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Project Name	Project - Cloud Application Development

Assignment - 2 CRUD Operations Using Flask

- 1. Create a User table with users with email, username, roll number, password.
- 2. Perform UPDATE, DELETE Queries with user table
- 3. Connect python code to db2.
- 4. Create a flask app with registration page, login page and welcome page. By default load the registration page once the user enters all the fields, store the data in the database and navigate to the login page to authenticate user username and password. If the user is valid, show the welcome page.

Source Code:

app.py

```
from flask import Flask, render_template, url_for, redirect, flash
from flask_login import UserMixin, login_user, LoginManager,
login_required, logout_user, current_user
from wtforms.validators import InputRequired, Length, ValidationError
from flask_bcrypt import Bcrypt
from wtforms import StringField, PasswordField, SubmitField, IntegerField
from flask_wtf import FlaskForm
import sqlite3

app = Flask(__name__)
bcrypt = Bcrypt(app)
app.config['SECRET_KEY'] = 'B7-1A3E'

login_manager = LoginManager()
```

```
login manager.init app(app)
login manager.login view = 'login'
@login_manager.user_loader
def load_user(user_id):
   usr_obj = User(user[0], user[1], user[2])
   return usr obj
def connect_db():
   conn = sqlite3.connect('database.db')
class User:
       self.id = id
       self.username = username
       self.email = email
       return {"username": self.username,
                "email": self.email}
   def is authenticated(self):
    def is_anonymous(self):
   def get id(self):
```

```
email = StringField(validators=[
        InputRequired(), Length(min=4, max=50)], render kw={"placeholder":
"Email"})
   username = StringField(validators=[
                           InputRequired(), Length(min=4, max=20)],
render kw={"placeholder": "Username"})
   rollnumber = StringField(validators=[
        InputRequired(), Length(min=5, max=10)], render kw={"placeholder":
"RollNumber"})
   password = PasswordField(validators=[
                             InputRequired(), Length(min=8, max=20)],
render kw={"placeholder": "Password"})
   submit = SubmitField('Register')
   def validate username(self, username):
       conn = connect db()
       existing user username = conn.execute('SELECT * FROM user WHERE
                                               (username.data,)).fetchone()
       conn.commit()
       conn.close()
       if existing user username:
            raise ValidationError(
class LoginForm(FlaskForm):
   username = StringField(validators=[
                           InputRequired(), Length(min=4, max=20)],
render kw={"placeholder": "Username"})
   password = PasswordField(validators=[
                             InputRequired(), Length(min=8, max=20)],
render kw={"placeholder": "Password"})
   submit = SubmitField('Login')
```

```
username = StringField(validators=[
                           InputRequired(), Length(min=4, max=20)],
render kw={"placeholder": "Username"})
    oldpassword = PasswordField(validators=[
        InputRequired(), Length(min=8, max=20)], render kw={"placeholder":
    password = PasswordField(validators=[
                             InputRequired(), Length(min=8, max=20)],
render kw={"placeholder": "Password"})
    submit = SubmitField('Update')
@app.route('/')
def home():
    return render template('home.html')
@app.route('/login', methods=['GET', 'POST'])
def login():
    form = LoginForm()
        conn = connect db()
       user = conn.execute('SELECT * FROM user WHERE username = ?',
                            (form.username.data,)).fetchone()
       conn.commit()
       conn.close()
        if user:
            if bcrypt.check password hash(user[4], form.password.data):
                usr obj = User(user[0], user[1], user[2])
                login user(usr obj)
                return redirect(url for('welcome'))
                flash(f'Invalid credentials, check and try logging in
```

```
return redirect(url for('login'))
    return render template('login.html', form=form)
@app.route('/welcome', methods=['GET', 'POST'])
@login required
def welcome():
    return render template('welcome.html')
@app.route('/logout', methods=['GET', 'POST'])
@login required
def logout():
   logout user()
@ app.route('/register', methods=['GET', 'POST'])
def register():
   form = RegisterForm()
    conn = connect db()
    if form.validate on submit():
        hashed password =
bcrypt.generate password hash(form.password.data)
        conn.execute('INSERT INTO user (email, username, roll number,
pass word) VALUES (?, ?, ?, ?)',
                     (form.email.data, form.username.data,
form.rollnumber.data, hashed password))
       conn.commit()
        conn.close()
        return redirect(url for('login'))
    return render template('register.html', form=form)
@ app.route('/update', methods=['GET', 'POST'])
def update():
    form = UpdateForm()
    conn = connect db()
```

```
conn = connect db()
                            (form.username.data,)).fetchone()
       if user:
            if bcrypt.check password hash(user[4], form.oldpassword.data):
               print(user)
               hashed password1 = bcrypt.generate password hash(
                    form.password.data)
               conn.execute('UPDATE user set pass word = ? where username
                             (hashed password1, form.username.data))
               conn.close()
               return redirect(url for('home'))
                flash(f'Invalid password, Enter valid password.',
            flash(f'Invalid user, Enter valid User.', 'danger')
   return render template('update.html', form=form)
if name == " main ":
   app.run (debug=True)
```

