CLASSIGATOR

A Mini-Project Report
Submitted For
Partial fulfillment of the Requirements of the Degree of
Bachelor of Engineering
In
ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
(Semester III)

By

Myron Dabreo (9701)

Anwaya Belwalkar (9690)

Neston Cabral (9694)

Mark Almeida (9687)

Under the guidance

of

<< Prof. Garima Tripathi >>

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
Fr. Conceicao Rodrigues College of Engineering
Bandra (w), Mumbai:400050
University of Mumbai

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This work is dedicated to my family.

I am very thankful for their motivation and support.

CERTIFICATE

This is to certify that the mini-project entitled **"CLASSIGATOR"** is a bonafide work of "Myron Dabreo **(9701)**, Anwaya Belwalkar (**9690**), Neston Cabral (**9694**), Mark Almeida (**9687**)**"** submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering** in **Artificial Intelligence and Data Science** (Semester- VI).

(Sign)

Prof. Garima Tripathi

Dr. Jagruti Save
(Head of the Department)

Dr. S. S. Rathod
(Principal)

Approval Sheet

Mini Project Report Approval for T.E. (Semester-VI)

This mini-project report entitled "**CLASSIGATOR**" submitted by "Myron Dabreo (9701), Anwaya Belwalkar (9690), Neston Cabral (9694), Mark Almeida (9687)" is approved for the degree of Bachelor of Engineering in **Artificial Intelligence and Data Science** (Semester-VI).

Examiner 1.———————————

Examiner 2. ———————————

Date:

Place:

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Date:

Mark Almeida
9687

Anwaya
Belwalkar
9690

Neston Cabral
9694

Myron Dabreo
9701

ABSTRACT

In the era of information technology, the introduction of new and greatly improved technologies is becoming vital especially with the progressive development of computing power to fulfill current technological needs. The advances in positioning based technologies and the expanding significance of indoor positioning has led to a growing business interest in location-based services. The demand for indoor localization services has turned essential in many markets.

Indoor navigation for campus can significantly impact a student's experience on campus. There does not exist an efficient system to inform about the location of specific classes/branches or an event happening in the campus premises. Nowadays, most of the students,

faculty members and staff use smartphones and laptops for personal use. An Indoor Positioning System (IPS) based map website will be most helpful to locate desired places and to get updates of events on map. The proposed system helps students navigate to their respective classes and labs and the floors they're located on easily with the help of a web based platform.Based on the problem statement mentioned above, we have decided to create a website that has been developed using HTML and CSS. Layout of the campus and the main administrative building will be provided in detail with the specific layouts of each floor. Thus, this will reduce confusion of new faculty, students and visitors inside the campus.

Acknowledgments

We have great pleasure in presenting the report on **"CLASSIGATOR"**. I take this opportunity to express my sincere thanks towards the guide **Prof. Garima Tripathi**, C.R.C.E, Bandra (W), Mumbai, for providing the technical guidelines, and the suggestions regarding the line of this work. We enjoyed discussing the work progress with her during our visits to the department.

We thank Dr. Jagruti Save, Head of Artificial Intelligence and Data Science department, Principal and the management of C.R.C.E., Mumbai for encouragement and providing necessary infrastructure for pursuing the project.

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Date:
Myron Dabreo (9701)
Anwaya Belwalkar (9690)
Neston Cabral (9694)
Mark Almeida (9687)

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Chapter 1

INTRODUCTION

College is a major life milestone for students. Those years aren't only a crucial academic experience, but for many it's the first time they're away from home and navigating life on their own.

Indoor navigation for campus can significantly impact a student's experience on campus. The pressure to succeed in the classroom and balancing other aspects of college life, including work, social activities and relationships, can be overwhelming. Smartphones and laptops are the things students carry with them on campus 24/7 and they're constantly looking at their screens. It only makes sense for schools to provide a navigation solution for their students that's built right into their computing system.

The proposed system is a website based on the Indoor Positioning System (IPS). IPS is a network of devices used to locate people or objects where GPS and other satellite technologies lack precision or fail entirely. This system is implemented to make it easier for the students (mostly freshmen) to find the way to their desired classrooms or labs within the college. Most of the time in the process of finding classrooms students tend to waste time and often end up in the wrong classrooms. This system offers a user-friendly experience where you just have to enter your destination and the system will then guide you to it. The workload of a university student is already stressful enough – navigating their way to class shouldn't be.

1.2 Objectives of the Project

- The main objective of the system is to save the students time and energy by providing the directions to their desired classrooms or labs
- It will also display extra added information for example which lab is equipped with a printer, whether you need to remove your footwear outside the lab before entering a particular lab etc.
- To help the new teachers/staff or even prospective students find their way without having to stop and look for nearby faculty to ask for help.

