



SRI RAMACHANDRA

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Category - I Deemed to be University) Porur, Chennai

REVIEW 2- INT 300 Internship

VISITOR MANAGEMENT SYSTEM

A FULL-STACK VISITOR MANAGEMENT SYSTEM WITH MS SQL SERVER, ENTITY FRAMEWORK AND ASP.NET(MVC).



Bharat Heavy Electricals Limited

Powering Progress, Brightening Lives Touching Every Indian Home

HEMA VARSHINI R

E0322010

Project Guide

The Manager

Mohan.J

Introduction

About Company:

Indian central public sector company Bharat Heavy Electricals Limited (BHEL) is the biggest producer of power generation equipment owned by the government.

The Ministry of Heavy Industry is in charge of management, though the Government of India owns the company, With the aid of Soviet technology.

BHEL was found in 1956 and has its head office in New Delhi.

About my Project:

BrieflyThe goal of the project "A Full-Stack Visitor Management System with MS SQL and ASP.NET(Mvc)" is to offer an efficient and easy-to-use platform. Through the combination of ASP.NET(Mvc) for frontend and backend development and Microsoft SQL Server for the backend, the project focuses on safe visitor registration, robust user authentication, and best database design.

Survey

The goal of the "Visitor Management System Survey" is to gather feedback and insights from users and stakeholders regarding their experience with the Visitor Management System. By collecting information on user satisfaction, usability, security, compliance, and suggestions for future enhancements, the survey aims to identify areas of improvement and inform the development roadmap for the system. Additionally, demographic information allows for a better understanding of the diverse needs and preferences of different organizations and industries. Ultimately, the goal is to use the feedback gathered from the survey to enhance the Visitor Management System, ensuring it meets the evolving needs and expectations of its users.

PROBLEM STATEMENT/OBJECTIVES

Problem Statement:

Traditional paper-based visitor management processes lack centralization, security, and efficiency, necessitating a digital solution using MS SQL Server, Entity Framework, and ASP.NET (MVC).

Purpose of the Project:

To modernize visitor registration, tracking, and management processes by implementing a full-stack system, enhancing security, efficiency, and data management within organizations.

The ultimate goal:

the project is to create a robust, user-friendly, and secure visitor management system that effectively streamlines processes, enhances security, and provides comprehensive data management for organizations.

Technologies used

- **Microsoft SQL Server:** For data storage and management.
- **Entity Framework:** For database interaction.
- **ASP.NET MVC:** For web application development.
- **C#:** For server-side programming.
- **HTML/CSS/JavaScript:** For front-end development.
- **Bootstrap:** For responsive design.
- **Visual Studio:** For development and debugging.
- **IIS:** For web hosting.

Hardware & Software Requirements

Hardware Requirements:

- **Server:** A robust server with sufficient processing power, memory (16GB minimum), and storage (SSD recommended) for hosting MS SQL Server and ASP.NET applications.
- **Network:** Stable internet connectivity and a reliable network infrastructure to ensure seamless communication between the server and client devices

Software Requirements:

- **Operating System:** Windows Server (e.g., Windows Server 2016 or later) for hosting MS SQL Server and ASP.NET applications.
- **Database Management System:** Microsoft SQL Server (e.g., SQL Server 2019) for efficient data storage and management.
- **Development Tools:** Microsoft Visual Studio for ASP.NET MVC development, along with Entity Framework for database interaction.
- **Web Server:** Internet Information Services (IIS) for hosting ASP.NET MVC web applications and handling HTTP requests securely.

Work Flow

- Design and create the database schema using Microsoft SQL Server.
- Define tables for storing visitor information, user authentication data, and any other relevant data entities.
- Develop the backend logic using ASP.NET(Mvc) framework.
- Implement functionalities for visitor registration, check-in/out management, user authentication, and database interaction.
- Design and develop the frontend UI using ASP.NET(Mvc) framework.
- Create intuitive user interfaces for visitor registration forms, search functionality, reports, and any other user interactions.
- Connect the backend and frontend components to ensure seamless communication.
- Conduct thorough testing to identify and address any bugs or issues.

