الجمهورية العربية السورية

وزارة التعليم العالي- جامعة تشرين

كلية الهندسة الميكانيكية والكهربائية

قسم هندسة الاتصالات والالكترونيات

السنة الخامسة

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2223

(h2)

Question 1: Bank ATM Application with TCP Server/Client and Multi-threading

Project Description:

Build a TCP server and client Bank ATM application using Python. The server should handle multiple client connections simultaneously using multi-threading. The application should allow clients to connect, perform banking operations (such as check balance, deposit, and withdraw), and receive their updated account status upon completion.

Requirements:

A. The server should be able to handle multiple client connections concurrently.

B. The server should maintain a set of pre-defined bank accounts with balances.

C. Each client should connect to the server and authenticate with their account details.

D. Clients should be able to perform banking operations: check balance, deposit money, and withdraw money.

E. The server should keep track of the account balances for each client.

F. At the end of the session, the server should send the final account balance to each client.

Guidelines:

- Use Python's socket module without third-party packages.
- Implement multi-threading to handle multiple client connections concurrently.
- Store the account details and balances on the server side.

Notes:

- Write a brief report describing the design choices you made, and any challenges faced during implementation.
- You can choose to create a TCP Server/Client Bank ATM application or any other appropriate application that fulfills all requirements.

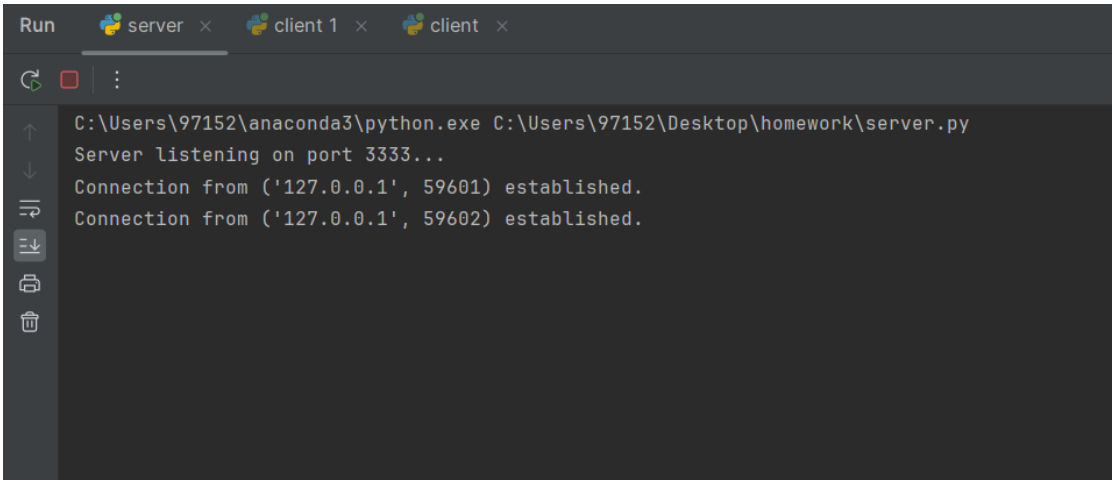
كود السيرفر:

```python
import socket
import threading

# Bank account details
accounts = {
    '777': 3000,
    '999': 6000
}


1 usage
def handle_client(client_socket):
    account_number = client_socket.recv(2048).decode()
    if account_number in accounts:
        client_socket.send(b"Welcome! You have connected to the bank server.")
    else:
        client_socket.send(b"Invalid account number. Connection terminated.")
        client_socket.close()
        return

    while True:
        option = client_socket.recv(2048).decode()

        if option == '1':
            balance = accounts[account_number]
            client_socket.send(f"Your current balance is: {balance}".encode())
        elif option == '2':
            amount = int(client_socket.recv(2048).decode())
            accounts[account_number] += amount
            client_socket.send(f"Deposit successful. Your new balance is: {accounts[account_number]}".encode())
        elif option == '3':
            amount = int(client_socket.recv(2048).decode())
        elif option == '3':
            amount = int(client_socket.recv(2048).decode())
            if accounts[account_number] >= amount:
                accounts[account_number] -= amount
                client_socket.send(f"Withdrawal successful. Your new balance is: {accounts[account_number]}".encode())
            else:
                client_socket.send("Insufficient funds. Withdrawal failed.".encode())
        else:
            break

    client_socket.close()


1 usage
def start_server():
    server = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    server.bind(('127.0.0.1', 3333))
    server.listen(6)
    print("Server listening on port 3333...")

    while True:
        client_socket, address = server.accept()
        print(f"Connection from {address} established.")
        client_thread = threading.Thread(target=handle_client, args=(client_socket,))
        client_thread.start()


start_server()
```