1.3 Scope of the Project

- The proposed system can firstly be used by all the students of Fr CRCE.
- It can also be used in different colleges/universities for students to navigate their way through their respective campuses.
- It can be implemented with additional applications like the events/classes being held in a particular room at that point or which rooms are equipped with air conditioning or working printers.

1.4 Applications and Social Relevance of the project

Applications:

● The main objective of the system is to save students time and energy by providing directions to their desired classroom or lab.
● It also displays additional information for example which lab is equipped with a printer for student use or whether footwear needs to be removed before entering the particular lab(in progress).
● To help newer teachers, staff or even prospective students find their way without having to stop and look for nearby faculty to ask for their help.

Social Relevance:

● Implementing indoor navigation allows students, employees, and visitors to seamlessly navigate the campus and find exactly what they're looking for.
● Indoor mapping can also help students to quickly find available PC's, printers, and other resources.
● When students and staff have a clear idea of how to get to where they need to go next can help reduce feeling overwhelmed and ultimately create a more positive experience.

Chapter 2

REVIEW OF LITERATURE

Title of paper	Journal/ conference Title	Publication Year	Database used	Algorithms & methods used	Research Gap
1: Indoor localization and guidance using portable smartphones. **2:** video stream for visual-based indoor localisation **3:**map framework using crowd-sourced data. **4:**campus spatial information service based on google maps	**1:** Indoor localisation **\2:**vision based indoor localisation **3:**crowd-source data for indoor localisation. **4:** campus spatial information service	**2012** **2016** **2017** **2010**	**object -oriented** **javascript(object-oriented)** **Distributed, Commercial-based Databases** **Cloud & Graph Database**	**Fast visual map building method** **GIS-based Algorithms**	**Not implemented in big Databases** **2D & 3D Implemented Maps**

Chapter 3

3.1 DRAWBACKS OF EXISTING SYSTEM

- Ultra Wide Bands (UWB): While UWB is useful for real-time location and offers precise capabilities, it has limited range and may experience interference in certain environments. Additionally, UWB technology is still relatively new and not yet widely adopted, which may limit its compatibility with existing systems.

- Quick visible map constructing technique: While using video flow for indoor localization is convenient, it may not always be reliable, especially in low-light or crowded environments. The magnetic map approach also relies on the assumption that magnetic signatures remain consistent, which may not always be the case.

- GIS-based campus information navigation system: While this system offers illustrated information resource query and spatial analysis, it requires a significant amount of data collection and processing to create an accurate map. Additionally, maintenance and updates to the system may be time-consuming and costly.

3.2 PROBLEM STATEMENT

- Students(freshmen especially) find it difficult to navigate in the college premises.

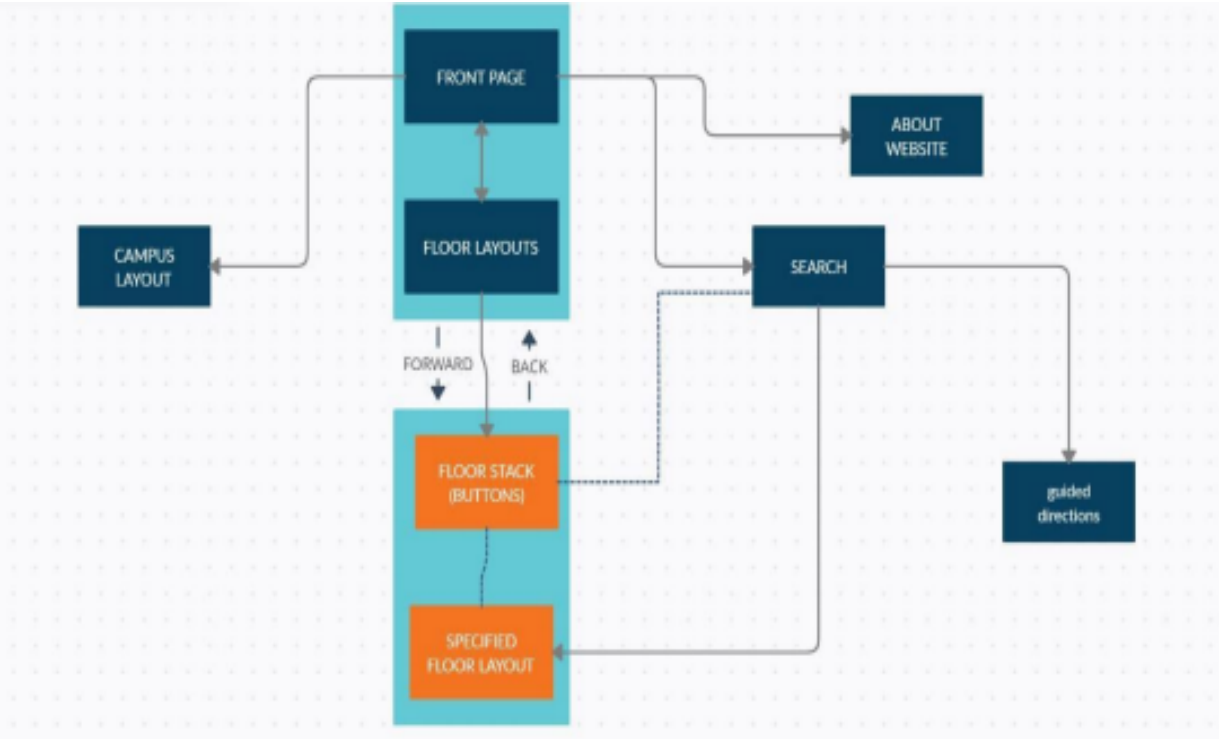
- In the process of finding classrooms ,students tend to waste time and often end up in the wrong classroom.

