Syrian Arab Republic

Latakia Tishreen University

Department of Communication and Electrical Engineering

5^{th}, Networking Programming: homework

No 1

الجمهورية العربية السورية

اللاذقية _ جامعة تشرين

كلية الهندسة الكهربائية والميكانيكية

قسم هندسة الاتصالات والالكترونيات

السنة الخامسة: برمجة شبكات: وظيفة

رقم 1

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Quesion1: python Basics?

A- If you have two lists,

L1= [‘HTTP’,’HTTPS’,’FTP’,’DNS’]

L2= [80, 443, 21, 53], convert it generate this dictionary

d= {‘HTTP’:80,’HTTPS’:443, ’FTP’:21, ’DNS’:53}

الشرح:

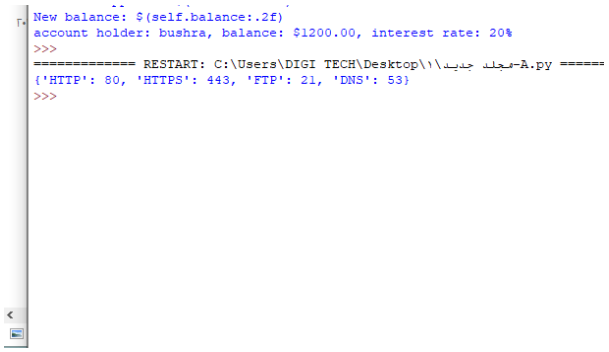
قمنا باستخدام التابع zip جمعنا L1 في L2 (ازواج) ، وباستخدام dict() تم تحويل الازواج الى قاموس وقمنا بطباعه القاموس لنرى النتيجة

1-A.py - C:\Users\DIGI TECH\Desktop\1\مجلد جديد-A.py (3.9.7)

File Edit Format Run Options Window Help

```
d = {}
L1 = ['HTTP','HTTPS','FTP','DNS']
L2 = [80,443,21,53]
d = dict(zip(L1,L2))
print(d)
```

النتيجة:



B- write a python program that calculates the factorial of a given number entered by user

الشرح:

قمنا بتعريف تابع فرعي لحساب العاملي(المضروب) باستخدام input تم الطلب من المستخدم ادخال عدد لحساب مضروبه وطباعة النتيجة.

```
File  Edit  Format  Run  Options  Window  Help
def factorial(x):
    f = 1
    if x == 0:
        return 1
    else:
        while x > 0:
            f = f*x
            x -= 1
    return f
while True:
    number = int(input("input a number to calculate its factorial:"))
    print("the factorial of",number," is", factorial(number))
    y = ("do you want to continue, yes or no").upper()
    if y =="NO":
        break
```

النتيجة:

```
>>>
============= RESTART: C:\Users\DIGI TECH\Desktop\١\مجلد جديد\B-مجلد جديد.py
input a number to calculate its factorial:5
the factorial of 5  is 120
input a number to calculate its factorial:10
the factorial of 10  is 3628800
input a number to calculate its factorial:
```

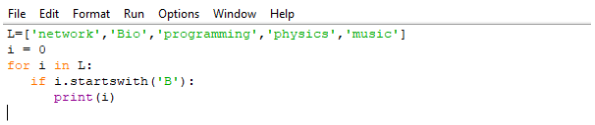
C- L= [‘network’,’Bio’,’programming’,’physics’,’music’]

in this exercise you will implement a python program that reads the items of the pervious list and identifies the items that starts with ’B’ letter then print it on screen.

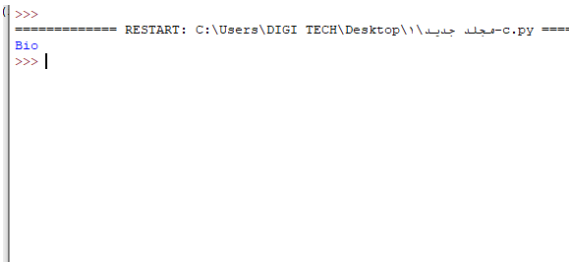
Tips: using loop,’len ()’,startswith() methods

الشرح:

باستخدام startswith(‘B’) قمنا بالبحث عن العنصر الذي يبدا بحرف ”B“ ويتضمن فحص العناصر باستخدام len() لضمان ان العنصر ليس سلسله فارغة قبل طباعته.



