place: Madurai.

J. JEFFRIN SANJITH (22SUCA08)

A.K KARTHICK RAJA (22SUCA09)

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**INTRODUCTION**

* 1. **ABSTRACT**

Our project entitled **“Exam hall seating arrangement”** is a web-based application designed to Automate and streamline the process of organizing seating arrangements for exams. Our project keeps track of various details in modules such as, Students Details, Examination Timing Details, and Hall Details with the proper descriptions and automatically generates exam seat arrangement for every student and sends a message to the students about the exam details. Overall, the "Exam Hall Seating Arrangement" reduces the time and effort required to manage seating arrangements.

Our project is developed using Hyper Text Markup Language (HTML version 5), Cascading Style Sheets (CSS3), JavaScript (JS version ES6) , Bootstrap (version 3) as **Front-end** and Hypertext Preprocessor (PHP version 8.2) and MYSQL(10.4.32-MariaDB) Database as a **back-end.**

It includes the following modules

* User Module

**Login**: Students log into the system securely.

**View Seat Assignment**: Students can view their assigned seats and exam schedules.

* Admin Module

**Login**: The administrator logs into the system securely.

**Manage Exam Details**: They can input and update exam schedules and student lists.

**Manage Seating Arrangements**: The administrator oversees the automatic allocation of seats, ensuring all criteria are met.

**View Seating Arrangements**: They can review and make necessary adjustments to the seating plans.

**USER MODULE**

* Student logs into the system.
* The system verifies the student’s credentials.
* Upon successful login, the student can view their assigned seat and exam schedule

**ADMIN MODULE**

* Our admin module is specially designed for the administrator.
* Our module has 3 sub-modules
* **Administrator login**

Admin logs into the system.

The system verifies the login credentials.

Upon successful verification, the admin gains access to the admin panel.

* **Managing Exam Details**

The Admin enters exam details (exam schedules, student lists).

The system stores this information in the database.

* **Seat Allocation**

The Admin enters exam details (exam schedules, student lists).

The system stores this information in the database.

**1.2 ACKNOWLEDGEMENT**

First and foremost, We render our deep and sincere thanks to the Lord Almighty for his Blessings. He has bestowed us with good health enabling us to complete our project.

We whole heartedly thank the Management for the golden opportunity given to me to study in this esteemed Institution. We take great delight in expressing our thanks to our **Principal Dr. D. Pandiaraja M.Sc., M.Phil., PGDCA., B.Ed., Ph.D. Thiagarajar College, Madurai**, for giving us an opportunity to study in this institution.

Our special and sincere thanks to all the faculty members, Department of Computer Application and Information Technology, Thiagarajar college, Madurai for providing laboratory facilities and her timely support throughout the project.

We are immensely pleased to record our profound gratitude and heartfelt thanks to our esteemed guide for her continuous guidance, supervision, encouragement and valuable suggestions throughout the entire project. I deem it as a special privilege to work under her guidance. We remain forever grateful to her.

We wish to dedicate our thanks to all the staff members and my friends for their precious support through their prayers in our hardships and helping us to attain our goal. At this juncture, I would like to express our heartfelt gratitude to our ever-loving family members for bearing all the inconvenience and providing their constant support and encouragement now and forever.

Finally, We thank all those who have helped us directly and indirectly for the successful completion of our Project.

**SYSTEM ANALYSIS**

**2.1.EXISTING SYSTEM**

* Currently, exam seating arrangements in educational institutions are managed manually or through basic software tools.
* Manual methods involve creating seating charts using spreadsheets or paper-based systems, which are time-consuming and prone to errors.
* These methods often lack automation.
* Basic software solutions used in some institutions offer limited functionality.
* Existing systems also face challenges in integrating with student databases, which can result in outdated or inaccurate information.

**2.2.PROPOSED SYSTEM**

* The proposed approach for the "Exam Hall Seating Arrangement" involves implementing an advanced, automated solution to enhance exam seating management.
* Our approach starts with developing sophisticated algorithms for automated seating allocation.
* To accommodate various exam environments, the system will support multiple hall layouts and configurations.
* Integration with existing student databases will be a key component, ensuring that the system can accurately manage and update student information.
* Robust conflict resolution mechanisms will be incorporated to identify and address issues such as overlapping exam schedules and seating preferences.
* Lastly, enhanced security measures will be integrated to protect sensitive student data. The system will ensure compliance with privacy regulations and restrict access to confidential information to authorized personnel only.

**SYSTEM CONFIGURATION**

**3.1. HARDWARE SPECIFICATIONS**

Processor : Intel(R) Core(TM) i7-10750H CPU

Core : Quad Core Processor

Cache Memory : 384 KB

Processor Speed : 2.60 GHz

RAM : 16.0 GB

Hard Drive : 500 GB

**3.2 SOFTWATE SPECIFICATIONS**

Operating System : Windows 11 Home Single Language

Front-end Technology : HTML(Version 5) ,CSS(Version 3)

JavaScript(JS version E6),

Bootstrap(Version 3)

Back-end Technology : Hyper Text Preprocessor

(PHP Version 8.2)

Database : MYSQL(10.4.32-MariaDB)

**ABOUT THE LANGUAGE**

### FRONT-END TECHNOLOGY

### HTML

### CSS

* **BOOTSTAP**

### JavaScript

### BACK-END TECHNOLOGY

* **PHP**

### MYSQL

### FRONT-END TECHNOLOGIES

Front end languages are **a programming language used by developers on the front end of a site**. Our 'front end' is the external end of the site seen by the visitor. Programming languages to learn for front-end development include JavaScript, HTML, and CSS.

**CSS**

CSS (Cascading Style Sheets) is used to style and layout web pages — for example, to alter the font, color, size, and spacing of your content, split it into multiple columns, or add animations and other decorative features.

### ADVANTAGES OF CSS

* **CSS saves time** − Write CSS once and then reuse the same sheet in multiple HTML pages.
* **Easy maintenance** − To make a global change, simply change the style, and all elements in all the web pages will be updated automatically
* **Global web standards** − HTML attributes are being deprecated and it is being recommended to use CSS. So it's a good strategy to start using CSS in all the HTML pages to make them compatible.

**BOOTSTRAP**

Bootstrap is a CSS framework developed by Twitter. The latest version of Bootstrap is Bootstrap 5. Bootstrap provides various components which can be used to design different types of layout to build a website. The bootstrap layout consists of **containers, a grid system, flexible media objects, and responsive utility classes.**

### ADVANTAGES OF BOOTSTRAP

* **Responsive Design:** Through bootstrap you can easily create responsive design. If your website is responsive then it adjusts itself according to the screen size in any platform or device like desktop, laptop, mobile etc.
* **Cross Browser Compatible:** Bootstrap is designed in such a way that our web-page will look the same in almost all modern browsers like Firefox, Chrome, Internet Explorer, Opera etc.
* **Saving time:** Bootstrap increases the development speed and gets the work done in a very short time.

**JAVASCRIPT**

JavaScript is a **client-side**, **object-based scripting language** that is used to handle and validate client-side data. JavaScript is also used for making the user interface of the web pages more dynamic making it responsive to events like the movement of the mouse, mouse click on a certain HTML element, a button click, etc, using which we can improve the user experience.

JavaScript is P**latform Independent**, which means you need to write the script once and can run it on any platform or browser without affecting the output of the Script.

### ADVANTAGES OF JAVASCRIPT

* **Light Weight:** JavaScript is a lightweight scripting language because it is made for data handling at the browser level only. Since it is not a general-purpose language so it has a limited set of libraries.
* **Dynamic Typed:** JavaScript supports dynamic typing which means types of the variable are defined based on the stored value**.** For example, if you declare a variable x then you can store either a string or a Number type value. This is known as **dynamic typing**.

**BACK-END TECHNOLOGIES**

**PHP: HYPERTEXT PREPROCESSOR**

* PHP is an open-source, interpreted, and object-oriented scripting language that can be executed at the server-side. PHP is well suited for web development. Therefore, it is used to develop web applications (an application that executes on the server and generates the dynamic page.).
* PHP is an interpreted language, i.e., there is no need for compilation.
* PHP is faster than other scripting languages, for example, ASP and JSP.
* PHP is a server-side scripting language, which is used to manage the dynamic content of the website.
* PHP can be embedded into HTML.

**ADVANTAGES OF PHP**

* PHP can generate dynamic page content.
* PHP can create, open, read, write, delete, and close files on the server.
* PHP can add, delete, modify data in your database.
* PHP can be used to control user-access.

### MYSQL

* MySQL is currently the most popular database management system software used for managing the relational database. It is open-source database software, which is supported by Oracle Company. It is fast, scalable, and easy to use database management system in comparison with Microsoft SQL Server and Oracle Database. It is commonly used in conjunction with PHP scripts for creating powerful and dynamic server-side or web-based enterprise applications.

**ADVANTAGES OF MYSQL**

* MySQL handle a large set of functionality of the most expensive and powerful database packages.
* MySQL is easy to use.
* MySQL consists of a solid data security layer that protects sensitive data from intruders.
* MySQL supports a large number of embedded applications, which makes MySQL very flexible.
* Its efficiency is high because it has a very low memory leakage problem.

**SYSTEM DESIGN**

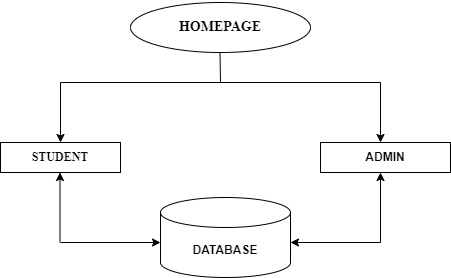
**5.1 DATA FLOW DIAGARAM**

The Data flow diagram is a graphical tool. It is used to describe and analyses the movement of the data through a system manual or automated. They focus on the data flowing into system between processed and in out of data stores. This is a central tool and the basis from which other components are developed. The system models are termed as Data Flow Diagram. The Data flow Diagram is also known as Data Flow graph or a bubble chart.

The basic notations are,

* Indicates the Flow of Data.
* Indicate the form.
* Indicate the Process being carried out by the form.
* Indicate the database to store and retrieve data.

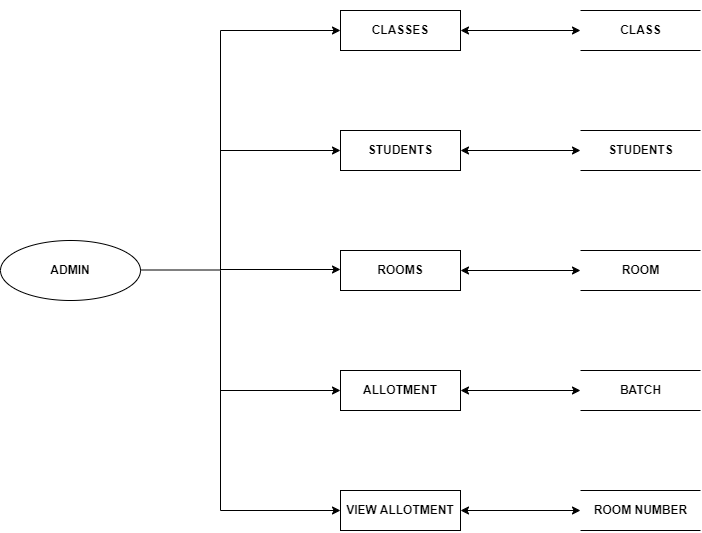
**Overall DFD**



**USER MODULE**

C:\Users\welco\Downloads\Untitled Diagram.drawio (1).png

**ADMIN MODULE**



**5.2 DATABASE DESCRIPTION**

Database Name: **SEATING**

Table1 name: Admin

|  |  |  |
| --- | --- | --- |
| **FIELD NAME** | **DATATYPE** | **CONSTRAINT** |
| ADMINID | INT(11) | PRIMARY KEY |
| NAME | VARCHAR(20) | NOT NULL |
| EMAIL | VARCHAR(255) | NOT NULL |
| PASSWORD | VARCHAR(10) | NOT NULL |

Table2 name: Class

|  |  |  |
| --- | --- | --- |
| **FIELD NAME** | **DATATYPE** | **CONSTRAINT** |
| CLASS\_ID | INT(11) | PRIMARY KEY |
| YEAR | VARCHAR(20) | NOT NULL |
| DEPT | VARCHAR(30) | NOT NULL |
| DIVISION | VARCHAR(20) | NOT NULL |

