



جامعة تشرين
هندسة الاتصالات
السنة الخامسة

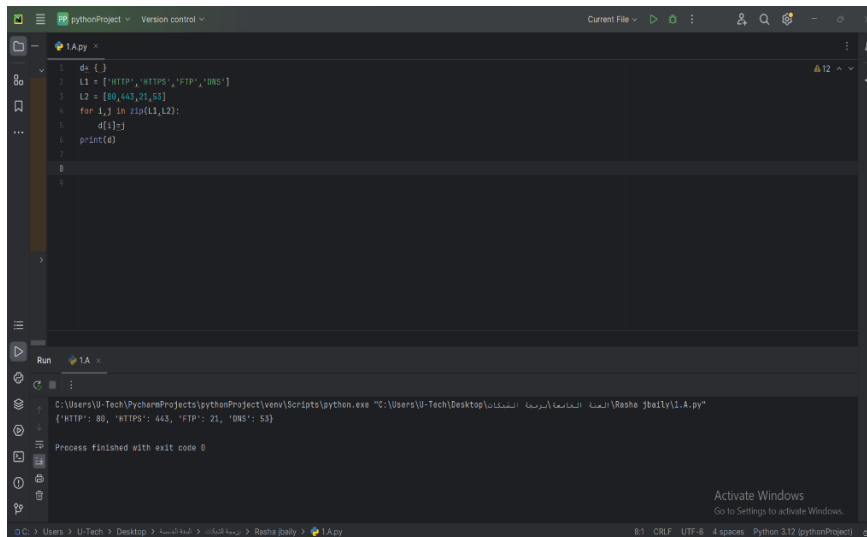
وظيفة برمجة الشبكات

تقديم الطالبة:

رشا شادي جبيلي

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 }



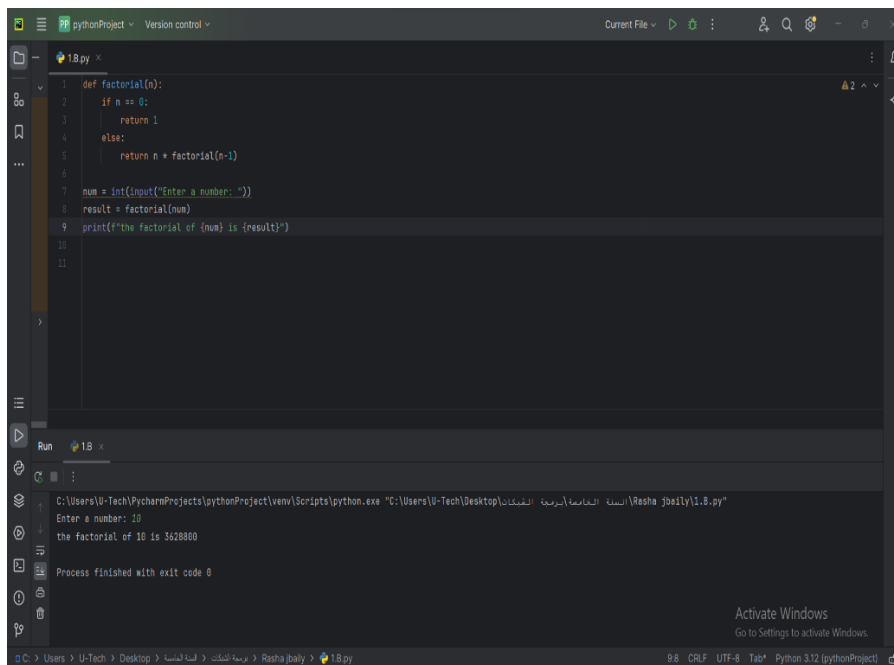
```
1 d = {}
2 L1 = ['HTTP','HTTPS','FTP','DNS']
3 L2 = [80,443,21,53]
4 for i,j in zip(L1,L2):
5     d[i]=j
6 print(d)
```

Run 1A

```
C:\Users\U-Tech\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\U-Tech\Desktop\المسابقة\المسابقة\المسابقة\Resha jbalily\1.4.py"
{'HTTP': 80, 'HTTPS': 443, 'FTP': 21, 'DNS': 53}
```

Process finished with exit code 0

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



```
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}")
```

Run 1B

```
C:\Users\U-Tech\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\U-Tech\Desktop\المسابقة\المسابقة\المسابقة\Resha jbalily\1.8.py"
Enter a number: 10
the factorial of 10 is 3628800
```

Process finished with exit code 0

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.

