الجمهورية العربية

السورية

اللاذقية -جامعـــة تشريـــــن

كلية الهندسة الكهربائية والميكانيكية

قسم هندسة الاتصالات والالكترونيات

السنة الخامسة: وظيفة1 برمجة شبكات

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Question 1: Python Basics?

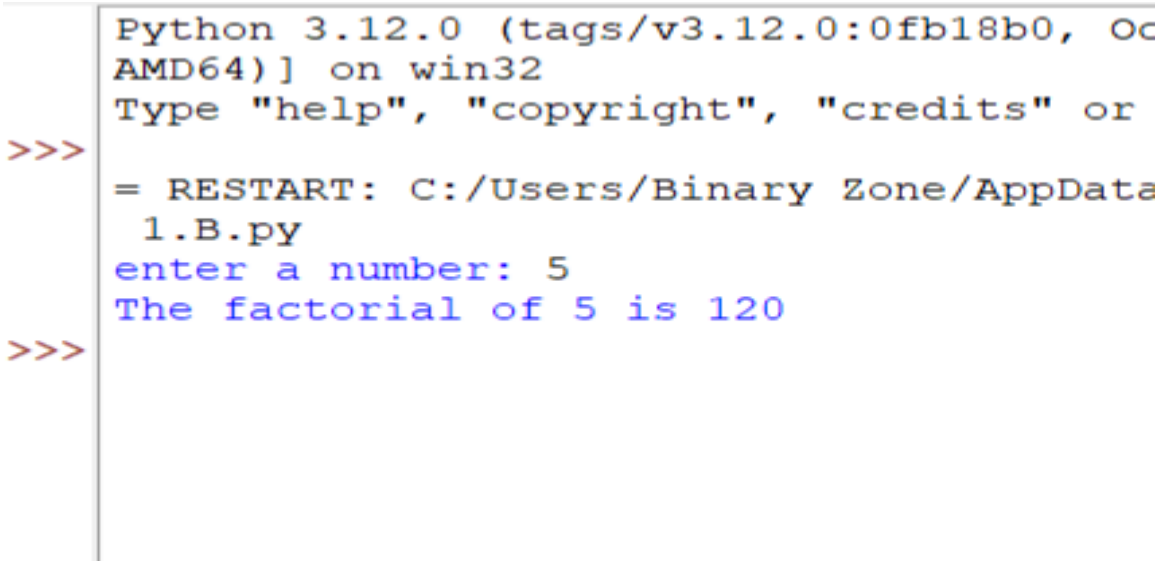
A-If you have two lists, L1=['HTTP','HTTPS','FTP','DNS'] L2=[80,443,21,53], convert it to generate this dictionary d={'HTTP':80,'HTTPS':443,'FTP':21,'DNS':53 }.

```
d= {}
L1 = ["HTTP","HTPPS","FTP","DNS"]
L2 = [80,443,21,53]
for i,j in zip(L1,L2):
    d[i]=j
print(d)
```

```
Python 3.12.0 (tags/v3.12.0:0fb18b0, Oct  2 2023, 13:0
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for
>>>
= RESTART: C:/Users/Binary Zone/AppData/Local/Programs
 1. A.py
{'HTTP': 80, 'HTPPS': 443, 'FTP': 21, 'DNS': 53}
>>>
```

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

```
def factorial(n):
    if n == 0 :
        return 1
    else :
        return n * factorial(n-1)
num = int(input("enter a number: "))
result = factorial(num)
print(f"The factorial of {num} is {result}")
```



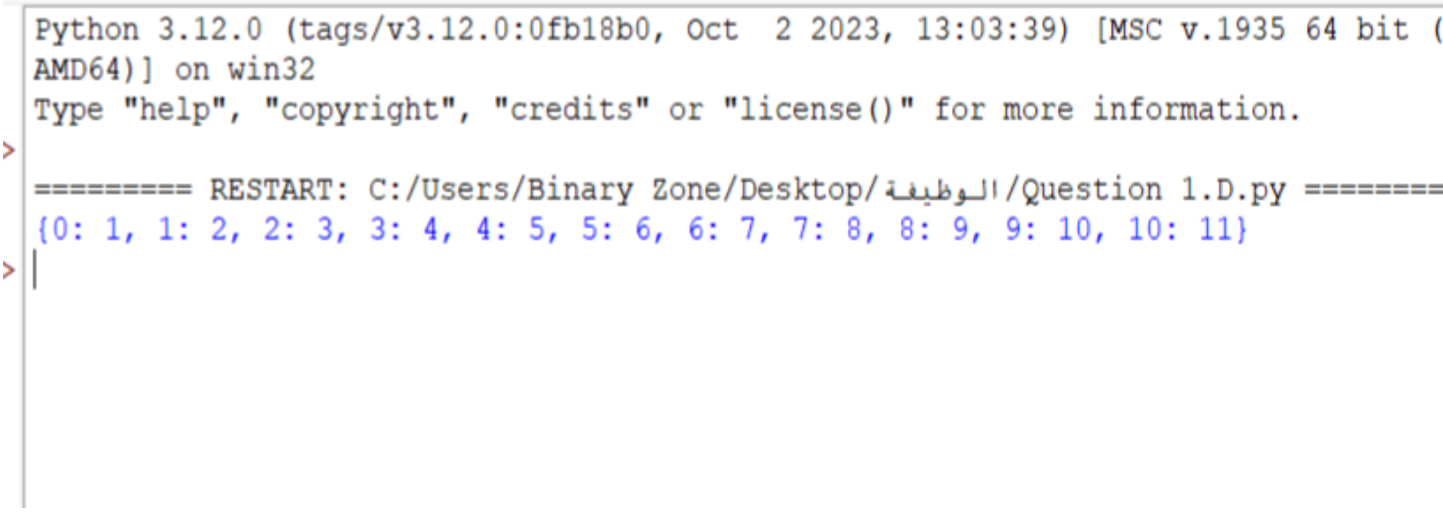
C- L=[‘Network’ , ’Bio’ , ’Programming’, ‘Physics’ , ‘Music’] In this exercise, you will implement a Python program that reads the items of the previous list and identifies the items that starts with ‘B’ letter, then print it on screen.

```
L= ['Network','Bio','Programming','Physics','Music']
i = 0
for i in range(len(L)):
    if L[i].startswith("ph"):
        print(L[i])
```

```
Python 3.12.0 (tags/v3.12
AMD64)] on win32
Type "help", "copyright",
>>>
========== RESTART: C:\Use
Physics
>>>
```