Table3 name: Students

|  |  |  |
| --- | --- | --- |
| **FIELD NAME** | **DATATYPE** | **CONSTRAINT** |
| STUDENT\_ID | INT(11) | PRIMARY KEY |
| NAME | VARCHAR(100) | NOT NULL |
| EMAIL | VARCHAR(255) | NOT NULL |
| PASSWORD | VARCHAR(255) | NOT NULL |
| CLASS | INT(11) | NOT NULL |
| ROLLNO | INT(11) | NOT NULL |

Table4 name: Room

|  |  |  |
| --- | --- | --- |
| **FIELD NAME** | **DATATYPE** | **CONSTRAINT** |
| RID | INT(11) | PRIMARY KEY |
| ROOM\_NO | INT(11) | NOT NULL |
| FLOOR | INT(11) | NOT NULL |
| CAPACITY | INT(11) | NOT NULL |
| VACANCY | INT(11) | NOT NULL |

Table5 name: Batch

|  |  |  |
| --- | --- | --- |
| **FIELD NAME** | **DATATYPE** | **CONSTRAINT** |
| BATCH\_ID | INT(11) | PRIMARY KEY |
| CLASS\_ID | INT(11) | NOT NULL |
| ROOM\_ID | INT(11) | NOT NULL |
| STARTNO | INT(11) | NOT NULL |
| ENDNO | INT(11) | NOT NULL |
| DATE | DATE | NOT NULL |
| TOTAL | INT(11) | NOT NULL |

**PROJECT DESCRIPTION**

**5.3 PROJECT DESCRIPTION**

**ADMIN SIDE**

**CLASS MODULE**

The **Class Module** allows the admin to manage essential class details such as the year, department, and division. The admin can add new entries for each of these categories and view the existing ones. This functionality helps the admin maintain an organized structure for class-related information, which plays a crucial role in the exam hall seating allocation process.

**STUDENT MODULE**

The **Student Module** allows the admin to add students by entering details such as the student's name, class, roll number, email, and password. The admin can also view the list of students in the system. This module ensures that all student information is properly recorded and accessible, which is essential for the seating allocation process during exams.

**ROOM MODULE**

The **Room Module** allows the admin to create rooms by adding details such as the room number, floor, and seating capacity. The admin can view the list of rooms and delete any that are no longer needed. This module ensures that all available rooms are properly recorded, which is essential for allocating seats to students during exams.

**ALLOTMENT MODULE**

The **Allocation Module** allows the admin to assign students to specific exam rooms. The admin can select the room, floor, and class, and then specify a range of students by providing a start roll number and an end roll number. This ensures that students are properly seated according to the allocation rules, streamlining the exam seating process.

**VIEW ALLOTMENT MODULE**

The View Allotment Module allows the admin to see which students have been assigned to specific rooms. By selecting a room number, the admin can view the list of students allotted to that room, making it easy to track the seating arrangements for exams.

**USER SIDE**

**DASHBOARD**

The **Dashboard Module** allows students to check whether they have been allocated a seat for an exam. If they are assigned a seat, they can view details such as the room number, floor, and the range of roll numbers (start and end) for that room. This feature provides students with clear information about their seating arrangements.

**SOURCE CODE**

**5.4 SOURCE CODE**

**LOGIN\_ADMIN.PHP**

<?php

session\_start();

include "db.php";

if (isset($\_POST['submit'])) {

$name = $\_POST['name'];

$name = mysqli\_real\_escape\_string($conn, $name);

$name = htmlentities($name);

$password = $\_POST['password'];

$password = mysqli\_real\_escape\_string($conn, $password);

$password = htmlentities($password);

$select\_admin = "SELECT name, password FROM admin WHERE name='$name' AND password='$password'";

$select\_admin\_query = mysqli\_query($conn, $select\_admin);

if (mysqli\_num\_rows($select\_admin\_query) > 0) {

$\_SESSION['login'] = "admin";

header('Location: admin/dashboard.php');

} else {

$\_SESSION['loginmsg'] = "Incorrect Credentials";

}

}

?>

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0" />

<link rel="stylesheet" href="style.css">

<title>Admin Login</title>

</head>

<body>

<div class="flex-r container">

<div class="flex-r login-wrapper">

<div class="login-text">

<div class="logo">

<span><i class="fab fa-speakap"></i></span>

</div>

<h1 style="text-align: center;">Exam Hall Seating Arrangement</h1>

<p style="text-align: center;">ADMIN LOGIN</p>

<div class="login-div">

<p class="loginmsg">

<?php

if (isset($\_SESSION['loginmsg'])) {

echo $\_SESSION['loginmsg'];

unset($\_SESSION['loginmsg']);

}

?>

</p>

</div>

<form class="flex-c" method="post">

<div class="input-box">

<span class="label">Name</span>

<div class="flex-r input">

<input class="name" name="name" type="text" placeholder="Enter Name">

<i class="fas fa-user"></i>

</div>

</div>

<div class="input-box">

<span class="label">Password</span>

<div class="flex-r input">

<input class="pass" name="password" type="password" placeholder="Password">

<i class="fas fa-lock"></i>

</div>

</div>

<input class="btn" name="submit" type="submit" value="LOGIN">

<span class="extra-line">

<span>Are you a student?</span>

<a href="login\_student.php">Login Here</a>

</span>

</form>

</div>

</div>

</div>

</body>

</html>

**DB.PHP**

<?php

$conn = mysqli\_connect("localhost","root","","seating");

if($conn){

    // echo "Successfully";

}

else{

    die("no conn" . mysqli\_connect\_error());

}

?>

**ADD\_CLASS.PHP**

<html>

<head>

    <title>Manage Classes</title>

    <link rel="stylesheet" href="common.css">

    <?php include'../link.php' ?>

    <style type="text/css">

    </style>

    </head>

<body>

<?php

    session\_start();

?>

    <div class="wrapper">

        <nav id="sidebar">

            <div class="sidebar-header">

                <h4>DASHBOARD</h4>

            </div>

            <ul class="list-unstyled components">

                    <li>

                        <a href="add\_class.php" class="active\_link"><img src="https://img.icons8.com/ios-filled/26/ffffff/google-classroom.png"/> Classes</a>

                    </li>

                    <li>

                        <a href="add\_student.php"><img src="https://img.icons8.com/ios-filled/25/ffffff/student-registration.png"/> Students</a>

                    </li>

                    <li>

                        <a href="add\_room.php"><img src="https://img.icons8.com/metro/25/ffffff/building.png"/> Rooms</a>

                    </li>

                    <li>

                        <a href="dashboard.php"><img src="https://img.icons8.com/nolan/30/ffffff/summary-list.png"/> Allotment</a>

                    </li>

                    <li>

                        <a href="examseat.php"><img width="30" height="30" src="https://img.icons8.com/ios-filled/50/FFFFFF/shuffle.png"/>View Allotment</a>

                    </li>

                </ul>

            </nav>

<div id="content">

    <nav class="navbar navbar-expand-lg navbar-light bg-light">

        <div class="container-fluid">

            <button type="button" id="sidebarCollapse" class="btn btn-info">

                <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

            </button><span class="page-name"> Manage Classes</span>

            <button class="btn btn-dark d-inline-block d-lg-none ml-auto" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

            <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

            </button>

            <div class="collapse navbar-collapse" id="navbarSupportedContent">

                <ul class="nav navbar-nav ml-auto">

                    <li class="nav-item active">

                        <a class="nav-link" href="../logout.php">Logout</a>

                    </li>

                </ul>

            </div>

        </div>

    </nav>

    <div class="main-content">

        <?php

        if(isset($\_SESSION['class'])){

            echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>".$\_SESSION['class']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

            unset($\_SESSION['class']);

        }

        if(isset($\_SESSION['classnot'])){

            echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>".$\_SESSION['classnot']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

            unset($\_SESSION['classnot']);

        }

        if(isset($\_SESSION['delete'])){

            echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>".$\_SESSION['delete']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

            unset($\_SESSION['delete']);

        }

        if(isset($\_SESSION['deletenot'])){

            echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>".$\_SESSION['deletenot']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

            unset($\_SESSION['deletenot']);

        }

        ?>

    <div class="table-responsive border">

            <table class="table table-hover text-center">

                <thead class="thead-light">

                    <tr>

                        <th>Year</th>

                        <th>Department</th>

                        <th>Division</th>

                        <th>Actions</th>

                    </tr>

                </thead>

                <tbody>

                    <form action="addclass.php" method="post">

                     <tr>

                        <th class="py-3 bg-light">

                            <select id="year" name="year" class="form-control" required>

                                <option value="">--select--</option>

                                <option value="FE">FE</option>

                                <option value="SE">SE</option>

                                <option value="TE">TE</option>

                            </select>

                        </th>

                        <th class="py-3 bg-light">

                            <select id="dept" name="dept" class="form-control" required>

                                <option value="">--select--</option>

                                <option value="BCA">BCA</option>

                                <option value="IT">IT</option>

                                <option value="CS">CS</option>

                            </select>

                        </th>

                        <th class="py-3 bg-light">

                            <select id="div" name="div" class="form-control" required>

                                <option value="">--select--</option>

                                <option value="A">A</option>

                                <option value="B">B</option>

                            </select>

                        </th>

                        <th class="py-3 bg-light">

                            <button class="btn btn-primary" name="addclass">Add</button>

                        </th>

                    </tr>

                </form>

                <?php

                $selectclass = "Select \* from class order by year, dept, division";

                $selectclassquery = mysqli\_query($conn, $selectclass);

                if($selectclassquery){

                    while ($row = mysqli\_fetch\_assoc($selectclassquery)) {

                        echo "<tr>

                        <td>".$row['year']."</td>

                        <td>".$row['dept']."</td>

                        <td>".$row['division']."</td>

                        <td>

                        </td>

                    </tr>";

                    }

                }

                else{

                    echo "<tr><td>No classes available.</td></tr>";

                }

                ?>

                </tbody>

            </table>

        </div>

    </div>

    </div>

</div>

<?php include'footer.php' ?>

**ADDCLASS.PHP**

<?php

include '../db.php';

session\_start();

if(isset($\_POST['addclass'])){

    $year = $\_POST['year'];

    $year = mysqli\_real\_escape\_string($conn, $year);

    $year = htmlentities($year);

    $dept = $\_POST['dept'];

    $dept = mysqli\_real\_escape\_string($conn, $dept);

    $dept = htmlentities($dept);

    $div = $\_POST['div'];

    $div = mysqli\_real\_escape\_string($conn, $div);

    $div = htmlentities($div);

        $check\_query = "SELECT \* FROM class WHERE year='$year' AND dept='$dept' AND division='$div'";

    $check\_result = mysqli\_query($conn, $check\_query);

    if(mysqli\_num\_rows($check\_result) > 0){

        $\_SESSION['classnot'] = "Error!! Class with the same year, department, and division already exists.";

    } else {

        $insert = "INSERT INTO class (year, dept, division) VALUES ('$year', '$dept', '$div')";

        $insert\_query = mysqli\_query($conn, $insert);

        if($insert\_query){

            $\_SESSION['class'] = "New class added successfully.";

        } else {

            $\_SESSION['classnot'] = "Error!! New class not added.";

        }

    }

    header("Location: add\_class.php");

}

?>

**ADD\_ROOM.PHP**

<?php

session\_start();

?>

<html>

<head>

    <title>Manage Rooms</title>

    <?php include '../link.php'; ?>

    <style type="text/css">

        \* {

            margin: 0;

            padding: 0;

            box-sizing: border-box;

        }

        body {

            margin: 0;

        }

    </style>

    <link rel="stylesheet" href="common.css">

</head>

<body>

<?php

    if (isset($\_POST['deleteroom'])) {

        $room = $\_POST['deleteroom'];

        include 'dell.php';

    }

?>

    <div class="wrapper">

        <nav id="sidebar">

            <div class="sidebar-header">

                <h4>DASHBOARD</h4>

            </div>

            <ul class="list-unstyled components">

                <li>

                    <a href="add\_class.php"><img src="https://img.icons8.com/ios-filled/26/ffffff/google-classroom.png"/> Classes</a>