Methodology

- **System Design:** Design the system architecture, database schema using MS SQL Server, and entity relationships using Entity Framework. Plan the user interface layout and navigation flow using ASP.NET (MVC) framework.
- **Database Design and Implementation:** Develop the database schema in MS SQL Server, including tables for visitors, employees, visits, access logs, etc. Implement data integrity constraints, indexes, and relationships using Entity Framework Code-First approach.
- **Backend Development:** Implement server-side logic and functionality using ASP.NET (MVC) framework. Develop controllers to handle HTTP requests, interact with the database using Entity Framework for data manipulation, and implement business logic for visitor management operations such as registration, check-in, check-out, and access control.
- **Frontend Development:** Design and develop user interfaces using HTML, CSS, and Razor syntax within ASP.NET (MVC) Views. Implement responsive layouts and client-side validations for seamless user interaction.
- **Integration and Testing:** Integrate different components of the system and conduct thorough testing, including unit testing, integration testing, and user acceptance testing, to ensure functionality, performance, and security.

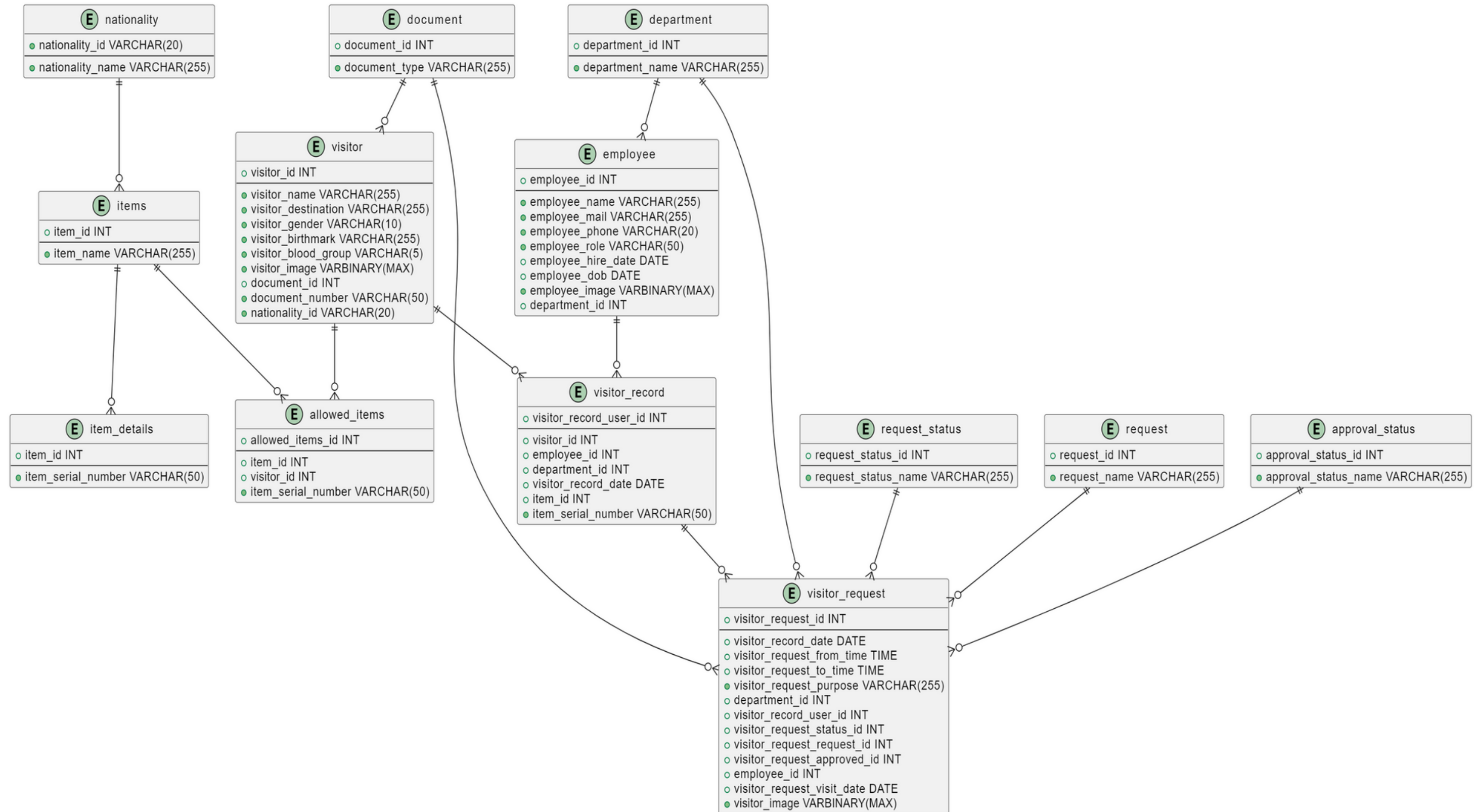
Implementation

- A database (VMS) containing tables for entities such as nationalities, items, documents, request statuses, approval statuses, departments, employees, visitors, and their relationships with one another will be created as part of the Visitor Management System (VMS) project. The solution ensures data integrity by enabling CRUD operations for these entities through the use of Entity Framework and ASP.NET MVC.
- Tables with single connections, such as item details, and documents, that are connected to items and documents, are included in the database design. Tables having several connections, such as visitor and employee, record particular data and preserve connections to departments and other essential entities.
- An easy-to-use interface is offered by the ASP.NET MVC application to manage employees, visitors, and applications. For sensitive data, safety protocols include encryption, authorization, and authentication. Thorough debugging and testing ensure functionality and thorough documentation handles the codebase, database schema, and user guidance.