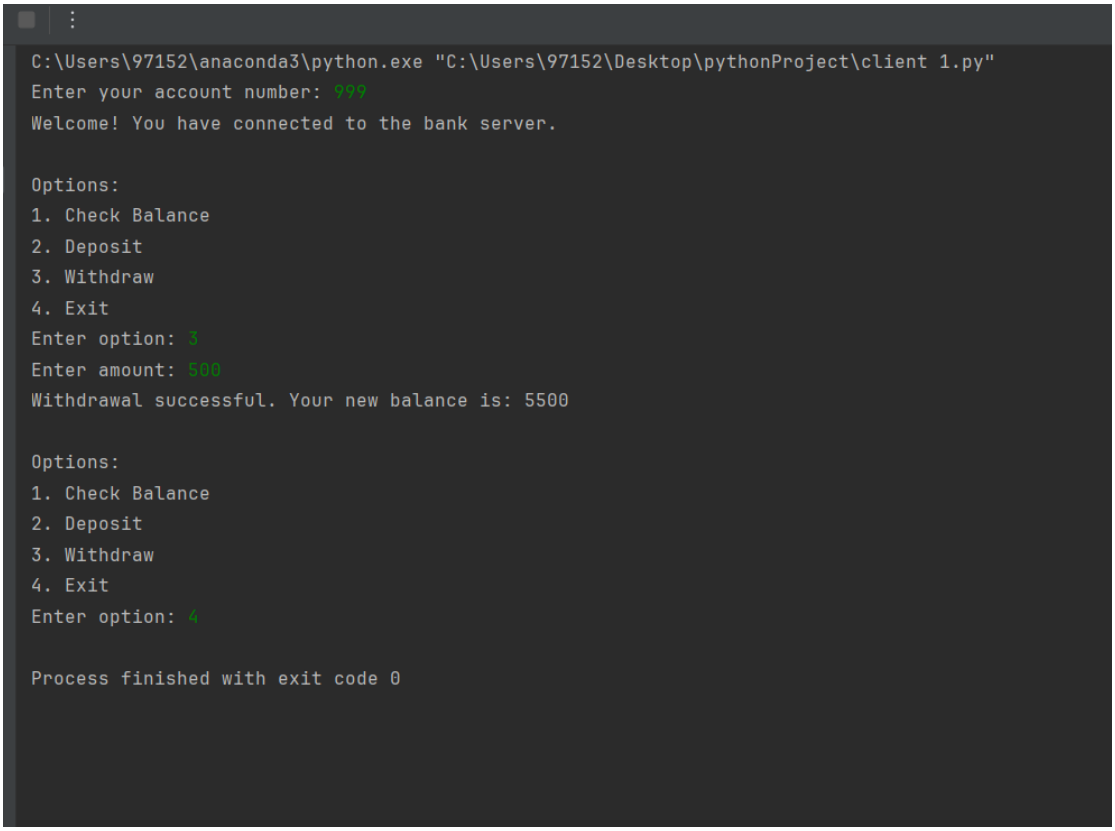
كود الكلاينت:

```python
import socket


def main():
    client = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    client.connect(('127.0.0.1', 3333))

    account_number = input("Enter your account number: ")
    client.send(account_number.encode())

    print(client.recv(2048).decode())

    while True:
        print("\nOptions:")
        print("1. Check Balance")
        print("2. Deposit")
        print("3. Withdraw")
        print("4. Exit")
        option = input("Enter option: ")

        if option == '4':
            break

        client.send(option.encode())

        if option == '1':
            print(client.recv(2048).decode())
        elif option == '2' or option == '3':
            amount = input("Enter amount: ")
            client.send(amount.encode())
            print(client.recv(2048).decode())

    client.close()


if __name__ == "__main__":
    main()
```