                </li>

                <li>

                    <a href="add\_student.php"><img src="https://img.icons8.com/ios-filled/25/ffffff/student-registration.png"/> Students</a>

                </li>

                <li>

                    <a href="add\_room.php" class="active\_link"><img src="https://img.icons8.com/metro/26/ffffff/building.png"/> Rooms</a>

                </li>

                <li>

                    <a href="dashboard.php"><img src="https://img.icons8.com/nolan/30/ffffff/summary-list.png"/> Allotment</a>

                </li>

                <li>

                    <a href="examseat.php"><img width="30" height="30" src="https://img.icons8.com/ios-filled/50/FFFFFF/shuffle.png"/>View Allotment</a>

                </li>

            </ul>

        </nav>

        <div id="content">

            <nav class="navbar navbar-expand-lg navbar-light bg-light">

                <div class="container-fluid">

                    <button type="button" id="sidebarCollapse" class="btn btn-info">

                        <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                    </button><span class="page-name"> Manage Rooms</span>

                    <button class="btn btn-dark d-inline-block d-lg-none ml-auto" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

                        <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                    </button>

                    <div class="collapse navbar-collapse" id="navbarSupportedContent">

                        <ul class="nav navbar-nav ml-auto">

                            <li class="nav-item active">

                                <a class="nav-link" href="../logout.php">Logout</a>

                            </li>

                        </ul>

                    </div>

                </div>

            </nav>

            <div class="main-content">

                <?php

                if (isset($\_SESSION['room'])) {

                    echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>".$\_SESSION['room']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['room']);

                }

                if (isset($\_SESSION['roomnot'])) {

                    echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>".$\_SESSION['roomnot']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['roomnot']);

                }

                if (isset($\_SESSION['delroom'])) {

                    echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>".$\_SESSION['delroom']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['delroom']);

                }

                if (isset($\_SESSION['delnotroom'])) {

                    echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>".$\_SESSION['delnotroom']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['delnotroom']);

                }

                ?>

                <div class="table-responsive border">

                    <table class="table table-hover text-center">

                        <thead class="thead-light">

                            <tr>

                                <th>Room No.</th>

                                <th>Floor</th>

                                <th>Capacity</th>

                                <th>Vacancy</th>

                                <th>Actions</th>

                            </tr>

                        </thead>

                        <tbody>

                        <form action="addroom.php" method="post">

                            <tr>

                                <th class="py-3 bg-light">

                                    <input class="form-control" type="number" min=0 max=815 name="roomno" required>

                                </th>

                                <th class="py-3 bg-light">

                                    <input class="form-control" type="number" min=0 max=8 name="floor" required>

                                </th>

                                <th class="py-3 bg-light">

                                    <input class="form-control" type="number" min=0 max=80 name="cap" required>

                                </th>

                                <th class="py-3 bg-light"></th>

                                <th class="py-3 bg-light">

                                    <button class="btn btn-primary" name="addroom">Add</button>

                                </th>

                            </tr>

                        </form>

                        <?php

                        $selectclass = "SELECT rid, room\_no, floor, capacity, SUM(total) AS filled

                                        FROM batch

                                        RIGHT JOIN room ON batch.room\_id = room.rid

                                        GROUP BY rid";

                        $selectclassquery = mysqli\_query($conn, $selectclass);

                        if ($selectclassquery) {

                            while ($row = mysqli\_fetch\_assoc($selectclassquery)) {

                                $vacancy = $row['capacity'] - $row['filled'];

                                echo "<tr>

                                <td>" . $row['room\_no'] . "</td>

                                <td>" . $row['floor'] . "</td>

                                <td>" . $row['capacity'] . "</td>

                                <td>" . $vacancy . " </td>

                                <td>

                                    <form method='post'>

                                        <button class='btn btn-light px-1 py-0' type='submit' value='" . $row['rid'] . "' name='deleteroom'>

                                            <img src='https://img.icons8.com/color/25/000000/delete-forever.png'/>

                                        </button>

                                    </form>

                                </td>

                                </tr>";

                            }

                        } else {

                            echo "<tr><td colspan=5>No rooms available.</td></tr>";

                        }

                        ?>

                        </tbody>

                    </table>

                </div>

            </div>

        </div>

    </div>

</body>

</html>

<?php include'footer.php' ?>

**ADDROOM.PHP**

<?php

include "../db.php";

session\_start();

if (isset($\_POST['addroom'])) {

    $roomno = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['roomno']));

    $floor = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['floor']));

    $capacity = (int)mysqli\_real\_escape\_string($conn, htmlentities($\_POST['cap']));

    $vacancy = $capacity;

    $check\_query = "SELECT \* FROM room WHERE room\_no = '$roomno' AND floor = '$floor'";

    $check\_result = mysqli\_query($conn, $check\_query);

    if (mysqli\_num\_rows($check\_result) > 0) {

        $\_SESSION['roomnot'] = "Error!! This room is already added.";

        header("Location: add\_room.php");

        exit();

    } else {

        $insert = "INSERT INTO room (room\_no, floor, capacity, vacancy) VALUES ('$roomno', '$floor', '$capacity', '$vacancy')";

        $insert\_query = mysqli\_query($conn, $insert);

        if ($insert\_query) {

            $\_SESSION['room'] = "New room added successfully.";

            $jesus = "SELECT rid FROM room WHERE room\_no='$roomno' AND floor='$floor'";

            $check\_jesus = mysqli\_query($conn, $jesus);

            $row = mysqli\_fetch\_assoc($check\_jesus);

            $table\_name = $row['rid'];

            $table\_name = mysqli\_real\_escape\_string($conn, $table\_name);

            $check\_table\_query = "SHOW TABLES LIKE '$table\_name'";

            $table\_exists = mysqli\_query($conn, $check\_table\_query);

            if (mysqli\_num\_rows($table\_exists) == 0) {

                $create\_table\_query = "

                    CREATE TABLE `$table\_name` (

                        `student\_id` int(11) NOT NULL,

                        `password` varchar(255) NOT NULL,

                        `name` varchar(100) NOT NULL,

                        `email` varchar(255),

                        `class` int(11) NOT NULL,

                        `rollno` int(11) NOT NULL,

                        `seatno` int(11) NOT NULL

                    )

                ";

                mysqli\_query($conn, $create\_table\_query);

            }

        } else {

            $\_SESSION['roomnot'] = "Error!! New room not added.";

        }

        header("Location: add\_room.php");

        exit();

    }

}

?>

**ADD\_STUDENT.PHP**

<?php

session\_start();

?>

<html>

<head>

    <title>Manage Student</title>

    <link rel="stylesheet" href="common.css">

    <?php include'../link.php' ?>

    <style type="text/css">

    </style>

</head>

<body>

    <div class="wrapper">

        <nav id="sidebar">

            <div class="sidebar-header">

                <h4>DASHBOARD</h4>

            </div>

            <ul class="list-unstyled components">

                <li>

                    <a href="add\_class.php"><img src="https://img.icons8.com/ios-filled/26/ffffff/google-classroom.png"/> Classes</a>

                </li>

                <li>

                    <a href="add\_student.php" class="active\_link"><img src="https://img.icons8.com/ios-filled/25/ffffff/student-registration.png"/> Students</a>

                </li>

                <li>

                    <a href="add\_room.php"><img src="https://img.icons8.com/metro/25/ffffff/building.png"/> Rooms</a>

                </li>

                <li>

                    <a href="dashboard.php"><img src="https://img.icons8.com/nolan/30/ffffff/summary-list.png"/> Allotment</a>

                </li>

                <li>

                    <a href="examseat.php"><img width="30" height="30" src="https://img.icons8.com/ios-filled/50/FFFFFF/shuffle.png"/>View Allotment</a>

                </li>

            </ul>

        </nav>

        <div id="content">

            <nav class="navbar navbar-expand-lg navbar-light bg-light">

                <div class="container-fluid">

                    <button type="button" id="sidebarCollapse" class="btn btn-info">

                        <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                    </button>

                    <span class="page-name"> Manage Students</span>

                    <button class="btn btn-dark d-inline-block d-lg-none ml-auto" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

                        <img src="https://img.icons8.com/ios-filled/20/ffffff/menu--v3.png"/>

                    </button>

                    <div class="collapse navbar-collapse" id="navbarSupportedContent">

                        <ul class="nav navbar-nav ml-auto">

                            <li class="nav-item active">

                                <a class="nav-link" href="../logout.php">Logout</a>

                            </li>

                        </ul>

                    </div>

                </div>

            </nav>

            <div class="main-content">

                <?php

                if(isset($\_SESSION['student'])){

                    echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>".$\_SESSION['student']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['student']);

                }

                if(isset($\_SESSION['studentnot'])){

                    echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>".$\_SESSION['studentnot']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['studentnot']);

                }

                if(isset($\_SESSION['delstudent'])){

                    echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>".$\_SESSION['delstudent']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['delstudent']);

                }

                if(isset($\_SESSION['delnotstudent'])){

                    echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>".$\_SESSION['delnotstudent']."<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                    unset($\_SESSION['delnotstudent']);

                }

                ?>

                <div class="table-responsive border">

                    <table class="table table-hover text-center">

                        <thead class="thead-light">

                            <tr>

                                <th>Name</th>

                                <th>Class</th>

                                <th>Roll No.</th>

                                <th>Email</th>

                                <th>Password</th>

                                <th>Actions</th>

                            </tr>

                        </thead>

                        <tbody>

                            <tr>

                                <form action="addstudent.php" method="post">

                                    <th class="py-3 bg-light">

                                        <input class="form-control" type="text" name="sname" placeholder="Enter Name" required>

                                    </th>

                                    <th class="py-3 bg-light">

                                        <select id="sem" name="sclass" class="form-control" required>

                                            <?php

                                            $selectclass = "SELECT \* FROM class ORDER BY year, dept, division";

                                            $selectclassQuery = mysqli\_query($conn, $selectclass);

                                            if($selectclassQuery){

                                                echo "<option value=''>--select--</option>";

                                                while($row = mysqli\_fetch\_assoc($selectclassQuery)){

                                                    echo "<option value=".$row['class\_id'].">".$row['year']." ".$row['dept']." ".$row['division']."</option>";

                                                }

                                            } else {

                                                echo "<option value=''>No options</option>";

                                            }

                                            ?>

                                        </select>

                                    </th>

                                    <th class="py-3 bg-light">

                                        <input class="form-control" type="number" name="sroll"  required>

                                    </th>

                                    <th class="py-3 bg-light">

                                        <input class="form-control" type="email" name="semail"  required>

                                    </th>

                                    <th class="py-3 bg-light">

                                        <input class="form-control" type="password" name="spwd"  required>

                                    </th>

                                    <th class="py-3 bg-light">

                                        <button class="btn btn-primary" name="addstudent">Add</button>

                                    </th>

                                </form>

                            </tr>

                            <?php

                            $selectclass = "SELECT \* FROM students, class WHERE students.class = class.class\_id ORDER BY year, dept, division, rollno,email";

                            $selectclassquery = mysqli\_query($conn, $selectclass);

                            if($selectclassquery){

                                while ($row = mysqli\_fetch\_assoc($selectclassquery)) {

                                    echo "<tr>

                                    <td>".$row['name']."</td>

                                    <td>".$row['year']." ".$row['dept']." ".$row['division']."</td>

                                    <td>".$row['rollno']."</td>

                                    <td>".$row['email']."</td> <!-- Displaying Email -->

                                    <td>-</td>

                                    <td>

                                    </td>

                                    </tr>";

                                }

                            }

                            ?>

                        </tbody>

                    </table>

                </div>

            </div>

        </div>

    </div>

</body>

</html>

<?php include'footer.php' ?>

**ADDSTUDENT.PHP**

<?php

include "../db.php";

session\_start();

if(isset($\_POST['addstudent'])){

    $name = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['sname']));

    $password = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['spwd']));

    $class = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['sclass']));

    $roll = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['sroll']));

    $email = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['semail']));

    $check\_query = "SELECT \* FROM students WHERE (rollno = '$roll' OR email = '$email') AND class = '$class'";

    $check\_result = mysqli\_query($conn, $check\_query);

    if(mysqli\_num\_rows($check\_result) > 0) {

        $existing\_student = mysqli\_fetch\_assoc($check\_result);

         if ($existing\_student['rollno'] == $roll) {

            $\_SESSION['studentnot'] = "Error!! This roll number is already added.";