- Deployment on a configured server is required for deployment, and regular maintenance includes security and feature updates. Within the framework of an organization, the system serves to manage visitor data, requests, and employee information in a successful way.

Work plan

DAY	DATE	TODAY'S ACTIVITY
Day 1	19-02-2024	Formalities and Company Introduction in BHEL. Complete necessary paperwork and administrative formalities. Get an overview of the company's policies, values, and culture.
Day 2	21-02-2024	the introduction to the project and team
Day 3	22-02-2024	Research and documentation on ASP.NET MVC
Day 4	23-02-2024	Research and documentation on ASP.NET MVC. Understand the requirements for the Visitor Management System.
Day 5	24-02-2024	Set up the development environment (Visual Studio, SQL Server).
Day 6	25-02-2024	Sunday
Day 7	26-02-2024	In Ms SQL Sever we were Created Table(visitor,document,etc...)
Day 8	28-02-2024	In Ms SQL Sever relation with each table and learning course in asp.net(mvc)
Day 9	01-03-2024	learning course in asp.net(mvc)
Day 10	02-03-2024	Saturday
Day 11	03-03-2024	Sunday
Day 12	04-03-2024	connecting ms sql server to asp.net
Day 13	06-03-2024	connecting ms sql server to asp.net
Day 14	08-01-2024	set up the development asp.net (Entity Framework EF) and learning course in asp.net(mvc) in Frontend code
Day 15	09-03-2024	Saturday
Day 16	10-03-2024	Sunday
Day 17	11-03-2024	Leave
Day 18	12-03-2024	College First Review
Day 19	14-03-2024	Leave
Day 20	16-01-2024	Saturday
Day 21	17-01-2024	Sunday
Day 22	18-01-2024	Frotend UI Part
Day 23	20-01-2024	Frotend UI Part
Day 24	21-01-2024	Frotend connection to mssql
Day 25	22-01-2024	Frotend connection to mssql
Day 26	23-01-2024	Frotend connection to mssql
Day 27	24-01-2024	Frotend connection to mssql
Day 28	25-01-2024	Creating controler parts and models
Day 29	27-01-2024	Creating controler parts and models and Model view creation
Day 30	28-01-2024	UI+ Backend(Database) in mssql
Day 31	29-01-2024	UI+ Backend(Database) in mssql
Day 32	30-01-2024	UI+ Backend(Database) in mssql
Day 33	31-01-2024	Sunday
Day 34	01-02-2024	Leave
Day 35	02-02-2024	College Second Review
Day 36	03-02-2024	College Second Review

