

Syrian Arab Republic

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5th, Network Programming : Homework No1



الجمهورية العربية السورية

اللاذقية - جامعة تشرين

كلية الهندسة الكهربائية والميكانيكية

قسم هندسة الاتصالات والإلكترونيات

السنة الخامسة: وظيفة | برمجة شبكات

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[https://github.com/YaraShahoud/Network Programming Homework No1 2024.git](https://github.com/YaraShahoud/Network_Programming_Homework_No1_2024.git)

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 }

```
# initializing lists
```

```
L1 = ["HTTP", "HTTPS", "FTP", "DNS"]
```

```
L2 = [80, 443, 21, 53]
```

```
# Printing original keys-value lists
```

```
print("Original L1 list is : " + str(L1))
```

```
print("Original L2 list is : " + str(L2))
```

```
# using dictionary comprehension
```

```
# to convert lists to dictionary
```

```
res = {L1[i]: L2[i] for i in range(len(L1))}
```

```
# Printing resulting dictionary
```

```
print("d = " + str(res))
```

```
c:/yara/first.py
Original L1 list is : ['HTTP', 'HTTPS', 'FTP', 'DNS']
Original L2 list is : [80, 443, 21, 53]
d = {'HTTP': 80, 'HTTPS': 443, 'FTP': 21, 'DNS': 53}
PS C:\yara>
```

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

```
#Define Factorial function that is 1 if number is 0 or 1 or n * n-1 *  
n-2 ... else
```

```
def factorial(n):
```

```
    # Recursive way to find factorial
```

```
    return 1 if (n==1 or n==0) else n * factorial(n - 1)
```

```
number = int(input("Enter the number:")) #ask user to input number
```

```
f = factorial(number) #cal function to calculate factorial
```

```
print("The Factorial of", number, "is: ", f) #print result to user
```

```
c:/yara/firstb.py  
Enter the number:6  
The Factorial of 6 is: 720  
PS C:\yara>
```

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.

```
L = ["Network", "Bio", "Programming", "Physics", "Music"]
```

```
for i in range(len(L)): #loop list using len
```

```
    if L[i].startswith("B"): #check if element startswith B print it
```

```
        print(L[i]) #print element
```

```
c:/yara/firstc.py  
Bio  
PS C:\yara>
```

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}
```

```
# creation using list comprehension
```

```
myDict = {x: x+1 for x in [0,1,2,3,4,5,6,7,8,9,10]}#make dict as x, x+1  
looping from 0 to 10
```

```
print (myDict)#print resulting dictionary
```

```
c:/yara/firstd.py  
{0: 1, 1: 2, 2: 3, 3: 4, 4: 5, 5: 6, 6: 7, 7: 8, 8: 9, 9: 10, 10: 11}  
PS C:\yara>
```

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.

```
# binary to decimal
def binaryToDecimal(n):
    number = n;
    decimal_value = 0;#inal decimal number

    # Initializing base
    # value to 1, i.e 2 ^ 0
    base = 1;#2^base for example bit zero has 2^0=1

    len1 = len(number);#get length of number
    for i in range(len1 - 1, -1, -1):#loop number from reight to left
        if (number[i] != '1') and (number[i] != '0'): #if digit is not
1 and not 0 print error and exit
            print("Wrong Binary number");
            exit();
        if (number[i] == '1'): #if digit is 1 multiply it by 2 ^
base
            decimal_value += base;#add it to final decimal
            base = base * 2;#update base value

    return decimal_value;#return final number

# Test Code
number = str(input("Enter the binary number:")) #ask user to input
binary number
print(binaryToDecimal(number));
```