        } else if ($existing\_student['email'] == $email) {

            $\_SESSION['studentnot'] = "Error!! This email is already added.";

        }

        header("Location: add\_student.php");

        exit();

    } else {

        $insert = "INSERT INTO students(name, password, class, rollno, email)

                   VALUES ('$name', '$password', '$class', '$roll', '$email')";

        $insert\_query = mysqli\_query($conn, $insert);

        if($insert\_query){

            $\_SESSION['student'] = "New student added successfully.";

        } else {

            $\_SESSION['studentnot'] = "Error!! New student not added.";

        }

        header("Location: add\_student.php");

        exit();

    }

}

?>

**DASHBOARD.PHP**

<?php

session\_start();

?>

<html>

<head>

    <title>Dashboard</title>

    <link rel="stylesheet" href="common.css">

    <?php include'../link.php' ?>

</head>

<body>

<?php

if (isset($\_POST['deletebatch'])) {

    $batch = $\_POST['deletebatch'];

    $get\_batch\_query = "SELECT room\_id, startno, endno, class\_id, total FROM batch WHERE batch\_id = '$batch'";

    $batch\_result = mysqli\_query($conn, $get\_batch\_query);

    if ($batch\_row = mysqli\_fetch\_assoc($batch\_result)) {

        $room\_id = $batch\_row['room\_id'];

        $start\_roll = $batch\_row['startno'];

        $end\_roll = $batch\_row['endno'];

        $class = $batch\_row['class\_id'];

        $total\_students = $batch\_row['total'];

        $delete\_batch\_query = "DELETE FROM batch WHERE batch\_id = '$batch'";

        $delete\_batch\_result = mysqli\_query($conn, $delete\_batch\_query);

        if ($delete\_batch\_result) {

            $update\_vacancy\_query = "

                UPDATE room

                SET vacancy = vacancy + $total\_students

                WHERE rid = '$room\_id'";

            $update\_vacancy\_result = mysqli\_query($conn, $update\_vacancy\_query);

            if ($update\_vacancy\_result) {

                $delete\_students\_query = "DELETE FROM `$room\_id` WHERE rollno BETWEEN '$start\_roll' AND '$end\_roll' AND class = '$class'";

                $delete\_students\_result = mysqli\_query($conn, $delete\_students\_query);

                if ($delete\_students\_result) {

                    $\_SESSION['delbatch'] = "Batch and students deleted successfully, vacancy updated.";

                } else {

                    $\_SESSION['delnotbatch'] = "Batch deleted, but error occurred while deleting students from the room.";

                }

            } else {

                $\_SESSION['delnotbatch'] = "Error updating the room's vacancy.";

            }

        } else {

            $\_SESSION['delnotbatch'] = "Error deleting the batch.";

        }

    } else {

        $\_SESSION['delnotbatch'] = "Batch not found.";

    }

}

?>

<div class="wrapper">

    <nav id="sidebar">

        <div class="sidebar-header">

            <h4>DASHBOARD</h4>

        </div>

        <ul class="list-unstyled components">

            <li>

                <a href="add\_class.php"><img src="https://img.icons8.com/ios-filled/26/ffffff/google-classroom.png"/> Classes</a>

            </li>

            <li>

                <a href="add\_student.php"><img src="https://img.icons8.com/ios-filled/25/ffffff/student-registration.png"/> Students</a>

            </li>

            <li>

                <a href="add\_room.php"><img src="https://img.icons8.com/metro/25/ffffff/building.png"/> Rooms</a>

            </li>

            <li>

                <a href="dashboard.php" class="active\_link"><img src="https://img.icons8.com/nolan/30/ffffff/summary-list.png"/> Allotment</a>

            </li>

            <li>

                <a href="examseat.php"><img width="30" height="30" src="https://img.icons8.com/ios-filled/50/FFFFFF/shuffle.png"/>View Allotment</a>

            </li>

        </ul>

    </nav>

    <div id="content">

        <nav class="navbar navbar-expand-lg navbar-light bg-light">

            <div class="container-fluid">

                <button type="button" id="sidebarCollapse" class="btn btn-info">

                    <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                </button><span class="page-name"> Allotment</span>

                <button class="btn btn-dark d-inline-block d-lg-none ml-auto" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

                    <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                </button>

                <div class="collapse navbar-collapse" id="navbarSupportedContent">

                    <ul class="nav navbar-nav ml-auto">

                        <li class="nav-item active">

                            <a class="nav-link" href="../logout.php">Logout</a>

                        </li>

                    </ul>

                </div>

            </div>

        </nav>

        <div class="main-content">

            <?php

            if (isset($\_SESSION['batch'])) {

                echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>" . $\_SESSION['batch'] . "<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                unset($\_SESSION['batch']);

            }

            if (isset($\_SESSION['batchnot'])) {

                echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>" . $\_SESSION['batchnot'] . "<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                unset($\_SESSION['batchnot']);

            }

            if (isset($\_SESSION['delbatch'])) {

                echo "<div class='alert alert-warning alert-dismissible fade show' role='alert'>" . $\_SESSION['delbatch'] . "<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                unset($\_SESSION['delbatch']);

            }

            if (isset($\_SESSION['delnotbatch'])) {

                echo "<div class='alert alert-danger alert-dismissible fade show' role='alert'>" . $\_SESSION['delnotbatch'] . "<button class='close' data-dismiss='alert' aria-label='Close'><span aria-hidden='true'>&times;</span></button></div>";

                unset($\_SESSION['delnotbatch']);

            }

            ?>

            <div class="table-responsive border">

                <table class="table table-hover text-center">

                    <thead class="thead-light">

                        <tr>

                            <th>Room & Floor</th>

                            <th>Class</th>

                            <th>Start Roll No.</th>

                            <th>End Roll No.</th>

                            <th>Total</th>

                            <th>Actions</th>

                        </tr>

                    </thead>

                    <tbody>

                        <form action="addallot.php" method="post">

                            <tr>

                                <th class="py-3 bg-light">

                                    <select name="room" class="form-control" required>

                                        <?php

                                        $select\_rooms = "SELECT rid, room\_no, floor, capacity, sum(total) as filled from batch right JOIN room on batch.room\_id=room.rid group by rid";

                                        $select\_rooms\_query = mysqli\_query($conn, $select\_rooms);

                                        if (mysqli\_num\_rows($select\_rooms\_query) > 0) {

                                            echo "<option>--select--</option> ";

                                            while ($row = mysqli\_fetch\_assoc($select\_rooms\_query)) {

                                                if ($row['capacity'] > $row['filled']) {

                                                    echo "<option value=\"" . $row['rid'] . "\">Room-" . $row['room\_no'] . " & Floor-" . $row['floor'] . " </option>";

                                                }

                                            }

                                        } else {

                                            echo "<option>No Rooms</option>";

                                        }

                                        ?>

                                    </select>

                                </th>

                                <th class="py-3 bg-light">

                                    <select id="sem" name="class" class="form-control" required>

                                        <?php

                                        $selectclass = "select \* from class order by year, dept, division";

                                        $selectclassQuery = mysqli\_query($conn, $selectclass);

                                        if ($selectclassQuery) {

                                            echo "<option>--select--</option>";

                                            while ($row = mysqli\_fetch\_assoc($selectclassQuery)) {

                                                echo "<option value=" . $row['class\_id'] . ">" . $row['year'] . " " . $row['dept'] . " " . $row['division'] . "</option>";

                                            }

                                        } else {

                                            echo "<option value='No options'>no</option>";

                                        }

                                        ?>

                                    </select>

                                </th>

                                <th class="py-3 bg-light"><input type="number" name="start" class="form-control" size=4 required></th>

                                <th class="py-3 bg-light"><input type="number" name="end" class="form-control" size=4 required></th>

                                <th class="py-3 bg-light"></th>

                                <th class="py-3 bg-light"><button class="btn btn-info form-control" name="addallotment">Add</button></th>

                            </tr>

                        </form>

                        <?php

                        $batch = "SELECT room\_id, year, dept, division, startno, endno, total, batch\_id, room\_no, floor from batch JOIN class on batch.class\_id=class.class\_id JOIN room on batch.room\_id=room.rid order by room\_no, year, dept, division";

                        $batch\_query = mysqli\_query($conn, $batch);

                        if (mysqli\_num\_rows($batch\_query) > 0) {

                            while ($row = mysqli\_fetch\_assoc($batch\_query)) {

                                echo "<tr>";

                                echo "<td>Room-" . $row['room\_no'] . " & Floor-" . $row['floor'] . "</td>";

                                echo "<td>" . $row['year'] . " " . $row['dept'] . " " . $row['division'] . "</td>";

                                echo "<td>" . $row['startno'] . "</td>";

                                echo "<td>" . $row['endno'] . "</td>";

                                echo "<td>" . $row['total'] . "</td>";

                                echo "<form method='post'>

                                        <td><button class='btn btn-light px-1 py-0' type='submit' value='".$row['batch\_id']."' name='deletebatch'>

                                           <img src='https://img.icons8.com/color/25/000000/delete-forever.png'/>

                                           </button>

                                        </td>

                                     </form>";

                                echo "</tr>";

                            }

                        }

                        ?>

                    </tbody>

                </table>

            </div>

        </div>

    </div>

</div>

</body>

</html>

<?php include'footer.php' ?>

**ADDALLOT.PHP**

<?php

include '../db.php';

session\_start();

if (isset($\_POST['addallotment'])) {

    $roomno = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['room']));

    $class = mysqli\_real\_escape\_string($conn, htmlentities($\_POST['class']));

    $start = (int) mysqli\_real\_escape\_string($conn, htmlentities($\_POST['start']));

    $end = (int) mysqli\_real\_escape\_string($conn, htmlentities($\_POST['end']));

    $seatno=0;

    if($end!=0){

    $total\_students = $end - $start + 1;

    }

    else{

    $total\_students =1;

    $end=$start;

    }

    $vacancy\_query = "SELECT vacancy FROM room WHERE rid = '$roomno'";

    $vacancy\_result = mysqli\_query($conn, $vacancy\_query);

    if ($vacancy\_result) {

        $vacancy\_data = mysqli\_fetch\_assoc($vacancy\_result);

        $current\_vacancy = (int) $vacancy\_data['vacancy'];

        if ($current\_vacancy < $total\_students) {

            $\_SESSION['batchnot'] = "Error!! Not enough vacancy in room `$current\_vacancy`--`$total\_students`--'$roomno'. Available seats: $current\_vacancy.";

            header("Location: dashboard.php");

            exit();

        }

    } else {

        $\_SESSION['batchnot'] = "Error!! Could not fetch room vacancy.";

        header("Location: dashboard.php");

        exit();

    }

    $check\_overlap = "

        SELECT COUNT(\*) as count

        FROM batch

        WHERE class\_id = '$class'

        AND (

            (startno <= $end AND endno >= $start)  -- Overlap condition

        )";

    $overlap\_result = mysqli\_query($conn, $check\_overlap);

    $overlap\_count = mysqli\_fetch\_assoc($overlap\_result)['count'];

    if ($overlap\_count > 0) {

        $\_SESSION['batchnot'] = "Error!! The roll numbers are already allocated.";

        header("Location: dashboard.php");

        exit();

    }

    $fetch\_students = "SELECT COUNT(\*) as count FROM students WHERE class = '$class' AND rollno BETWEEN $start AND $end";

    $students\_result = mysqli\_query($conn, $fetch\_students);

    $students\_count = mysqli\_fetch\_assoc($students\_result)['count'];

    if ($students\_count < $total\_students or $start > $end) {

        $\_SESSION['batchnot'] = "Error!! Only $students\_count students found in the roll number range $start to $end. Allocation cannot proceed.";

        header("Location: dashboard.php");

        exit();

    }

    $insert = "INSERT INTO batch (class\_id, room\_id, startno, endno) VALUES ('$class', '$roomno', '$start', '$end')";

    $insert\_query = mysqli\_query($conn, $insert);

    if ($insert\_query) {

        $fetch\_students = "SELECT student\_id, name, class, rollno FROM students WHERE class = '$class' AND rollno BETWEEN $start AND $end";

        $result = mysqli\_query($conn, $fetch\_students);

        if ($result) {

            while ($student = mysqli\_fetch\_assoc($result)) {

                $student\_id = $student['student\_id'];

