Lab report 6

Fall 2021

CSE422L Data Analytics Lab

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Section: **A**

"On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Student Signature: _____

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OBJECTIVE:

The basic Objective of this lab is:

- To know python basics
- To learn and code different task in python

TASKS

Task 1:

1) Using function, find all the multiplicative factors of a number provided as input.

Code + Output:

In [3]:
```
# This function computes the multiplicative factor of the argument passed
def print_factors(x):
   print("The factors of",x,"are:")
   for i in range(1, x + 1):
       if x % i == 0:
           print(i)
```

In [4]:
```
x=int(input('enter a no:'))
```

```
enter a no:10
```

In [5]:
```
print_factors(x)
```

```
The factors of 10 are:
1
2
5
10
```

Task 2:

Create a library system for DCSE using dictionaries (must include Student's information, Books information

Code+Outputs:

List of Books and Semester Student Dictionary:

```
books={ #List of books in our Library
    '1st':['CF','Calculus','AP','English','Islamiat'],
    '2nd':['CP','DE','Drawing','pak study','Cps','Cs1'],
    '3rd':['LA','CV','OOP','DLD','CS2'],
    '4th':['DSA','OS','S&s','EC'],
    '5th':['DSP','SP','COA','EE','Comm Sys'],
    '6th':['MBSD','DSD','DBMS'],
    '7th':['DA','Ethics','CC','SE','CS'],
}
```

```
students={'1st':[],
          '2nd':[],
          '3rd':[],
          '4th':[],
          '5th':[],
          '6th':[],
          '7th':[],
   }
```

Student Registration in Library function:

```
In [ ]: def student_registration(name,reg,semester,batch):
            emptylist=[]

            #to give ID to the next student Id should be unique
            for x in students.keys(): #to make it sure for the right semester
                   #name because we have semester name as we define in dic key
               if x==semester:
                    length=len(students[semester])
                    detail={
                        #student details needed at the time of registration in library
                        'id':length,
                       'name':name,
                       'reg':reg,
                       'semester':semester,
                       'batch':batch,
                       'borrowed book':[],
                    }
                    students[semester].append(detail) #adding new student detail
                    print('Record added successfully')
```

Student Registration cancel in Library function:

For that we need to check whether the student really exist or not that's why another function is been called from inside which is checkregister function

```
def Checkregister(id,semester):
    for i in range(0,len(students[semester])):
        if(students[semester][i]['id']==id):
            return True
    return False
```

```
def remove_registration(id,semester):
     val=Checkregister(id,semester) #checking that the student is in the list or not
     if val==True:
         for x in students.keys(): #to make it sure for the right semester
            #name because we have semester name as we define in dic key
            if x==semester:
                for y in range(0,len(students[semester])-1):
                    if students[semester][y]['id']==id:

                        students[semester].remove(students[semester][y]) #deleting a student
                        print('Record deleted successfully')
     else:
         print("Wrong detail->Correct it and try again\n")
```

Borrowing a book from library function:

The details of book will be saved in borrowed book list variable for every semester student. We have defined it for every individual student.

```
def borrowing(semester,id,bookname): #student borrowing a book by giving his ID and book name, the same as in our library
    val=Checkregister(id,semester)
    if(val==True):
        for i in range(0,len(students[semester])):
            if(students[semester][i]['id']==id):
                students[semester][i]['borrowed book'].append(bookname)
                print("Book Borrowed successfully\n")
    else:
        print("Wrong detail->Correct it and try again\n")
```

Returning a book to library:

After returning it to library the book will be deleted from the list of borrowed list.

```
def returnbook(semester,id,bookname): #student returning a book by giving his ID and book name, the same as in our library
    val=Checkregister(id,semester)
    if val==True:
        for i in range(0,len(students[semester])):
            if(students[semester][i]['id']==id):
                students[semester][i]['borrowed book'].remove(bookname)
                print("Book Returned successfully\n")
    else:
        print("Wrong detail->Correct it and try again\n")
```