- To avoid this problem , our team has built a system which helps students to save time and energy navigating their way through floors and classrooms.

- This system will also help new teachers, staff or even prospective students find their way without having to stop and look for nearby faculty(when not available) to ask for their help

Chapter 4
SYSTEM ANALYSIS AND DESIGN ENGINEERING

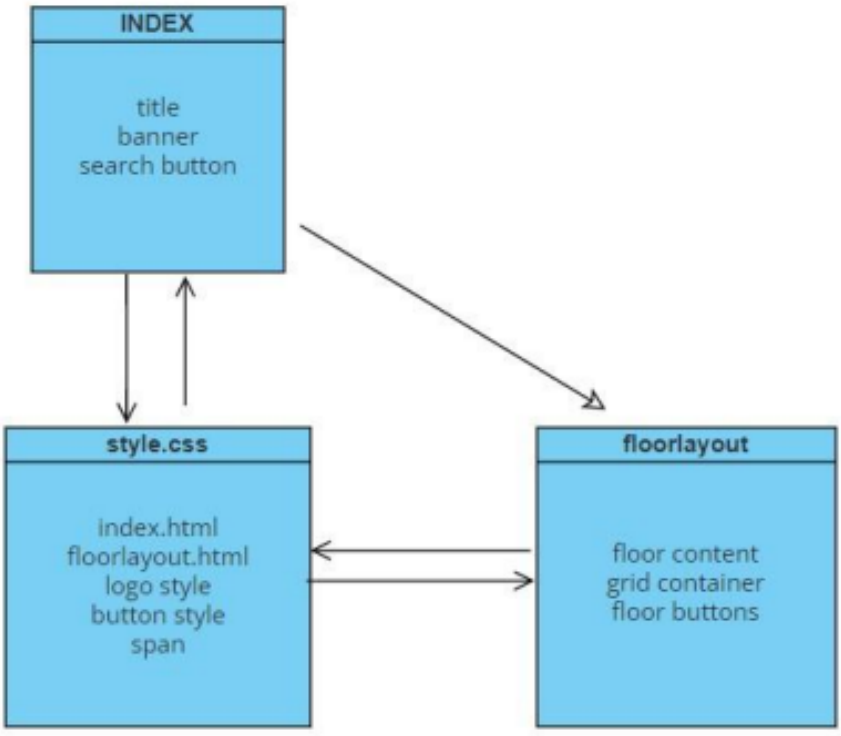
4.1 BLOCK DIAGRAM



(4.1.1)

