LABORATORY REPORT

Application Development Lab
(CS33002)

B.Tech Program in CSE

Submitted By

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Table of Content

Lab Number	9
Experiment Number	7
Experiment Title	Database Management Using Flask
Date of Experiment	13/03/2025
Date of Submission	20/03/2025

1. Objective:-

To develop an application for user authentication and grade viewing.

2. Procedure:- (Steps Followed)

1. Install MySQL workbench in your system and install flask-mysqldb package.

2. Create a database where you wish to store your user name and the password.

3. Implement user authentication/registration form using Flask and the database. For a new user the account is created using the 'signup' button. Existing users can directly login with their credentials.

4. Inside the users can update their personal details, reset their passwords.

5. Inside the users can see the grades for their marks, which they cannot edit personally.

6. Build a responsive front-end for user interactions.

3. Code:-

```sql
CREATE DATABASE user_management;

USE user_management;

CREATE TABLE users (
    id INT AUTO_INCREMENT PRIMARY KEY,
    username VARCHAR(50) NOT NULL,
    email VARCHAR(100) NOT NULL UNIQUE,
    password VARCHAR(255) NOT NULL,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

SELECT * FROM users;

DROP TABLE users;

CREATE TABLE grades (
    id INT AUTO_INCREMENT PRIMARY KEY,
    user_id INT NOT NULL,
    subject VARCHAR(100) NOT NULL,
    grade DECIMAL(5, 2) NOT NULL,
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE
);

```

app.py

```python
import os
from dotenv import load_dotenv
from flask import Flask, render_template, request, redirect, url_for, flash
from flask_mysqldb import MySQL
from flask_bcrypt import Bcrypt
from flask_login import LoginManager, UserMixin, login_user, logout_user, login_required, current_user

# Load environment variables
load_dotenv()

app = Flask(__name__)

# Set the secret key
app.secret_key = os.urandom(24)

# MySQL Config from .env
app.config['MYSQL_HOST'] = os.getenv("MYSQL_HOST")
app.config['MYSQL_USER'] = os.getenv("MYSQL_USER")
app.config['MYSQL_PASSWORD'] = os.getenv("MYSQL_PASSWORD")
app.config['MYSQL_DB'] = os.getenv("MYSQL_DB")
app.config['MYSQL_CURSORCLASS'] = 'DictCursor'

mysql = MySQL(app)
bcrypt = Bcrypt(app)
login_manager = LoginManager(app)
login_manager.login_view = 'login'

class User(UserMixin):
    def __init__(self, id, username, email):
        self.id = id
        self.username = username
        self.email = email

@login_manager.user_loader
def load_user(user_id):
    cur = mysql.connection.cursor()
    cur.execute("SELECT * FROM users WHERE id = %s", (user_id,))
    user_data = cur.fetchone()
    cur.close()
    if user_data:
```

