

Міністерство освіти і науки України
Державний університет “Житомирська політехніка”

Кафедра інженерії програмного забезпечення
Група: ВТ-21-1[1]

Програмування мовою Python
Лабораторна робота № 11
«Робота з Flask»

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Прийняв: Морозов Д. С.

					«Житомирська політехніка».22.121.01.000–Лр11		
Змн.	Арк.	№ докум.	Підпис	Дата	Звіт з лабораторної роботи		
Розроб.	Бабушко А.С.						
Перевір.	Морозов Д.С.						
Керівник							
Н. контр.							
Затверд.							
					Літ.	Арк.	Аркушів
						1	15
					ФІКТ Гр. ВТ-21-1[1]		

Мета роботи: ознайомитися з роботою з веб-фреймворка Flask.

Хід роботи:

Завдання на лабораторну роботу:

Використовуючи веб-фреймворк Flask і створіть сайт музичного гурту/виконавця з наступним функціоналом:

1. Сайт має містити сторінки «Головна», «Про проект», «Історія гурту» і сторінки окремих альбомів.
2. Реалізуйте можливість додавання, видалення і редагування сторінок альбомів для авторизованих користувачів.
3. Обмеження на використання будь-яких front-end технологій на сайті немає.
4. Розгорніть ваш Flask-проект на платформі Heroku

Лістинг програми:

1. app.py:

```
from albumBand import app

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

2. __init__.py:

```
from flask import Flask
from flask_login import LoginManager

app = Flask(__name__)
app.config['SECRET_KEY'] = '089edelb5ebaebb10fa0f3328afb3864'

login_manager = LoginManager()
login_manager.init_app(app)
login_manager.login_view = 'login'

from albumBand import routes
```

3. routes.py:

```
from albumBand import app
from flask import render_template, flash, redirect, url_for, request
from albumBand.forms import RegistrationForm, LoginForm, PostForm
from albumBand.models import User, Posts
from flask_login import login_required, login_user, logout_user, current_user
import datetime

albums: list[Posts] = [
    Posts('Andrii Babushko', '2018', 'Highway to Hell', '1978'),
    Posts('Ihor Dzhush', '2022', 'Iron Man 2', '2010'),
    Posts('Karina Zbun', '2023', 'Black in Black', '1980'),
    Posts('Olexander Vignich', '2021', 'Power Up', '2020'),
    Posts('Olexander Shumskii', '2015', 'Powerage', '1978')
]

user: User = User()

@app.route('/')
@app.route('/index')
def index():
    return render_template('index.html', albums=albums, user=user)
```

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```

@app.route('/about/')
def about():
    return render_template('about.html', title='About project', user=user)

@app.route('/about_band/')
def about_band():
    return render_template('about_band.html', title='Band history', user=user)

@app.route('/login/', methods=['GET', 'POST'])
def login():
    login_form: LoginForm = LoginForm()

    if login_form.validate_on_submit():
        if login_form.email.data == 'admin@gmail.com' and login_form.password.data == 'admin':
            init_user('Admin', login_form.email.data, login_form.password.data, True)
            flash('You have been logged in!', 'success')
            return redirect(url_for('index', user=user))
        else:
            flash('Login unsuccessful. Please, check username and password!', 'danger')

    return render_template('login.html', title='Login', form=login_form, user=user)

@app.route("/logout")
def logout():
    logout_user()
    user.is_authenticated = False
    return redirect(url_for('index', user=user))

@app.route('/register/', methods=['GET', 'POST'])
def register():
    registration_form: RegistrationForm = RegistrationForm()

    if registration_form.validate_on_submit():
        init_user(registration_form.username.data, registration_form.email.data, registration_form.password.data, False)
        flash(f'Account was successfully created! Now you are able to log in.', 'success')
        return redirect(url_for('index', user=user))

    return render_template('register.html', title='Registration', form=registration_form, user=user)

@app.route('/post/new', methods=['GET', 'POST'])
def new_post():
    post_form: PostForm = PostForm()

    if post_form.validate_on_submit():
        today = datetime.date.today()
        albums.append(Posts(user.username, today.strftime("%Y"), post_form.title.data, post_form.album_date.data))
        flash('Your post has been created!', 'success')
        return redirect(url_for('index', user=user))

    return render_template('create_post.html', title='New post', form=post_form, user=user, legend='New post')

@app.route('/post/<int:post_id>', methods=['GET', 'POST'])
def post(post_id: int):
    searched_album: Posts = get_searched_album(post_id)
    return render_template('post.html', title=searched_album.title, album=searched_album, user=user)

```

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```

@app.route('/post/<int:post_id>/update', methods=['GET', 'POST'])
def update_post(post_id: int):
    searched_album: Posts = get_searched_album(post_id)
    post_form: PostForm = PostForm()

    if post_form.validate_on_submit():
        for album in albums:
            if album.post_id == post_id:
                album.title = post_form.title.data
                album.album_date = post_form.album_date.data
                flash('Your post has been updated!', 'success')
                return redirect(url_for('post', post_id=album.post_id, user=user))
    elif request.method == 'GET':
        post_form.title.data = searched_album.title
        post_form.album_date.data = searched_album.album_date

    return render_template('create_post.html', title='Update post', form=post_form,
user=user, legend='Update post')

@app.route('/post/<int:post_id>/delete', methods=['GET', 'POST'])
def delete_post(post_id):
    for album in albums:
        if album.post_id == post_id:
            albums.remove(album)

    flash('Your post has been deleted!', 'success')
    return redirect(url_for('index', user=user))

def init_user(username: str, email: str, password: str, is_authenticated: bool):
    user.username = username
    user.email = email
    user.password = password
    user.is_authenticated = is_authenticated

def get_searched_album(post_id):
    for album in albums:
        if album.post_id == post_id:
            return album
    return None

```

4. forms.py:

```

from flask_wtf import FlaskForm
from wtforms import StringField, PasswordField, SubmitField, BooleanField, DateTimeField
from wtforms.validators import DataRequired, Length, Email, EqualTo

class RegistrationForm(FlaskForm):
    username = StringField('Username', validators=[DataRequired(), Length(min=3, max=15)])
    email = StringField('Email address', validators=[DataRequired(), Email()])
    password = PasswordField('Password', validators=[DataRequired()])
    confirm_password = PasswordField('Confirm password', validators=[DataRequired(),
EqualTo('password')])
    submit = SubmitField('Sign Up')

class LoginForm(FlaskForm):
    email = StringField('Email address', validators=[DataRequired(), Email()])
    password = PasswordField('Password', validators=[DataRequired()])
    remember = BooleanField('Remember me')
    submit = SubmitField('Login')

class PostForm(FlaskForm):
    title = StringField('Title', validators=[DataRequired()])

```

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```
album_date = StringField('Album date', validators=[DataRequired()])
submit = SubmitField('Post')
```

5. models.py:

```
from flask_login import UserMixin
from albumBand import login_manager
import random

@login_manager.user_loader
def load_user(user_id):
    return User.id

class User(UserMixin):
    id = random.getrandbits(64)
    username: str
    email: str
    image_file: str
    password: str
    posts: None
    is_authenticated: bool = False

class Posts:
    def __init__(self, author: str, date_posted: str, title: str, album_date: str):
        self.author: str = author
        self.date_posted: str = date_posted
        self.title: str = title
        self.album_date: str = album_date
        self.post_id: int = random.getrandbits(64)
```

6. index.html:

```
{% extends "layout.html" %}
{% block content %}
    {% for album in albums %}
        <article class="media content-section">
            <div class="media-body">
                <div class="article-metadata">
                    <a class="mr-2" href="#">{{ album.author }}</a>
                    <small class="text-muted p-2">{{ album.date_posted }}</small>
                </div>
                <h2><a class="article-title" href="{{ url_for('post', post_id=album.post_id) }}">{{ album.title }}</a></h2>
                <p class="article-content">{{ album.album_date }}</p>
            </div>
        </article>
    {% endfor %}
{% endblock content %}
```

7. layout.html:

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0, minimum-scale=1.0">
    <meta http-equiv="X-UA-Compatible" content="ie=edge">

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOMLASjC" crossorigin="anonymous">

    <link rel="stylesheet" type="text/css" href="{{ url_for('static', filename='styles/style.css') }}">

    {% if title %}
```

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        <title>Music band - {{ title }}</title>
    {% else %}
        <title>Music band</title>
    {% endif %}
</head>
<body>
<header class="site-header">
    <nav class="navbar navbar-expand-lg navbar-light bg-steel">
        <div class="container">
            <a href="{{ url_for('index') }}" class="navbar-brand">Music band</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 me-auto mb-2 mb-lg-0">
                    <li class="nav-item">
                        <a class="nav-link" href="{{ url_for('about') }}">About project</a>
                    </li>
                    <li class="nav-item">
                        <a class="nav-link" href="{{ url_for('about_band') }}">About
band</a>
                    </li>
                </ul>
                <ul class="navbar-nav">
                    {% if user.is_authenticated %}
                        <li class="nav-item">
                            <a class="nav-link" href="{{ url_for('new_post') }}">New
post</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>
</header>

<main role="main" class="container">
    <div class="row mt-3">
        <div class="col-xl-8 col-lg-8 col-md-12 col-sm-12">
            {% 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 content %}
        </div>
        <div class="col-xl-4 col-lg-4 col-md-12 col-sm-12">
            <div class="content-section">
                <h3>Our Sidebar</h3>
                <p class="text-muted">You can put any information here you'd like.</p>
                <ul class="list-group">
                    <li class="list-group-item list-group-item-light">Latest Posts</li>

```

```

        <li class="list-group-item list-group-item-light">Announcements</li>
        <li class="list-group-item list-group-item-light">Calendars</li>
        <li class="list-group-item list-group-item-light">etc</li>
    </ul>
</div>
</div>
</div>
</main>

<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>

```

8. about.html:

```

{% extends "layout.html" %}
{% block content %}
    <div class="d-flex flex-row flex-wrap justify-content-between">
        <div class="col-xl-12 col-lg-12 col-md-12 col-sm-12">
            <h1 class="h1" style="text-align: center;">
                
                About project
                
            </h1>
            <p class="mb-4">
                <strong>Lab 11. </strong>Python - Flask.
            </p>
            <p class="mb-4">
                Made by &copy;Andrii Babushko. Group: WT-21-1(1).
            </p>
            <p class="mb-4">
                Project repository <a
href="https://github.com/AndriiBabushko/Python">here</a>
            </p>
        </div>
    </div>
{% endblock content %}

```

9. about_band.html:

```

{% extends "layout.html" %}
{% block content %}
    <div class="d-flex flex-row flex-wrap justify-content-between">
        <div class="col-xl-4 col-lg-4 col-md-12 col-sm-12">
            
            
        </div>
        <div class="col-xl-6 col-lg-4 col-md-12 col-sm-12">
            <h1 class="h1">ACDC</h1>
            <p class="mb-4">
                AC/DC are an Australian rock band formed in Sydney, New South Wales,
                Australia in 1973 by Scottish-born brothers Malcolm and Angus Young. Their music has been
                variously described as hard rock, blues rock, and heavy metal, but the band
                calls it simply "rock and roll".
            </p>
            <p class="mb-4">
                AC/DC underwent several line-up changes before releasing their first album,
                1975's High Voltage. Membership subsequently stabilised around the Young brothers,
                singer Bon Scott, drummer Phil Rudd, and bassist Mark Evans. Evans was
                fired from the band in 1977 and replaced by Cliff Williams, who has appeared on every AC/DC
                album since 1978's Powerage. In February 1980, about seven months after the
                release of their breakthrough album Highway to Hell, Scott died of acute alcohol
                poisoning after a night of heavy drinking. AC/DC considered disbanding, but
                at Scott's family's request, the remaining members opted to continue the band,
            </p>
        </div>
    </div>