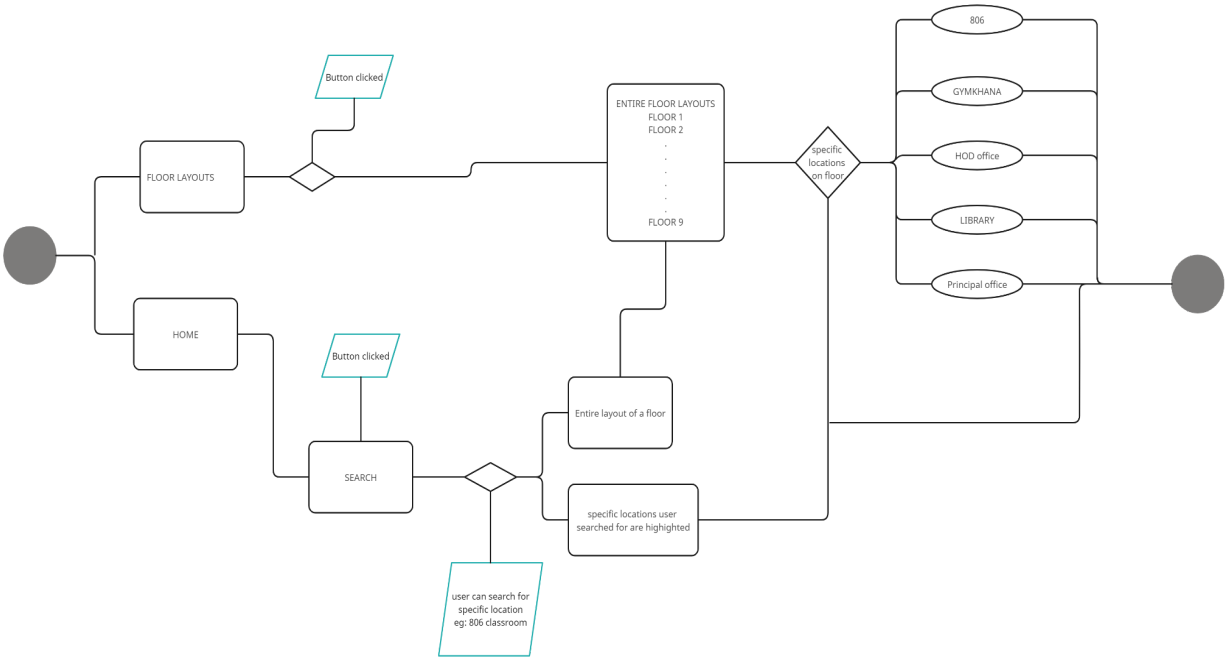
This is a block diagram of our proposed system which depicts the components present on the website and also about which operations/page will run when clicked on a specific button. The block diagram provides a visual representation of how different parts of a system work together to get an output.

4.2 Module(Class Diagram) :



Our proposed system is currently built on the basis of this “Class Diagram”. This class diagram tells us that there are two HTML files which call various classes from the CSS directory and this helps in building the structure and style of our website.

4.3.1 UML DIAGRAM



UML ACTIVITY(FLOW) DIAGRAM

4.3.2 SOFTWARE AND HARDWARE USED

SOFTWARE

Software required to create website (front-end):

➢CSS
➢HTML

Software required by the user to run the application:

➢Android (7, 8, 10, 11)
➢RAM (2-16 GB)
➢IOS

HARDWARE

Operating System: Windows, MacOS

Screen size and Resolution: 1920 x 1080

Processor: 32 bit

RAM: 256 GB

Hard Disk: 2 GB

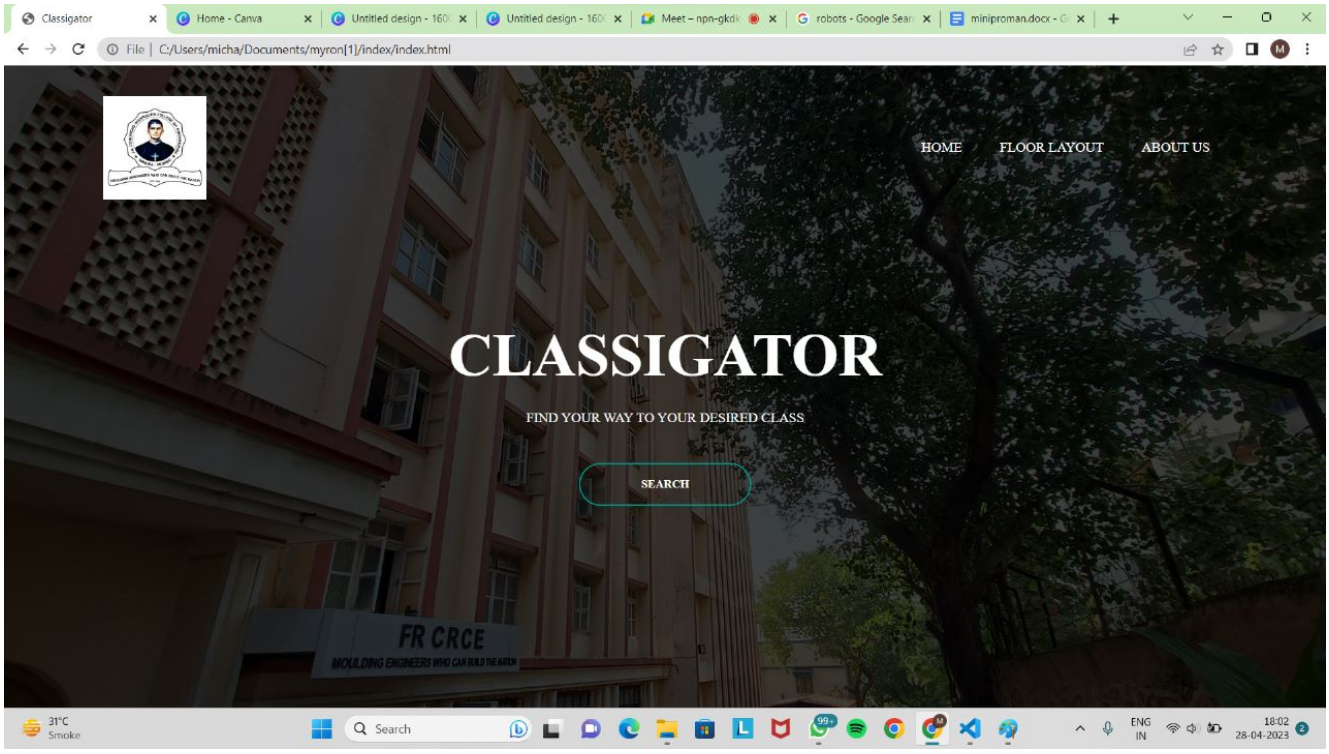
The website should run on any standard PC, laptop, smartphone, tablet with an active internet connection

