<u>LABORATORY REPORT</u>

Application Development Lab
(CS33002)

B.Tech Program in CSE

Submitted By

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Experiment Title	Database Management Using Flask
Date of Experiment	20/03/2025
Date of Submission	27/03/2025

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
1    CREATE DATABASE user_management;
2
3    USE user_management;
4
5    CREATE TABLE users (
6        id INT AUTO_INCREMENT PRIMARY KEY,
7        username VARCHAR(50) NOT NULL,
8        email VARCHAR(100) NOT NULL UNIQUE,
9        password VARCHAR(255) NOT NULL,
10       created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
11   );
12
13   SELECT * FROM users;
14
15   DROP TABLE users;
16
17   CREATE TABLE grades (
18       id INT AUTO_INCREMENT PRIMARY KEY,
19       user_id INT NOT NULL,
20       subject VARCHAR(100) NOT NULL,
21       grade DECIMAL(5, 2) NOT NULL,
22       created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
23       FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE
24   );
25
```

```python
app.py
1   import os
2   from dotenv import load_dotenv
3   from flask import Flask, render_template, request, redirect, url_for, flash
4   from flask_mysqldb import MySQL
5   from flask_bcrypt import Bcrypt
6   from flask_login import LoginManager, UserMixin, login_user, logout_user, login_required, current_user
7
8   # Load environment variables
9   load_dotenv()
10
11  app = Flask(__name__)
12
13  # Set the secret key
14  app.secret_key = os.urandom(24)
15
16  # MySQL Config from .env
17  app.config['MYSQL_HOST'] = os.getenv("MYSQL_HOST")
18  app.config['MYSQL_USER'] = os.getenv("MYSQL_USER")
19  app.config['MYSQL_PASSWORD'] = os.getenv("MYSQL_PASSWORD")
20  app.config['MYSQL_DB'] = os.getenv("MYSQL_DB")
21  app.config['MYSQL_CURSORCLASS'] = 'DictCursor'
22
23  mysql = MySQL(app)
24  bcrypt = Bcrypt(app)
25  login_manager = LoginManager(app)
26  login_manager.login_view = 'login'
27
28  class User(UserMixin):
29      def __init__(self, id, username, email):
30          self.id = id
31          self.username = username
32          self.email = email
33
34  @login_manager.user_loader
35  def load_user(user_id):
36      cur = mysql.connection.cursor()
37      cur.execute("SELECT * FROM users WHERE id = %s", (user_id,))
38      user_data = cur.fetchone()
39      cur.close()
40      if user_data:
```

```html
templates > dj base.html
1   <!DOCTYPE html>
2   <html lang="en">
3   <head>
4       <meta charset="UTF-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1">
6       <title>{% block title %}{% endblock %}</title>
7
8       <!-- Bootstrap 5 CDN -->
9       <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css" rel="stylesheet">
10
11      <style>
12          body {
13              font-family: 'Poppins', sans-serif;
14              background: #121212;
15              color: #e0e0e0;
16          }
17
18          /* Navbar */
19          .navbar {
20              background-color: #121212;
21              padding: 15px;
22          }
23
24          .navbar-brand {
25              color: #ffd400 !important;
26              font-weight: 600;
27              font-size: 20px;
28          }
29
30          .nav-link {
31              padding: 8px 15px !important;
32              border-radius: 25px;
33              transition: all 0.3s ease-in-out;
34              font-weight: 700;
35          }
36
37          .nav-item .nav-link {
38              color: #121212 !important;
39              background-color: rgba(255, 255, 255, 0.15);
40              margin: 5px;
```
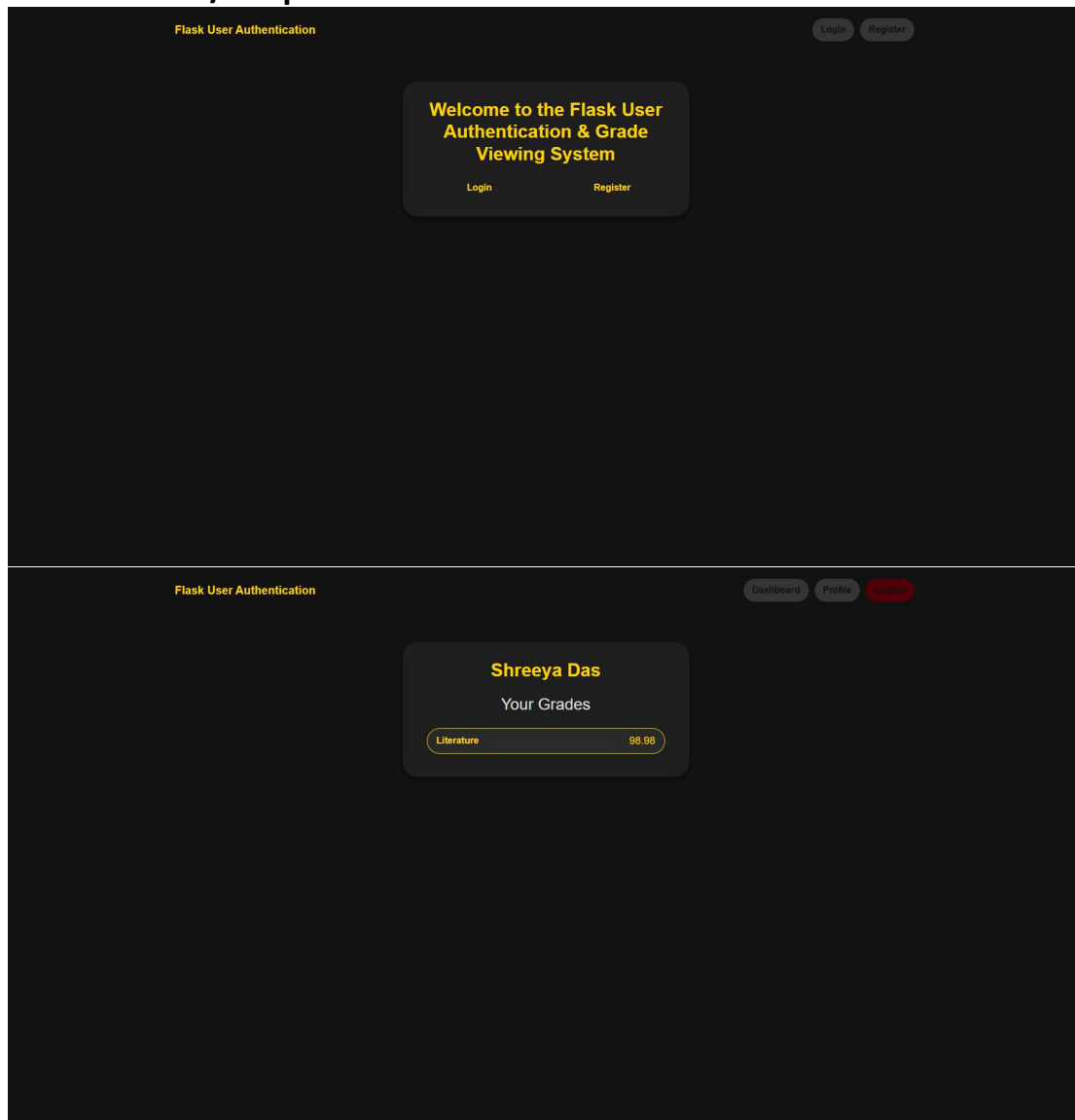
4. **Results/Output:-**

5. **Remarks:-**

Signature of the Student   Signature of the Lab Coordinator

_____   _____

(Name of the Student)   (Name of the Coordinator)