```

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        bringing in longtime Geordie vocalist Brian Johnson as Scott's replacement.
Later that year, the band released their first album with Johnson, Back in Black,
        which was dedicated to Scott's memory. The album launched AC/DC to new
heights of success and became one of the best selling albums of all time.
    </p>
    <p class="mb-4">
        The band's eighth studio album, For Those About to Rock We Salute You
(1981), was their first album to reach number one in the United States. Prior to the
release
        of their next album, Flick of the Switch (1983), Rudd left the band and was
replaced by Simon Wright, being in turn replaced by Chris Slade in 1989. The band
        experienced a commercial resurgence in the early nineties with the release
of their twelfth studio album The Razors Edge (1990); it was their only album to feature
        Slade, who was replaced by the returning Rudd in 1994. Rudd has since
recorded five more albums with the band, starting with, and including, Ballbreaker (1995).
        Their fifteenth studio album Black Ice was the second-highest-selling album
of 2008, and their biggest chart hit since For Those About to Rock, eventually reaching
        No.1 worldwide.
    </p>
    <p class="mb-4">
        The band's line-up remained the same for twenty years, until 2014 with
Malcolm Young's retirement due to early-onset dementia (he died in 2017) and Rudd's legal
        troubles. Malcolm was replaced by his nephew Stevie Young, who debuted on
AC/DC's 2014 album Rock or Bust, and on its accompanying tour, previous drummer Chris
        Slade filled in for Rudd. In 2016, Johnson was advised to stop touring due
to worsening hearing loss. Guns N' Roses frontman Axl Rose stepped in as the band's
        vocalist for the remainder of that year's dates. Long-term bass player and
background vocalist Cliff Williams retired from AC/DC at the end of the Rock or Bust tour
        in 2016 and the group entered a four-year hiatus. A reunion of the Rock or
Bust lineup was announced in September 2020 and the band's seventeenth studio album Power
        Up was released two months later.
    </p>
    <p class="mb-4">
        AC/DC have sold more than 200 million records worldwide, including 75
million albums in the United States, making them the ninth-highest-selling artist in the
        United States and the 16th-best-selling artist worldwide. Back in Black has
sold an estimated 50 million units worldwide, making it the
        second-highest-selling album by any artist, and the highest-selling album
by any band. The album has sold 25 million units in the US, where it is the fourth
        highest-selling album of all time. AC/DC were inducted into the Rock and
Roll Hall of Fame on 10 March 2003. AC/DC ranked fourth on VH1's list of the "100
        Greatest Artists of Hard Rock" and were named the seventh "Greatest Heavy
Metal Band of All Time" by MTV. In 2004, AC/DC ranked No. 72 on the Rolling
        Stone list of the "100 Greatest Artists of All Time". Producer Rick Rubin,
who wrote an essay on the band for the Rolling Stone list, referred to AC/DC as "the
        greatest rock and roll band of all time". In 2010, VH1 ranked AC/DC number
23 in its list of the "100 Greatest Artists of All Time".
    </p>
</div>
</div>
{% endblock content %}

```

10.login.html:

```

{% extends "layout.html" %}
{% block content %}
    <div class="content-section">
        <form action="" method="post">
            {{ form.hidden_tag() }}
            <fieldset class="form-group">
                <legend class="border-bottom mb-4">Log in!</legend>
                <div class="form-group mb-3">
                    {{ form.email.label(class="form-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>
                    {% endif %}
                </div>
            </fieldset>
        </form>
    </div>
{% endblock %}

```

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        </div>
        {% else %}
        {{ form.email(class="form-control form-control-lg") }}
        {% endif %}
    </div>
    <div class="form-group mb-3">
        {{ form.password.label(class="form-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>
    <div class="form-check">
        {{ form.remember(class="form-check-input") }}
        {{ form.remember.label(class="form-check-label") }}
    </div>
</fieldset>
<div class="form-group mb-3 mt-3">
    {{ form.submit(class="btn btn-outline-info") }}
</div>
<small class="text-muted">
    <a href="#">Forgot password?</a>
</small>
</form>
</div>
<div class="border-top pt-3 pb-3">
    <small class="text-muted">
        Need an account? <a href="{ url_for('register') }}" class="ml-2">Sign up
now!</a>
    </small>
</div>
{% endblock content %}

```

11.register.html:

```

{% extends "layout.html" %}
{% block content %}
    <div class="content-section">
        <form action="" method="post">
            {{ form.hidden_tag() }}
            <fieldset class="form-group">
                <legend class="border-bottom mb-4">Join to our music band!</legend>
                <div class="form-group mb-3">
                    {{ form.username.label(class="form-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 class="form-group mb-3">
                    {{ form.email.label(class="form-label") }}

                    {% if form.email.errors %}
                    {{ form.email(class="form-control form-control-lg is-invalid") }}

```

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        <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 class="form-group mb-3">
    {{ form.password.label(class="form-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>
<div class="form-group mb-3">
    {{ form.confirm_password.label(class="form-label") }}