```
c:/yara/second.py
Enter the binary number:0110101
53
PS C:\yara> & C:/Users/ميه اربا/AppData
c:/yara/second.py
Enter the binary number:0f00
Wrong Binary number
PS C:\yara>
```

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 #import lib to deal with json files
import os
import time
import random #generate random numbers
helpLineUsed = False #is the user used help

def fiftyFifty(question_ansDict): #choose random question
    print(question_ansDict.keys()) #print answers
    keysList = list(question_ansDict.keys())
    fiftyFiftyDict = {'q': question_ansDict['q'],
                      'ca': question_ansDict['ca'],
                      }
    print(question_ansDict['ca'])

    correctAnswerKey = question_ansDict['ca']
    fiftyFiftyDict[correctAnswerKey] =
question_ansDict[correctAnswerKey]
    keysList.pop(keysList.index('q'))
    keysList.pop(keysList.index('ca'))
    keysList.pop(keysList.index(correctAnswerKey))
    while len(keysList) > 1:
        randomIndex = random.randint(0, len(keysList) - 1)
        keysList.pop(randomIndex)
    else:
        fiftyFiftyDict[keysList[0]] = question_ansDict[keysList[0]]
    return fiftyFiftyDict

def showOptionAnswer(question_dict, isFiftyFifty):#show options that
user can input
    print("\n {questionNo}) {question}".format(questionNo=i + 1,
question=question_dict['q']))

    optionBuilder = ""
    for key, value in sorted(question_dict.items()):
        if key == 'ca' or key == 'q':
            continue
        optionBuilder += key + "/"
        print("<{optionNo}> {option}".format(optionNo=key,
option=value))
    if isFiftyFifty:
```

```

        answer = input("\n Enter the option ({})"
".format(optionBuilder))
    else:
        answer = input("\n Enter the option (a/b/c/d) or h for helpline
or q to quit: ")
    return answer

print(" ~~~~~ WELCOME TO QUIZ APP ~~~~~") #print welcome screen
print("\n ### RULES OF THE GAME ###")
print(" 1. Choose one of the correct option from each question
(a/b/c/d)")
print(" 2. h for help")
print(" 3. q to quit")
print("\n ### BEST OF LUCK ###\n")

with open("qa.json", "r", encoding='utf-8') as qa: #read json file to
get data
    questionSet = qa.read()
    questionsList = json.loads(questionSet)#load questions
    rightAnswer = 0
    i = 0
    while i < len(questionsList): #while we have questions
        question_dict = questionsList[i]#read question
        answer = showOptionAnswer(question_dict, False)#show answers
        i += 1
        if answer == 'h':#if user ask for help
            os.system("clear")
            if helpLineUsed:
                print("<<< Help Line Already Used >>>")#inshure help
not used before
                i -= 1
            else:
                helpLineUsed = True#mark help as used
                question_dict = fiftyFifty(question_dict)
                answer = showOptionAnswer(question_dict, True)#print
answer

        if answer == 'q':#if user quits
            print("\nGame Over")
            print("You made {} right. Your score is {}".format(rightAnswer, str(rightAnswer * 10)))
            exit()

        if question_dict['ca'] == answer:#if answer is wright
            print("You predicted right answer")
            rightAnswer += 1
        else:
            if not helpLineUsed:

```

```

        print("\nYour answer is wrong")
        print("\nCorrect answer is
{correctAnswer} ".format(correctAnswer=question_dict['ca']))

    time.sleep(1)
    os.system("clear")

    else:
        print("\n!!!Game Over")
        print("You made {} right. Your score is {}".format(rightAnswer, str(rightAnswer * 10)))#print results

```

```

c:/yara/third.py
~~~~~ WELCOME TO QUIZ APP ~~~~~

### RULES OF THE GAME ###
1. Choose one of the correct option from each question (a/b/c/d)
2. h for help
3. q to quit

### BEST OF LUCK ###

1) The International team of scientists has recently cracked the genetic code of which cultivated crop for the first time?
<a> Wheat
<b> Rice
<c> Maize
<d> Pulses

Enter the option (a/b/c/d) or h for helpline or q to quit: █

```

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.

```
class BankAccount: #bank class
    def __init__(self, account_holder, account_number,
balance=0.0):#constructor balance is default vale = 0.0
        self.account_holder = account_holder#assign values to members
        self.account_number = account_number
        self.balance = balance

    def deposit(self, amount):#deposit method
        self.balance += amount#add it to balance
        print(f"{self.account_holder} Deposited {amount} $")#print
depositing event

    def withdraw(self, amount):#withdraw method
        if self.balance >= amount:#check user have enough balance
            self.balance -= amount#discount it from user balance
            print(f"{self.account_holder} Withdrew {amount} $")#print
event to user
        else:
            print("You don't have enough funds to withdraw.")#print
insufficient balance error

    def get_balance(self):# print method
        print(f" Current balance is: {self.balance} $.")

test = BankAccount("yara", "1234")#create object
test.deposit(1000)
test.withdraw(500)
test.get_balance()#ptint balance

class SavingsAccount(BankAccount):#inheritance
    def __init__(self, account_holder, account_number, interest_rate,
balance=0.0):#constructor
        super().__init__(account_holder, account_number, balance)#call
parent constructor
        self.interest_rate = interest_rate#assign value
```

```
def apply_interest(self):#apply interest method
    interest = self.balance * self.interest_rate
    self.deposit(interest)

def get_balance(self):#override print method
    print(f" Current balance is: {self.balance} $ and current rate
is {self.interest_rate} .")
```

```
saving = SavingsAccount("yara", "123456789", 20) #test class
saving.deposit(1000)
saving.apply_interest()
saving.get_balance()
```

```
c:/yara/four.py
yara Deposited 1000 $
yara Withdrew 500 $
Current balance is: 500.0 $.
yara Deposited 1000 $
yara Deposited 20000.0 $
Current balance is: 21000.0 $ and current rate is 20 .
PS C:\yara>
```