**حنان ماهر طيبة /الرقم الجامعي /1890/**

حل الوظيفة الأولى /هندسة الاتصالات/

**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}

Answer the question A:

d= { }  
L1 = ['HTTP','HTTPS','FTP','DNS']  
L2 = [80,433,20,53]  
for n,m in zip(L1,L2):  
 d[n]=m  
print(d)

شرح : قمت بتعريف قاموس فارغ ثم تعريف القوائم ثم إدخالها إلى حلقة وتطبيق zip لدمج عناصر القائمتين

الخرج1 :

{'HTTP': 80, 'HTTPS': 433, 'FTP': 20, 'DNS': 53}

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Answer the question B:

number = int(input("Please enter number to calculate the factorial:"))  
f = 1  
if number<0:  
 print("sorry factorial does not exist for negative numbers")  
  
else:  
 for i in range(1,number+1):  
 f\*=i  
print("The factorial of",number,"is",f)

شرح: طلبت من المستخدم ادخال عدد لا يكون سلبي وأدخلت شرط للتحقق

الخرج2: Please enter number to calculate the factorial:45

The factorial of 45 is 119622220865480194561963161495657715064383733760000000000

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Answer the question C:

L=["Network" , "Bio" , "Programming", "Physics" , "Music"]  
c=0  
for c in range(len(L)) :  
 if L[c].startswith("B"):  
 print(L[c])

شرح: عرفت لائحة ثم استخدمت حلقة لطباعة المطلوب تمر على طول اللائحة

الخرج3: Bio

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Answer the question B:

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

شرح: من أجل كل قيمة من 1 الى 10 أنشأت قاموس مفتاحه العدد نفسه وقيمته هي زيادة عن المفتاح بمقدار 1

الخرج4: {1: 2, 2: 3, 3: 4, 4: 5, 5: 6, 6: 7, 7: 8, 8: 9, 9: 10, 10: 11}

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**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 erros.

Answer question 2:

try:  
 bin\_number = list(input("Input a binary number:"))  
except keyError:  
 value = 0  
for i in range(len(bin\_number)):  
 digital = bin\_number.pop()  
 if digital == '1':  
 value = value +pow(2,i)  
print("The decimal value of the number is",value)

شرح : وضعت العدد الذي يدخله المستخدم ضمن لائحة و أدخلته على حلقة فور لاختبار الشرط في حال ادخل المستخدم عدد ليس ثنائي يعطي البرنامج الخرج 0 لحل مشكلة الادخال هذه استخدمت الكتلة try/except

الخرج5: Input a binary number:1001

The decimal value of the number is 9

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**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()

**الخرج 6:**

**python quiz programm**

**Enter t for True or f for False**

**Enter your full name: hanan maher teiba**

**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 t**

**Wrong**

**Question 3 : ARP refers to Address Resolution Protocol.**

**The answer is t**

**Correct**

**Question 4 : TCP is a network layer protocol.**

**The answer is t**

**Wrong**

**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 f**

**Wrong**

**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 t**

**Wrong**

**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 f**

**Correct**

**Question 13 : MAC is address is 6 byte address.**

**The answer is f**

**Wrong**

**Question 14 : IPv4 is a 32-bit address.**

**The answer is t**

**Correct**

**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 t**

**Wrong**

**Question 18 : ICMP refers to Internet Control Message Protocol.**

**The answer is f**

**Wrong**

**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**

**Process finished with exit code 0**

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**Question 4**: Object-Oriented Programming - Bank ClassDefine 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.

**الكود الخاص بتعريف فئة BankAccount**

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  
  
 def withdraw(self, amount):  
 if self.balance >= amount:  
 self.balance -= amount  
 else:  
 print("Insufficient funds")  
  
 def get\_balance(self):  
 return self.balance  
  
# إنشاء نموذج BankAccount  
account = BankAccount("123456789", "John Doe")  
  
# إيداع $1000  
account.deposit(1000)  
print("Current balance after deposit: $", account.get\_balance())  
  
# سحب $500  
account.withdraw(500)  
print("Current balance after withdrawal: $", account.get\_balance())

**هنا الكود الخاص بتعريف فئة SavingsAccount التي تورث من BankAccount وتضيف سمة interest\_rate وطريقة apply\_interest():**

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\_amount = self.balance \* self.interest\_rate  
 self.deposit(interest\_amount)  
  
 def print(self):  
 print("Current balance: $", self.get\_balance())  
 print("Interest rate: ", self.interest\_rate)  
  
# إنشاء نموذج SavingsAccount  
savings\_account = SavingsAccount("987654321", "Jane Smith", 0.05) # سعر الفائدة 5%  
  
# تطبيق الفائدة  
savings\_account.apply\_interest()  
  
# طباعة الرصيد الحالي وسعر الفائدة  
savings\_account.print()

**الخرج7:**

**Current balance after deposit: $ 1000.0**

**Current balance after withdrawal: $ 500.0**

**Current balance: $ 0.0**

**Interest rate: 0.05**

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