schema.sql

```
DROP TABLE IF EXISTS user;

CREATE TABLE user (
   id INTEGER PRIMARY KEY AUTOINCREMENT,
   email TEXT NOT NULL,
   username TEXT NOT NULL,
   roll_number INTEGER NOT NULL,
   pass_word TEXT NOT NULL
);
```

Init_db.py

```
import sqlite3

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

with open('schema.sql') as f:
        conn.executescript(f.read())

conn.commit()
conn.close()
```

Style.css

```
.header {
   padding: 5px 120px;
   width: 150px;
   height: 70px;
   background-color: #236b8e;
 }
  .border {
   padding: 80px 50px;
   width: 400px;
   height: 450px;
   border: 1px solid #236b8e;
   border-radius: 0px;
   background-color: #9ac0cd;
 }
  .btn {
   padding: 10px 40px;
   background-color: #236b8e;
   color: #ffffff;
   font-style: oblique;
   font-weight: bold;
   border-radius: 10px;
  }
```

```
.textbox {
  padding: 10px 40px;
  background-color: #236b8e;
  text-shadow: #ffffff;
  border-radius: 10px;
::placeholder {
  color: #ffffff;
  opacity: 1;
  font-style: oblique;
  font-weight: bold;
}
.word {
 color: #ffffff;
 font-style: oblique;
  font-weight: bold;
}
.bottom {
  color: #236b8e;
  font-style: oblique;
  font-weight: bold;
}
body {
  background: #fafafa;
  color: #333333;
 margin-top: 5rem;
}
h1, h2, h3, h4, h5, h6 {
 color: #444444;
.bg-steel {
 background-color: #5f788a;
}
```

```
.site-header .navbar-nav .nav-link {
 color: #cbd5db;
}
.site-header .navbar-nav .nav-link:hover {
 color: #ffffff;
.site-header .navbar-nav .nav-link.active {
  font-weight: 500;
}
.content-section {
 background: #ffffff;
 padding: 10px 20px;
 border: 1px solid #dddddd;
 border-radius: 3px;
 margin-bottom: 20px;
}
.article-title {
 color: #444444;
a.article-title:hover {
 color: #428bca;
 text-decoration: none;
}
.article-content {
 white-space: pre-line;
.article-img {
 height: 65px;
 width: 65px;
 margin-right: 16px;
}
.article-metadata {
```

```
padding-bottom: 1px;
 margin-bottom: 4px;
 border-bottom: 1px solid #e3e3e3
}
.article-metadata a:hover {
 color: #333;
 text-decoration: none;
}
.article-svg {
 width: 25px;
 height: 25px;
 vertical-align: middle;
.account-img {
 height: 125px;
 width: 125px;
 margin-right: 20px;
 margin-bottom: 16px;
.account-heading {
 font-size: 2.5rem;
```

Templates:

Welcome.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <link rel="stylesheet"</pre>
href="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/css/bootstrap.min.
css"
integrity="sha384-gg0yR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQU0hcWr7x9JvoR
xT2MZw1T" crossorigin="anonymous">
    <link rel="stylesheet" type="text/css" href="{{ url for('static',</pre>
filename='style.css') }}" />
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Welcome Page</title>
</head>
<body>
    <h1>Welcome!</h1> <br>
    <a href="{{url for('logout')}}">Press here to logout</a>
    <script src="https://code.jquery.com/jquery-3.3.1.slim.min.js"</pre>
integrity="sha384-q8i/X+965Dz00rT7abK41JStQIAqVqRVzpbzo5smXKp4YfRvH+8abtTE
1Pi6jizo" crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/popper.js@1.14.7/dist/umd/popper.min.js"
integrity="sha384-U02eT0CpHqdSJQ6hJty5KVphtPhzWj9W01c1HTMGa3JDZwrnQq4sF86d
IHNDz0W1" crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/js/bootstrap.min.js
integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xI
M+B07jRM" crossorigin="anonymous"></script>
</body>
</html>
```

Login.html