WORKFLOW DIAGRAM- ER DIAGRAM

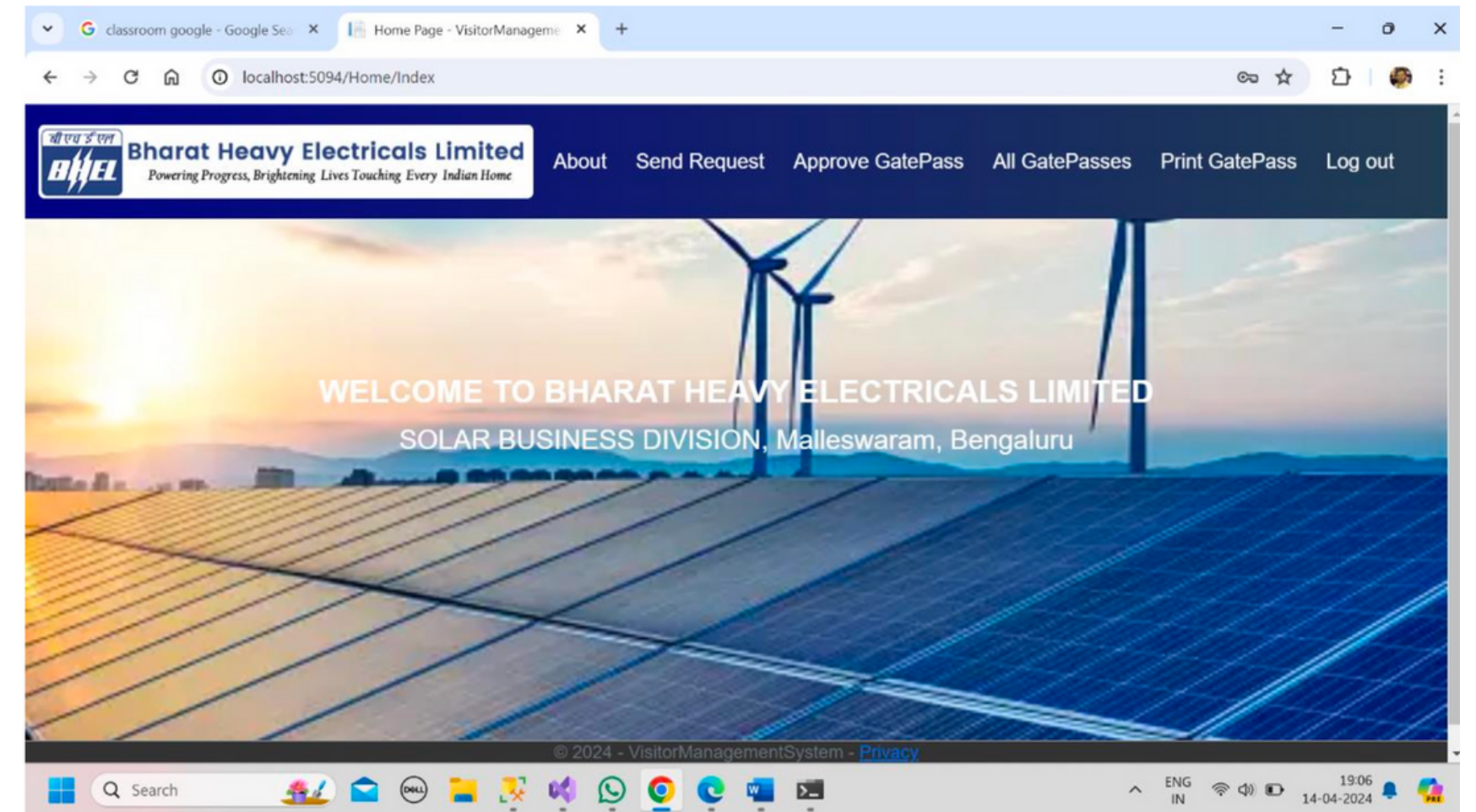