    {% if form.confirm_password.errors %}
        {{ form.confirm_password(class="form-control form-control-lg is-
invalid") }}

        <div class="invalid-feedback">
            {% for error in form.confirm_password.errors %}
                <span>{{ error }}</span>
            {% endfor %}
        </div>
    {% else %}
        {{ form.confirm_password(class="form-control form-control-lg") }}
    {% endif %}
</div>
</fieldset>
<div class="form-group mb-3">
    {{ form.submit(class="btn btn-outline-info") }}
</div>
</form>
</div>
<div class="border-top pt-3 pb-3">
    <small class="text-muted">
        Already have an account? <a href="{{ url_for('login') }}" class="ml-2">Sign
in</a>
    </small>
</div>
{% endblock content %}

```

12.post.html:

```

{% extends "layout.html" %}
{% block content %}
    <article class="media content-section">
        <div class="media-body">
            <div class="article-metadata">
                <a class="mr-2" href="#">{{ album.author }}</a>
                <small class="text-muted p-2">{{ album.date_posted }}</small>
            </div>
            <a href="{{ url_for('update_post', post_id=album.post_id) }}"
class="btn btn-secondary btn-sm mt-1 mb-1">Update</a>
            <a href="{{ url_for('delete_post', post_id=album.post_id) }}"
class="btn btn-danger btn-sm m-1">Delete</a>
        </div>
        <h2 class="article-title">{{ album.title }}</h2>
    </article>
{% endblock %}

```

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```

        <p class="article-content">{{ album.album_date }}</p>
    </div>
</article>
{% endblock content %}

```

13.create_post.html:

```

{% extends "layout.html" %}
{% block content %}
    <div class="content-section">
        <form action="" method="post">
            {{ form.hidden_tag() }}
            <fieldset class="form-group">
                <legend class="border-bottom mb-4">{{ legend }}</legend>
                <div class="form-group mb-3">
                    {{ form.title.label(class="form-label") }}

                    {% if form.title.errors %}
                        {{ form.title(class="form-control form-control-lg is-invalid") }}
                        <div class="invalid-feedback">
                            {% for error in form.title.errors %}
                                <span>{{ error }}</span>
                            {% endfor %}
                        </div>
                    {% else %}
                        {{ form.title(class="form-control form-control-lg") }}
                    {% endif %}
                </div>
                <div class="form-group mb-3">
                    {{ form.album_date.label(class="form-label") }}

                    {% if form.album_date.errors %}
                        {{ form.album_date(class="form-control form-control-lg is-invalid") }}
                        <div class="invalid-feedback">
                            {% for error in form.album_date.errors %}
                                <span>{{ error }}</span>
                            {% endfor %}
                        </div>
                    {% else %}
                        {{ form.album_date(class="form-control form-control-lg") }}
                    {% endif %}
                </div>
            </fieldset>
            <div class="form-group mb-3 mt-3">
                {{ form.submit(class="btn btn-outline-info") }}
            </div>
        </form>
    </div>
{% endblock content %}

```

14.style.sass:

```

body
  background: #fafafa
  color: #333333

h1, h2, h3, h4, h5, h6
  color: #444444

.bg-steel
  background-color: #5e9cce

.site-header .navbar-nav .nav-link:hover
  color: #d7d7d7

.content-section
  background: #ffffff
  padding: 10px 20px
  border: 1px solid #dddddd
  border-radius: 3px

```

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```

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

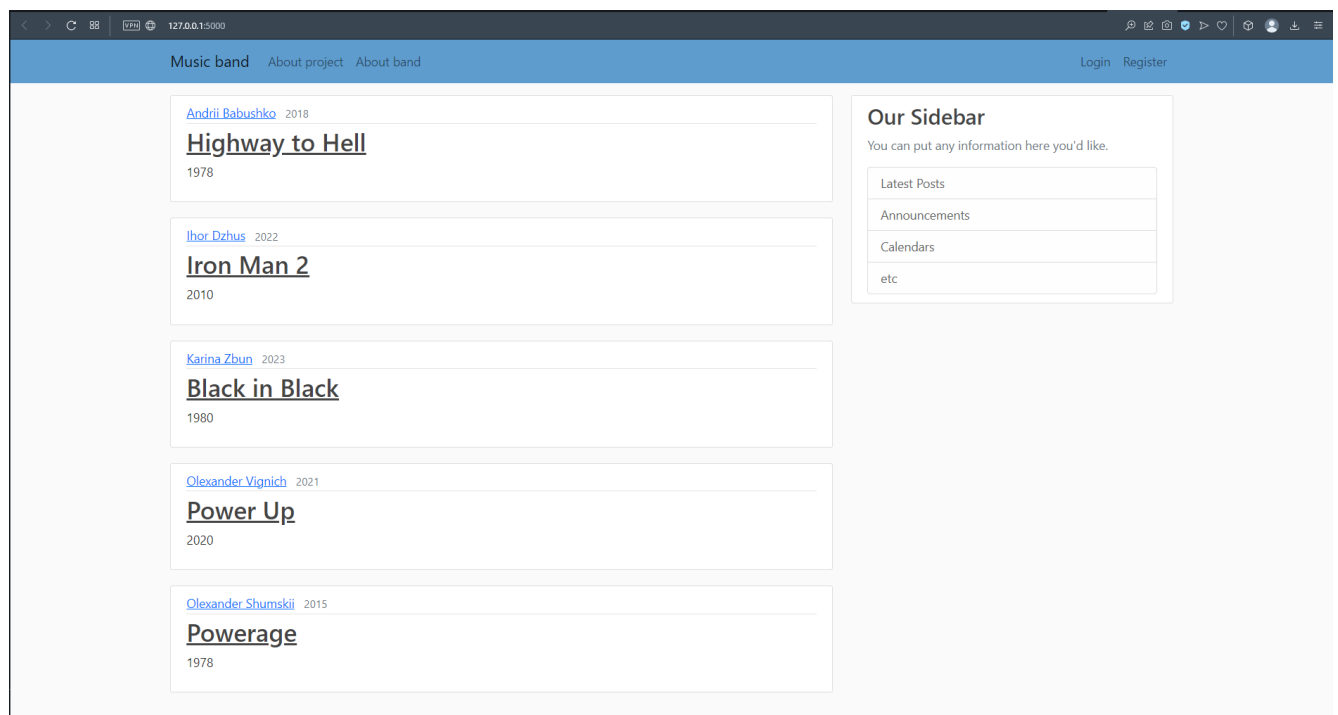
.article-svg
width: 25px
height: 25px
vertical-align: middle