```
!DOCTYPE html>
<html lang="en">
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <title>Login</title>
    <link rel="stylesheet"</pre>
href="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/css/bootstrap.min.
integrity="sha384-gg0yR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQU0hcWr7x9JvoR
xT2MZw1T" crossorigin="anonymous">
    <link rel="stylesheet" type="text/css" href="{{ url_for('static',</pre>
filename='style.css') }}" />
   <div class="col-md-8">
        {% with messages = get flashed messages(with categories=true) %}
            {% if messages %}
                {% for category, message in messages %}
                        {{ message }}
                {% endfor %}
        {% endwith %}
    <h1>Login Page</h1> <br>
    <form method="POST" action="">
        {{ form.hidden tag() }}
                {{ form.username.label(class="form-control-label") }}
```

```
{{ form.username(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.username.errors %}
                        {% endfor %}
                {% else %}
                    {{ form.username(class="form-control form-control-lg")
                {% endif %}
                {{ form.password.label(class="form-control-label") }}
                {% if form.password.errors %}
                    {{ form.password(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.password.errors %}
                        {% endfor %}
                {% else %}
                    {{ form.password(class="form-control form-control-lg")
                {% endif %}
            {{ form.submit(class="btn btn-outline-info") }}
```

Home.html

```
</head>
<body>
    <div class="col-md-8">
        {% with messages = get flashed messages(with categories=true) %}
            {% if messages %}
                {% for category, message in messages %}
                    <div class="alert alert-{{category}}">
                        {{ message }}
                    </div>
                {% endfor %}
            {% endif %}
        {% endwith %}
        {% block content %} {% endblock %}
    </div>
    <h1>Flask Application</h1> <br>
    <a href="{{ url for('login') }}">Login Page</a><br> <br>
    <a href="{{ url for('register') }}">Register Page</a><br> <br>
    <a href="{{ url for('update') }}">Update Password</a><br> <br>
    <script src="https://code.jquery.com/jquery-3.3.1.slim.min.js"</pre>
integrity="sha384-q8i/X+965Dz00rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE
1Pi6jizo" crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/popper.js@1.14.7/dist/umd/popper.min.js"
integrity="sha384-U02eT0CpHqdSJQ6hJty5KVphtPhzWj9W01c1HTMGa3JDZwrnQq4sF86d
IHNDz0W1" crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/js/bootstrap.min.js
integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xI
M+B07jRM" crossorigin="anonymous"></script>
</body>
</html>
```

Register.html

```
<!DOCTYPE html>
<html lang="en">
<head>
   <link rel="stylesheet"</pre>
href="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/css/bootstrap.min.
integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoR
xT2MZw1T" crossorigin="anonymous">
    <link rel="stylesheet" type="text/css" href="{{ url_for('static',</pre>
filename='style.css') }}" />
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Register</title>
</head>
<body>
   <h1>Register Page</h1> <br>
   <!-- <form method="POST" action="">
        {{ form.hidden tag() }}
       {{ form.email }} <br> <br>
        {{ form.username }} <br> <br>
        {{ form.rollnumber }} <br>
        {{ form.password }} <br>
        {{ form.submit }} <br>
   </form> -->
   <form method="POST" action="">
        {{ form.hidden tag() }}
        <fieldset class="form-group">
            <!-- <leqend class="border-bottom mb-4">Registration
Page</legend> -->
            <div>
                {{ form.email.label(class="form-control-label") }}
```

```
{% if form.email.errors %}
                    {{ form.email(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.email.errors %}
                            <span>{{ error }}</span>
                        {% endfor %}
                    </div>
                {% else %}
                    {{ form.email(class="form-control form-control-lg") }}
                {% endif %}
            </div>
            <div>
                {{ form.username.label(class="form-control-label") }}
                {% if form.username.errors %}
                    {{ form.username(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.username.errors %}
                            <span>{{ error }}</span>
                        {% endfor %}
                    </div>
                {% else %}
                    {{ form.username(class="form-control form-control-lg")
}}
                {% endif %}
            </div>
            <div>
                {{ form.rollnumber.label(class="form-control-label") }}
                {% if form.rollnumber.errors %}
                    {{ form.rollnumber(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.rollnumber.errors %}
                            <span>{{ error }}</span>
```