The screenshot shows a Windows IDE with a Python project. The code in the editor is as follows:

```
1 subjects = ['Network', 'Bio', 'Programming', 'Physics', 'Music']
2 i = 0
3 for i in range(len(subjects)):
4     if subjects[i].startswith('B'):
5         print(subjects[i])
6
7
8
```

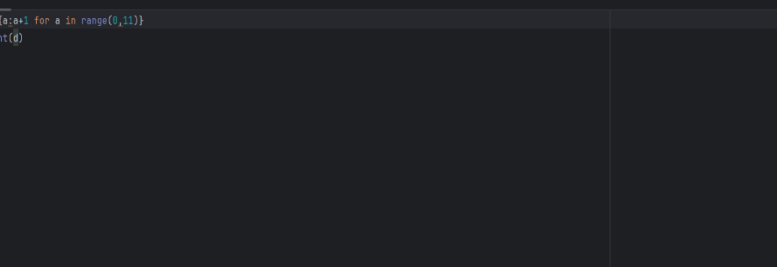
The Run window shows the execution path and the output:

```
Run
C:\Users\U-Tech\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\U-Tech\Desktop\المادة العلمية\المادة العلمية\Rasha_jbailly\1.C.py"
Bio
Process finished with exit code 0
```

The status bar at the bottom indicates the file path and the Python interpreter used:

```
D:\Users > U-Tech > Desktop > المادة العلمية > المادة العلمية > Rasha_jbailly > 1.C.py
R1 CRF UTF-8 4 spaces Python 3.12 (pythonProject)
```

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 screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations, running, and debugging. The main editor window displays a Python script named `1D.py` with the following code:

```
1 d= {a:a+1 for a in range(0,11)}
2 print(d)
3
4
5
```

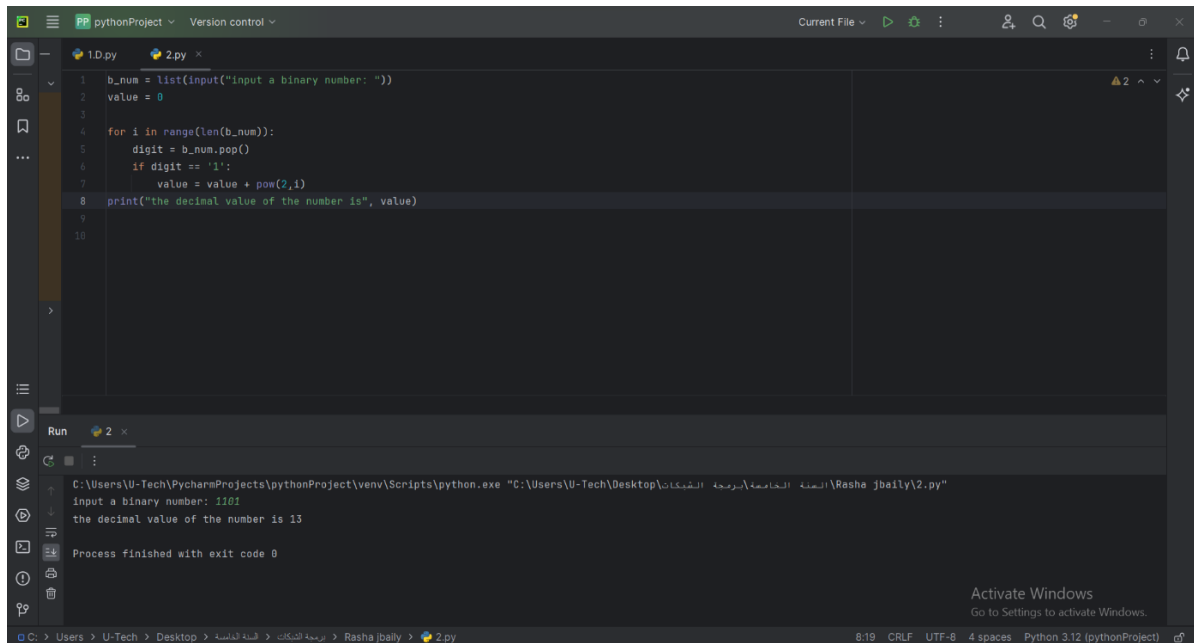
The bottom pane is split into two sections. The top section, labeled "Run", shows the command executed: `C:\Users\U-Tech\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\U-Tech\Desktop\المهمة الخامسة\المهمة\1D.py"`. The output below the command is: `{0: 1, 1: 2, 2: 3, 3: 4, 4: 5, 5: 6, 6: 7, 7: 8, 8: 9, 9: 10, 10: 11}`. The bottom section of the Run pane states: "Process finished with exit code 0".