التنفيذ:




```
C:\Users\97152\anaconda3\python.exe "C:\Users\97152\Desktop\pythonProject\client 1.py"
Enter your account number: 777
Welcome! You have connected to the bank server.

Options:
1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter option: 1
Your current balance is: 3000

Options:
1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter option: 2
Enter amount: 3000
Deposit successful. Your new balance is: 6000

Options:
1. Check Balance
2. Deposit
3. Withdraw
4. Exit
Enter option:
```



Question 2: Simple Website Project with Python Flask Framework (you have choice to use Django or any Other Deferent Useful Python Project "from provide Project Links")

Create a simple website with multiple pages using Flask, HTML, CSS, and Bootstrap. The website should demonstrate your understanding of web design principles.

Requirements:

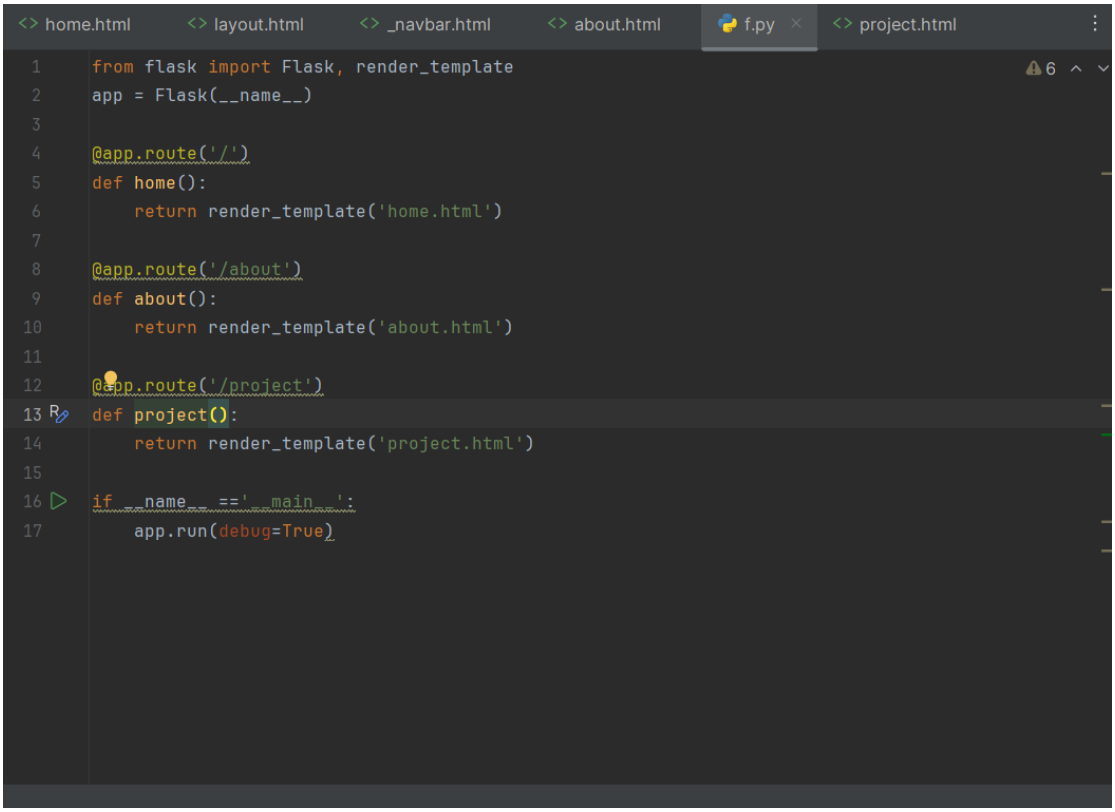
G. Set up a local web server using XAMPP, IIS, or Python's built-in server (using Flask).