.account-img
height: 125px
width: 125px
margin-right: 20px
margin-bottom: 16px

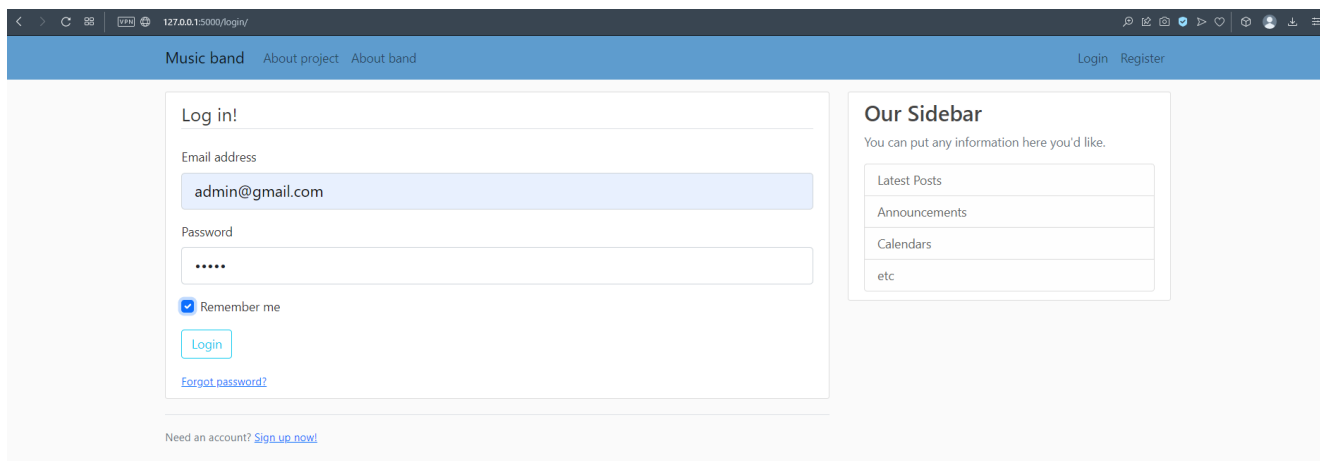
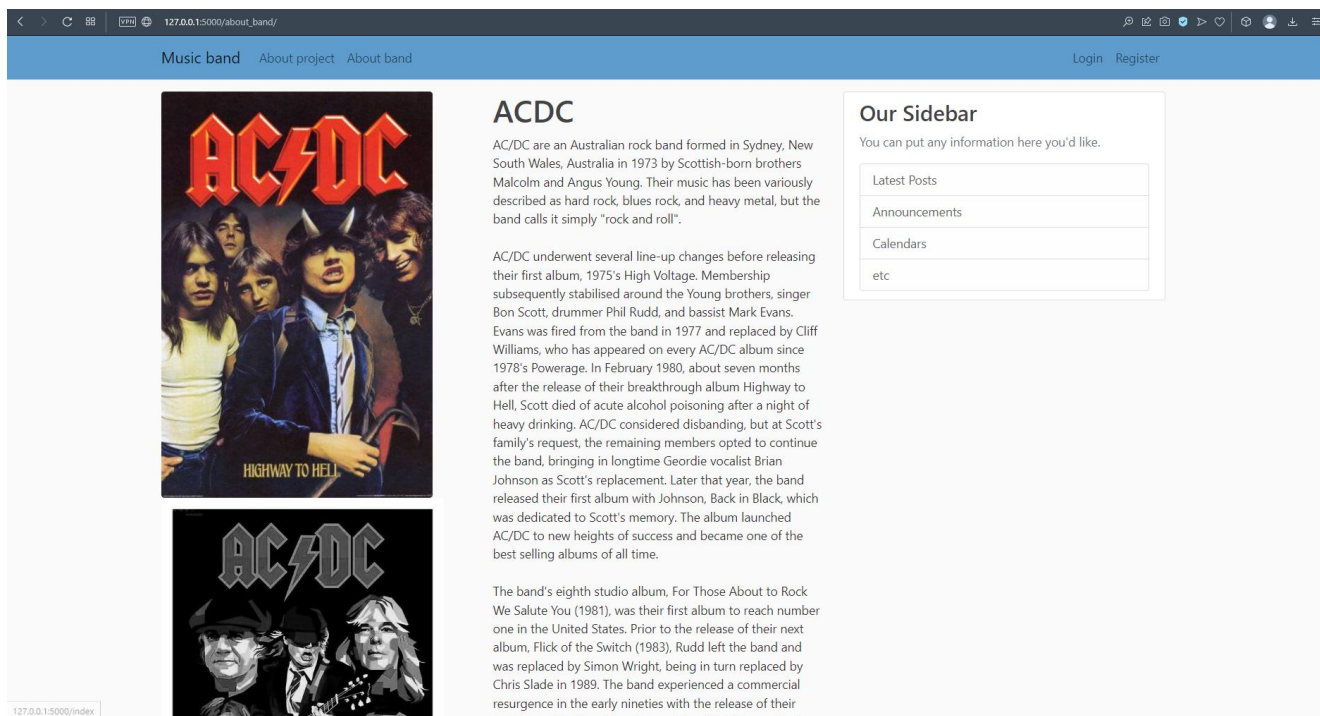
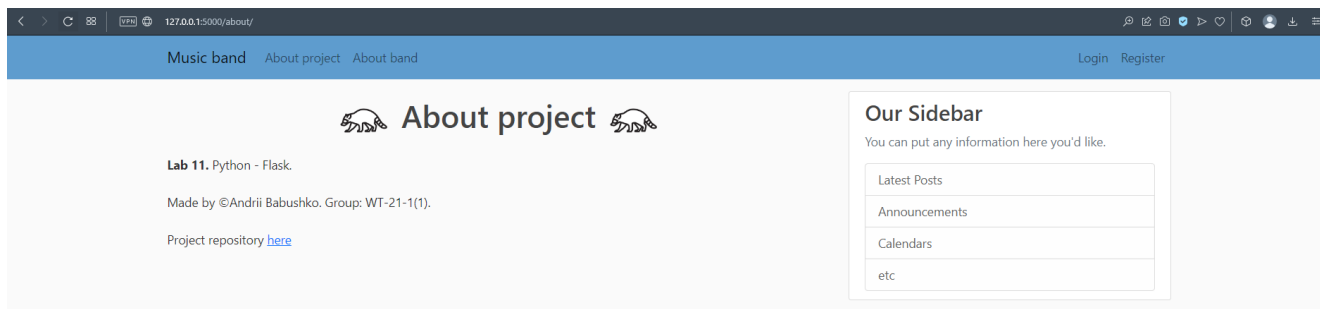