In the bottom right corner, there is a watermark that says "Activate Windows Go to Settings to activate Windows."

Question2: 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.



```
1 b_num = list(input("input a binary number: "))
2 value = 0
3
4 for i in range(len(b_num)):
5     digit = b_num.pop()
6     if digit == '1':
7         value = value + pow(2,i)
8 print("the decimal value of the number is", value)
9
10
```

Run

```
C:\Users\U-Tech\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\U-Tech\Desktop\المهمة الخامسة\المهمة الخامسة\Rasha jBaily\2.py"
input a binary number: 1101
the decimal value of the number is 13
Process finished with exit code 0
```

Question 3: Working with Files” Quiz Program”

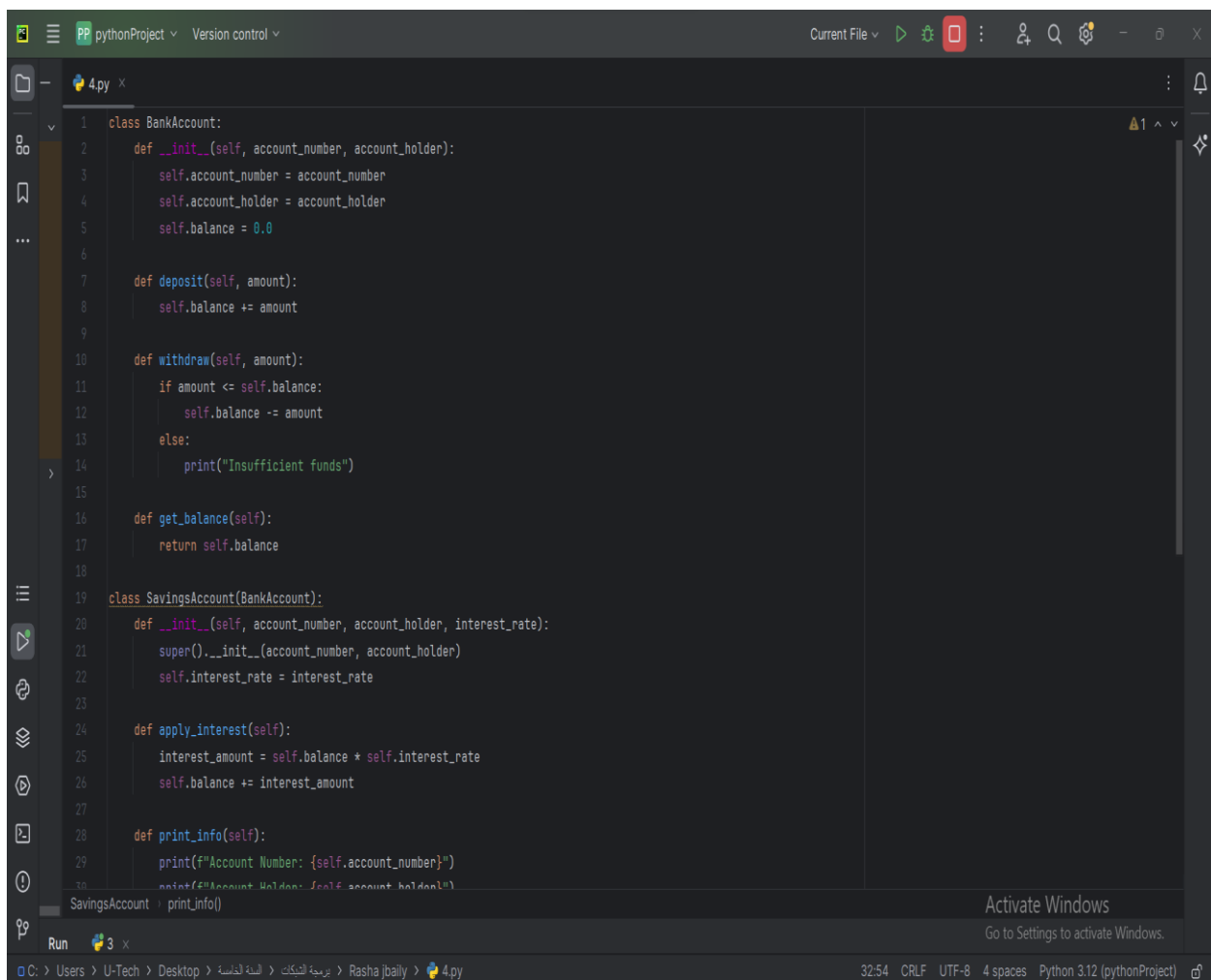
Type python quiz program that takes a text or json or csv file as input for (20 (Questions, Answers)). It asks the questions and finally computes and prints user results and store user name and result in separate file csv or json file.

```
pythonProject Version control
Current File
3.py
1 import json
2 questions = {}
3 #define a variable for the score
4 scores = 0
5 #define the question number
6 number=1
7 #loading question to the program
8 f = open("questions.txt","r")
9 questions = json.load(f)
10 f.close()
11 print("python quiz program")
12 print("Enter t for True or f for False")
13 name = input("Enter your full name: ")
14 #display the questions
15 for ques in questions.keys():
16     #displaying the question
17     print("Question",number," : ", ques)