Chapter 5

IMPLEMENTATION

HOMEPAGE:

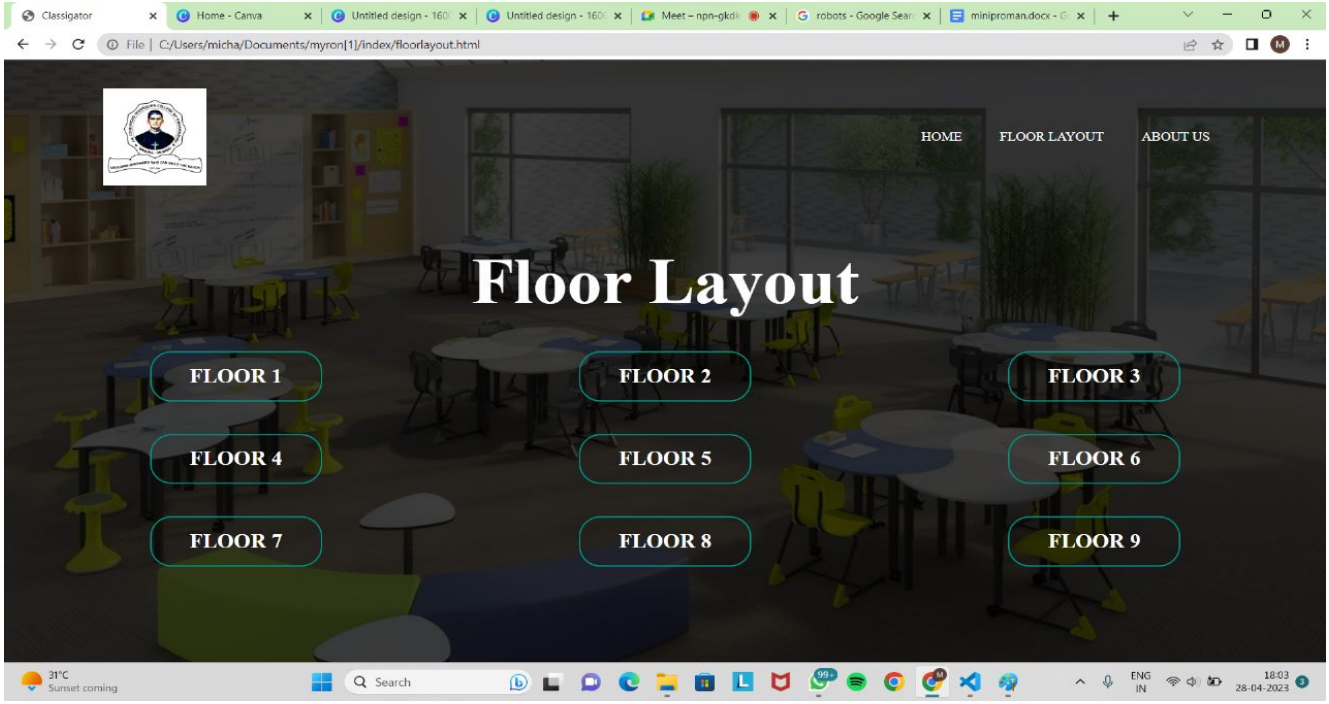
homepage:



code:

```
<html>
    <title>Classigator</title>
    <link rel="stylesheet" href="style.css">
    <head>
    <body>
        <div class="banner">
         <div class="navbar">
            <img src="website-logo.jpeg" class="logo">
            <ul>
                <li><a href="index.html">Home</a></li>
                <li><a href="floorlayout.html">Floor Layout</a></li>
                <li><a href="aboutus.html">About Us</a></li>
            </ul>
        </div>
        </div>
        <div class="content">
            <h1>CLASSIGATOR</h1>
            <P>FIND YOUR WAY TO YOUR DESIRED CLASS</P>
            <a href='search.html'>
            <button type="button"><span></span>SEARCH</button></a>
        </div>
        <div>
        </div>

    </body>
</html>
```