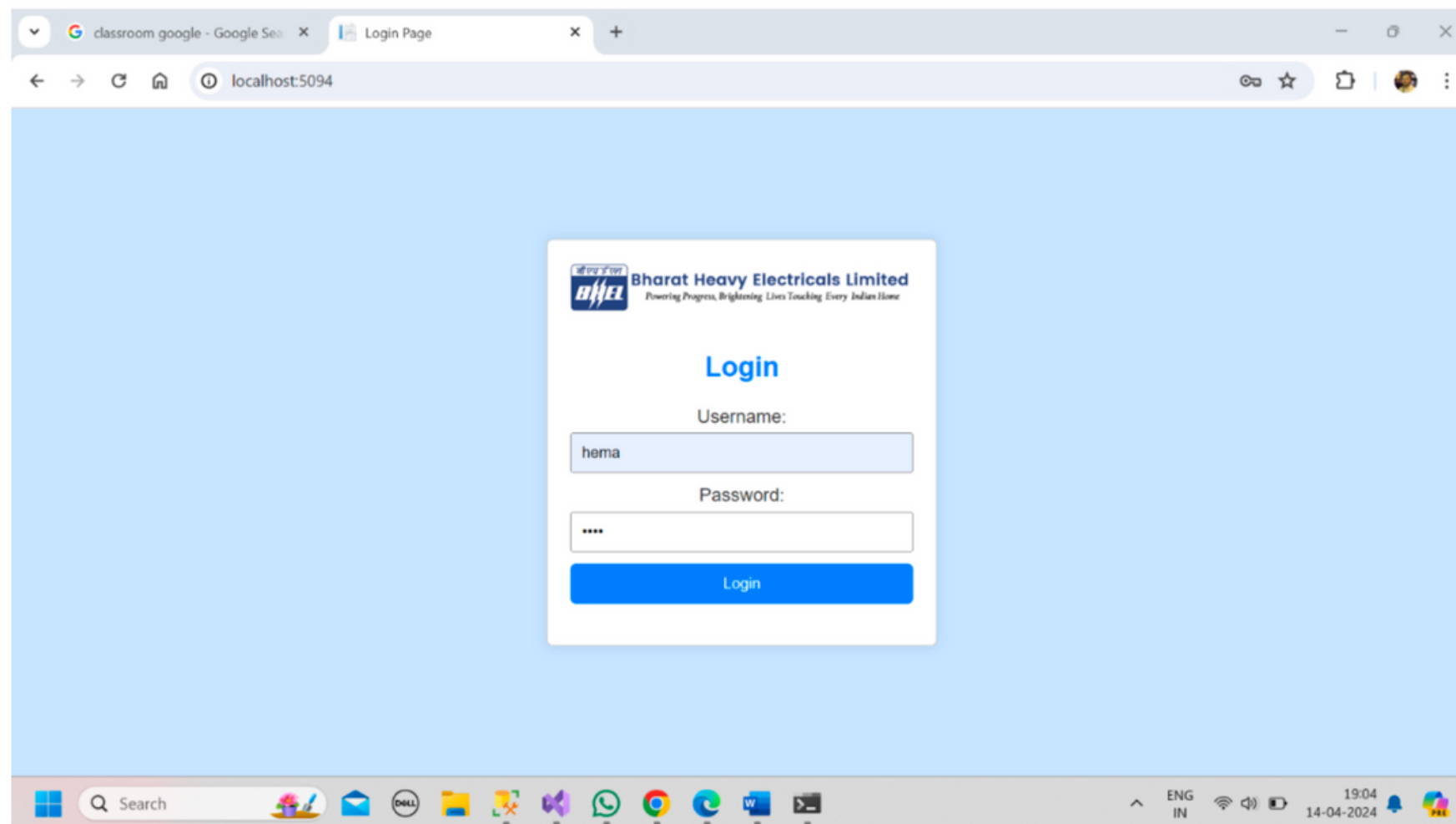