18     ans = input("The answer is ")
19     #testing the result
20     if ans.upper() == questions[ques].upper():
21         scores = scores + 1
22         print("Correct ")
23     else:
24         print("Wrong")
25     number = number + 1
26 #write the name and the score in a separate file
27 result={name:scores}
28 m = open("score.txt","w")
29 result = json.dump(result,m)
30 m.close()
Run 3
Activate Windows
Go to Settings to activate Windows.
C:\Users> U-Tech > Desktop > البرمجة الشبكية > Rasha Jbaily > 3.py 10:10 CRLF UTF-8 4 spaces Python 3.12 (pythonProject)
```

```
pythonProject Version control
Current File
Run 3
Enter t for True or f for False
Enter your full name: rasha jbaily
Question 1 : 10.0.0.5 is a private ip address.
The answer is t
Correct
Question 2 : 153.16.2.8 is a private ip address.
The answer is f
Correct
Question 3 : ARP refers to Address Resolution Protocol.
The answer is t
Correct
Question 4 : TCP is a network layer protocol.
The answer is f
Correct
Question 5 : IPv4 is a 128-bit address.
The answer is f
Correct
Question 6 : IPv6 is a 128-bit address.
The answer is t
Correct
Question 7 : SDN refers to Software Defined Network.
The answer is t
Correct
Question 8 : UDP is a Transport Layer protocol.
The answer is t
Correct
Question 9 : 224.0.0.9 is a multicast address.
The answer is t
Correct
Activate Windows
Go to Settings to activate Windows.
C:\Users> U-Tech > Desktop > البرمجة الشبكية > Rasha Jbaily > 3.py 10:10 CRLF UTF-8 4 spaces Python 3.12 (pythonProject)
```