FLOOR LAYOUT page:

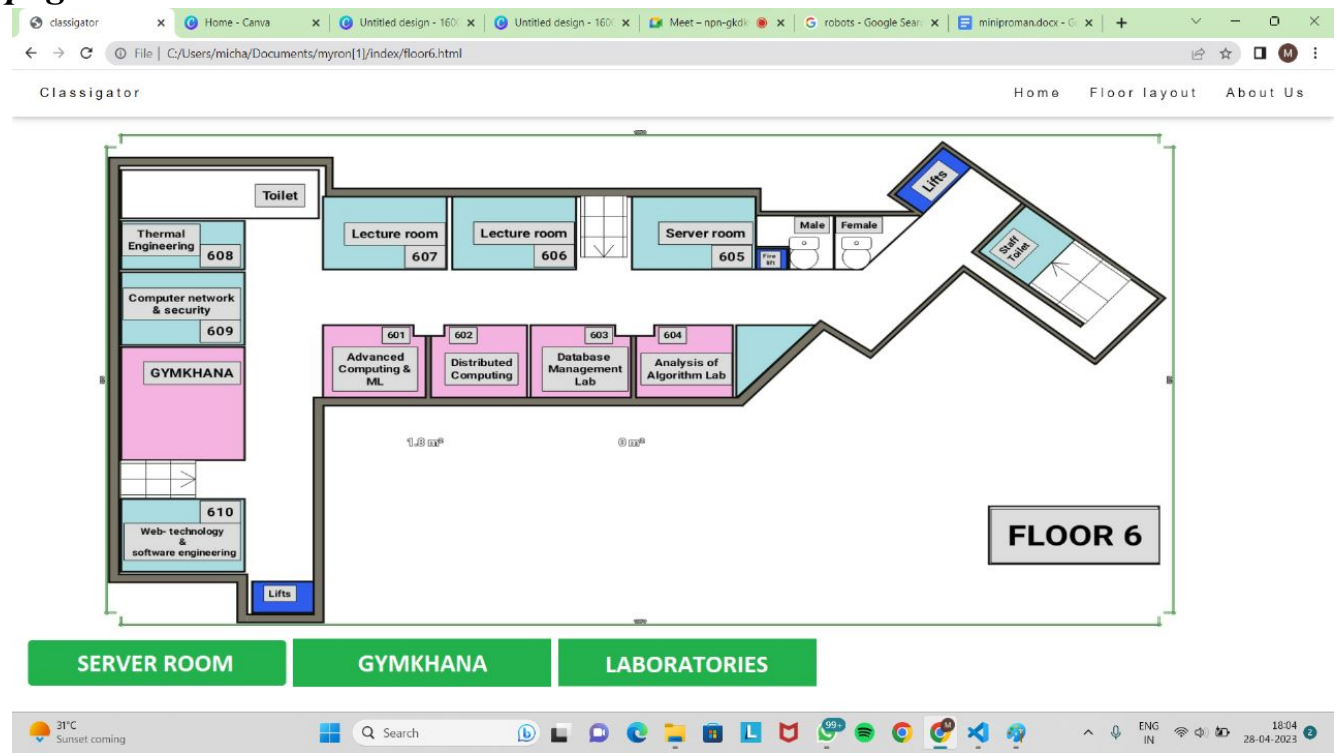


code:

```
<html>
    <title>Classigator</title>
    <link rel="stylesheet" href="style.css">
    <head>
    <body>
        <div class="floorbanner">
         <div class="navbar">
            <img src="website-logo.jpeg" class="logo">
            <ul>
                <li><a href="index.html">Home</a></li>
                <li><a href="floorlayout.html">Floor Layout</a></li>
                <li><a href="aboutus.html">About Us</a></li>
            </ul>
        </div>
        </div>
    <div class="floorcontent">
        <h1>Floor Layout</h1>
        <div class="gridcontainer">
            <a href="floor1.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 1</button></div></a>
            <a href="newwindow2.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 2</button></div></a>
            <a href="floor3.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 3</button></div></a>
            <a href="floor4.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 4</button></div></a>
            <a href="floor5.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 5</button></div></a>
            <a href="floor6.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 6</button></div></a>
            <a href="floor7.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 7</button></div></a>
            <a href="newwindow.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 8</button></div></a>
            <a href="floor9.html"><div><button type="button" class="floorbuttons"><span></span>FLOOR 9</button></div></a>
            <!DOCTYPE html>
</head>
<body>
</body>
</html>


        </div>
    </div>
```

Floor 6(as an example):

page:



code:

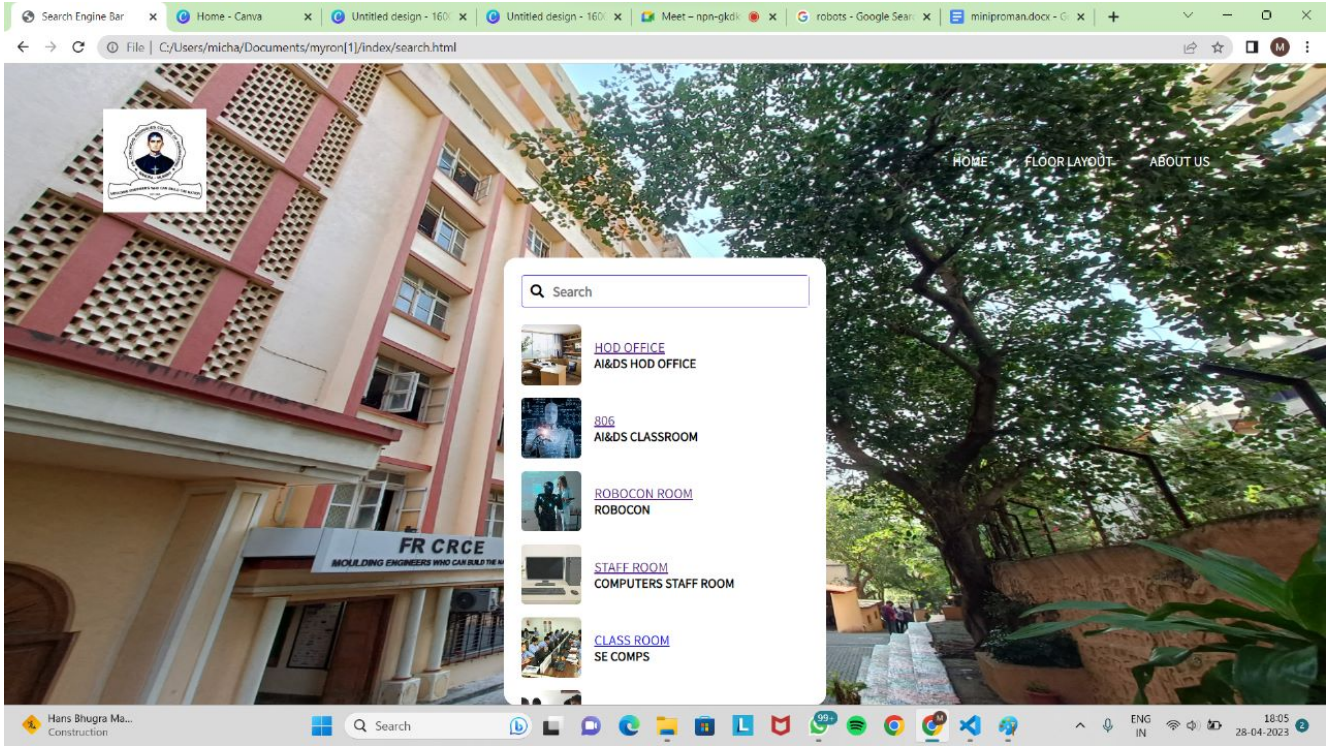
```
<script>
// Get the modal
var modal = document.getElementById("myModal");

// Get the image and insert it inside the modal - use its "alt" text as a caption
var img = document.getElementById("myImg");
var modalImg = document.getElementById("img01");
var captionText = document.getElementById("caption");
img.onclick = function(){
  modal.style.display = "block";
  modalImg.src = this.src;
  captionText.innerHTML = this.alt;
}

// Get the <span> element that closes the modal
var span = document.getElementsByClassName("close")[0];

// When the user clicks on <span> (x), close the modal
span.onclick = function() {
  modal.style.display = "none";
}
</script>

<img id="myImg1" src="GYMKHANAPOPUP.png" alt="This room has  computers which can be used for reasearch and browsing for your respectiv

<!-- The Modal -->
<div id="myModal" class="modal">
  <span class="close">&times;</span>
  <img class="modal-content" id="img01">
  <div id="caption"></div>
</div>
```