النتيجة:



D- Using dictionary comprehension. Generate this dictionary

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

الشرح:

باستخدام dictionarycomprehension تم توليد قاموس وطباعته (المفتاح i والقيمة i+1)

```
d = {x:x+1 for x in range(1,11)}
print(d)
```

النتيجة:

```
>>>
========== RESTART: E:/b/1-d.py ==========
{1: 2, 2: 3, 3: 4, 4: 5, 5: 6, 6: 7, 7: 8, 8: 9, 9: 10, 10: 11}
>>>
```

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

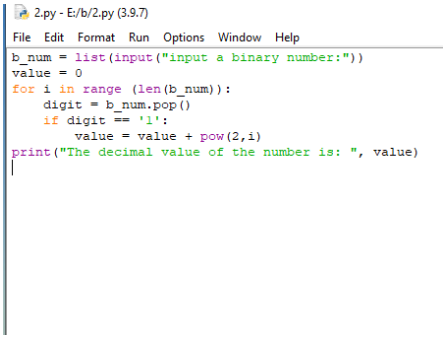
الشرح:

قمنا بالخطوات الآتية:

- يطلب من المستخدم إدخال رقم ثنائي.
- تحويل الرقم الثنائي الى عشري باستخدام الصيغة:

value= value + pow(2,i)

- طباعة الرقم العشري



النتيجة:

```
============================== RESTART: E:/b/2.py ==================
input a binary number:100
The decimal value of the number is:  4
>>>
```

Question 3: working with files “Quiz program”

Type python quiz program that takes a text or json or csv file as input (20(Questions, Answers)).

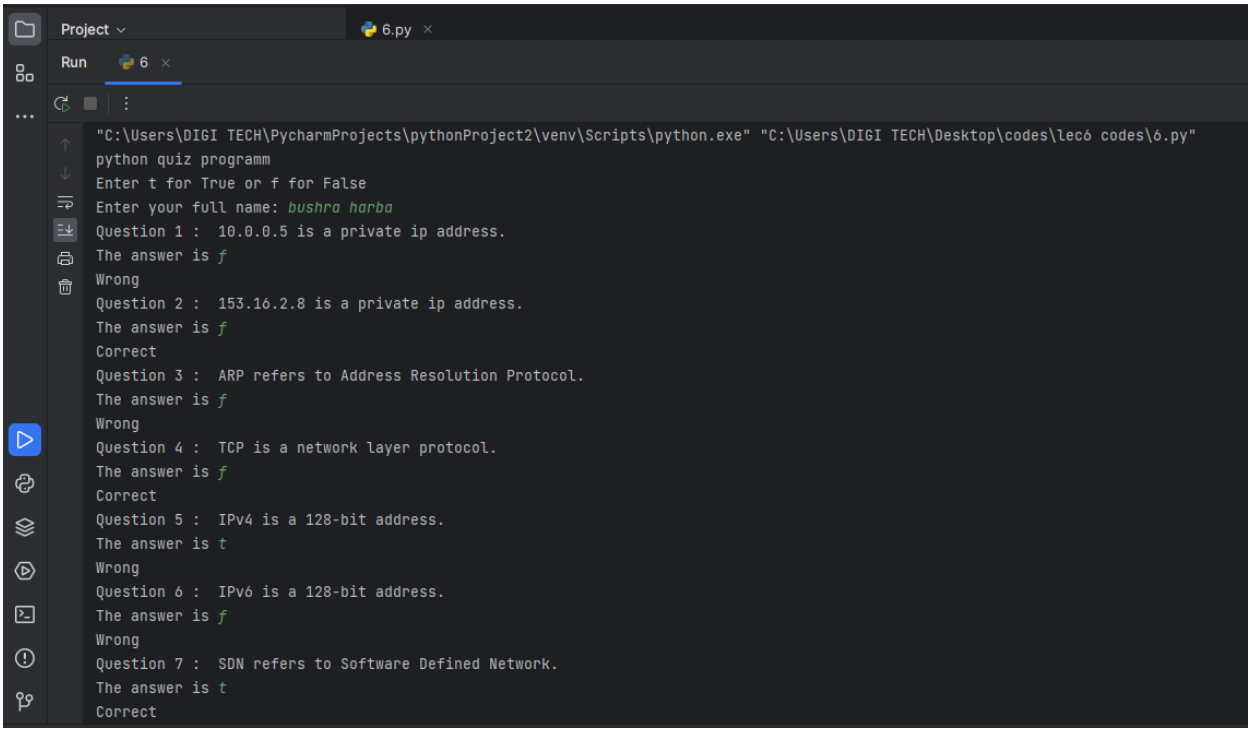
It takes the questions and finally computes and prints user results and store user name and result in separate file csv or json file

