

LAMPIRAN

➤ Controller

```
import os
import uuid
import cv2
from flask import Flask,
render_template, request,
redirect, url_for, session,
Response
import sqlite3
from datetime import datetime
from werkzeug.utils import
secure_filename
import numpy as np

app = Flask(__name__)
app.secret_key = 'absensi-
perpus'

UPLOAD_FOLDER =
'static/uploads'
ALLOWED_EXTENSIONS = {'png',
'jpg', 'jpeg'}

app.config['UPLOAD_FOLDER'] =
UPLOAD_FOLDER

def allowed_file(filename):
    return '.' in filename and
filename.rsplit('.',
1)[1].lower() in
ALLOWED_EXTENSIONS

def init_db():
    conn =
sqlite3.connect('mahasiswa.db'
)
    cursor = conn.cursor()
    cursor.execute('''
        CREATE TABLE IF NOT
EXISTS mahasiswa (
            id INTEGER PRIMARY
KEY AUTOINCREMENT,
            nama TEXT,
            nim TEXT,
            jurusan TEXT,
            angkatan TEXT,
            foto TEXT
        )
    ''')
    cursor.execute('''
        CREATE TABLE IF NOT
EXISTS user (
            id INTEGER PRIMARY
KEY AUTOINCREMENT,
            username TEXT,
            password TEXT
        )
    ''')
    cursor.execute('''
        CREATE TABLE IF NOT
EXISTS absensi (
            id INTEGER PRIMARY
KEY AUTOINCREMENT,
            id_mahasiswa
INTEGER,
            tanggal TEXT,
            FOREIGN KEY
(id_mahasiswa) REFERENCES
mahasiswa(id)
        )
    ''')
    conn.commit()
    conn.close()

init_db()

@app.route('/')
def index():
    if 'logged_in' not in
session:
        return
        redirect(url_for('login'))
        return
        render_template('login.html')

@app.route('/login',
methods=['GET', 'POST'])
def login():
    if request.method ==
'POST':
        username =
request.form['username']
        password =
request.form['password']

        conn =
sqlite3.connect('mahasiswa.db'
)
        cursor = conn.cursor()
        cursor.execute('SELECT
* FROM user WHERE username = ?
AND password = ?', (username,
password))
        user =
cursor.fetchone()
        conn.close()

        if user:
            session['logged_in'] = True
            return
            redirect(url_for('absensi'))
```

```

        else:
            return "Username
atau Password salah"

        return
render_template('login.html')

@app.route('/logout')
def logout():
    session.pop('logged_in',
None)
    return
redirect(url_for('login'))

@app.route('/absensi',
methods=['GET', 'POST'])
def absensi():
    if 'logged_in' not in
session:
        return
redirect(url_for('login'))

    if request.method ==
'POST':
        id_mahasiswa =
request.form['id_mahasiswa']
        tanggal =
datetime.now().strftime('%Y-
%m-%d')

        conn =
sqlite3.connect('mahasiswa.db'
)
        cursor = conn.cursor()
        cursor.execute(''
INSERT INTO
absensi (id_mahasiswa,
tanggal)
VALUES (?, ?)
'', (id_mahasiswa,
tanggal))
        conn.commit()
        conn.close()

        return
redirect(url_for('absensi'))

    conn =
sqlite3.connect('mahasiswa.db'
)
    cursor = conn.cursor()
    cursor.execute(''
SELECT absensi.id,
mahasiswa.nama,
absensi.tanggal
FROM absensi

```

```

JOIN mahasiswa ON
absensi.id_mahasiswa =
mahasiswa.id
''')
    data = cursor.fetchall()

    cursor.execute('SELECT id,
nama FROM mahasiswa')
    mahasiswa_list =
cursor.fetchall()
    conn.close()

    return
render_template('absensi.html'
, data=data,
mahasiswa_list=mahasiswa_list)

@app.route('/mahasiswa',
methods=['GET', 'POST'])
def mahasiswa():
    if 'logged_in' not in
session:
        return
redirect(url_for('login'))

    if request.method ==
'POST':
        nama =
request.form['nama']
        nim =
request.form['nim']
        jurusan =
request.form['jurusan']
        angkatan =
request.form['angkatan']

        if 'foto' not in
request.files:
            return 'No file
part'

        file =
request.files['foto']
        if file.filename ==
'':
            return 'No
selected file'

        if file and
allowed_file(file.filename):
            filename =
secure_filename(file.filename)
            extension =
filename.rsplit('.',
1)[1].lower()
            random_filename =
f"{uuid.uuid4().hex}.{extensio
n}"