```
{% endfor %}
                    </div>
                {% else %}
                    {{ form.rollnumber(class="form-control
form-control-lg") }}
                {% endif %}
            </div>
            <div>
                {{ form.password.label(class="form-control-label") }}
                {% if form.password.errors %}
                    {{ form.password(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.password.errors %}
                            <span>{{ error }}</span>
                        {% endfor %}
                    </div>
                {% else %}
                    {{ form.password(class="form-control form-control-lg")
} }
                {% endif %}
            </div>
        </fieldset>
        <div class="form-group">
            {{ form.submit(class="btn btn-outline-info") }}
        </div>
        <small class="text-muted ml-2">
            <a href="{{ url for('login') }}">Already have an account? Log
In</a>
        </small>
    </form>
```

Update.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Login</title>
    <link rel="stylesheet"</pre>
href="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/css/bootstrap.min.
integrity="sha384-gg0yR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQU0hcWr7x9JvoR
xT2MZw1T" crossorigin="anonymous">
    <link rel="stylesheet" type="text/css" href="{{ url for('static',</pre>
filename='style.css') }}" />
</head>
<body>
    <div class="col-md-8">
        {% with messages = get flashed messages(with categories=true) %}
            {% if messages %}
                {% for category, message in messages %}
```

```
<div class="alert alert-{{category}}">
                        {{ message }}
                    </div>
                {% endfor %}
            {% endif %}
        {% endwith %}
        {% block content %} {% endblock %}
   </div>
   <h1>Update Password</h1> <br>
   <form method="POST" action="">
        {{ form.hidden tag() }}
       <fieldset class="form-group">
            <div>
                {{ form.username.label(class="form-control-label") }}
                {% if form.username.errors %}
                    {{ form.username(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.username.errors %}
                            <span>{{ error }}</span>
                        {% endfor %}
                    </div>
                {% else %}
                    {{ form.username(class="form-control form-control-lg")
}}
                {% endif %}
            </div>
            <div>
                {{ form.oldpassword.label(class="form-control-label") }}
                {% if form.oldpassword.errors %}
                    {{ form.oldpassword(class="form-control
form-control-lg is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.oldpassword.errors %}
                            <span>{{ error }}</span>
```

```
{% endfor %}
                    </div>
                {% else %}
                    {{ form.oldpassword(class="form-control
form-control-lg") }}
                {% endif %}
            </div>
            <div>
                {{ form.password.label(class="form-control-label") }}
                {% if form.password.errors %}
                    {{ form.password(class="form-control form-control-lg
is-invalid") }}
                    <div class="invalid-feedback">
                        {% for error in form.password.errors %}
                            <span>{{ error }}</span>
                        {% endfor %}
                    </div>
                {% else %}
                    {{ form.password(class="form-control form-control-lg")
} }
                {% endif %}
            </div>
       </fieldset>
        <div class="form-group">
            {{ form.submit(class="btn btn-outline-info") }}
        </div>
   </form>
   <script src="https://code.jquery.com/jquery-3.3.1.slim.min.js"</pre>
integrity="sha384-q8i/X+965Dz00rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE
1Pi6jizo" crossorigin="anonymous"></script>
    <script
src="https://cdn.jsdelivr.net/npm/popper.js@1.14.7/dist/umd/popper.min.js"
integrity="sha384-U02eT0CpHqdSJQ6hJty5KVphtPhzWj9W01c1HTMGa3JDZwrnQq4sF86d
IHNDz0W1" crossorigin="anonymous"></script>
```

```
<script
src="https://cdn.jsdelivr.net/npm/bootstrap@4.3.1/dist/js/bootstrap.min.js
"
integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy6OrQ6VrjIEaFf/nJGzIxFDsf4x0xI
M+B07jRM" crossorigin="anonymous"></script>
</body>
</html>
```

Output Snapshots:

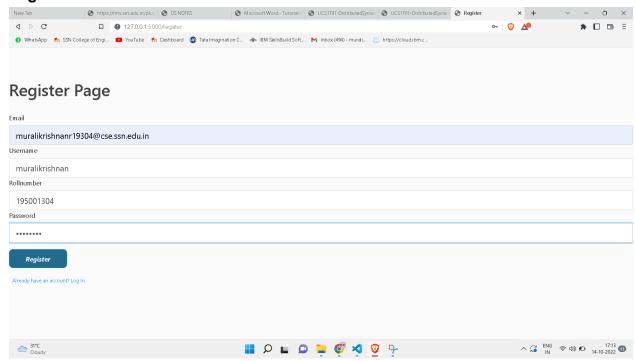
Flask Application

Login Page

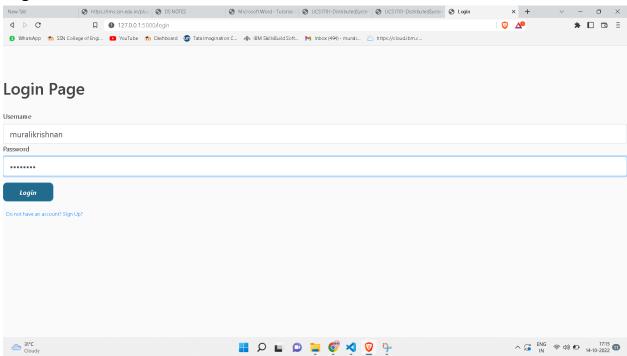
Register Page

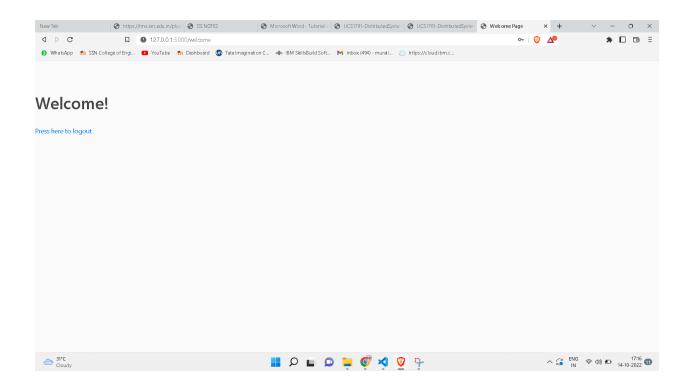
Update Password

Registration:

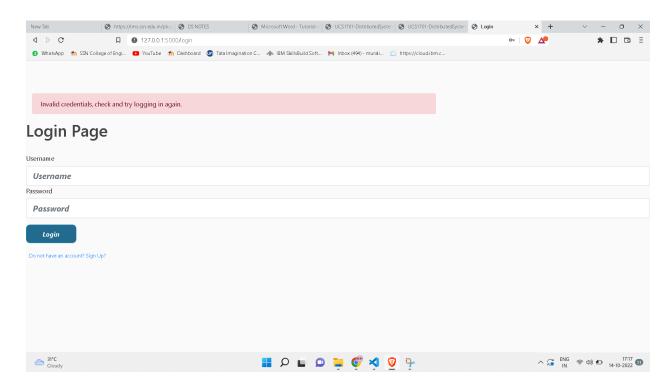


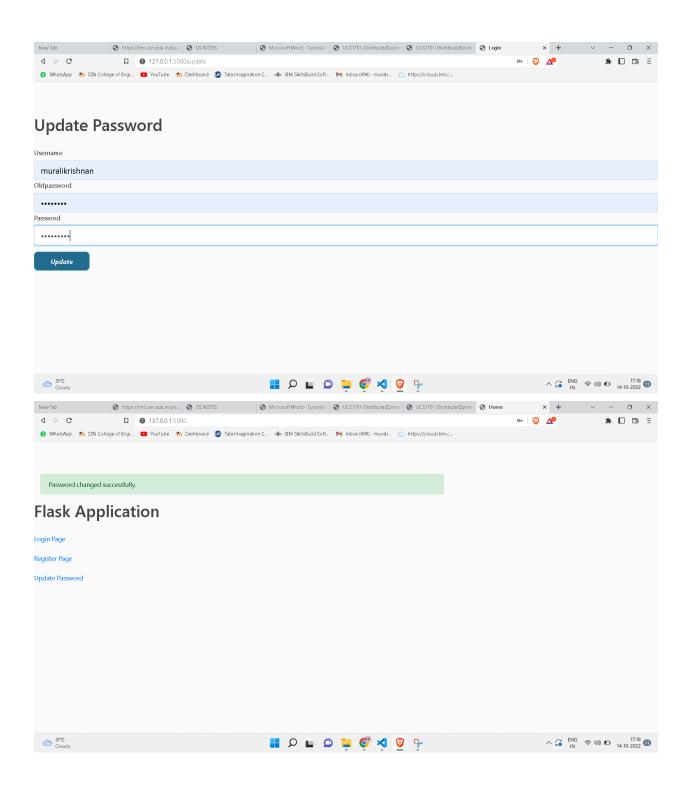
Login:





Password Updation:





Login with new password:

