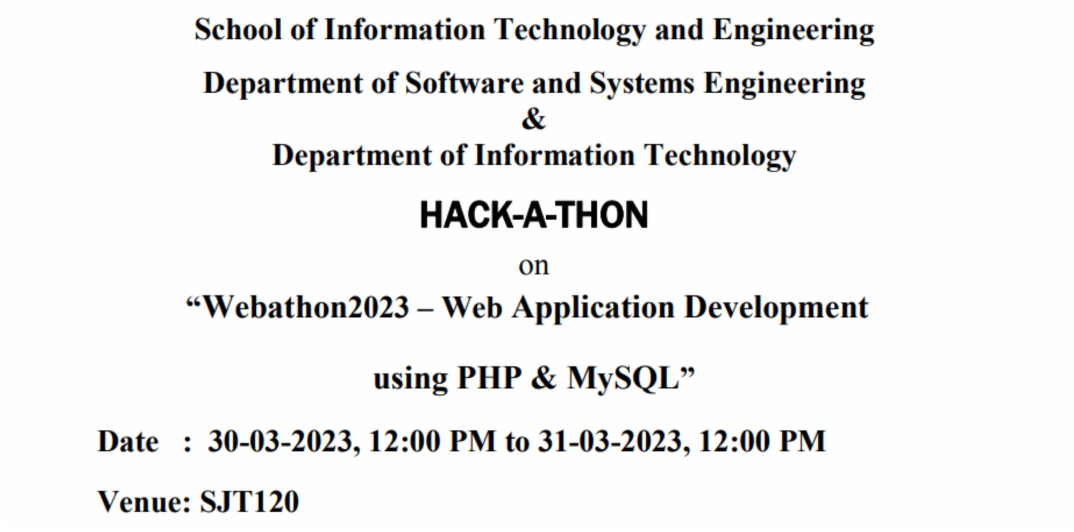
VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)



School of Information Technology and Engineering

Department of Software and Systems Engineering

&

Department of Information Technology

HACK-A-THON

on

“Webathon2023 – Web Application Development

using PHP & MySQL”

Date : 30-03-2023, 12:00 PM to 31-03-2023, 12:00 PM

Venue: SJT120

WINTER SEMESTER – 2022-2023

WEB TECHNOLOGIES(SWE1008) – LAB

FACULTY :MAREESWARI V

SLOT :L29+L30

TEAM MEMBERS:

YOGENDIRAN D (21MIS0055)

PRAVEEN KUMAR P(21MIS0071)

NITHYA SRI S(21MIS0090)

TOPIC:

AUTOMATION IN HOME – ROOM OCCUPANCY DETECTION

DESCRIPTION:

Home automation is the use of technology to control various systems and devices in a home, including lighting, security, heating and cooling, entertainment systems, and more. One example of home automation is the use of facial recognition technology to automatically turn lights on and off.

Facial recognition technology uses a camera to capture an image of a person's face and then uses software to analyze the features of the face and match it to a pre-existing database of faces. Once a match is found, the system can trigger a pre-programmed action, such as turning on a light.

To set up this kind of automation in your home, you would need to install a camera with facial recognition software and connect it to your home automation system. You would also need to program the system to recognize the faces of the people who live in your home and to associate each face with a specific action, such as turning on a light when they enter a room.

Once the system is set up and programmed, it can operate automatically, detecting when a person enters a room and turning on the lights for them. This can be particularly useful in areas such as hallways and bathrooms, where people often need to navigate in the dark.

Overall, home automation can help to make your home more convenient and efficient, while also enhancing security and safety. By using facial recognition technology to automatically control your lighting, you can enjoy a more seamless and effortless living experience.

LANGUAGE USED:

- HTML
- CSS
- JAVASCRIPT
- PHP
- MYSQL
- PYTHON
  -OPENCV
  -FLASK

TECHNOLOGY USED:

OPENCV:

OpenCV is a Python library that allows you to perform image processing and computer vision tasks. It provides a wide range of features, including object detection, face recognition, and tracking.