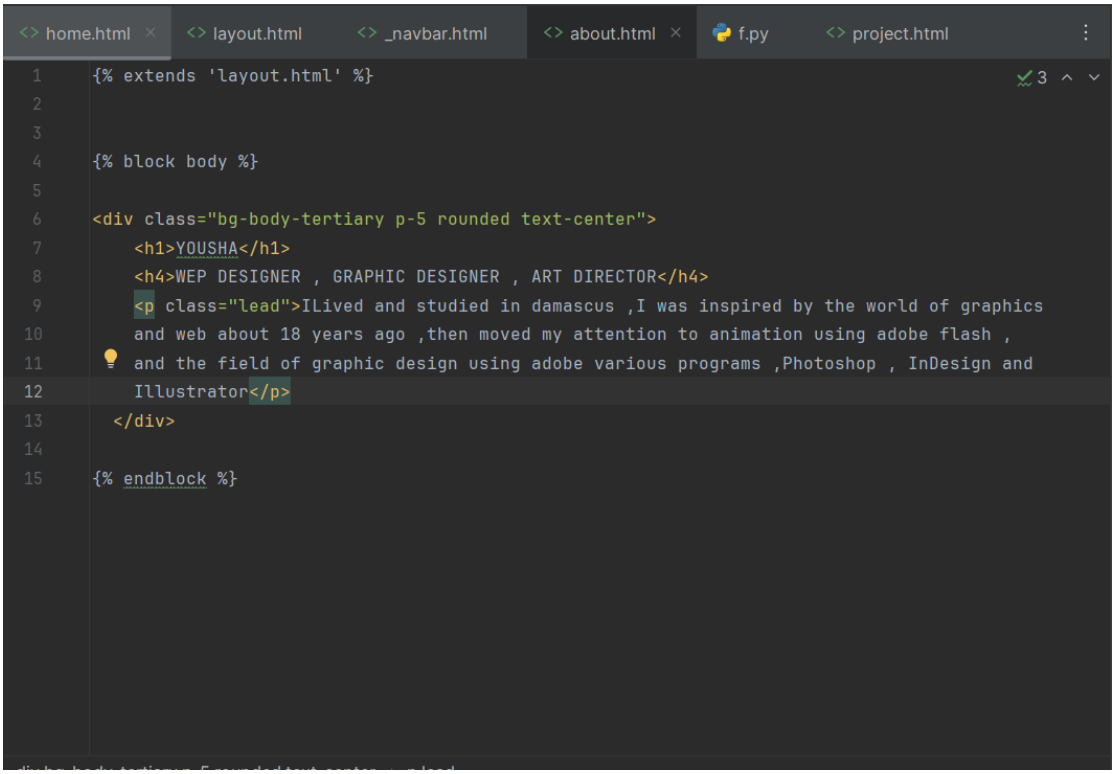
H. Apply CSS and Bootstrap to style the website and make it visually appealing.

