<u>حل الوظيفة الأولى /هندسة الاتصالات/</u>

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

الخرج١ :

{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

الخرج٢:Please enter number to calculate the factorial:45

The factorial of 45 is 119622220865480194561963161495657715064383733760000000000

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```python
    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

الخرج٣: Bio

ملف hananteiba3

Answer the question B:

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

شرح: من أجل كل قيمة من ١ الى ١٠ أنشأت قاموس مفتاحه العدد نفسه وقيمته هي زيادة عن المفتاح بمقدار ١

الخرج٤:{١: ٢ , ٢: ٣, ٣: ٤ , ٤: ٥ , ٥: ٦ , ٦: ٧ , ٧: ٨, ٨: ٩ , ٩: ١٠, ١٠: ١١}

ملف hananteiba4

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:

```python
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

الخرج٥:Input a binary number:1001

The decimal value of the number is 9

ملف hananteiba5/

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.

```python
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 ٦:

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 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.

BankAccount الكود الخاص بتعريف فئة

```python
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()
```

الخرج٧:

Current balance after deposit: $ 1000.0

Current balance after withdrawal: $ 500.0

Current balance: $ 0.0

Interest rate: 0.05