

Syrian Arab Republic

Lattakia - Tishreen University

Department of Communication and electrical  
engineering

5<sup>th</sup> , Network Programming : Homework No1



الجمهورية العربية السورية

اللاذقية - جامعة تشرين

كلية الهندسة الكهربائية والميكانيكية

قسم هندسة الاتصالات والالكترونيات

السنة الخامسة: وظيفة 1 برمجة شبكات

## First Network Programming Homework

**Name:** يوسف حسن سالم

**Number:** 2498

**Submitted To GitHub:**

### Question 1: Python Basics?

A-If you have two lists, L1=['HTTP','HTTPS','FTP','DNS'] L2=[80,443,21,53], convert it to generate this dictionary **d**={'HTTP':80,'HTTPS':443,'FTP':21,'DNS':53 }

B- Write a Python program that calculates the factorial of a given number entered by user.

C- L=['Network' , 'Bio' , 'Programming' , 'Physics' , 'Music']

In this exercise, you will implement a Python program that reads the items of the previous list and identifies the **items that starts with 'B' letter**, then print it on screen.

**Tips:** using loop, 'len ()' , startswith() methods.

D: Using Dictionary comprehension, Generate this dictionary

d={0:1,1:2,2:3,3:4,4:5,5:6,6:7,7:8,8:9,9:10,10:11}

**The answer of the question 1 is :**

**A. تحويل القوائم لقاموس :**  
الكود :

```
main.py x
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base Direction)
1 L1 = ['HTTP', 'HTTPS', 'FTP', 'DNS']
2 L2 = [80, 443, 21, 53]
3
4 d = {L1[i]: L2[i] for i in range(len(L1))}
5 print(d)
6
```

**الخرج :**

```
Run: main x
C:\Users\youse\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:/Users/youse/PycharmProjects/pythonProject1/main.py
{'HTTP': 80, 'HTTPS': 443, 'FTP': 21, 'DNS': 53}
Process finished with exit code 0
```

## B. حساب عاملي عدد معين

الكود :

```
main.py x
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base Direction)
1 def factorial(n):
2     if n == 0:
3         return 1
4     else:
5         return n * factorial(n-1)
6
7 num = int(input("Enter a number: "))
8 result = factorial(num)
9 print("The factorial of", num, "is", result)
10
```

الخرج :

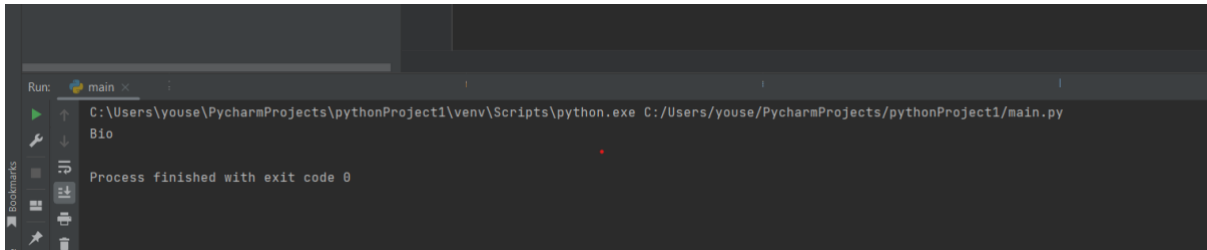
```
C:\Users\youse\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:/Users/youse/PycharmProjects/pythonProject1/main.py
Enter a number: 5
The factorial of 5 is 120
Process finished with exit code 0
```

## C. تحديد العناصر في القائمة التي تبدأ بالحرف "B":

الكود :