I. Ensure that the website is responsive and displays correctly on different screen sizes.

J. Implement basic server-side functionality using Flask to handle website features.

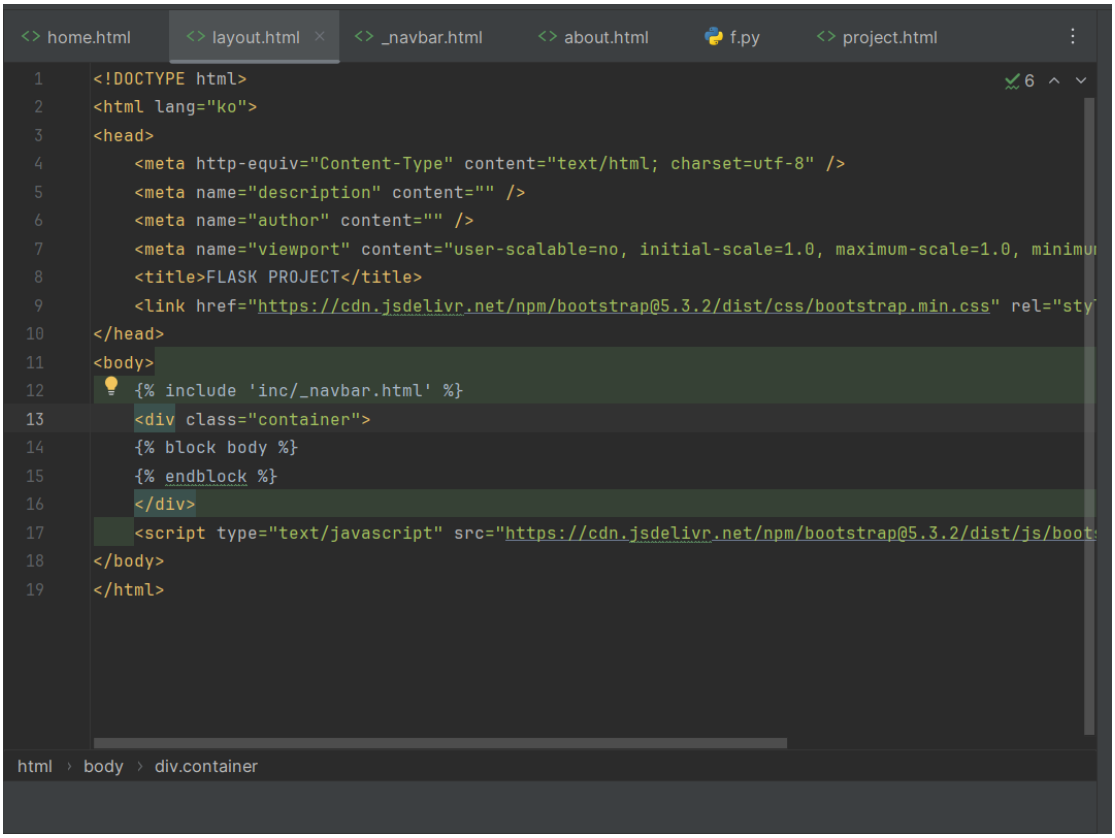
الكود:


home.html
layout.html
_navbar.html
about.html
f.py
project.html
6
from flask import Flask, render_template
app = Flask(__name__)
@app.route('/')
def home():
return render_template('home.html')
@app.route('/about')
def about():
return render_template('about.html')
@app.route('/project')
def project():
return render_template('project.html')
if __name__ == '__main__':
app.run(debug=True)


home.html
layout.html
_navbar.html
about.html
f.py
project.html
{% extends 'layout.html' %}
{% block body %}

<h1>YOUSHA</h1>
<h4>WEP DESIGNER , GRAPHIC DESIGNER , ART DIRECTOR</h4>
ILived and studied in damascus ,I was inspired by the world of graphics
and web about 18 years ago ,then moved my attention to animation using adobe flash ,
and the field of graphic design using adobe various programs ,Photoshop , InDesign and
Illustrator

{% endblock %}


home.html
layout.html
_navbar.html
about.html
f.py
project.html
<!DOCTYPE html>
<html lang="ko">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<meta name="description" content="" />
<meta name="author" content="" />
<meta name="viewport" content="user-scalable=no, initial-scale=1.0, maximum-scale=1.0, minimu
<title>FLASK PROJECT</title>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="sty
</head>
<body>
{% include 'inc/_navbar.html' %}

{% block body %}
{% endblock %}

<script type="text/javascript" src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/boot
</body>
</html>
html
body
div.container