                $name = $student['name'];

                $class = $student['class'];

                $rollno = $student['rollno'];

                $insert\_students = "INSERT INTO `$roomno` (student\_id, name, class, rollno, seatno) VALUES ('$student\_id', '$name', '$class', '$rollno','$seatno')";

                $insert\_students\_query = mysqli\_query($conn, $insert\_students);

                if (!$insert\_students\_query) {

                    $\_SESSION['batchnot'] = "Error!! Some students could not be placed in table '$roomno'.";

                    header("Location: dashboard.php");

                    exit();

                }

            }

            $new\_vacancy = $current\_vacancy - $total\_students;

            $update\_vacancy = "UPDATE room SET vacancy = $new\_vacancy WHERE rid = '$roomno'";

            $vacancy\_update\_query = mysqli\_query($conn, $update\_vacancy);

            if (!$vacancy\_update\_query) {

                $\_SESSION['batchnot'] = "Error!! Could not update the room vacancy.";

                header("Location: dashboard.php");

                exit();

            }

            $\_SESSION['batch'] = "New allotment placed successfully and students assigned. Room vacancy updated.";

        } else {

            $\_SESSION['batchnot'] = "Error!! Could not fetch students.";

        }

    } else {

        $\_SESSION['batchnot'] = "Error!! New allotment not placed.";

    }

    header("Location: dashboard.php");

}

?>

**DELL.PHP**

<?php

if (isset($\_POST['deleteroom'])) {

    $room = intval($\_POST['deleteroom']);

    mysqli\_begin\_transaction($conn);

    try {

        $deleteBatch = "DELETE FROM batch WHERE room\_id = '$room'";

        $deleteBatchQuery = mysqli\_query($conn, $deleteBatch);

        $deleteRoom = "DELETE FROM room WHERE rid = '$room'";

        $deleteRoomQuery = mysqli\_query($conn, $deleteRoom);

        $dropRoomTable = "DROP TABLE IF EXISTS `$room`";

        $dropRoomTableQuery = mysqli\_query($conn, $dropRoomTable);

        if ($deleteBatchQuery && $dropRoomTableQuery && $deleteRoomQuery) {

            mysqli\_commit($conn);

            $\_SESSION['delroom'] = "Room and associated data deleted successfully";

        } else {

            mysqli\_rollback($conn);

            $\_SESSION['delnotroom'] = "Error! Room deletion failed.";

        }

    } catch (Exception $e) {

        mysqli\_rollback($conn);

        $\_SESSION['delnotroom'] = "Error! Room deletion failed: " . $e->getMessage();

    }

}

?>

**EXAMSEAT.PHP**

<?php

include '../db.php';

include 'seat\_allocation.php';

session\_start();

?>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>View Allocation</title>

    <link rel="stylesheet" href="common.css">

    <?php include '../link.php'; ?>

    <style>

    .seat-grid {

    display: grid;

    grid-template-columns: repeat(3, 1fr);

    gap: 20px;

    justify-items: center;

    }

    .seat-box {

        border: 1px solid #ccc;

        padding: 10px;

        border-radius: 8px;

        background-color: #f9f9f9;

        text-align: center;

        width: 150px;

        transition: transform 0.3s ease;

    }

    .seat-box p {

        margin: 5px 0;

    }

    .seat-box:hover {

        transform: scale(1.1);

    }

    </style>

</head>

<body>

<div class="wrapper">

    <nav id="sidebar">

        <div class="sidebar-header">

            <h4>DASHBOARD</h4>

        </div>

        <ul class="list-unstyled components">

            <li><a href="add\_class.php"><img src="https://img.icons8.com/ios-filled/26/ffffff/google-classroom.png"/> Classes</a></li>

            <li><a href="add\_student.php"><img src="https://img.icons8.com/ios-filled/25/ffffff/student-registration.png"/> Students</a></li>

            <li><a href="add\_room.php"><img src="https://img.icons8.com/metro/25/ffffff/building.png"/> Rooms</a></li>

            <li><a href="dashboard.php"><img src="https://img.icons8.com/nolan/30/ffffff/summary-list.png"/> Allotment</a></li>

            <li><a href="examseat.php" class="active\_link"><img width="30" height="30" src="https://img.icons8.com/ios-filled/50/FFFFFF/shuffle.png"/> View Allotment</a></li>

        </ul>

    </nav>

    <div id="content">

        <nav class="navbar navbar-expand-lg navbar-light bg-light">

            <div class="container-fluid">

                <button type="button" id="sidebarCollapse" class="btn btn-info">

                    <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                </button>

                <span class="page-name"> View Allotment</span>

                <button class="btn btn-dark d-inline-block d-lg-none ml-auto" type="button" data-toggle="collapse" data-target="#navbarSupportedContent"

                        aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

                    <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                </button>

                <div class="collapse navbar-collapse" id="navbarSupportedContent">

                    <ul class="nav navbar-nav ml-auto">

                        <li class="nav-item active">

                            <a class="nav-link" href="../logout.php">Logout</a>

                        </li>

                    </ul>

                </div>

            </div>

        </nav>

        <div class="d-flex justify-content-center" style="margin-top: 20px;">

            <div class="table-responsive border" style="width: auto;">

                <form method="POST" action="">

                    <table class="table table-hover text-center">

                        <thead class="thead-light">

                        <tr>

                            <th class="text-center">Select Room</th>

                        </tr>

                        </thead>

                        <tbody>

                        <tr>

                            <td class="py-3 bg-light">

                                <select id="sem" name="sclass" class="form-control" style="display: inline-block; width: auto;" onchange="this.form.submit()">

                                    <?php

                                    $selectroom = "SELECT rid, room\_no, floor FROM room";

                                    $selectroomQuery = mysqli\_query($conn, $selectroom);

                                    if ($selectroomQuery) {

                                        echo "<option value=''>--Select--</option>";

                                        while ($row = mysqli\_fetch\_assoc($selectroomQuery)) {

                                            $selected = isset($\_POST['sclass']) && $\_POST['sclass'] == $row['rid'] ? 'selected' : '';

                                            echo "<option value='" . $row['rid'] . "' $selected>Room-" . $row['room\_no'] . " & Floor-" . $row['floor'] . "</option>";

                                        }

                                    } else {

                                        echo "<option value=''>No options</option>";

                                    }

                                    ?>

                                </select>

                            </td>

                        </tr>

                        </tbody>

                    </table>

                </form>

            </div>

        </div>

        <div class="seating-container">

            <?php

            if (isset($\_POST['sclass']) && !empty($\_POST['sclass'])) {

                $selected\_room\_id = $\_POST['sclass'];

                $selected\_room\_id = mysqli\_real\_escape\_string($conn, $selected\_room\_id);

                echo "<script>console.log('PHP Variable: " . addslashes($selected\_room\_id) . "');</script>";

                $allocation\_message = allocate\_seats($selected\_room\_id);

                echo "<p>$allocation\_message</p>";

                $room\_table\_name = $selected\_room\_id;

                $roomRecordsQuery = "SELECT \* FROM `$room\_table\_name` ORDER BY seatno ASC";

                $roomRecordsResult = mysqli\_query($conn, $roomRecordsQuery);

              if ($roomRecordsResult && mysqli\_num\_rows($roomRecordsResult) > 0) {

                    echo "<div class='seat-grid'>";

                    while ($record = mysqli\_fetch\_assoc($roomRecordsResult)) {

                        echo "<div class='seat-box'>";

                        echo "<p>Seat No: " . $record['seatno'] . "</p>";

                        echo "<p>Name: " . $record['name'] . "</p>";

                        echo "<p>Roll No: " . $record['rollno'] . "</p>";

                        echo "</div>";

                    }

                    echo "</div>";

                } else {

                    echo "<p>No records found for the selected room.</p>";

                }

            }

            ?>

        </div>

    </div>

</body>

</html>

<?php include'footer.php' ?>

**SEAT\_ALLOCATION.PHP**

<?php

include '../db.php';

function execute\_query($conn, $query, $params = [], $types = '') {

    $stmt = mysqli\_prepare($conn, $query);

    if (!empty($params)) {

        mysqli\_stmt\_bind\_param($stmt, $types, ...$params);

    }

    mysqli\_stmt\_execute($stmt);

    return mysqli\_stmt\_get\_result($stmt);

}

function allocate\_seats($room\_id) {

    global $conn;

    $room\_query = "SELECT capacity FROM room WHERE rid = ?";

    $room\_result = execute\_query($conn, $room\_query, [$room\_id], 's');

     $reset\_seat\_query = "UPDATE `$room\_id` SET seatno = 0 WHERE seatno != 0";

    $stmt = mysqli\_prepare($conn, $reset\_seat\_query);

    mysqli\_stmt\_execute($stmt);

    if (!$room\_result || mysqli\_num\_rows($room\_result) == 0) {

        return "Room not found or invalid room ID.";

    }

    $room = mysqli\_fetch\_assoc($room\_result);

    $room\_capacity = $room['capacity'];

    $class\_query = "SELECT DISTINCT class\_id FROM batch WHERE room\_id = ?";

    $class\_result = execute\_query($conn, $class\_query, [$room\_id], 's');

    if (mysqli\_num\_rows($class\_result) == 0) {

        return "No classes found for this room.";

    }

    $students\_by\_class = [];

    while ($class\_row = mysqli\_fetch\_assoc($class\_result)) {

        $class = $class\_row['class\_id'];

        $students\_query = "SELECT \* FROM `$room\_id` WHERE class = ? AND seatno = 0";

        $students\_result = execute\_query($conn, $students\_query, [$class], 's');

      $students\_by\_class[$class] = mysqli\_fetch\_all($students\_result, MYSQLI\_ASSOC);

    }

    foreach ($students\_by\_class as &$students) {

        shuffle($students);

    }

    $student\_list = [];

    while (!empty($students\_by\_class)) {

        foreach ($students\_by\_class as &$students) {

            if (!empty($students)) {

                $student\_list[] = array\_shift($students);

            }

        }

        $students\_by\_class = array\_filter($students\_by\_class);

    }

    $allocated\_count = min(count($student\_list), $room\_capacity);

    for ($i = 0; $i < $allocated\_count; $i++) {

        $student = $student\_list[$i];

        $student\_code = $student['student\_id'];

        $seat\_number = $i + 1;

        $update\_seat\_query = "UPDATE `$room\_id` SET seatno = ? WHERE student\_id = ?";

        execute\_query($conn, $update\_seat\_query, [$seat\_number, $student\_code], 'is');

    }

    return "$allocated\_count seats allocated successfully!";

}

?>

**FOOTER.PHP**

<script src="https://code.jquery.com/jquery-3.3.1.slim.min.js" integrity="sha384-q8i/X+965DzO0rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE1Pi6jizo" crossorigin="anonymous"></script>

<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.0/umd/popper.min.js" integrity="sha384-cs/chFZiN24E4KMATLdqdvsezGxaGsi4hLGOzlXwp5UZB1LY//20VyM2taTB4QvJ" crossorigin="anonymous"></script>

<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.1.0/js/bootstrap.min.js" integrity="sha384-uefMccjFJAIv6A+rW+L4AHf99KvxDjWSu1z9VI8SKNVmz4sk7buKt/6v9KI65qnm" crossorigin="anonymous"></script>

    <script type="text/javascript">

        $(document).ready(function () {

            $('#sidebarCollapse').on('click', function () {

                $('#sidebar').toggleClass('active');

            });

        });

    </script>

</body>

</html>

**LOGIN\_STUDENT.PHP**

<?php

session\_start();

include "db.php";

if (isset($\_POST['submit'])) {

    $name = $\_POST['name'];

    $name = mysqli\_real\_escape\_string($conn, $name);

    $name = htmlentities($name);

    $password = $\_POST['password'];

    $password = mysqli\_real\_escape\_string($conn, $password);

    $password = htmlentities($password);

    $select\_student = "SELECT student\_id, name, password FROM students WHERE name='$name' AND password='$password'";

    $select\_student\_query = mysqli\_query($conn, $select\_student);

    if (mysqli\_num\_rows($select\_student\_query) > 0) {

        $row = mysqli\_fetch\_assoc($select\_student\_query);

        $\_SESSION['login'] = "student";

        $\_SESSION['loginid'] = $row['student\_id'];

        header('Location: students/dashboard.php');