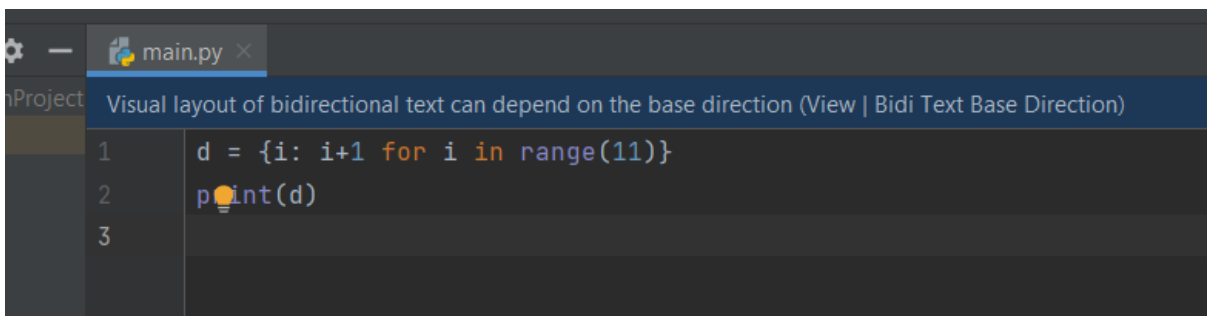
```
main.py x
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base Direction)
1 L = ['Network', 'Bio', 'Programming', 'Physics', 'Music']
2
3 for x in range(len(L)):
4     if L[x].startswith('B'):
5         print(L[x])
6
```

الخرج :



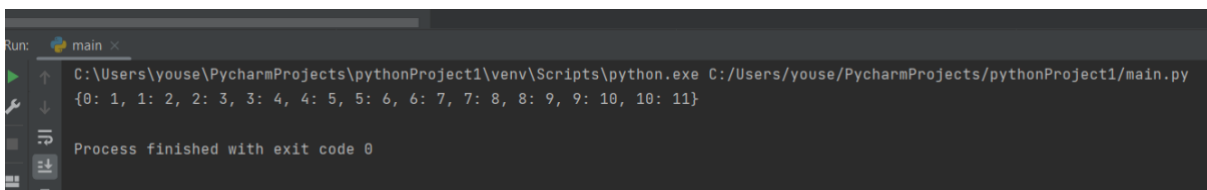
```
Run: main x
C:\Users\youse\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:/Users/youse/PycharmProjects/pythonProject1/main.py
Bio
Process finished with exit code 0
```

D. باستخدام فهم القاموس، نقوم بإنشاء القاموس d الكود



```
main.py x
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base Direction)
1 d = {i: i+1 for i in range(11)}
2 print(d)
3
```

الخرج :



```
Run: main x
C:\Users\youse\PycharmProjects\pythonProject1\venv\Scripts\python.exe C:/Users/youse/PycharmProjects/pythonProject1/main.py
{0: 1, 1: 2, 2: 3, 3: 4, 4: 5, 5: 6, 6: 7, 7: 8, 8: 9, 9: 10, 10: 11}
Process finished with exit code 0
```

## **Question 2: Convert from Binary to Decimal**

Write a Python program that **converts a Binary number into its equivalent Decimal number**. The program should start reading the binary number from the user. Then the decimal equivalent number must be calculated. Finally, the program must display the equivalent decimal number on the screen. **Tips:** solve input errors.

**The answer of the question 2 is :**

## الكود

```
main.py x
Visual layout of bidirectional text can depend on the base direction (View | Bidi Text Base Direction)
1 def binary_to_decimal(binary_str):
2     try:
3         binary_num = int(binary_str, 2)
4         return binary_num
5     except ValueError:
6         print("خطأ، يرجى إدخال رقم ثنائي وليس عشري.")
7         return None
8
9 # Get input from the user
10 binary_number = input("قم بإدخال الرقم الثنائي المطلوب تحويله للعشري: ")
11
12 # Convert binary to decimal
13 decimal_number = binary_to_decimal(binary_number)
14
15 if decimal_number is not None:
16     print(f"الرقم العشري الموافق للرقم الثنائي {binary_number} هو {decimal_number}")
17
```

## الخرج :

```
main x
C:\Users\youse\PycharmProjects\pythonProject1\venv\Scripts\python.exe
11 : قم بإدخال الرقم الثنائي المطلوب تحويله للعشري
الرقم العشري الموافق للرقم الثنائي 11 هو 3
Process finished with exit code 0
```

### **Question 3: Working with Files” Quiz Program”**

Type python quiz program that takes a text or json or csv file as input for (20 (Questions, Answers)). It asks the questions and finally computes and prints user results and store user name and result in separate file csv or json file.