FLASK:

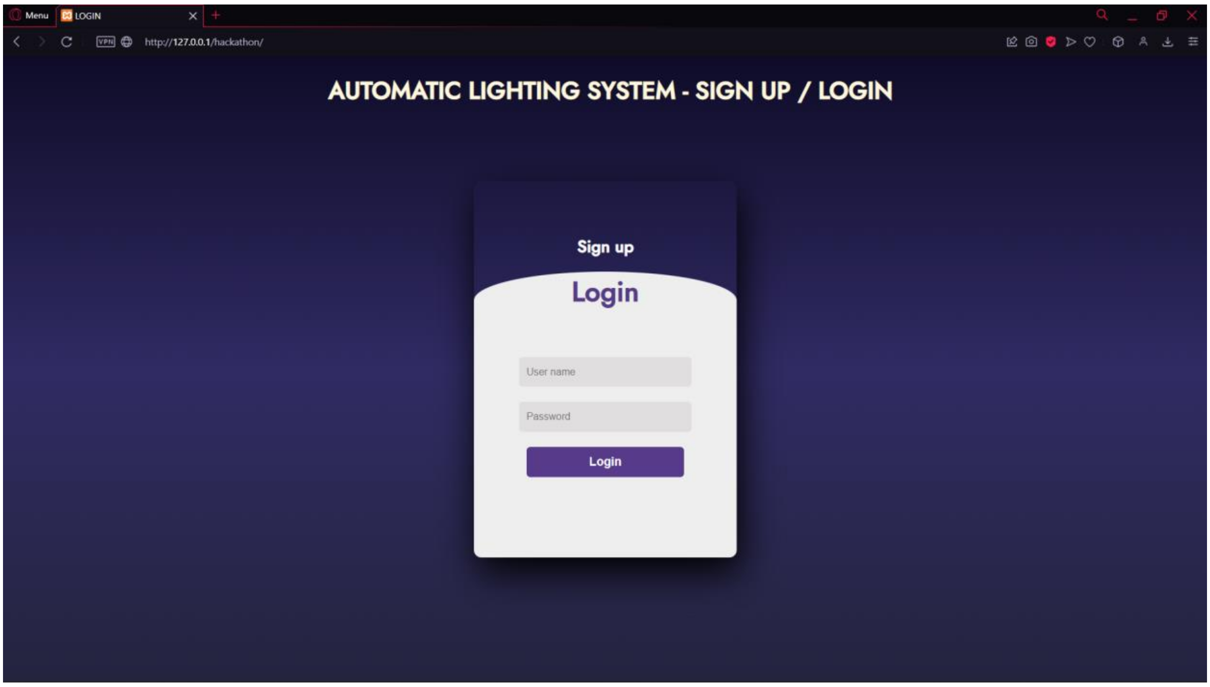
Flask is used for developing web applications using python, implemented on Werkzeug and Jinja2. Advantages of using Flask framework are: There is a built-in development server and a fast debugger provided.

FEATURES:

- Login and signup page.
  -Form Validation
  -Data Insertion
  -Data retrieval
  -Credential validation
- Room occupancy detection.
  -Face detection
  -People detection
  -Control room lights