templates > dj base.html

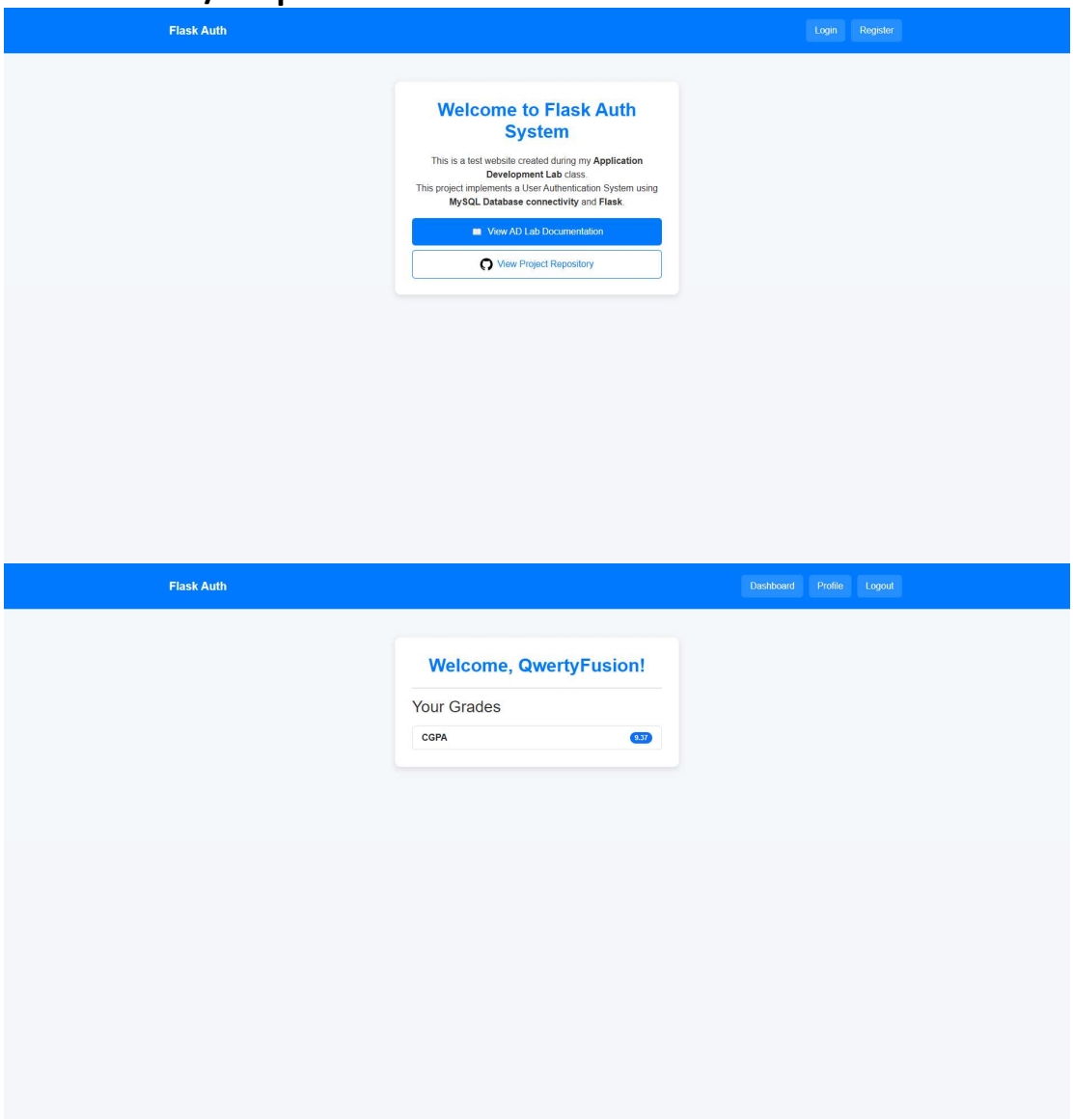
```html
<head>
    <style>
        .form-control {
        }

        .form-group {
            margin-bottom: 20px;
        }
    </style>
</head>
<body>
    <nav class="navbar navbar-expand-lg navbar-dark">
        <div class="container">
            <a class="navbar-brand" href="{{ url_for('home') }}">Flask Auth</a>
            <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarNav">
                <span class="navbar-toggler-icon"></span>
            </button>
            <div class="collapse navbar-collapse" id="navbarNav">
                <ul class="navbar-nav ms-auto">
                    {% if current_user.is_authenticated %}
                        <li class="nav-item"><a class="nav-link" href="{{ url_for('dashboard') }}">Dashboard</a></li>
                        <li class="nav-item"><a class="nav-link" href="{{ url_for('profile') }}">Profile</a></li>
                        <li class="nav-item"><a class="nav-link" href="{{ url_for('logout') }}">Logout</a></li>
                    {% else %}
                        <li class="nav-item"><a class="nav-link" href="{{ url_for('login') }}">Login</a></li>
                        <li class="nav-item"><a class="nav-link" href="{{ url_for('register') }}">Register</a></li>
                    {% endif %}
                </ul>
            </div>
        </div>
    </nav>

    <div class="container-box">
        {% block content %}{% endblock %}
    </div>

    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"></script>
</body>
</html>
```

4. Results/Output:-



5. Remarks:-

Signature of the Student

_____

(Name of the Student)

Signature of the Lab Coordinator

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(Name of the Coordinator)