**The answer of the question 3 is :**

The main code :

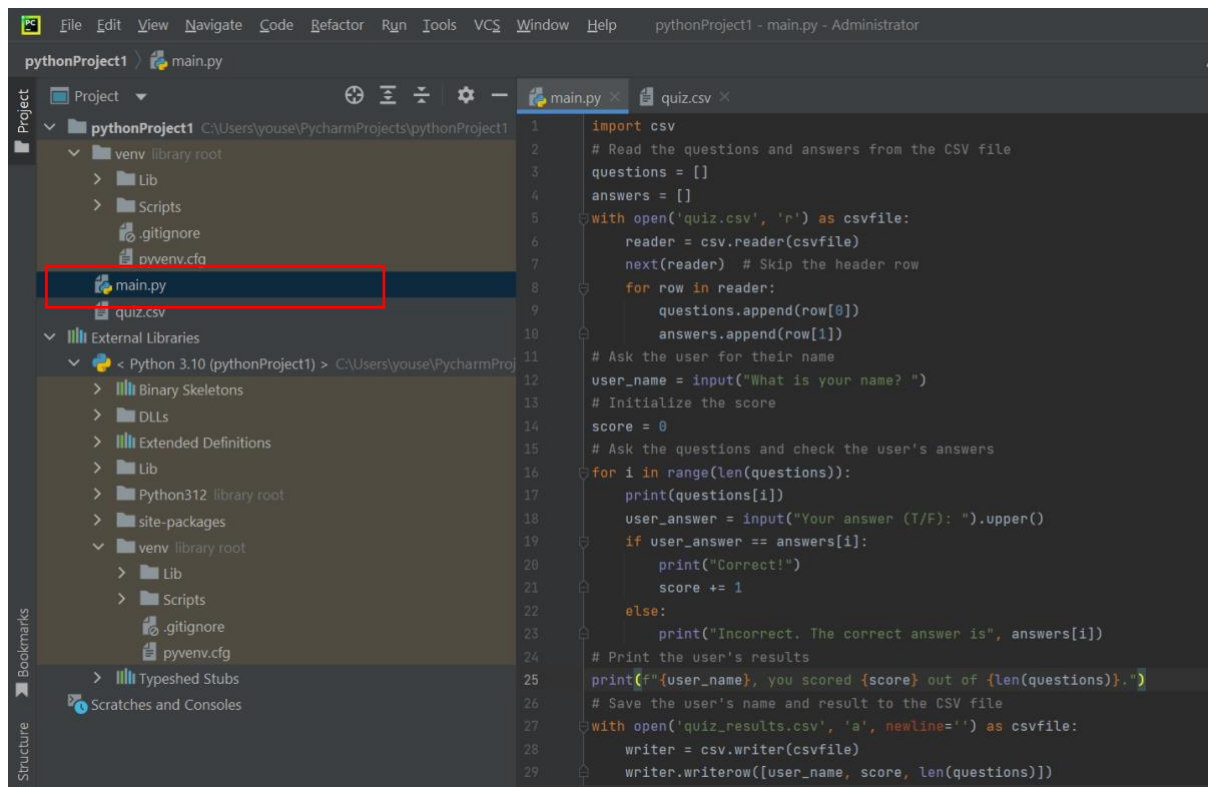
هنا نقوم ب :

1. قراءة ملف المعلومات الذي يحتوي على الأسئلة والأجوبة. واستخدام Python ملف CSV وتخزين المحتوى في بنية بيانات مناسبة مثل قاموس أو قائمة.