    } else {

        $\_SESSION['loginmsg'] = "Incorrect Credentials";

    }

}

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1" />

    <link rel="stylesheet" href="style.css">

    <title>Student Login</title>

</head>

<body>

    <div class="flex-r container">

        <div class="flex-r login-wrapper">

            <div class="login-text">

                <div class="logo">

                    <span><i class="fab fa-speakap"></i></span>

                </div>

                <h1>Exam Hall Seating Arrangement</h1>

                <p>STUDENT LOGIN</p>

                <div class="login-div">

                    <p class="loginmsg">

                        <?php

                        if (isset($\_SESSION['loginmsg'])) {

                            echo $\_SESSION['loginmsg'];

                            unset($\_SESSION['loginmsg']);

                        }

                        ?>

                    </p>

                </div>

                <form class="flex-c" method="post">

                    <div class="input-box">

                        <span class="label">Name</span>

                        <div class="flex-r input">

                            <input class="name" name="name" type="text" placeholder="Enter Name" required>

                            <i class="fas fa-user"></i>

                        </div>

                    </div>

                    <div class="input-box">

                        <span class="label">Password</span>

                        <div class="flex-r input">

                            <input class="pass" name="password" type="password" placeholder="Password" required>

                            <i class="fas fa-lock"></i>

                        </div>

                    </div>

                    <input class="btn" name="submit" type="submit" value="LOGIN">

                    <span class="extra-line">

                        <span>Are you an Admin?</span>

                        <a href="login\_admin.php">Login Here</a>

                    </span>

                </form>

            </div>

        </div>

    </div>

</body>

</html>

**STUDENTDASHBOARD.PHP**

<?php

session\_start();

?>

<html>

<head>

    <title>Dashboard</title>

    <link rel="stylesheet" href="../admin/common.css">

    <?php include '../link.php'; ?>

</head>

<body>

    <div id="content">

        <nav class="navbar navbar-expand-lg navbar-light bg-light">

            <div class="container-fluid">

                <span class="page-name"> DASHBOARD</span>

                <button class="btn btn-dark d-inline-block d-lg-none ml-auto" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

                   <img src="https://img.icons8.com/ios-filled/19/ffffff/menu--v3.png"/>

                </button>

                <div class="collapse navbar-collapse" id="navbarSupportedContent">

                    <ul class="nav navbar-nav ml-auto">

                        <li class="nav-item active">

                            <a class="nav-link" href="../logout.php">Logout</a>

                        </li>

                    </ul>

                </div>

            </div>

        </nav>

        <div class="main-content d-lg-flex justify-content-around">

<?php

    if (isset($\_SESSION['loginid'])) {

        $id = $\_SESSION['loginid'];

        $select\_student = "SELECT \* FROM students, class WHERE student\_id='$id' AND class=class\_id";

        $select\_student\_query = mysqli\_query($conn, $select\_student);

        if (mysqli\_num\_rows($select\_student\_query) > 0) {

            $row = mysqli\_fetch\_assoc($select\_student\_query);

            $class = $row['class'];

            $roll = $row['rollno'];

            echo "<div class='mt-4 '>

                    <h2>" . htmlspecialchars($row['name']) . "</h2>

                    <h6 class='py-2'>" . htmlspecialchars($row['year']) . " " . htmlspecialchars($row['dept']) . " " . htmlspecialchars($row['division']) . "</h6>

                    Roll No. " . htmlspecialchars($row['rollno']) . "

                </div>

                <div>

                    <h5 align=center class='mt-4 mb-3 text-primary'>Exam Seating Allotment</h5>";

            echo "<table class='table text-center table-bordered'>

                <tr>

                    <th>Room Number</th>

                    <th>Floor Number</th>

                    <th>Seat No</th>

                </tr>";

            $allotment = "SELECT year, dept, division, room\_no, floor, startno, room\_id, endno FROM batch, room, class WHERE room\_id=rid AND batch.class\_id=class.class\_id AND batch.class\_id='$class' AND startno<='$roll' AND endno>='$roll'";

            $allotment\_query = mysqli\_query($conn, $allotment);

            if (mysqli\_num\_rows($allotment\_query) > 0) {

                $array = mysqli\_fetch\_assoc($allotment\_query);

                $room\_id = $array['room\_id'];

                // Query to get seat number

                $seat = "SELECT seatno FROM `$room\_id` where student\_id='$id'"; // Make sure `$room\_id` refers to a valid table name

                $seat\_query = mysqli\_query($conn, $seat);

                if ($seat\_query && mysqli\_num\_rows($seat\_query) > 0) {

                    $res = mysqli\_fetch\_assoc($seat\_query);

                    $seat\_number = $res['seatno']; // Assuming 'seatno' is the correct column name

                    echo "<tr>

                        <td>" . htmlspecialchars($array['room\_no']) . "</td>

                        <td>" . htmlspecialchars($array['floor']) . "</td>

                        <td>" . htmlspecialchars($seat\_number) . "</td>

                    </tr>";

                } else {

                    echo "<tr><td colspan='5'>No seat number found.</td></tr>";

                }

            } else {

                echo "<tr><td colspan='5'>Exam Seat Not Allotted</td></tr>";

            }

            echo "</table>";

        } else {

            echo "No student with Id = '$id'";

        }

    }

?>

        </div>

    </div>

</div>

</body>

</html>

**LOGOUT.PHP**

<?php

session\_start();

include "db.php";

$\_SESSION['loginmsg'] = "Logged Out Successfully";

if($\_SESSION['login']=="student"){

    unset($\_SESSION['login']);

    header('Location: login\_student.php');

}

else{

    unset($\_SESSION['login']);

    header('Location: login\_admin.php');

}

?>

**TESTING**

**5.5 TESTING**

### UNIT TESTING

* **Unit testing**involves the testing of each unit or an individual component of the software application. It is the first level of functional testing.
* The **purpose**of unit testing is to test the correctness of isolated code. A unit component is an individual function or code of the application. White box testing approach used for unit testing and usually done by the developers.
* Whenever the application is ready and given to the Test engineer, he/she will start checking every component of the module or module of the application independently or one by one, and this process is known as **Unit testing**or **components testing**.

### SYSTEM TESTING

### System Testing is a level of testing that validates the complete and fully integrated software product.

* The purpose of a system test is to evaluate the end-to-end system specifications.

Usually, the software is only one element of a larger computer-based system.

### Ultimately, the software is interfaced with other software/hardware systems. System Testing is defined as a series of different tests whose sole purpose is to exercise the full computer-based system.

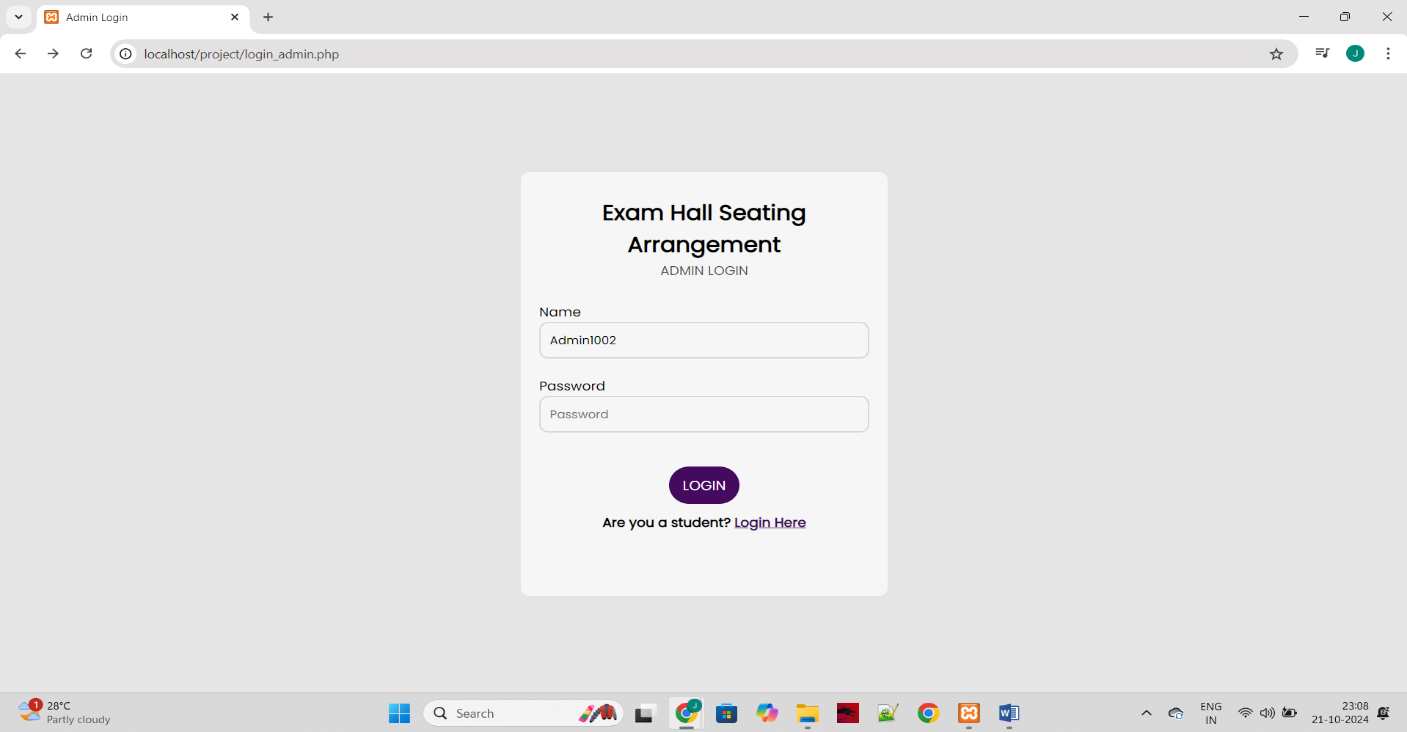
### INTEGRATION TESTING

Integration Testing is defined as a type of testing where software modules are integrated logically and tested as a group. A typical software project consists of multiple software modules, coded by different programmers. The purpose of this level of testing is to expose defects in the interaction between these software modules when they are integrated.