```

```

file.save(os.path.join(app.config['UPLOAD_FOLDER'],
random_filename))

    foto_path =
os.path.join(app.config['UPLOAD_FOLDER'], random_filename)

    conn =
sqlite3.connect('mahasiswa.db'
)

    cursor = conn.cursor()
    cursor.execute(''
INSERT INTO
mahasiswa (nama, nim, jurusan,
angkatan, foto)
VALUES (?, ?, ?, ?,
?)
'', (nama, nim,
jurusan, angkatan, foto_path))
    conn.commit()
    conn.close()

    return
redirect(url_for('mahasiswa'))

    conn =
sqlite3.connect('mahasiswa.db'
)

    cursor = conn.cursor()
    cursor.execute('SELECT *
FROM mahasiswa')
    data = cursor.fetchall()
    conn.close()
    return
render_template('mahasiswa.htm
l', data=data)

@app.route('/delete_mahasiswa/
<int:id>', methods=['POST'])
def delete_mahasiswa(id):
    if 'logged_in' not in
session:
        return
    redirect(url_for('login'))

    conn =
sqlite3.connect('mahasiswa.db'
)

    cursor = conn.cursor()
    cursor.execute('SELECT
foto FROM mahasiswa WHERE id =
?', (id,))
    foto_path =
cursor.fetchone()[0]

    if
os.path.exists(foto_path):
        os.remove(foto_path)

        cursor.execute('DELETE
FROM mahasiswa WHERE id = ?',
(id,))
        conn.commit()
        conn.close()

        return
    redirect(url_for('mahasiswa'))

@app.route('/recognize')
def recognize():
    return
render_template('recognize.htm
l')

def generate_frames():
    video_capture =
cv2.VideoCapture(0+
cv2.CAP_DSHOW)

    conn =
sqlite3.connect('mahasiswa.db'
)

    cursor = conn.cursor()
    cursor.execute('SELECT id,
nama, foto FROM mahasiswa')
    mahasiswa =
cursor.fetchall()
    # conn.close()

    known_faces = []
    known_names = []

    face_cascade =
cv2.CascadeClassifier(cv2.data
.harcascades +
'haarcascade_frontalface_defau
lt.xml')
    recognizer =
cv2.face.LBPHFaceRecognizer_cr
eate()

    for idx, row in
enumerate(mahasiswa):
        nama = row[1]
        foto_path = row[2]
        known_image =
cv2.imread(foto_path,
cv2.IMREAD_GRAYSCALE)
        faces =
face_cascade.detectMultiScale(

```

```

known_image, scaleFactor=1.1,
minNeighbors=5)

    for (x, y, w, h) in
faces:
        face =
known_image[y:y+h, x:x+w]

known_faces.append(face)

known_names.append(idx)

recognizer.train(known_faces,
np.array(known_names))

    while True:
        ret, frame =
video_capture.read()
        if not ret:
            break

        gray_frame =
cv2.cvtColor(frame,
cv2.COLOR_BGR2GRAY)
        faces =
face_cascade.detectMultiScale(
gray_frame, scaleFactor=1.1,
minNeighbors=5)

        for (x, y, w, h) in
faces:
            face =
gray_frame[y:y+h, x:x+w]
            label, confidence
= recognizer.predict(face)
            name = "Unknown"
            if confidence <
50:
                id_mahasiswa =
mahasiswa[label][0]
                name =
mahasiswa[label][1] + " - Belum
Absen"

                tanggal =
datetime.now().strftime('%Y-
%m-%d')

                # Periksa
apakah sudah absen hari ini

cursor.execute(''')
SELECT
COUNT(*)
FROM
absensi

```

```

WHERE
id_mahasiswa = ? AND tanggal =
?
''',
(id_mahasiswa, tanggal))
result =
cursor.fetchone()

    if result[0]
== 0:

cursor.execute(''')
INSERT
INTO absensi (id_mahasiswa,
tanggal)
VALUES
(?, ?)
''',
(id_mahasiswa, tanggal))
conn.commit()

    else :
        name =
mahasiswa[label][1] + " - Sudah
Absen"

cv2.rectangle(frame, (x, y),
(x+w, y+h), (0, 0, 255), 2)
cv2.putText(frame,
name, (x, y-10),
cv2.FONT_HERSHEY_SIMPLEX, 0.9,
(255, 255, 255), 2)

        ret, buffer =
cv2.imencode('.jpg', frame)
        frame =
buffer.tobytes()
        yield (b'--frame\r\n'
b'Content-Type:
image/jpeg\r\n\r\n' + frame +
b'\r\n')

        video_capture.release()

@app.route('/video_feed')
def video_feed():
    return
Response(generate_frames(),
mimetype='multipart/x-mixed-
replace; boundary=frame')

if __name__ == '__main__':
    app.run(debug=True)

```

```

<!DOCTYPE html>
<html><!DOCTYPE html>
<html>
<head>
  <title>Face
Recognition</title>
  <style>
    .video-container {
      display: flex;
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    .video-container {
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  </style>
</head>
<body>
  <div class="video-container">
    <img alt="A black and white photograph of a person's face, partially obscured by a large, dark, irregular shape that resembles a stylized 'X' or a mask." data-bbox="115 115 885 885"/>
  </div>
</body>
</html>
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<body>
    <div class="video-
container">
        
    </div>
</body>
</html>

<head>
    <title>Absensi
Mahasiswa</title>
    <!-- Bootstrap CSS -->
    <link
href="https://cdn.jsdelivrivr.net
/npm/bootstrap@5.0.2/dist/css/
bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9Nao
0Yzl1ztCqTWFspD3yD65VohhpUuCOML
ASjC" crossorigin="anonymous">
</head>

<body class="bg-light">
    <!-- Navbar -->
    <nav class="navbar navbar-
expand-lg navbar-dark bg-
primary">
        <div class="container-
fluid">
            <a class="navbar-
brand" href="#">Admin</a>
            <button
class="navbar-toggler"
type="button" data-bs-
toggle="collapse" data-bs-
target="#navbarNav"
aria-
controls="navbarNav" aria-
expanded="false" aria-
label="Toggle navigation">
                <span
class="navbar-toggler-
icon"></span>
            </button>

```

```

        <div
class="collapse navbar-
collapse" id="navbarNav">
            <ul
class="navbar-nav">
                <li
class="nav-item">
                    <a
class="nav-link"
href="/absensi">Absensi</a>
                </li>
                <li
class="nav-item">
                    <a
class="nav-link"
href="/mahasiswa">Mahasiswa</a>
                </li>
                <li
class="nav-item">
                    <a
class="nav-link"
href="/recognize">Recognize</a>
                </li>
            </ul>
        </div>
        <a href="/logout"
class="btn btn-danger btn-
sm">Logout</a>
    </div>
</nav>

    <div class="card container
mt-5">
        <div class="card-
body">
            <h1>Absensi
Mahasiswa</h1>
            <button class="btn
btn-primary" data-bs-
toggle="modal" data-bs-
target="#addModal">Tambah
Absensi</button>
            <table
class="table table-bordered
mt-3">
                <thead>
                    <tr>
                        <th>ID</th>
                        <th>Nama Mahasiswa</th>
                        <th>Tanggal</th>
                    </tr>

```

```

        </thead>
        <tbody>
            {% for row
in data %}
                <tr>
                    <td>{{
row[0] }}</td>
                    <td>{{
row[1] }}</td>
                    <td>{{
row[2] }}</td>
                </tr>
            {% endfor
%}
        </tbody>
    </table>
</div>
</div>

<!-- Modal -->
<div class="modal fade"
id="addModal" tabindex="-1"
aria-
labelledby="exampleModalLabel"
aria-hidden="true">
    <div class="modal-
dialog">
        <div class="modal-
content">
            <div
class="modal-header">
                <h5
class="modal-title"
id="exampleModalLabel">Tambah
Absensi</h5>
                <button
type="button" class="btn-
close" data-bs-dismiss="modal"
aria-label="Close"></button>
            </div>
            <div
class="modal-body">
                <form
action="/absensi"
method="post">
                    <div
class="mb-3">
                        <label for="id_mahasiswa"
class="form-label">Nama
Mahasiswa</label>
                        <select class="form-control"
id="id_mahasiswa"
name="id_mahasiswa" required>
                    {% for mahasiswa in
mahasiswa_list %}
                        <option value="{{ mahasiswa[0]
}}">{{
mahasiswa[1]
}}</option>
                    {% endfor %}
                </select>
                </div>
                <button
type="submit"
class="btn
primary">Submit</button>
            </form>
        </div>
    </div>
</div>

<!-- Bootstrap JS -->
<script
src="https://cdn.jsdelivrivr.net/
npm/bootstrap@5.0.2/dist/js/bo
otstrap.bundle.min.js"
integrity="sha384-
MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsX
sPlUyJoMp4YLEuNSfAP+JcXn/tWtIa
xVXM"
crossorigin="anonymous"></scri
pt>
</body>
</html>

<!DOCTYPE html>
<html>

<head>
    <title>Dashboard</title>
    <!-- Bootstrap CSS -->
    <link
href="https://cdn.jsdelivrivr.net
/npm/bootstrap@5.0.2/dist/css/
bootstrap.min.css"
rel="stylesheet"
integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9Nao
0YzlztcQTWfSpd3yD65VohhpUuCOML
ASjC" crossorigin="anonymous">
</head>

```

```

<body>
  <div class="container mt-5">
    <h1>Dashboard</h1>
  </div>

  <!-- Bootstrap JS -->
  <script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsPlUyJoMp4YLEuNSfAP+JcXn/tWtIaXVXM"

crossorigin="anonymous"></script>
</body>

</html>

<!DOCTYPE html>
<html>
<head>
  <title>Login</title>
  <!-- Bootstrap CSS -->
  <link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet"
integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC" crossorigin="anonymous">
</head>
<body class="bg-light">
  <div class="container mt-5">
    <div class="row justify-content-center">
      <div class="col-md-6">
        <div class="card">
          <div class="card-body">
            <h1 class="card-title">Login</h1>
            <form action="/login" method="post">

<div class="mb-3">
<label

```

```

class="form-label">Username</label>

<input
type="text"
class="form-control"
id="username" name="username"
required>

</div>

<div class="mb-3">

<label
for="password"
class="form-label">Password</label>

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

</div>

<button
type="submit"
class="btn btn-primary">Login</button>

</form>

</div>
</div>
</div>
</div>

<!-- Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsPlUyJoMp4YLEuNSfAP+JcXn/tWtIaXVXM"

crossorigin="anonymous"></script>
</body>
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<head>
  <title>Data
Mahasiswa</title>

```



```

alt="Foto Mahasiswa"
width="100"></td>

<td>

<form action="{ {
url_for('delete_mahasiswa',
id=row[0]) } }" method="POST"

style="display:inline;">

<input type="submit"
value="Hapus" class="btn btn-
sm btn-danger"

onclick="return confirm('Anda
yakin ingin menghapus data
ini?');">

</form>

</td>
</tr>
{% endfor
%}

</tbody>
</table>
</div>
</div>

<!-- Modal -->
<div class="modal fade"
id="addModal" tabindex="-1"
aria-
labelledby="exampleModalLabel"
aria-hidden="true">
<div class="modal-
dialog">
<div class="modal-
content">
<div
class="modal-header">
<h5
class="modal-title"
id="exampleModalLabel">Tambah
Data Mahasiswa</h5>
<button
type="button" class="btn-
close" data-bs-dismiss="modal"
aria-label="Close"></button>
</div>
<div
class="modal-body">
<form
action="/mahasiswa"
method="post"
enctype="multipart/form-data">

```

```

<div
class="mb-3">

<label for="nama" class="form-
label">Nama</label>

<input type="text"
class="form-control" id="nama"
name="nama" required>

</div>
<div
class="mb-3">

<label for="nim" class="form-
label">NIM</label>

<input type="text"
class="form-control" id="nim"
name="nim" required>

</div>
<div
class="mb-3">

<label for="jurusan"
class="form-
label">Jurusan</label>

<input type="text"
class="form-control"
id="jurusan" name="jurusan"
required>

</div>
<div
class="mb-3">

<label for="angkatan"
class="form-
label">Angkatan</label>

<input type="text"
class="form-control"
id="angkatan" name="angkatan"
required>

</div>
<div
class="mb-3">

<label for="foto" class="form-
label">Foto</label>

<input type="file"
class="form-control" id="foto"
name="foto" required>

</div>

<button type="submit"

```

```

class="btn btn-
primary">Submit</button>
</form>
</div>
</div>
</div>
</div>

<!-- Bootstrap JS -->
<script
src="https://cdn.jsdelivr.net/
npm/bootstrap@5.0.2/dist/js/bo
otstrap.bundle.min.js"
integrity="sha384-
MrcW6ZMFY1lzcLA8Nl+NtUVF0sA7MsX
sPlUyJoMp4YLEuNSfAP+JcXn/tWtIa
xVXM"

crossorigin="anonymous"></scri
pt>
</body>

</html>
<!DOCTYPE html>
<html>
<head>
<title>Face
Recognition</title>
<style>
.video-container {
display: flex;
justify-content:
center;
align-items:
center;
height: 100vh;
background-color:
#000;
}
.video {
width: 640px;
height: 480px;
border: 5px solid
#fff;
}
</style>
</head>
<body>
<div class="video-
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</div>
</body>
</html>

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