.account-heading
font-size: 2.5rem

```

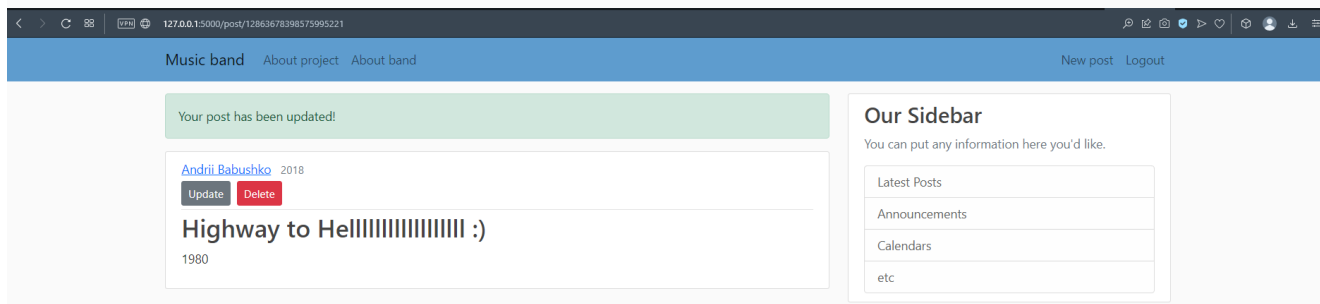
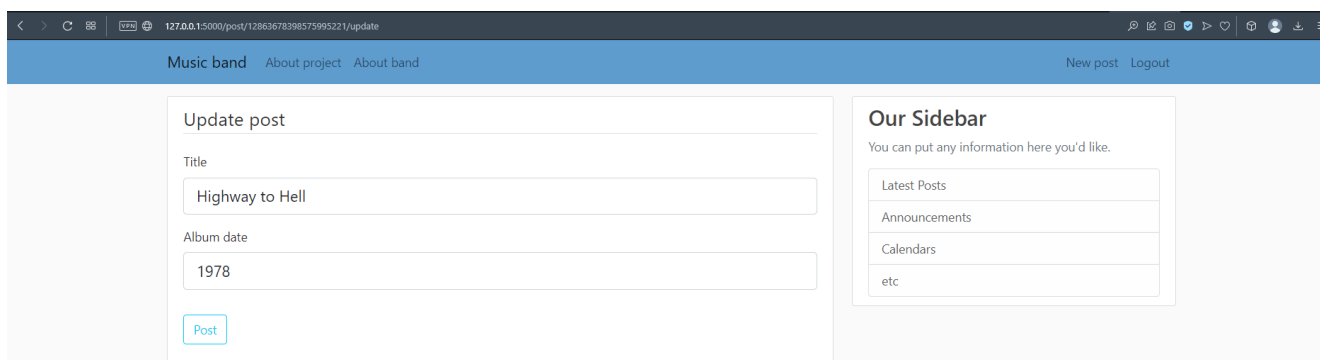
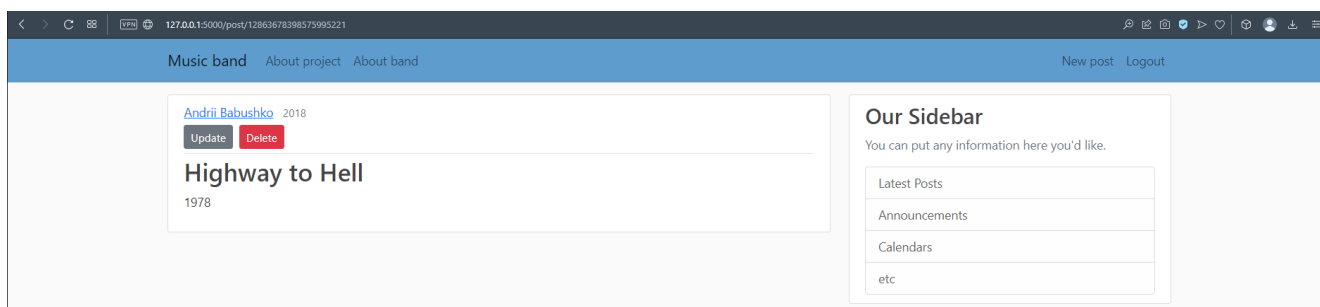
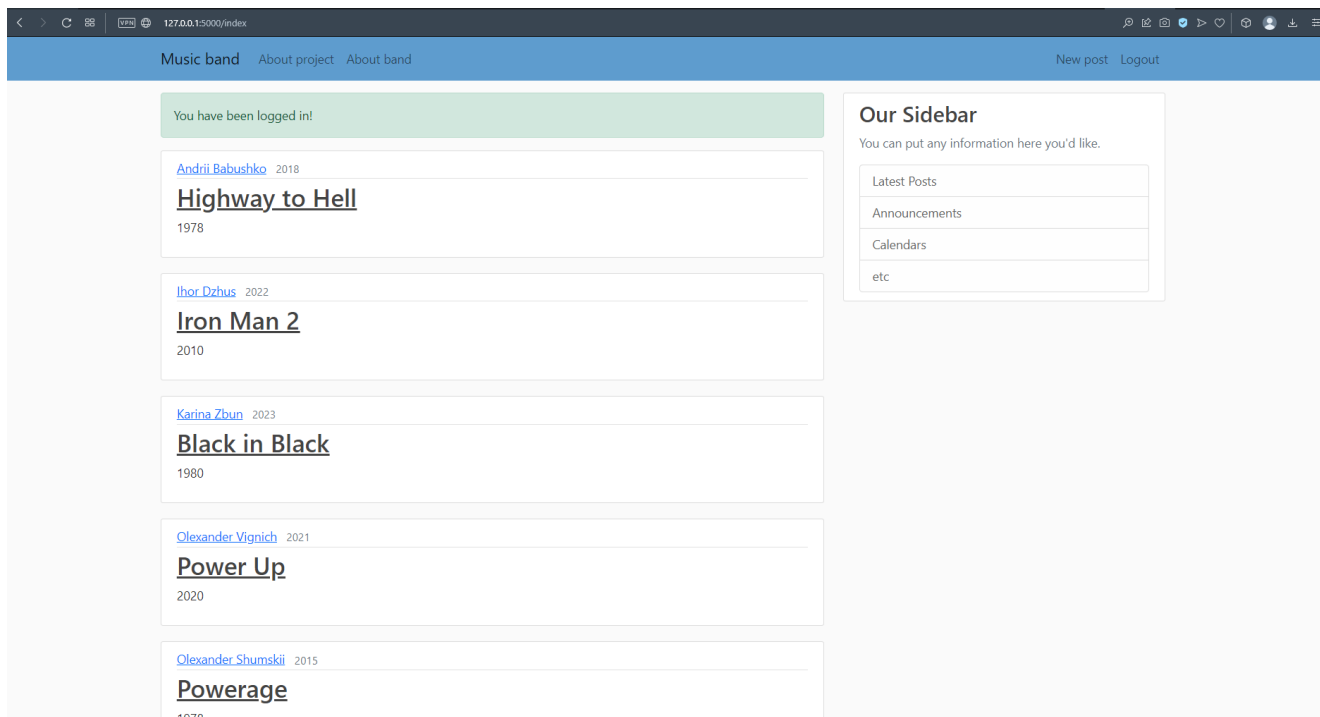