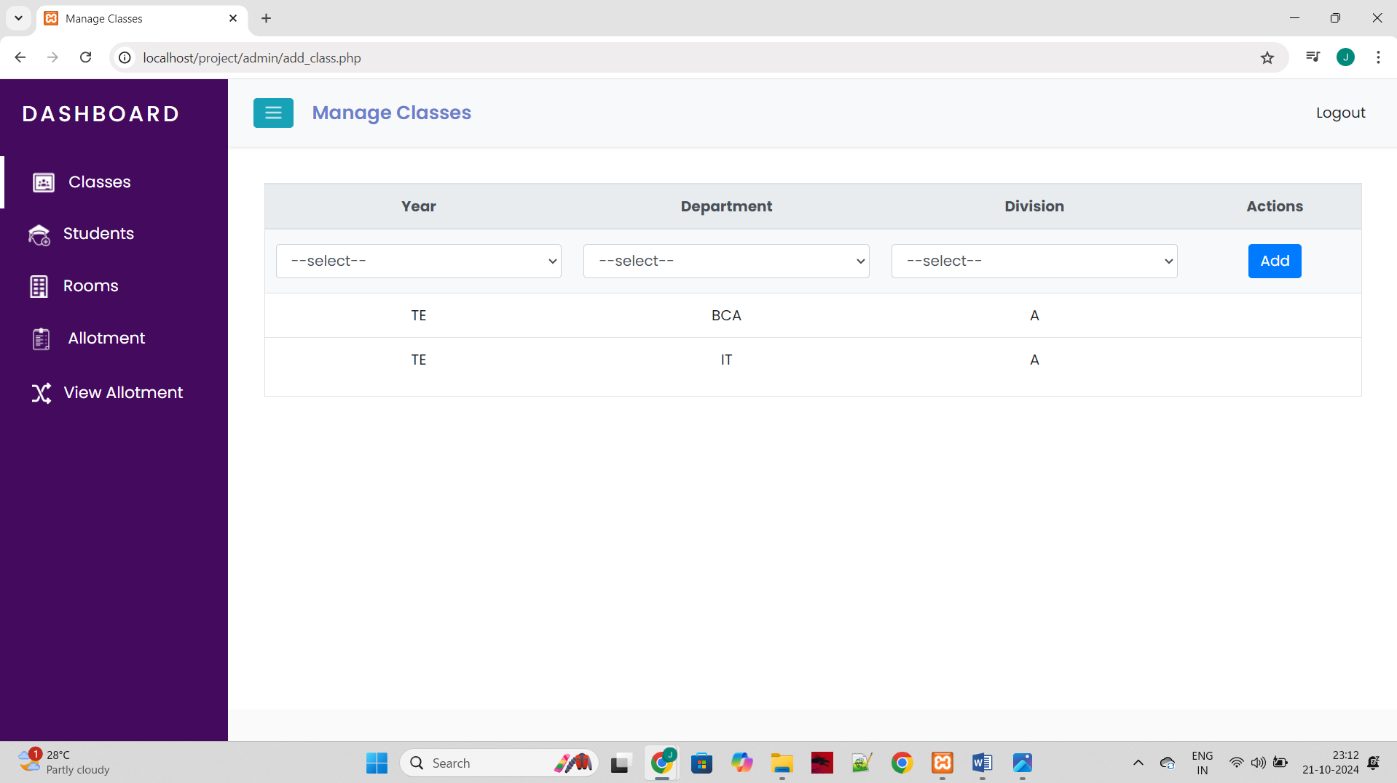
**SCREENSHOTS**

**5.6 SCREENSHOTS**

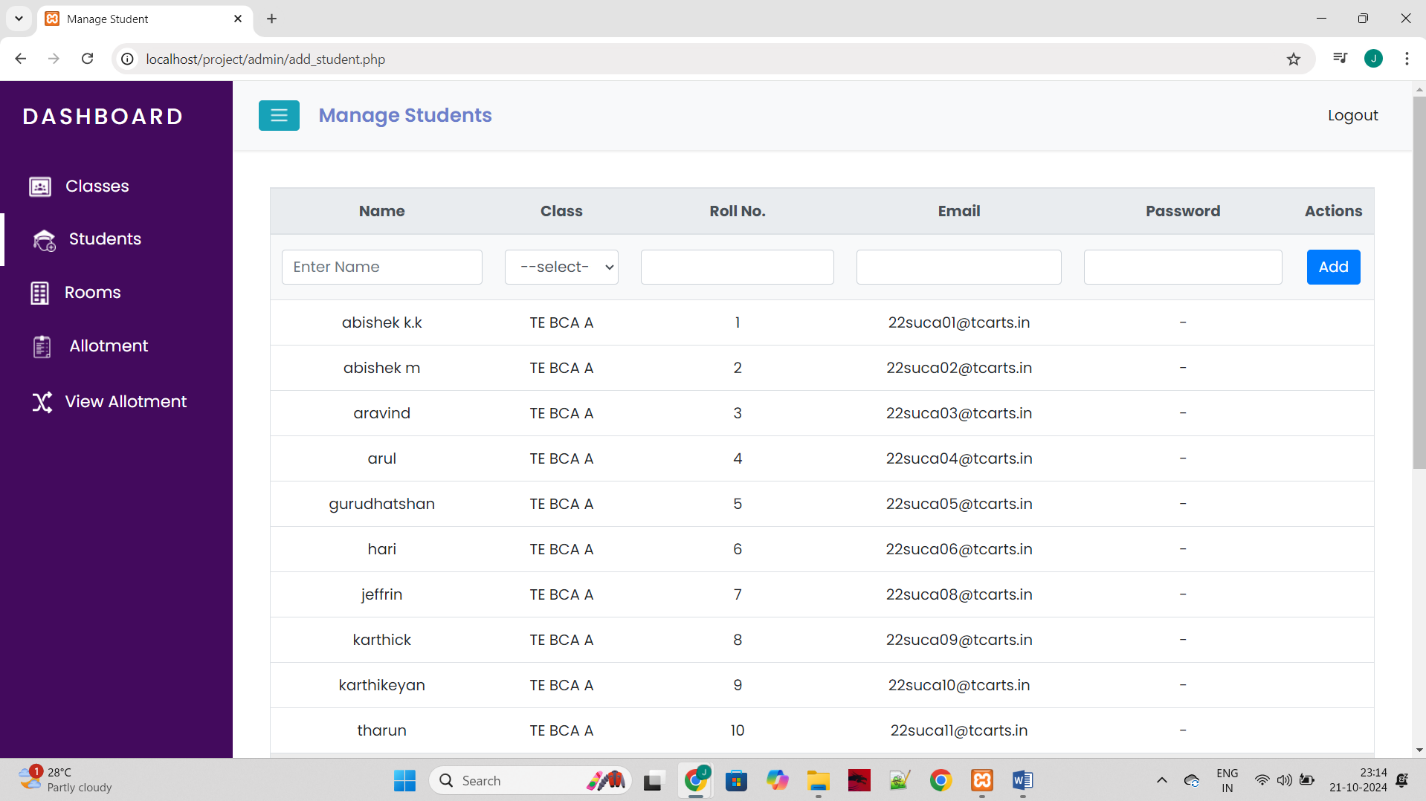
**ADMIN LOGIN**



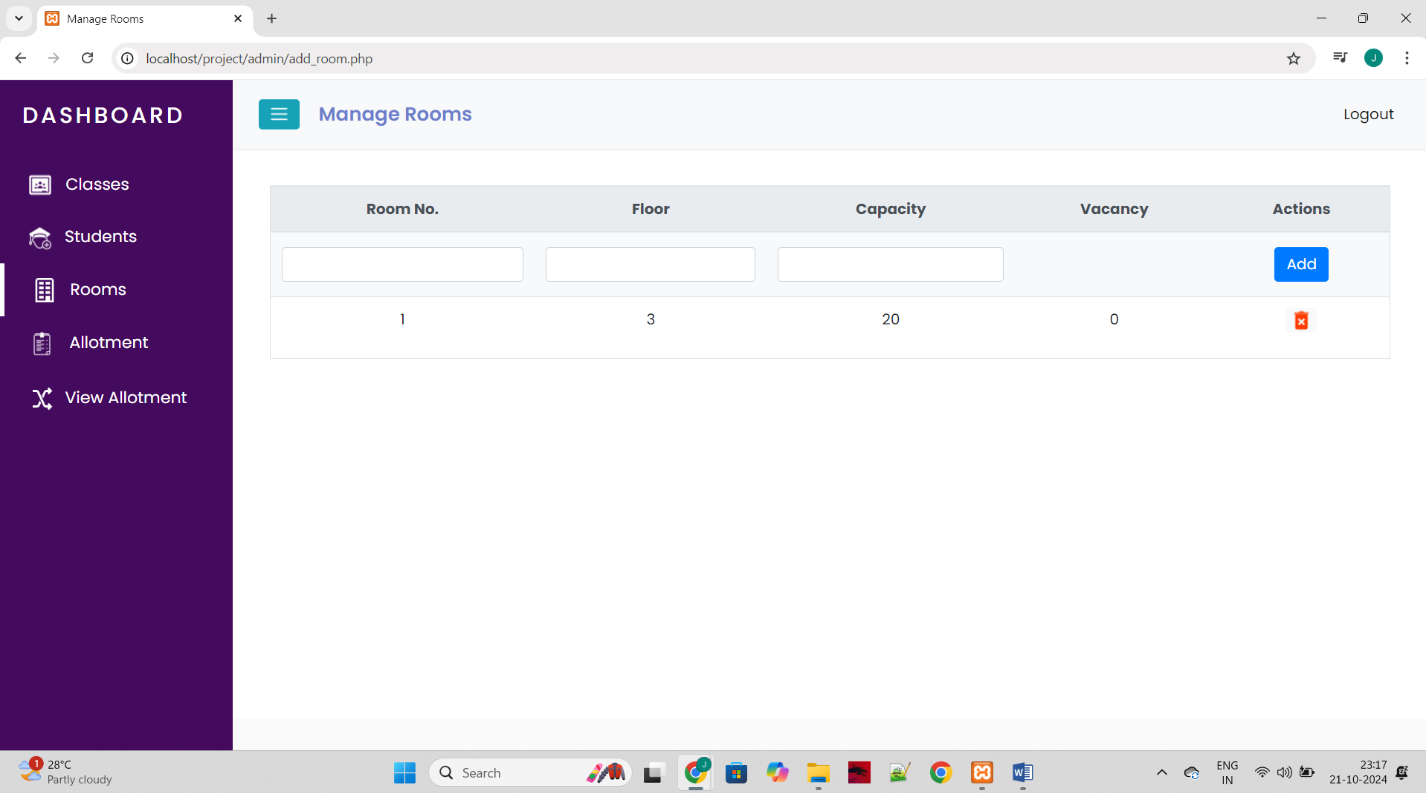
**MANAGE CLASSES**



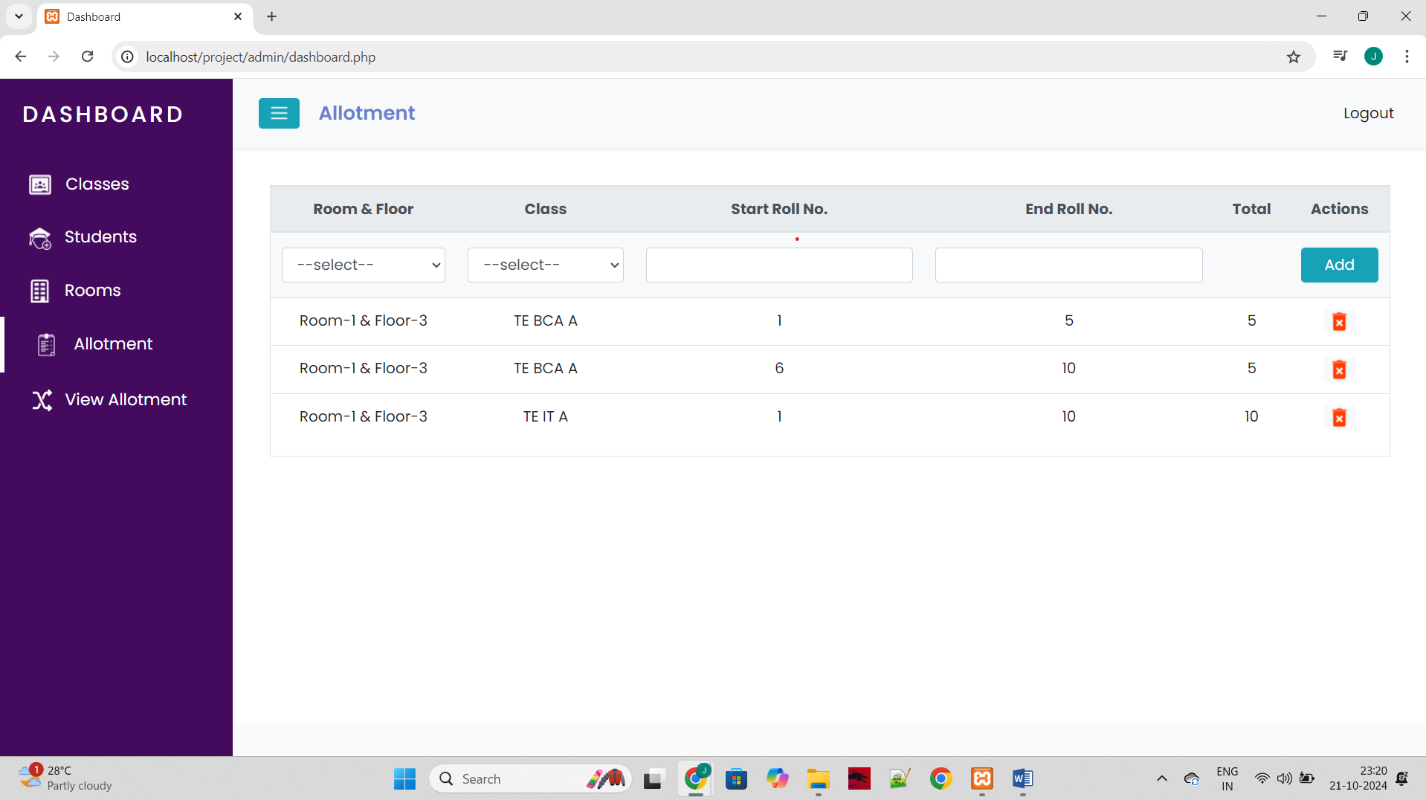
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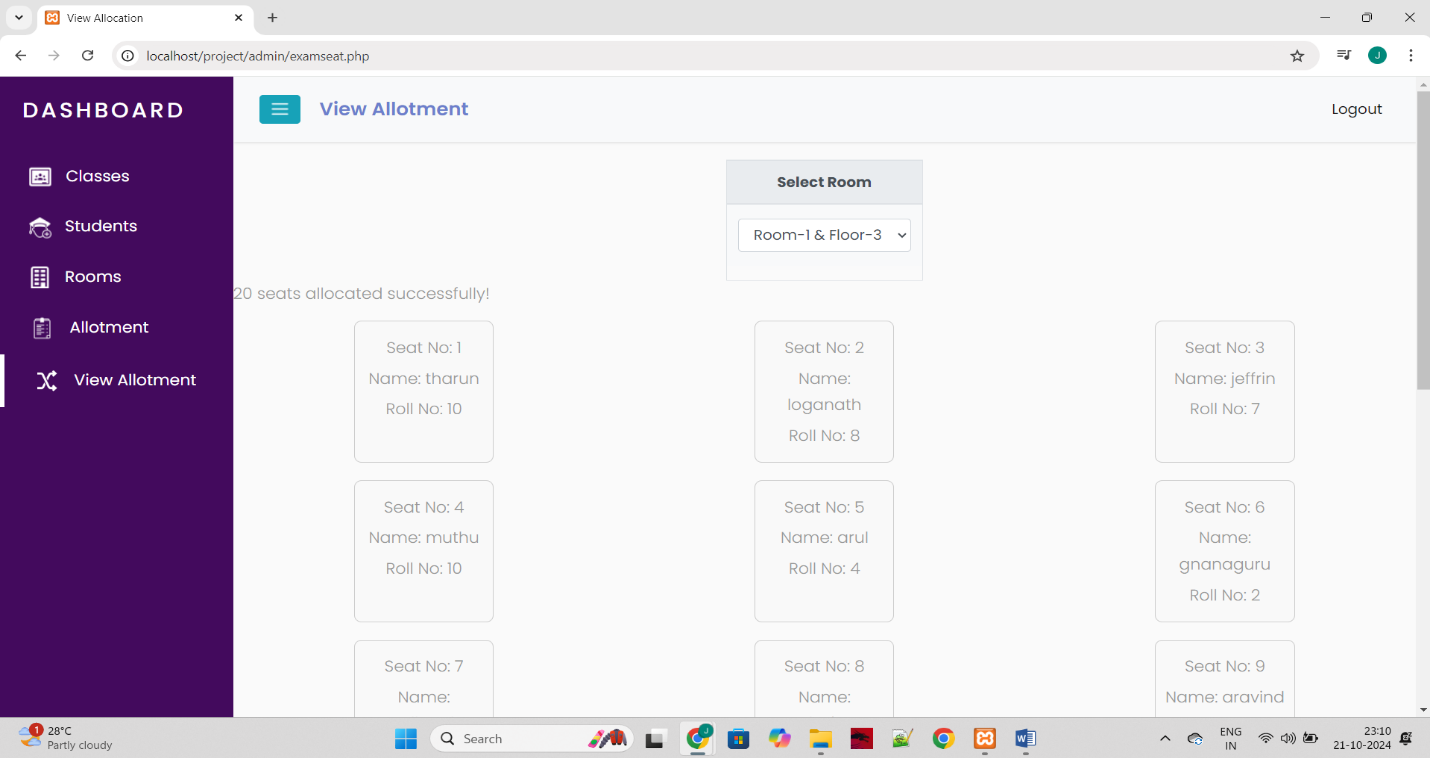
**MANAGE ROOMS**