2. عرض الأسئلة والحصول على الأجوبة: بعد قراءة المعلومات من الملف، نعرض الأسئلة على المستخدم واحدًا تلو الآخر، أخذ إجابات المستخدم.

3. حساب النتيجة: بعد عرض جميع الأسئلة، عليك حساب النتيجة النهائية للمستخدم من خلال مقارنة إجاباته بالإجابات الصحيحة المخزنة في الملف.

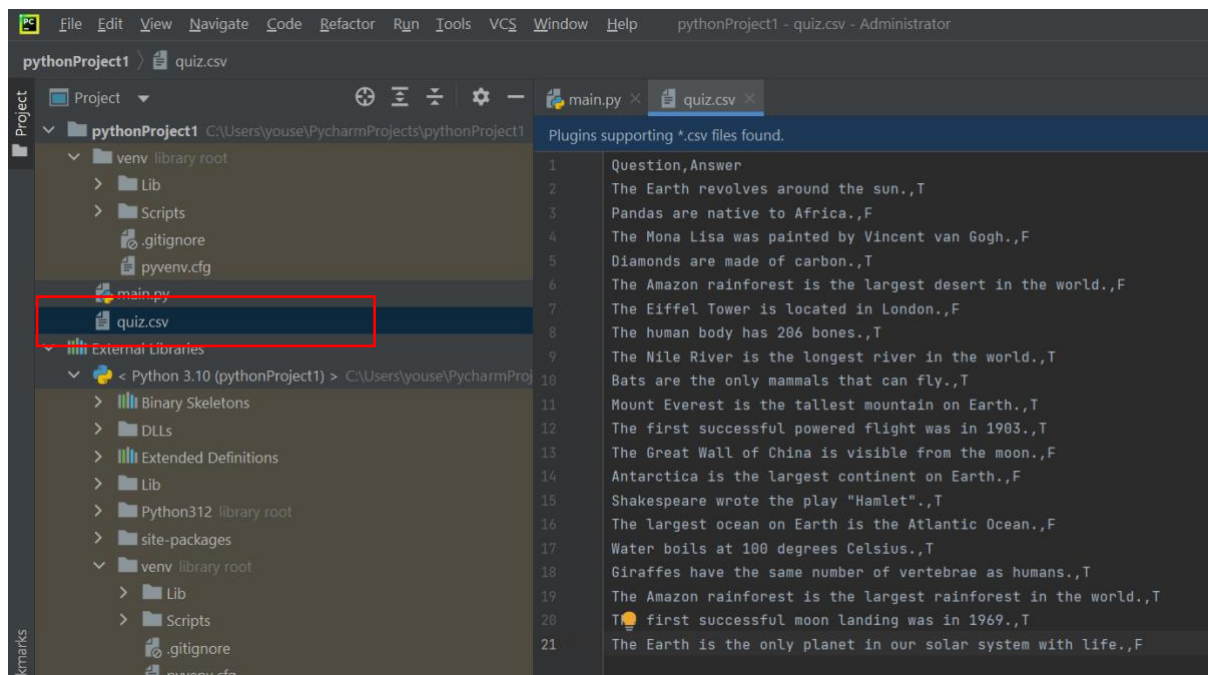
4. حفظ نتائج المستخدم ونتيجته في ملف آخر بتنسيق CSV