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}.

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



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.

```
b_num = list(input("input a binary number: "))
value = 0
for i in range(len(b_num)) :
    digit = b_num.pop()
    if digit == '1' :
        value = value + pow(2, i)
print("The decimal value of the number is", value)
```

```
Python 3.12.0 (tags/v3.12.0:0fb18b0, Oct  2 2023, 1
MD64)] on win32
Type "help", "copyright", "credits" or "license()"
>
= RESTART: C:/Users/Binary Zone/AppData/Local/Progr
2.py
input a binary number: 0101
The decimal value of the number is 5
>
>
```

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.

```
import json
questions = { }
#define a variable for the score
scores = 0
#define the question number
number=1
#loading question to the program
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: ")
#display the questions
for ques in questions.keys():
    #displaying the question
    print("Question",number,": ", ques)
    ans = input("The answer is ")
    #testing the result
    if ans.upper() == questions[ques].upper():
        scores = scores + 1
        print("Correct ")
    else:
        print ("Wrong")
    number = number + 1

#write the name and the score is a separate file
result={name:scores}
m = open("score.txt",'w')
result = json.dump(result,m)
m.close()
```

```
Python 3.12.0 (tags/v3.12.0:0fb18b0, Oct  2 2023, 13:03:39) [M
Type "help", "copyright", "credits" or "license()" for more in
>
= RESTART: C:\Users\Binary Zone\Desktop\جعفر\lec6 codes\6.py
python quiz programm
Enter t for True or f for False
Enter your full name: Jaafar Ali
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
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 f
Correct
Question 12 :  130.130.130.130 is a class C address.
The answer is f
Correct
Question 13 :  MAC is address is 6 byte address.
The answer is t
Correct
Question 14 :  IPv4 is a 32-bit address.
The answer is t
```

```
Question 15 :  IP is a network Layer protocol.
The answer is t
Correct
Question 16 :  OSPF is a Routing Protocol.
The answer is t
Correct
Question 17 :  ARP request message is a unicast message.
The answer is f
Correct
Question 18 :  ICMP refers to Internet Control Message Protocol.
The answer is t
Correct
Question 19 :  hub is a layer 2 device .
The answer is f
Correct
Question 20 :  bridge is a layer 3 device.
The answer is f
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()

- 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.

```
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):
        """Deposit the given amount into the account."""
        self.balance += amount

    def withdraw(self, amount):
        """Withdraw the given amount from the account."""
        if self.balance >= amount:
            self.balance -= amount
        else:
            print("Insufficient balance!")
    def get_balance(selve):
        """Get the current balance."""
        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):
        """Apply interest to the balance based on the interest rate."""
        self.balance *= (1 + self.interest_rate)

    def print(self):
        """Override the print method to display balance and interest rate."""
        print(f"Account Holder:{self.account_holder}")
        print(f"Account Number:{self.account_number}")
        print(f"Balance:${self.balance:.2f}")
        print(f"Interest Rate:{self.interest_rate * 100:.2f}%")

#creat an instance of SavingsAccount
savings_account = SavingsAccount(account_number="123456", account_holder="John Doe",

#Perform a deposit of $1000
savings_account.deposit(1000)

#Perform a deposit of $500
savings_account.withdraw(500)

#Apply interest
savings_account.apply_interest()
```

```
Python 3.12.0 (tags/v3.12.0:0fb18b0, Oct  2 2023, 13
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" f
>>>
========== RESTART: C:\Users\Binary Zone\Desktop\د
Account Holder:John Doe
Account Number:123456
Balance:$510.00
Interest Rate:2.00%
>>>
```