Conclusion

In conclusion, developing a Visitor Management System entails four main stages: database creation, backend and UI development, and integration/testing. Starting with database design on Microsoft SQL Server, tables are structured to store visitor and authentication data. The backend, built using ASP.NET(Mvc), manages functionalities like registration, check-in/out, and database interaction. Simultaneously, the UI is crafted for intuitive user experiences, ensuring compatibility across devices.

Integration ensures seamless communication between components, followed by rigorous testing to ensure functionality, performance, and security. This systematic approach results in a robust system that effectively manages visitor flow while prioritizing data integrity and user satisfaction.

Output



classroom google - Google Se...x

- VisitorManagementSystem x

- VisitorManagementSystem x

+

localhost:5094/VisitorRequest/RequestVisitor

Visitor Pass Form

Name of the Visitor:

Raju

Purpose:

Site visit

Designation:

HR

Department to visit:

IT

Date:

11-03-2024

Address of the Visitor:

Indra Nagar, Bangalore

To be Visited:

Manager

Allowed Items:

Laptop, Mobile Phone

Submit

ENG

IN

19:22

14-04-2024

classroom google - Google Se...x

- VisitorManagementSystem x

- VisitorManagementSystem x

+

localhost:5094/VisitorRequest/VisitorRequestList

Bharat Heavy Electricals Limited

Powering Progress, Brightening Lives Touching Every Indian Home

About

Send Request

Approve GatePass

All GatePasses

Print GatePass

Log out

Visitor Pass Requests

Pass Number	Visitor Name	Purpose	Designation	Date	To Be Visited	Department	Visitor Address	Allowed Items	Approve/Reject
a583df81-f1e6-4402-0251-08dc5c8a5f64	Raju	Site visit	HR	11-03-2024 00:00:00	Manager	It	Indra Nagar, Bangalore	Laptop, Mobile Phone	<div>Approve</div> <div>Reject</div>

© 2024 - VisitorManagementSystem - [Privacy](#)

Search

ENG

IN

19:24

14-04-2024

Target Audience

- Enable hosts and employees to manage visitor notifications, check-in/out status, and access visitor information on the go.
- Enhance analytics capabilities to provide deeper insights into visitor traffic patterns, peak visiting hours, and popular visitor destinations within the facility.
- Offer self-service options for visitor registration and check-in to reduce wait times and enhance convenience.
- Integrate advanced security features such as real-time threat detection, anomaly detection, and automatic alerts for suspicious behavior or unauthorized access attempts.

Future Scope

- Businesses of all sizes, including corporate offices, manufacturing plants, educational institutions, healthcare facilities, government agencies, and event venues.
- Personnel responsible for greeting and registering visitors at the reception desk or entry point.
- Guards or security officers tasked with monitoring access points and ensuring the safety and security of the premises.
- Individuals within the organization who are expecting visitors or are responsible for receiving guests.
- Professionals responsible for managing the IT infrastructure and systems within the organization.

Mentor Guidance

I would also like to extend heartfelt thanks to our Head of the Department Dr. Uma Satya Rajan for helping us with additional support during this study.

I wish to thank my faculty supervisor(s), Dr. R. Purushothaman, Department of Artificial Intelligence and Data Analytics, Sri Ramachandra Faculty of Engineering and Technology and MOHAN J, Dy. Manager/DTG, SBD, BHEL Ltd for extending help and encouragement throughout the project. Without his/her continuous guidance and persistent help, this project would not have been a success for me.

I am grateful to all the staff members of Sri Ramachandra Faculty of Engineering and Technology, my beloved parents, and my friends for extending their support, who helped us to overcome obstacles in the study.

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WEB REFERENCE:

International Facility Management Association (IFMA).

<https://www.ifma.org/news/what-is-visitor-management>

3. Security Magazine. (2020). "5 Key Benefits of Modern Visitor Management Systems"

<https://www.securitymagazine.com/artic>

JOURNAL REFERENCE:

Brown, K., & Williams, R. (2019). "Designing Access Control Systems for Visitor Management: A Case Study Approach." *International Journal of Information Management*, 49, 181-193

<https://doi.org/10.1016/j.ijinfomgt.2019.04.006>

Sample code

5.2.2 Appsetting.cs (Views)

```
{
  "Logging": {
    "LogLevel": {
      "Default": "Information",
      "Microsoft.AspNetCore": "Warning"
    }
  },
  "AllowedHosts": "*",
  ,
  "ConnectionStrings": {
    "VMS":
      "Server=SANJAYVS\\SQLEXPRESS;Database=VMSDB;Trusted_Connection=True;TrustServerCertificate=Yes"
  }
}
```

VMLogin.cs(Model)

```
namespace VisitorManagementSystem.Models
{
    public class VMLogin
    {
        public string Username { get; set; }
        public string Password { get; set; }
    }
}
```

Privacy.cshtml

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-
scale=1.0">
<title>Privacy Policy</title>
<style>
body {
```

```
    font-family: Arial, sans-serif;
    line-height: 1.6;
    margin: 0;
    padding: 0;
}
h1, h2 {
    color: navy;
}
p {
    margin-bottom: 15px;
}
address {
    margin-bottom: 20px;
}
</style>
</head>
<body>
<div class="container">
<h1>Contact Information</h1>
```

<address>
Corporate Office

BHEL House,

Siri Fort,

New Delhi - 110049,

India

Phone: +91-1166 33 7598, +91-1166 33 7597
</address>

<address>
Industry Sector

Integrated Office Complex,

Lodhi Road,

New Delhi - 110003,

India

Phone: +91-1124 302 243, +91-1141 793 243
</address>

<h1>Privacy Policy</h1>

<p>Thanks for visiting the website of Department of Bharat Heavy Electricals Limited, New Delhi and reviewing our privacy policy.</p>

</div>
</body>
</html>

```

@model
List<VisitorManagementSystem.Models.Entites.VisitorReques
t>
@{
    ViewData["Title"] = "All Visitor Gate Pass";
}
<style>
body {
    background-color: #c3cfe2; /* Navy blue background */
    font-family: 'Cabin', sans-serif; /* Set font to Cabin */
}
.form-box {
    background-color: #ffffff; /* White background */
    border: 2px solid #1a237e; /* Navy blue border */
    border-radius: 10px;
    padding: 20px;
    margin-bottom: 20px;
    box-shadow: 0px 0px 10px 0px rgba(0,0,0,0.1); /* Soft
shadow */
}

```

```

able {
    width: 100%;
    border-collapse: collapse;
    background-color: #fff; /* White background for table */
    box-shadow: 0 4px 8px 0 rgba(0,0,0,0.2); /* Soft shadow */
    overflow-x: auto; /* Enable horizontal scroll if needed */
}
th, td {
    border: 1px solid #ddd;
    padding: 12px;
    text-align: left;
}
th {
    background-color: #1a237e; /* Navy blue header background
*/
    color: white; /* White text for header */
}
tr:nth-child(even) {
    background-color: #f2f2f2; /* Alternate row background */
}
tr:hover {
    background-color: #ddd; /* Hover background color */
}

```

```
/* Title styling */
h1 {
text-align: center; /* Center align the title */
color: #1a237e; /* Navy blue title color */
text-shadow: 2px 2px 4px rgba(0, 0, 0, 0.2); /* 3D text
effect */33
margin-top: 20px; /* Add some top margin */
}
</style>
<h1>All Visitor Gate Pass</h1>
<div class="form-box">
<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Visitor Name</th>
<th>Purpose</th>
<th>Designation</th>
<th>Visit Date</th>
```

```
<th>To Be Visited</th>
<th>Department</th>
<th>Visitor Address</th>
<th>Allowed Items</th>
<th>Status</th>
</tr>
</thead>
<tbody>
@for (int i = 0; i < Model.Count; i++)
{
<tr>
<td>@(i + 1)</td>
<td>@Model[i].VisitorName</td>
<td>@Model[i].VisitPurpose</td>
<td>@Model[i].Designation</td>
<td>@Model[i].Date.ToString("MM/dd/yyyy")</td>
<td>@Model[i].ToBeVisited</td>
<td>@Model[i].DepartmentToBeVisited</td>
<td>@Model[i].VisitorAddress</td>
<td>@Model[i].AllowedItems</td>
<td>@Model[i].Status</td>
</tr>
} </tbody></table></div>
```


Thankyou