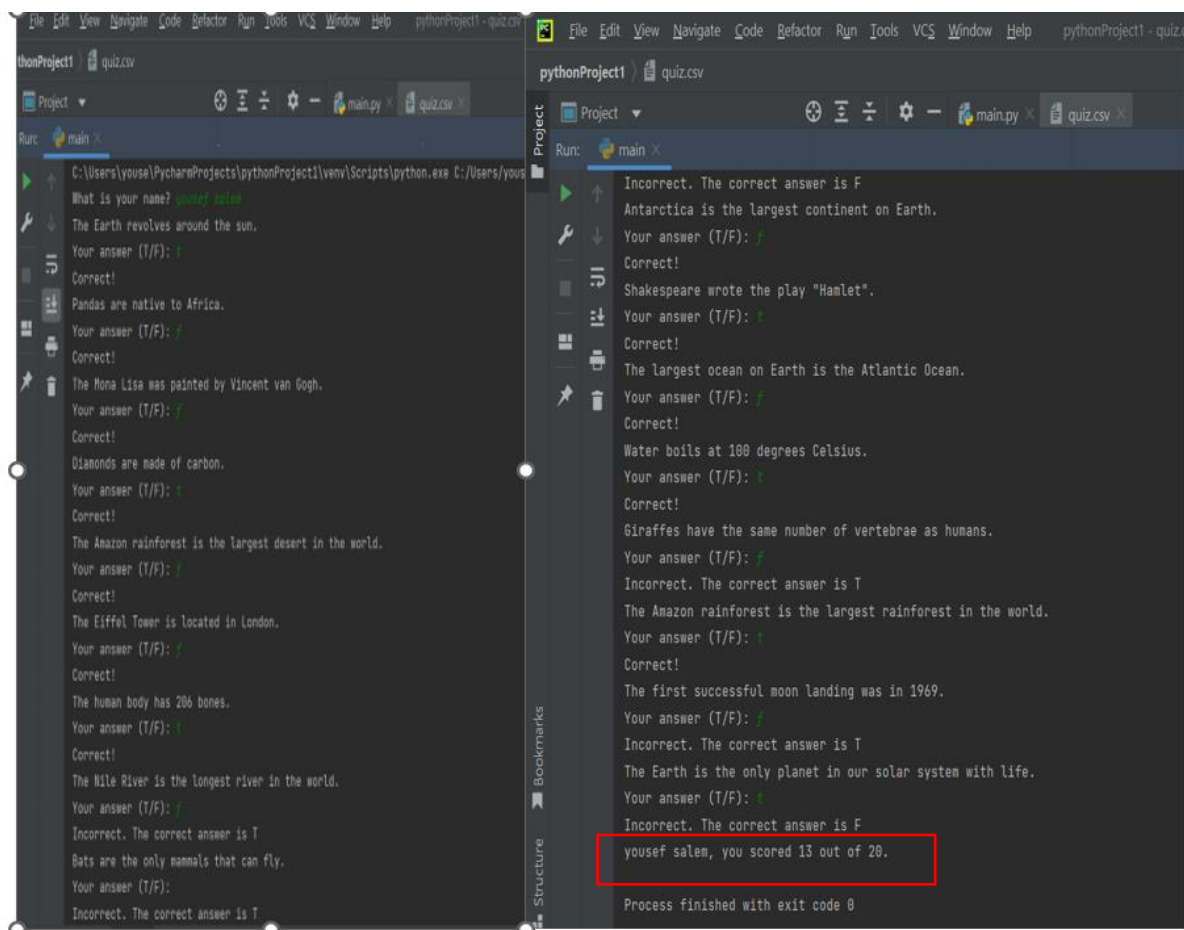
The screenshot shows the PyCharm IDE interface. On the left, the 'Project' view displays the file structure of 'pythonProject1'. The 'main.py' file is highlighted with a red rectangle. The 'main.py' file is open in the editor, showing the following Python code:

```
1 import csv
2 # Read the questions and answers from the CSV file
3 questions = []
4 answers = []
5 with open('quiz.csv', 'r') as csvfile:
6     reader = csv.reader(csvfile)
7     next(reader) # Skip the header row
8     for row in reader:
9         questions.append(row[0])
10        answers.append(row[1])
11 # Ask the user for their name
12 user_name = input("What is your name? ")
13 # Initialize the score
14 score = 0
15 # Ask the questions and check the user's answers
16 for i in range(len(questions)):
17     print(questions[i])
18     user_answer = input("Your answer (T/F): ").upper()
19     if user_answer == answers[i]:
20         print("Correct!")
21         score += 1
22     else:
23         print("Incorrect. The correct answer is", answers[i])
24 # Print the user's results
25 print(f"{user_name}, you scored {score} out of {len(questions)}.")
26 # Save the user's name and result to the CSV file
27 with open('quiz_results.csv', 'a', newline='') as csvfile:
28     writer = csv.writer(csvfile)
29     writer.writerow([user_name, score, len(questions)])
```