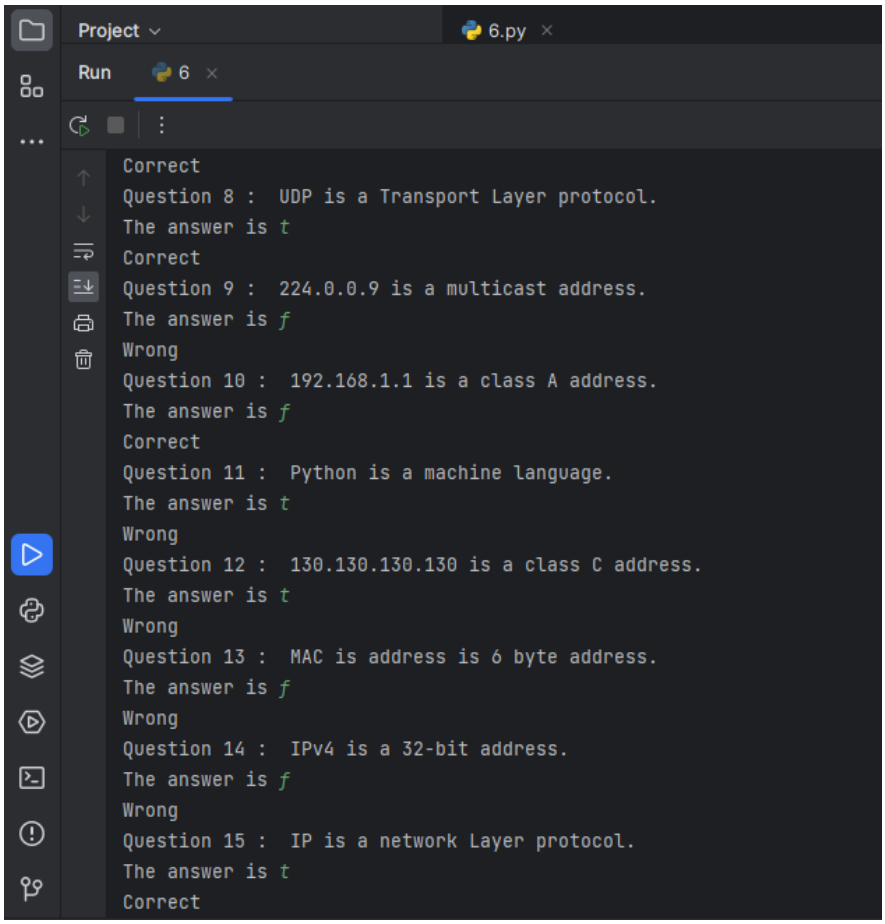
الشرح:

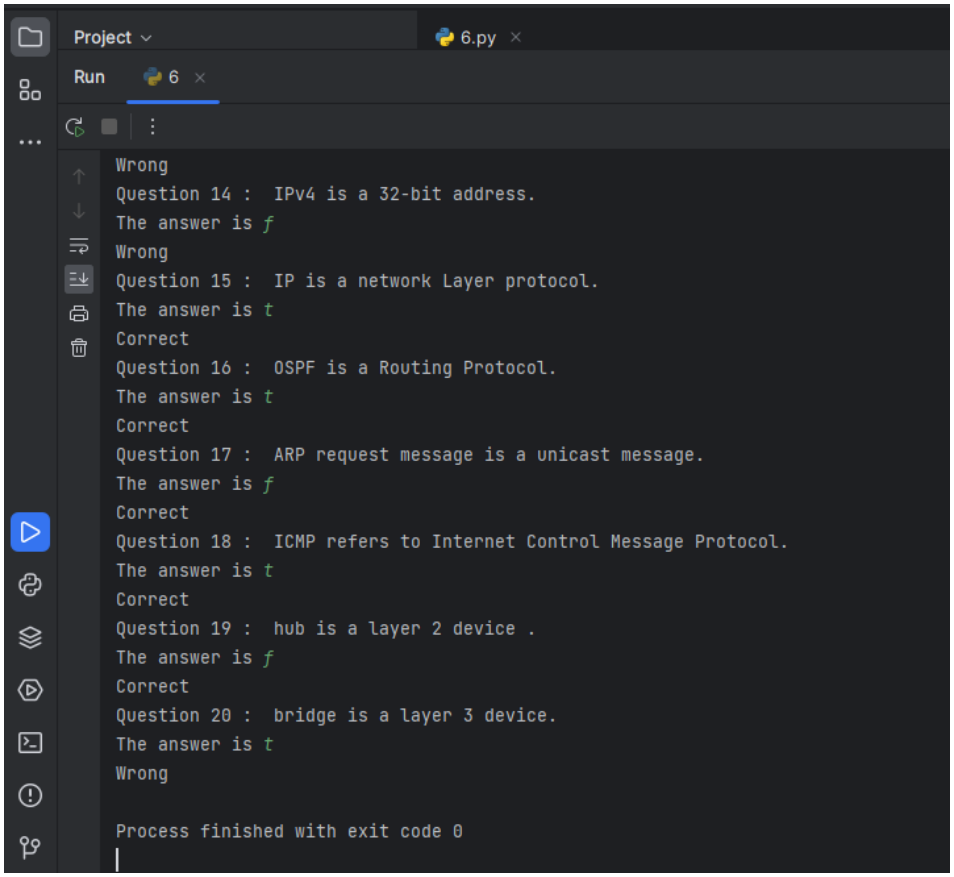
- قمنا بالخطوات الآتية:
- إدراج مكتبة json
- تعريف متغير للنتيجة
- تحميل الأسئلة للبرامج
- عرض الأسئلة
- فحص الأجوبة
- كتابة الاسم والنتيجة في ملف منفصل

6.py

```python
import json
questions = { }
scores = 0
number=1
f = open("questions.txt",'r')
questions = json.load(f)
f.close()
print("python quiz programm")
print("Enter t for True or f for False")
name = input("Enter your full name: ")
for ques in questions.keys():
    print("Question",number,": ", ques)
    ans = input("The answer is ")
    if ans.upper() == questions[ques].upper():
        scores = scores + 1
        print("Correct ")
    else:
        print ("Wrong")
    number = number + 1
result={name:scores}
m = open("score.txt",'w')
result = json.dump(result,m)
m.close()
```


Project
6.py
Run
6
"C:\Users\DIGI TECH\PycharmProjects\pythonProject2\venv\Scripts\python.exe" "C:\Users\DIGI TECH\Desktop\codes\lecó codes\ó.py"
python quiz programm
Enter t for True or f for False
Enter your full name: bushra harba
Question 1 : 10.0.0.5 is a private ip address.
The answer is f
Wrong
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 f
Wrong
Question 4 : TCP is a network layer protocol.
The answer is f
Correct
Question 5 : IPv4 is a 128-bit address.
The answer is t
Wrong
Question ó : IPvó is a 128-bit address.
The answer is f
Wrong
Question 7 : SDN refers to Software Defined Network.
The answer is t
Correct


Project
6.py
Run
6
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 f
Wrong
Question 10 : 192.168.1.1 is a class A address.
The answer is f
Correct
Question 11 : Python is a machine language.
The answer is t
Wrong
Question 12 : 130.130.130.130 is a class C address.
The answer is t
Wrong
Question 13 : MAC is address is ó byte address.
The answer is f
Wrong
Question 14 : IPv4 is a 32-bit address.
The answer is f
Wrong
Question 15 : IP is a network Layer protocol.
The answer is t
Correct



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()

Creat an instance of BankAccount, perform a withdrawal of $500.