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.



```
1 class BankAccount:
2     def __init__(self, account_number, account_holder):
3         self.account_number = account_number
4         self.account_holder = account_holder
5         self.balance = 0.0
6
7     def deposit(self, amount):
8         self.balance += amount
9
10    def withdraw(self, amount):
11        if amount <= self.balance:
12            self.balance -= amount
13        else:
14            print("Insufficient funds")
15
16    def get_balance(self):
17        return self.balance
18
19    class SavingsAccount(BankAccount):
20        def __init__(self, account_number, account_holder, interest_rate):
21            super().__init__(account_number, account_holder)
22            self.interest_rate = interest_rate
23
24        def apply_interest(self):
25            interest_amount = self.balance * self.interest_rate
26            self.balance += interest_amount
27
28        def print_info(self):
29            print(f"Account Number: {self.account_number}")
30            print(f"Account Holder: {self.account_holder}")
31            print_info()
32
33    SavingsAccount().print_info()
```

Activate Windows
Go to Settings to activate Windows.

Run 3 x

C:\> Users > U-Tech > Desktop > البرمجة الشبكات > Rasha\bailey > 4.py 32:54 CRLF UTF-8 4 spaces Python 3.12 (pythonProject)

```
pythonProject Version control Current File
4.py
24 def apply_interest(self):
25     interest_amount = self.balance * self.interest_rate
26     self.balance += interest_amount
27
28 def print_info(self):
29     print(f"Account Number: {self.account_number}")
30     print(f"Account Holder: {self.account_holder}")
31     print(f"Current Balance: {self.balance}")
32     print(f"Interest Rate: {self.interest_rate}")
33
34 # Create an instance of BankAccount
35
36
37 bank_account = BankAccount(account_number="123456789", account_holder="Alice")
38 bank_account.deposit(1000)
39 print("Balance after deposit: $", bank_account.get_balance())
40 bank_account.withdraw(500)
41 print("Balance after withdrawal: $", bank_account.get_balance())
42
43 # Create an instance of SavingsAccount
44 savings_account = SavingsAccount(account_number="987654321", account_holder="Bob", interest_rate=0.05)
45 savings_account.deposit(2000)
46 savings_account.apply_interest()
47 savings_account.print_info()
48
SavingsAccount print_info()
Activate Windows
Go to Settings to activate Windows.
Run 3 x
C:\Users\U-Tech\Desktop> Rasha jbalily 4.py 32:54 CRLF UTF-8 4 spaces Python 3.12 (pythonProject)
```

```
pythonProject Version control Current File
4.py
41 print("Balance after withdrawal: $", bank_account.get_balance())
42
43 # Create an instance of SavingsAccount
44 savings_account = SavingsAccount(account_number="987654321", account_holder="Bob", interest_rate=0.05)
45 savings_account.deposit(2000)
46 savings_account.apply_interest()
47 savings_account.print_info()
48
Run 3 x 4 x
C:\Users\U-Tech\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\U-Tech\Desktop\برمجة الشبكات\Rasha jbalily\4.py"
Balance after deposit: $ 1000.0
Balance after withdrawal: $ 500.0
Account Number: 987654321
Account Holder: Bob
Current Balance: 2100.0
Interest Rate: 0.05
Process finished with exit code 0
Activate Windows
Go to Settings to activate Windows.
C:\Users\U-Tech\Desktop> Rasha jbalily 4.py 47:29 CRLF UTF-8 4 spaces Python 3.12 (pythonProject)
```