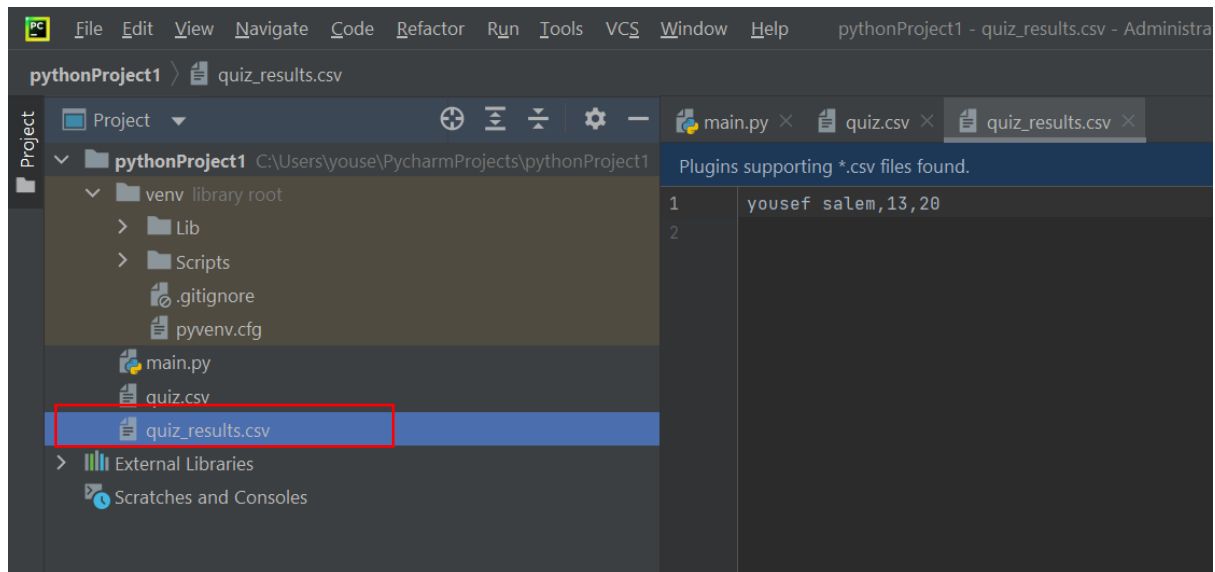
The quiz file in the same directory :



The question and my answers :



The quiz\_results.csv file :



#### **Question 4: Object-Oriented Programming - Bank Class**

Define a class BankAccount with the following attributes and methods:

**Attributes:** account\_number (string), account\_holder (string), balance (float, initialized to 0.0)

**Methods:** deposit(amount), withdraw(amount), get\_balance()

- Create an instance of BankAccount, - Perform a deposit of \$1000, - Perform a withdrawal of \$500.
- Print the current balance after each operation.
- Define a subclass SavingsAccount that inherits from BankAccount and adds **interest\_rate** Attribute and **apply\_interest()** method that Applies interest to the balance based on the interest rate.

And **Override print()** method to print the current balance and rate.

- Create an instance of SavingsAccount, and call apply\_interest() and print() functions.

**The answer of the question 4 is :**

**الكود :**

1. تعريف فئة BankAccount:

- init: يقوم بتهيئة الخصائص account\_number، account\_holder و balance ( إلى 0.0).

- deposit: تضيف مبلغ معين إلى رصيد الحساب وتطبع رسالة توضح ذلك.