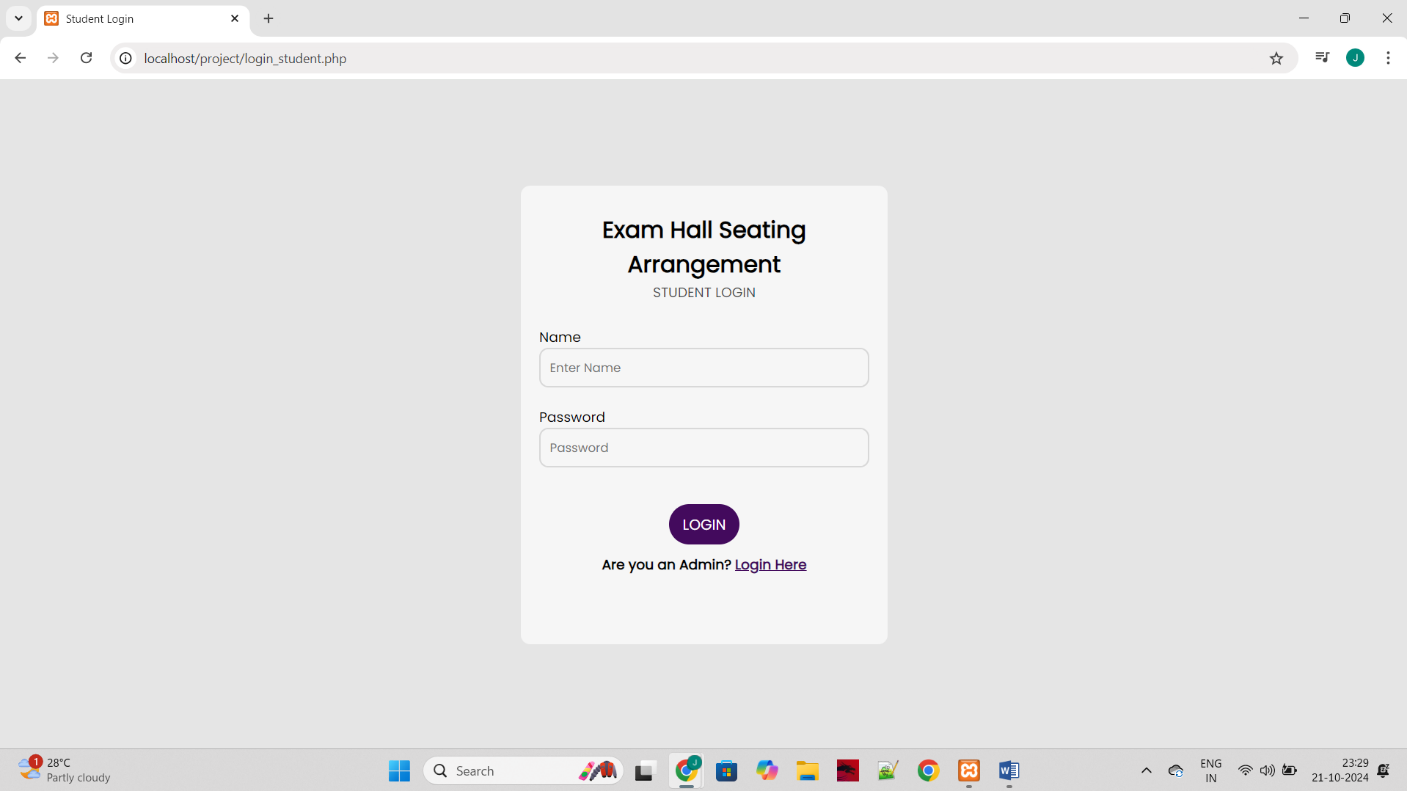
**MANAGE ALLOTMENT**



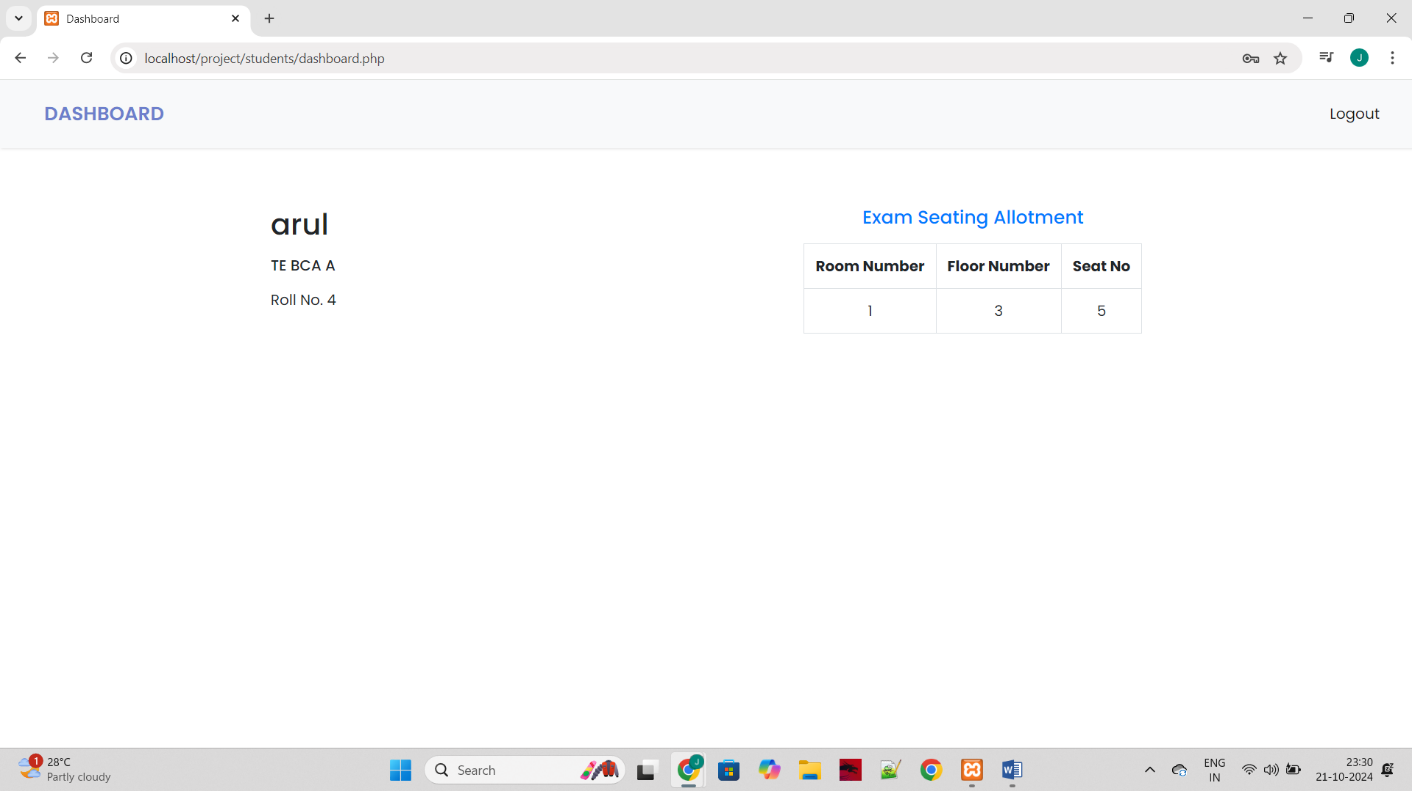
**VIEW ALLOTMENT**



**STUDENT LOGIN**



**DASHBOARD**



**CONCLUSION**

**AND**

**FUTURE ENHANCEMENT**

**6. CONCLUSION AND FUTURE ENHANCEMENT**

* The "Exam Hall Seating Arrangement" successfully addresses the challenges associated with manual exam seating arrangements by automating the process, thereby enhancing efficiency, accuracy, and ease of use.
* By providing a clear and organized view of seating information, it helps to reduce confusion and ensure that students know exactly where they need to be during exams.
* The system's simplicity and focus on essential information make it a practical tool for educational institutions.
* Our project not only streamlines the allocation of seats based on predefined rules and constraints but also provides a user-friendly interface for both administrators and students.

**FUTURE ENHANCEMENT**

* The future scope of the "Exam Hall Seating Arrangement" includes several enhancements aimed at further optimizing and expanding its capabilities.
* Integrating advanced algorithms and AI can handle more complex constraints and optimize resources, while developing a mobile application will enhance accessibility.
* Implementing real-time updates and push notifications will keep users informed of changes, and cloud integration will improve scalability and reliability.
* Additionally, incorporating user feedback for continuous improvement and offering customization options will tailor the system to specific institutional needs.
* These enhancements will transform the system into a versatile tool, meeting the evolving needs of educational institutions and providing a seamless experience for administrators and students alike.

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