وزارة التعليم العالي
جامعة تشرين
كلية الهندسة الميكانيكية والكهربائية
قسم هندسة الاتصالات والالكترونيات

وظيفة برمجة الشبكات الاولى

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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 }

الحل:

```
L1 = ['HTTP', 'HTTPS', 'FTP', 'DNS']
L2 = [80, 443, 21, 53]
D1 = dict(zip(L1, L2))
print(D1)
```

الخرج:

```
ts/Python Scripts/wael Homework 2.py"
{'HTTP': 80, 'HTTPS': 443, 'FTP': 21, 'DNS': 53}
```

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

الحل:

```
def factorial(n):
    """Calculates the factorial of a given number.

    Args:
      n: The number to calculate the factorial of.

    Returns:
      The factorial of n.
    """
    if n == 0:
        return 1
    else:
        return n * factorial(n - 1)


# Get user input
num = int(input("Enter a number: "))

# Calculate the factorial
fact = factorial(num)

# Print the result
print(f"The factorial of {num} is {fact}")
```

الخرج:

```
ython Scripts/wael Homework 2.py"
Enter a number: 15
The factorial of 15 is 1307674368000
```

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.

الحل:

```
# C
L = ['Network', 'Bio', 'Programming', 'Physics', 'Music']
L2 = []
for i in range(len(L)):
    if L[i].startswith('B'):
        L2.append(L[i])

print(L2)
```

الخرج

```
Python Scripts/wael Homework 2.py"
['Bio']
```

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}

الحل:

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

الخرج

```
ython Scripts/wael Homework 2.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.

الحل:

```
# Question 2
binary = input("Enter a binary number: ")
decimal = 0

for digit in binary:
    decimal = decimal*2 + int(digit)

print("The decimal equivalent of", binary, "is", decimal)
```

الخرج:

```
Python Scripts/wael Homework 2.py"
Enter a binary number: 00101010111
The decimal equivalent of 00101010111 is 343
```

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.

الحل:

```python
#'Question 3

import csv
def read_questions(filename):
    with open(filename, 'r') as f:
        reader = csv.reader(f)
        questions = list(reader)
    return questions


def ask_questions(questions):
    score = 0
    for question in questions:
        print(question[0])
        answer = input().strip().lower()
        if answer == question[1].strip().lower():
            score += 1
    return score


def save_result(name, score):
    with open('results.csv', 'a', newline='') as f:
        writer = csv.writer(f)
        writer.writerow([name, score])


filename = input("Enter the filename of the quiz questions: ")
questions = read_questions(filename)

name = input("Enter your name: ")
score = ask_questions(questions)

print("Your score is:", score)
save_result(name, score)
```

```
ython Scripts/wael Homework 2.py"
Enter the filename of the quiz questions: csv.txt
Enter your name: wael
What is the capital of France?
Paris
What is the largest planet in our solar system?
Jupiter
What is the smallest country in the world?
Vatican City
What is the highest mountain in the world?
Mount Everest
What is the largest ocean in the world?
Pacific Ocean
What is the smallest planet in our solar system?
Lake Superior
What is the largest country in the world by area?
Volga River
What is the smallest ocean in the world?
Greenland
What is the most populous country in the world?
China
What is the longest river in Africa?
Volga River\
What is the largest desert in the world?
Pacific Ocean
What is the highest waterfall in the world?
Angel Falls
What is the largest lake in Africa?
Great Britain
What is the longest river in South America?
Lake Superior
What is the largest island in Europe?
Volga River
What is the deepest ocean in the world?
Greenland
What is the largest lake in North America?
Denali (Mount McKinley)
What is the longest river in Europe?
Great Britain
What is the largest island in Asia?
Greenland
What is the highest mountain in North America?
Denali (Mount McKinley)
Your score is: 9
```

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.

الحل:

```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
        print(
            f"Deposit of ${amount:.2f} successful. Current balance: ${self.balance:.2f}")

    def withdraw(self, amount):
        if amount <= self.balance:
            self.balance -= amount
            print(
                f"Withdrawal of ${amount:.2f} successful. Current balance: ${self.balance:.2f}")
        else:
            print("Insufficient funds.")

    def get_balance(self):
        print(f"Current balance: ${self.balance:.2f}")


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 = self.balance * (self.interest_rate / 100)
        self.balance += interest
        print(
            f"Interest applied: ${interest:.2f}. New balance: ${self.balance:.2f}")

    def __str__(self):
        return f"Account Number: {self.account_number}\nAccount Holder: {self.account_holder}\n
        Balance: ${self.balance:.2f}\nInterest Rate: {self.interest_rate}%"
```

```python

# Create a BankAccount instance
account1 = BankAccount("1234567890", "John Doe")

# Perform deposit and withdrawal operations
account1.deposit(1000)
account1.withdraw(500)
account1.get_balance()

# Create a SavingsAccount instance
savings_account = SavingsAccount("9876543210", "Jane Doe", 2.5)

# Apply interest and print the details
savings_account.apply_interest()
print(savings_account)

```

الخرج:

```
ython Scripts/wael Homework 22.py"
Deposit of $1000.00 successful. Current balance: $1000.00
Withdrawal of $500.00 successful. Current balance: $500.00
Current balance: $500.00
Interest applied: $0.00. New balance: $0.00
Account Number: 9876543210
Account Holder: Jane Doe
Balance: $0.00
Interest Rate: 2.5%
```