home.html | layout.html | _navbar.html | about.html | f.py | project.html

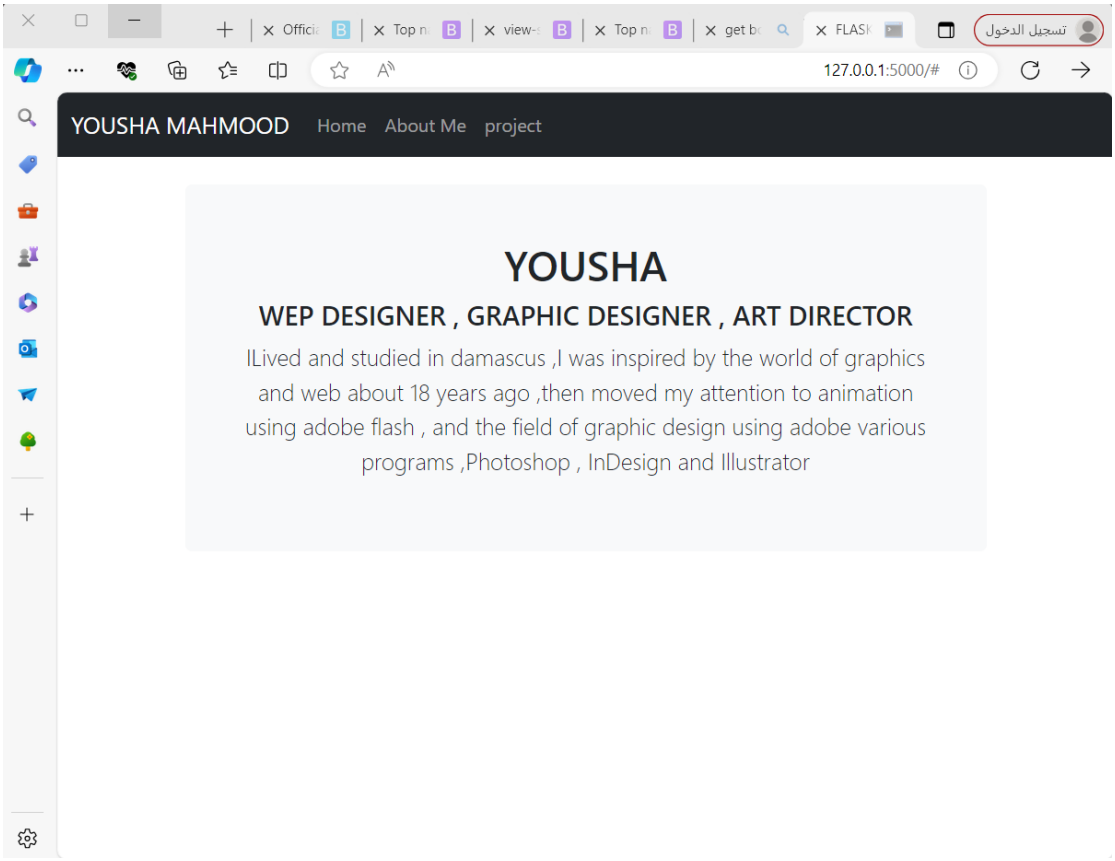
```
<nav class="navbar navbar-expand-md navbar-dark bg-dark mb-4">
  <div class="container-fluid">
    <a class="navbar-brand" href="#">YOUSHA MAHMOOD</a>
    <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbar
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarCollapse">
      <ul class="navbar-nav me-auto mb-2 mb-md-0">
        <li class="nav-item">
          <a class="nav-link " aria-current="page" href="/">Home</a>
        </li>
        <li class="nav-item">
          <a class="nav-link" href="/about">About Me</a>
        </li>
        <li class="nav-item">
          <a class="nav-link " href="/project"> project</a>
        </li>
      </ul>

    </div>
  </div>
</nav>
```

nav.navbar.navbar-expand-md.navbar-dark.bg-dark.mb-4 › div.container-fluid › div#navbarCollapse.collapse.navbar-collapse › ul.

home.html | layout.html | _navbar.html | about.html | f.py | pro

```
% extends 'layout.html' %}


{% block body %}

<div class="bg-body-tertiary p-5 rounded text-center">
    <h1>YOUSHA</h1>
    <p class="lead"></p>
  </div>

{% endblock %}
```

التنفيذ:


تسجيل الدخول
127.0.0.1:5000/#
YOUSHA MAHMOOD
Home
About Me
project
YOUSHA
WEP DESIGNER , GRAPHIC DESIGNER , ART DIRECTOR
ILived and studied in damascus ,I was inspired by the world of graphics and web about 18 years ago ,then moved my attention to animation using adobe flash , and the field of graphic design using adobe various programs ,Photoshop , InDesign and Illustrator