- withdraw: تسحب مبلغ معين من رصيد الحساب إذا كان الرصيد كافٍ، وتطبع رسالة توضح ذلك. إذا كان الرصيد غير كافٍ، تطبع رسالة تفيد بعدم كفاية الرصيد.

- get\_balance: تعيد رصيد الحساب الحالي.

2. تعريف فئة SavingsAccount التي ترث من BankAccount:

- init: يقوم بتهيئة الخصائص الموروثة من BankAccount وإضافة خاصية interest\_rate.

- apply\_interest: تطبق الفائدة على رصيد الحساب وتطبع رسالة توضح ذلك.

- str: تقوم بتوفير تمثيل نصي لكائن SavingsAccount يشمل رقم الحساب، اسم صاحب الحساب، الرصيد الحالي ومعدل الفائدة.

```
self.account_holder = account_holder
self.balance = 0.0

def deposit(self, amount):
    self.balance += amount
    print(f"Deposited ${amount:.2f} into account {self.account_number}. New balance: ${self.balance:.2f}")

def withdraw(self, amount):
    if self.balance >= amount:
        self.balance -= amount
        print(f"Withdrew ${amount:.2f} from account {self.account_number}. New balance: ${self.balance:.2f}")
    else:
        print(f"Insufficient funds in account {self.account_number}. Current balance: ${self.balance:.2f}")

def get_balance(self):
    return self.balance

class SavingsAccount(BankAccount):
    def __init__(self, account_number, account_holder, interest_rate):
        super().__init__(account_number, account_holder)
        self.interest_rate = interest_rate

    def apply_interest(self):
        interest_earned = self.balance * self.interest_rate
        self.balance += interest_earned
        print(
            f"Applied {self.interest_rate * 100:.2f}% interest to account {self.account_number}. New balance: ${self.balance:.2f}")

    def __str__(self):
        return f"Account Number: {self.account_number}, Account Holder: {self.account_holder}, Balance: ${self.balance:.2f}, Interest Rate: {self.interest_rate * 100:.2f}%"

bank_account = BankAccount("937266144", "yousefsalem")
bank_account.deposit(1000)
bank_account.withdraw(500)
print(f"Final balance: ${bank_account.get_balance():.2f}")
savings_account = SavingsAccount("992577513", "mohammedsalem", 0.05)
```

```
print(f"Final balance: ${bank_account.get_balance():.2f}")
savings_account = SavingsAccount("992577513", "mohammedsalem", 0.05)
savings_account.apply_interest()
print(savings_account)
```

الخرج :

```
main x
C:\Users\youse\PycharmProjects\pythonProject2\venv\Scripts\python.exe C:/Users/youse/PycharmProje
Deposited $1000.00 into account 937266144. New balance: $1000.00
Withdrew $500.00 from account 937266144. New balance: $500.00
Final balance: $500.00
Applied 5.00% interest to account 992577513. New balance: $0.00
Account Number: 992577513, Account Holder: mohammdsa1em, Balance: $0.00, Interest Rate: 5.00%

Process finished with exit code 0
```

1. باستخدام رقم الحساب "123456789" واسم صاحب BankAccount من فئة bank\_account إنشاء كائن "John Doe" الحساب.
2. تنفيذ عملية إيداع بمبلغ 1000 دولار وطباعة رسالة توضح ذلك والرصيد الجديد.
3. تنفيذ عملية سحب بمبلغ 500 دولار وطباعة رسالة توضح ذلك والرصيد الجديد.
4. طباعة الرصيد النهائي للحساب.
5. باستخدام رقم الحساب "987654321"، اسم SavingsAccount من فئة savings\_account إنشاء كائن "Jane Smith" صاحب الحساب ومعدل الفائدة 0.05.
6. وطباعة رسالة توضح تطبيق الفائدة والرصيد الجديد apply\_interest() تنفيذ طريقة.
7. str() باستخدام طريقة savings\_account طباعة تمثيل نصي لكائن.