Результат програми:



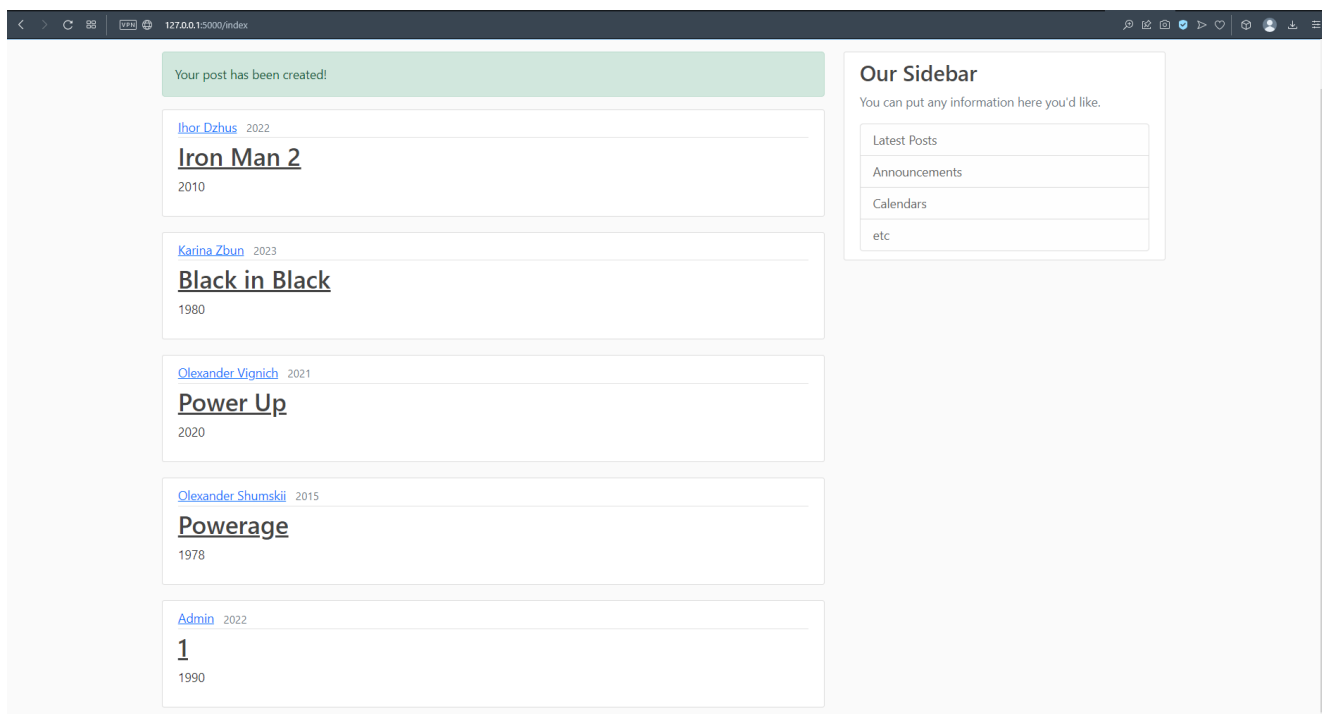
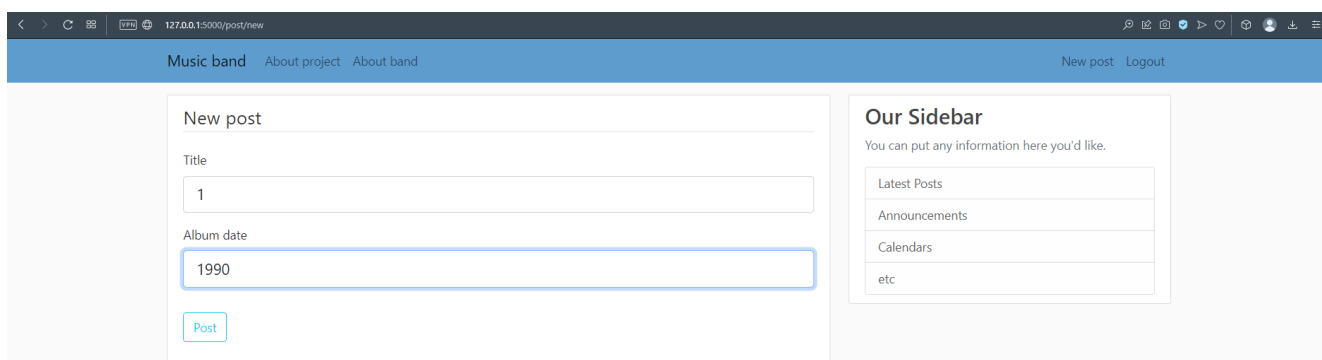
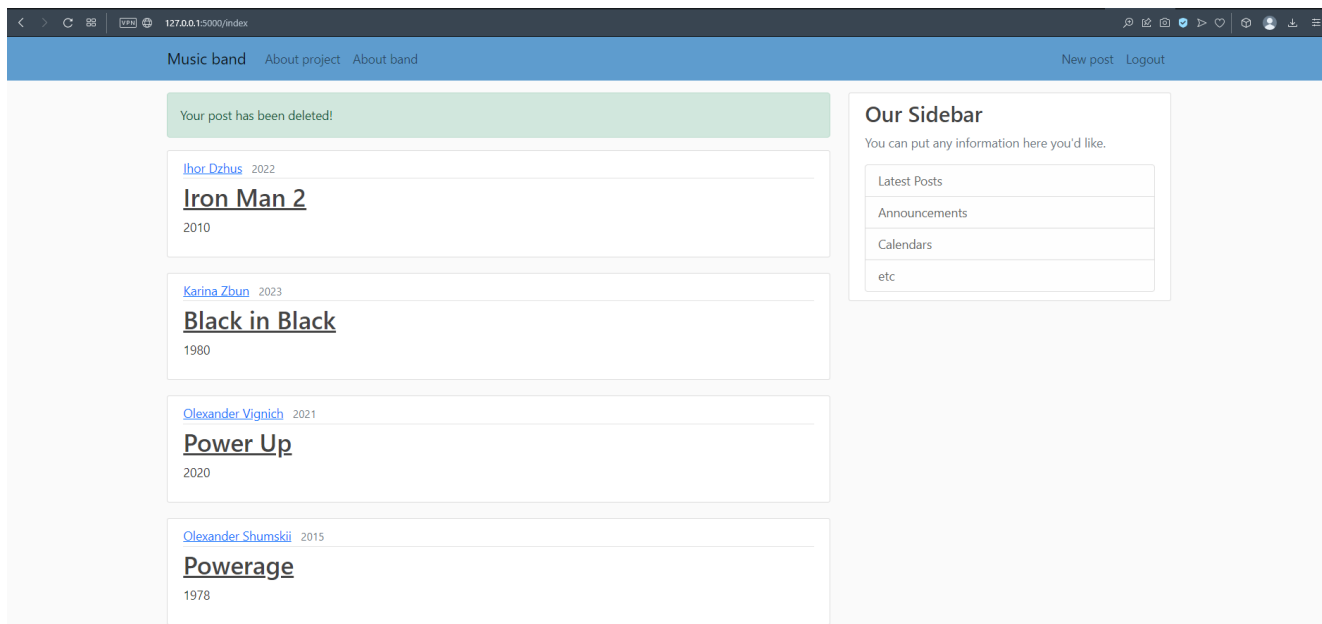
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Висновок: під час виконання лабораторної роботи було отримано навички написання сайту з використанням фреймворку Flask та можливостей які надає даний фреймворк.

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