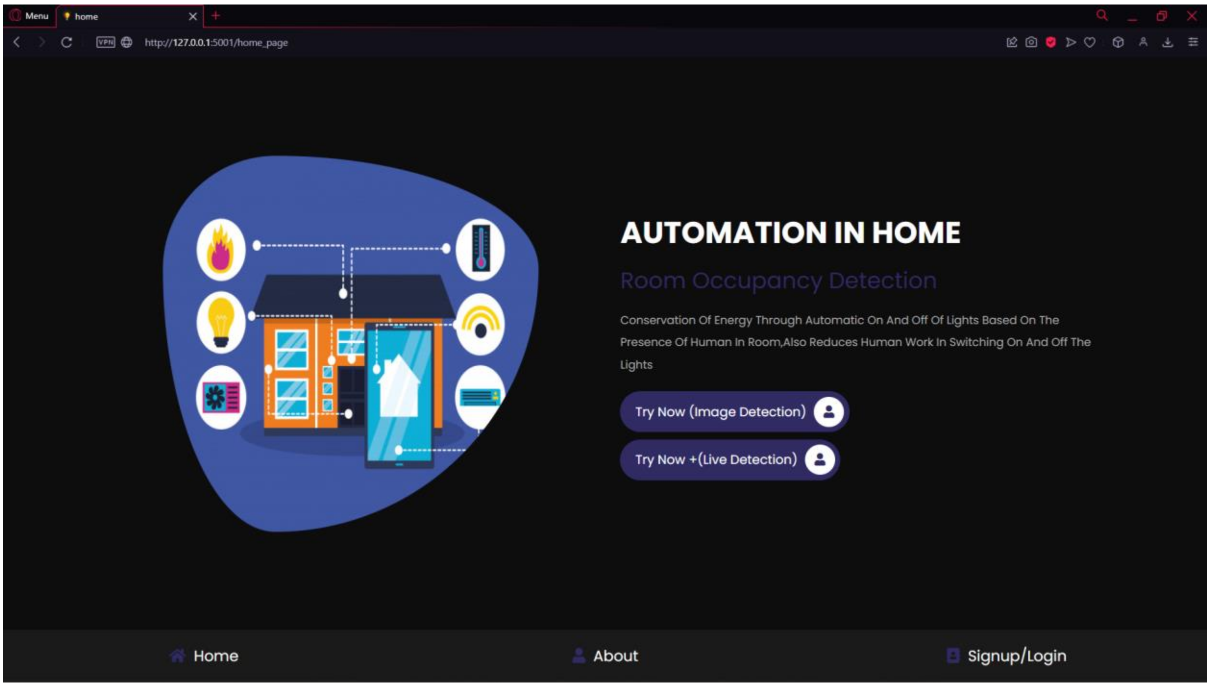
OUTPUT SCREENSHOTS:

Signup & Login Page:



AUTOMATIC LIGHTING SYSTEM - SIGN UP / LOGIN

Home Page:



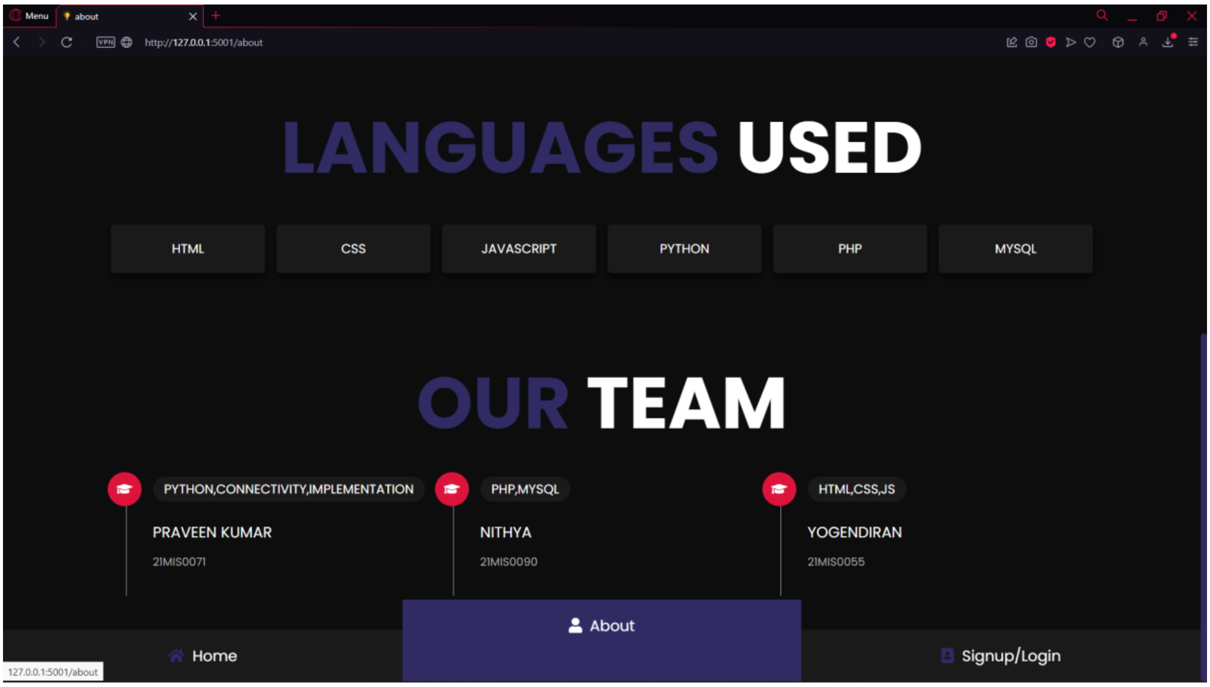
AUTOMATION IN HOME

Room Occupancy Detection

Conservation Of Energy Through Automatic On And Off Of Lights Based On The Presence Of Human In Room,Also Reduces Human Work In Switching On And Off The Lights

Menu
home
http://127.0.0.1:5001/home_page
Try Now (Image Detection)
Try Now +(Live Detection)
Home
About
Signup/Login

About Page:



LANGUAGES USED

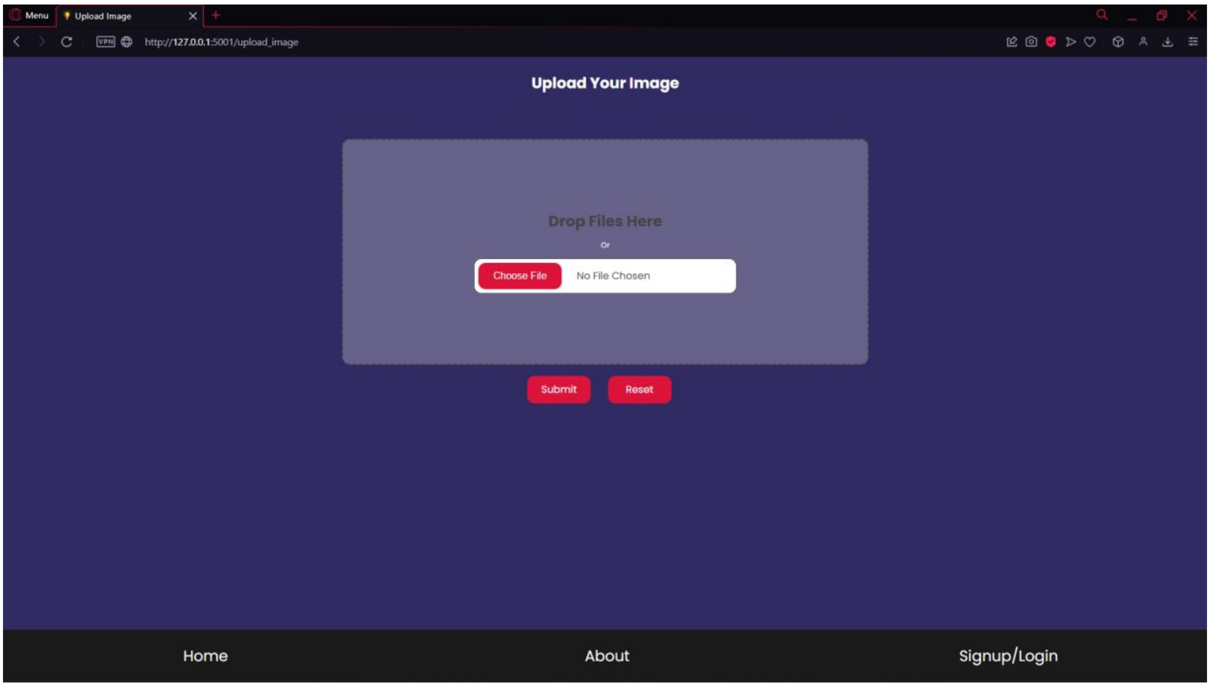
OUR TEAM

PYTHON,CONNECTIVITY,IMPLEMENTATION
PRAVEEN KUMAR
21MIS0071

PHP,MYSQL
NITHYA
21MIS0090

HTML,CSS,JS
YOGENDIRAN
21MIS0055

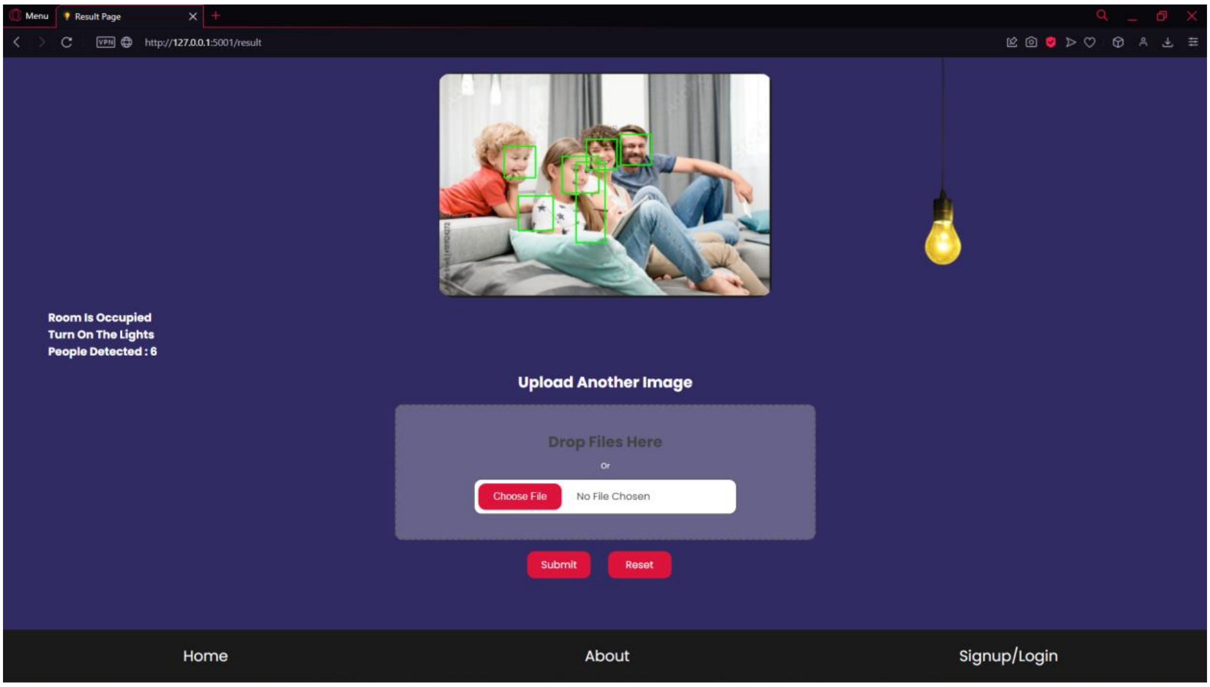
Image Upload Page:



Upload Your Image

Result Page:

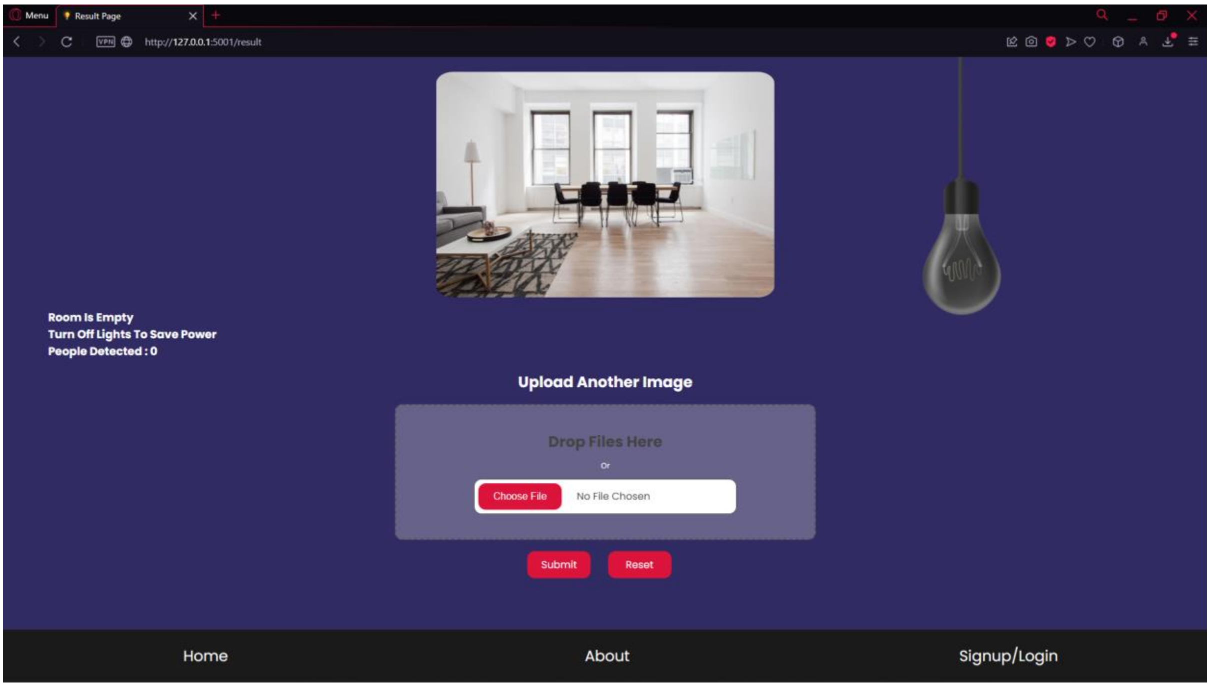
Occupied Room:



Room Is Occupied
Turn On The Lights
People Detected : 6

Upload Another Image

Empty Room:



Room Is Empty
Turn Off Lights To Save Power
People Detected : 0

Upload Another Image

SAMPLE CODE:

Signup.php (Form validation & Database Insertion):

```
<script>
  const userNameInput = document.querySelector('input[name="txt"]');
  // add an event listener for input change
  userNameInput.addEventListener('input', () => {
    // get the user name value
    const userName = userNameInput.value;
    // check if the user name is at least 5 characters long
    if (userName.length < 5) {
      userNameInput.setCustomValidity('User name must be at least 5 characters
long');
    } else {
      // check if the user name contains numbers or special characters
      const regex = /^[a-zA-Z]+$/;
      if (!regex.test(userName)) {
        userNameInput.setCustomValidity('User name cannot contain numbers or
special characters');
      } else {
        userNameInput.setCustomValidity('');
      }
    }
  });
  // prevent form submission if there are invalid fields
  const signUpForm = document.querySelector('.signup form');
  signUpForm.addEventListener('submit', (event) => {
    if (!signUpForm.checkValidity()) {
      event.preventDefault();
    }
  });
  const passwordInput = document.querySelector('input[name="pswd"]');
  // add an event listener for input change
  passwordInput.addEventListener('input', () => {
    // get the password value
    const password = passwordInput.value;
    // check if the password meets the requirements
    const regex = /^(?=.*\d)(?=.*[!@#$%^&*])(?=.*[A-Z]).{6,}$/;
    if (!regex.test(password)) {
      passwordInput.setCustomValidity('Password must contain at least one
uppercase letter, one special character, and be at least 6 characters long');
    } else {
      passwordInput.setCustomValidity('');
    }
  });
  // prevent form submission if there are invalid fields
  signUpForm.addEventListener('submit', (event) => {
    if (!signUpForm.checkValidity()) {
      event.preventDefault();
    }
  });

</script>


<?php

$sname= "localhost";
$unmae= "root";
$password = "";
$db_name = "auto_lights";
$conn = mysqli_connect($sname, $unmae, $password, $db_name);

//print_r($_POST);
$username = $_POST["txt"];
$email = $_POST["email"];
$password = $_POST["pswd"];

// Prepare and execute the SQL query
$sql = "INSERT INTO user (s_no, username, email, password) VALUES
(0,'$username', '$email', '$password')";
if (mysqli_query($conn, $sql)) {
    echo "<script>
  function redirect() {
    var confirmed = confirm('Account Created, Click yes to go to Login Page');
    if (confirmed) {
      window.location.href = 'http://127.0.0.1/hackathon/';
    }
  }
  redirect();
</script>
";
  } else {
    echo "<script>alert('Account NOT Created ')</script>";
    echo  mysqli_error($conn);
  }

?>
```

```php
<?php
session_start();
include "db_connection.php";
if (isset($_POST['txt']) && isset($_POST['pswd'])) {
    function validate($data){
       $data = trim($data);
       $data = stripslashes($data);
       $data = htmlspecialchars($data);
       return $data;
    }
    $uname = validate($_POST['txt']);
    $pass = validate($_POST['pswd']);
    if(1==1){
        $sql = "SELECT * FROM user WHERE username='$uname' AND
password='$pass'";
        $result = mysqli_query($conn, $sql);
        if (mysqli_num_rows($result) > 0 ) {
            $row = mysqli_fetch_assoc($result);
            if ($row['username'] === $uname && $row['password'] === $pass) {
                echo "Logged in!";
                $_SESSION['username'] = $row['username'];
                $_SESSION['password'] = $row['password'];
                header("Location: http://127.0.0.1:5001/home_page");
                exit();
            }else{
                echo "<script>alert('Password is required')</script>";
                exit();
            }
        }else{
        echo "<script>
        function redirect() {
            alert('Incorrect USERID/PASSWORD Click yes to go to Login Page');
            window.location.href = 'http://127.0.0.1/hackathon/';
        }
        redirect();
        </script>
        ";
            exit();
        }
    }
}else{
    header("Location: http://127.0.0.1/hackathon/");
    exit();
}
```

Detect People:

```
import cv2


def detect_():
   # Reading the Image
   image = cv2.imread("static\\uploaded_files\\image.jpg")
   height, width, channels = image.shape
   aspect_ratio = width / height
   new_width=700
   new_height = int(new_width / aspect_ratio)
   image = cv2.resize(image, (new_width, new_height))

   # initialize the HOG descriptor
   hog = cv2.HOGDescriptor()
   hog.setSVMDetector(cv2.HOGDescriptor_getDefaultPeopleDetector())

   # detect humans in input image
   (humans, _) = hog.detectMultiScale(image, winStride=(10, 10),
   padding=(32, 32), scale=1.1)

   face_cascade = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')

   # Convert the image to grayscale
   gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

   # Detect faces in the image
   faces = face_cascade.detectMultiScale(gray, scaleFactor=1.1,
minNeighbors=5)

   # loop over all detected humans
   for (x, y, w, h) in humans:
      pad_w, pad_h = int(0.15 * w), int(0.01 * h)
      cv2.rectangle(image, (x + pad_w, y + pad_h), (x + w - pad_w, y + h -
pad_h), (0, 255, 0), 2)

   # Draw rectangles around the detected faces
   for (x, y, w, h) in faces:
      cv2.rectangle(image, (x, y), (x+w, y+h), (0, 255, 0), 2)

   # display the output image
   cv2.imwrite("static\\uploaded_files\\out_image.jpg", image)


   MESSAGE = ""
   im_pth=""
   # getting no. of human detected
   if len(humans)>0 or len(faces)>0:
      print("Room is occupied")
      MESSAGE += "Room is occupied<br>Turn on the Lights"
      im_pth="BULBON.png"
   else:
      print("Room is empty")
      MESSAGE += "Room is empty<br>Turn off Lights to save power "
      im_pth="BULBOFF.png"
   print('Human Detected : ', len(humans)+len(faces))
   MESSAGE += ('<br>People Detected : '+ str(len(humans)+len(faces)))


   return MESSAGE,im_pth
```