Chapter 6

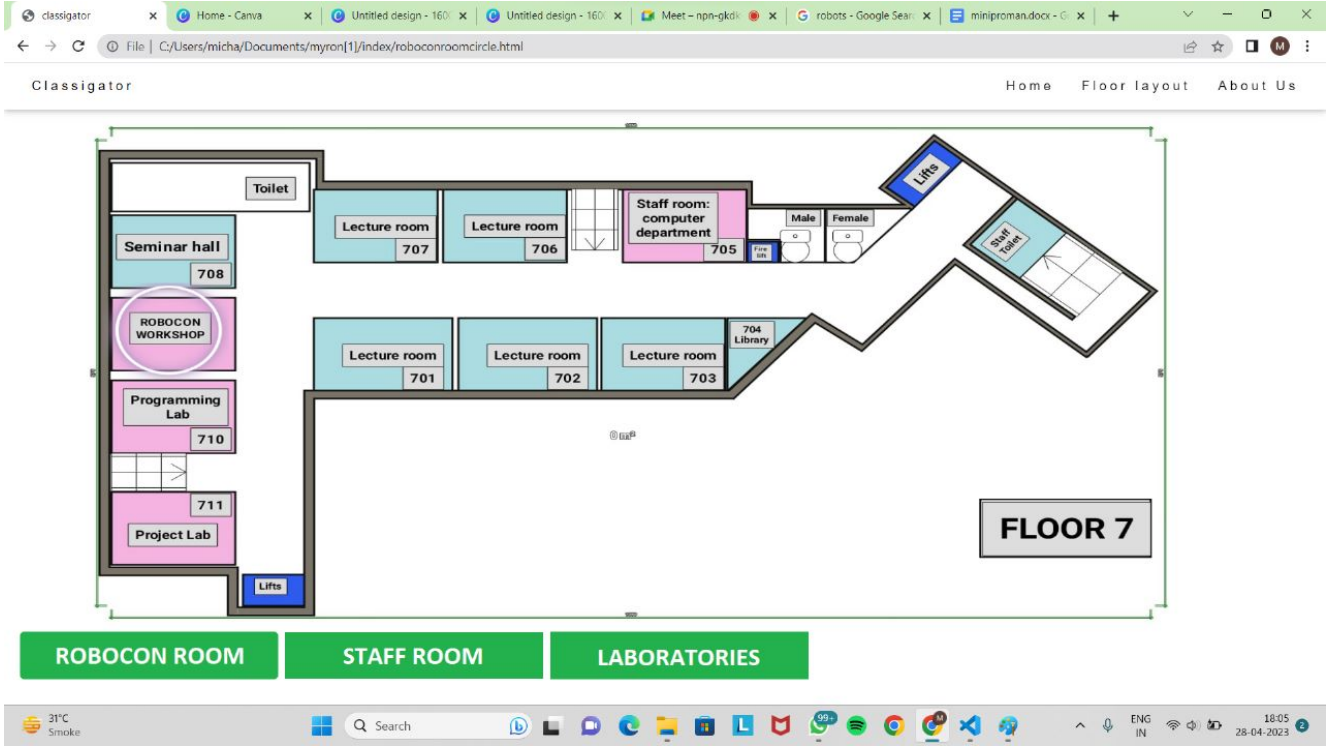
RESULTS

SEARCH RESULTS:

before search:



after search:



Chapter 7

CONCLUSION AND FUTURE SCOPE

7.1 CONCLUSION

We have conducted a thorough research on indoor mapping and class navigation and have decided our best method based on our knowledge to implement the proposed system which is by making a website. In semester III, the front end of the website was made ready and it included the home page along with the floor layout page. We implemented that by learning and using the basics of HTML and CSS.

The finalized project has a fully developed interface in which the search engine accepts more user inputs (for eg : HOD office , gymkhana , server room) and highlights that location on the respective floor . Also each floor layout page has pop-ups below the layout which give information about what it is currently used for or its significance.

7.2 FUTURE SCOPE

The future scope of this project is mainly to focus on indoor navigation using Augmented Reality (AR). Indoor Navigation cant be implemented using GPS signals due to its inaccuracy. On the other hand people have also used wifi and bluetooth signals, magnetic positioning, dead reckoning(using an initial position), positioning based on visual markers and combination of these but all have either failed or need extra hardware to function.

Thus we have used unity because of its ease of use and advantages. It consists of four major parts: AR core based localization, QR code positioning, Navigation (Navmesh) and AR view.

- ***AR core localization:*** It uses motion tracking and environmental understanding to move the dot on the screen to take you to the desired place. We can use it in our website for better user experience.
- ***QR code:*** A QR code can be placed on the front page of the website . Once the QR code is scanned you get to a page where a virtual view will be seen using your mobile's rear camera wherein you have to put the desired destination. After this, an arrow will appear on the screen which guides you to that location.
- ***Unity Navmesh Navigation:*** This part of our project uses path finding i.e finding the best route to the destination. You can make optimal routes but we consider taking the shortest path possible.

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APPENDIX

Plagiarism Report