Print the current balance after each operation.

Define a subclass SavingAccount 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.

Creat an instance of SavingAccount and call apply_interest() and print() functions.

الشرح:

قمنا بتعريف صف BankAccount يمثل حساب بنكي يحتوي خصائص مثل رقم الحساب (account_number) واسم صاحب الحساب (account_holder) والرصيد(balnce) الذي يتم تهيئته بصفر.

كما يتضمن الصف التوابع التالية:

- Deposiy(amount) لايداع مبلغ في الحساب
- Withdraw(amount) لسحب مبلغ من الحساب مع التحقق من أن الرصيد يكفي لعملية السحب
- Get_balance()للحصول على الرصيد الحالي
- __str__() لطباعة معلومات الحساب بشكل منسق

قمنا بإنشاء غرض من الصف bankaacount وأجرينا عمليات سحب وايداع وطباعة للرصيد بعد كل عملية.

نقوم بإنشاء صف Savingsaccount يرث الصف bankaccount يمتلك خاصية هي معدل الفائدة(interest_rate) بالإضافة الى تابع apply_interest() يقوم بتطبيق الفائدة على الرصيد. كما قمنا بإعادة تعريف التابع __str__() في الصف الابن لطباعة معلومات الحساب مع معدل الفائدة.

قمنا بإنشاء غرض من الصفsavingsaccount وأجرينا عملية إيداع، تطبيق الفائدة، طباعة الرصيد مع معدل الفائدة.

4.py - C:\Users\DIGI TECH\Desktop\4\مجلد جديد.py (3.9.7)

File Edit Format Run Options Window Help

```
class BankAccount:
    def __init__(self, account_number, account_holder):
        self.account_number = account_number
        self.account_holder = account_holder
        self.balance = 0.0
    def deposit(self, amount):
        self.balance += amount
        print("Deposited: {0:.2f}$".format(amount))
        print("Current balance: {0:.2f}$".format(self.balance))
    def withdrew(self, amount):
        if amount > self.balance:
            print("insufficient balance!")
        else:
            self.balance -= amount
            print("Withdrew:{0:.2f} $".format(amount))
            print(f"Current balance:{0:.2f} $".format(self.balance))
    def get_balance(self):
        return self.balance
    def __str__(self):
        return "account holder:" + self.account_holder+ " balance: " +str(self.balance)

class SavingAccount(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 = self.balance * (self.interest_rate / 100)
        self.balance += interest
        print("Interest applied: {0:.2f}$".format(interest))
        print(f"New balance: {0:.2f}$".format(self.balance))
    def __str__(self):
        return f"account holder: {self.account_holder}, balance: ${self.balance:.2f}, interest rate: {self.interest_rate}%"

account = BankAccount("2574", "bushra")
account.deposit(1000)
account.withdrew(500)
print(account)
saving = SavingAccount("2574", "bushra", 20)
saving.deposit(1000)
saving.apply_interest()
print(saving)
```

Ln: 30 Col: 58

النتيجة:

```
========== RESTART: C:\Users\DIGI TECH\Desktop\٤\مجلد جديد.py ==========
Deposited: 1000.00$
Current balance: 1000.00$
Withdrew:500.00 $
Current balance:0.00 $
account holder:bushra balance: 500.0
Deposited: 1000.00$
Current balance: 1000.00$
Interest applied: 200.00$
New balance: 0.00$
account holder: bushra, balance: $1200.00, interest rate: 20%
>>>
```