Home Screen Code:

```
while 1:
    print("\t\tLibrary Management System\n")
    print("\tEnter 1: to Register your self\n")
    print("\tEnter 2: to DeRegister your self\n")
    print("\tEnter 3: to Borrow a book\n")
    print("\tEnter 4: to return a book\n")
    value=int(input())
    if(i==1):
         name=input("Enter Your Name:\n")
         reg=input("Enter Your Reg No\n")
         semester=input("Enter Your Semester\n")
         batch=input("Enter Your Batch:\n")
         student_registration(name,reg,semester,batch)
    elif i==2:
         id=int(input("Enter ID"))
         semester=input("Enter Your Semester\n")
         remove_registration(id,semester)
    elif i==3:
        id=int(input("Enter ID"))
        semester=input("Enter Your Semester\n")
        bookname=input("Enter Book Name")
        borrowing(semester,id,bookname)
    elif i==4:
        id=int(input("Enter ID"))
        semester=input("Enter Your Semester\n")
        bookname=input("Enter Book Name")
        returnbook(semester,id,bookname)
    else:
        Print("rong Entry-> Try again")
```

Registering myself:

```
                    Library Management System

            Enter 1: to Register your self

            Enter 2: to DeRegister your self

            Enter 3: to Borrow a book

            Enter 4: to return a book

    1
    Enter Your Name:
    Ayaz Mehmood
    Enter Your Reg No
    18pwcse1652
    Enter Your Semester
    7th
    Enter Your Batch:
    20
    Record added successfully
```

Borrowing a book from library:

```
                    Library Management System

            Enter 1: to Register your self

            Enter 2: to DeRegister your self

            Enter 3: to Borrow a book

            Enter 4: to return a book

    3
    Enter ID0
    Enter Your Semester
    7th
    Enter Book NameDA
    Book Borrowed successfully
```

Checking:

Registration done and DA book is been added in the borrowed list too:

```
students['7th'][0]
```

```
{'id': 0,
 'name': 'Ayaz Mehmood',
 'reg': '18pwcse1652',
 'semester': '7th',
 'batch': '20',
 'borrowed book': ['DA']}
```

Returning a book:

```
                Library Management System

        Enter 1: to Register your self

        Enter 2: to DeRegister your self

        Enter 3: to Borrow a book

        Enter 4: to return a book

4
Enter ID0
Enter Your Semester
7th
Enter Book NameDA
Book Returned successfully
```

Checking:

```
: students['7th'][0]
```

```
: {'id': 0,
   'name': 'Ayaz Mehmood',
   'reg': '18pwcse1652',
   'semester': '7th',
   'batch': '20',
   'borrowed book': []}
```

Deregister from Library:

```
                  Library Management System

          Enter 1: to Register your self

          Enter 2: to DeRegister your self

          Enter 3: to Borrow a book

          Enter 4: to return a book

  2
  Enter ID0
  Enter Your Semester
  7th
  Record deleted successfully
```

Checking:

Empty list because I have deregistered my self

```
students['7th']
```

```
[]
```

Task 3:

Using functions, create an ATM system.

Code:

```
#Using functions, create an ATM system.
def ATM():
    pinCode = ["1234", "1122", "2233", "3344"]
    accountHoldersName = ["Ayaz", "Ayaz mhmd", "ayz mhmd", "ayz"]
    accountNumber = ['1652', '16522', "1653", "16523"]
    balance = [570000, 230000, 41000, 83331]
    while(1):
        print("\t\t------- Welcome-------")
        inputPin = input("\nEnter Pin Number: ")
        index=0
        for pin in pinCode:
            if pin == inputPin:
                break
```

```
            index=index+1
        print("\nYour account number is: ",accountNumber[index])
        print("Your account balance is: Rs.", balance[index])
        while(1):
            drawOrDeposite = input("\nDo you want to withdraw or deposit cash
(withdraw/deposite/no): ")
            if drawOrDeposite == "withdraw":
                amount = input("\nEnter the amount you want to withdraw: ")
                try: #Exception handling
                    amount = int(amount)
                    if amount > balance[index]:
                        raise
                except:
                    print("invalid amount.")

                else:
                    remainingBalalnce = balance[index] - amount #subtracting the drawed amount.
                    balance.remove(balance[index]) #removing the old ammount from the list and
adding the new list after draw.
                    balance.insert(index,remainingBalalnce)
                    print("\\t transaction successfull ")
                    print("\nYour available balance is: ",remainingBalalnce)
                break
            elif drawOrDeposite == "deposite":
                amount = input("Enter the amount you want to deposite: ")
                try:
                    amount = int(amount)
                    if amount > balance[index]:
                        raise
                except:
```

```
            print("invalid amount.")
        else:
            remainingBalalnce = balance[index] + amount #adding the deposited amount.
            balance.remove(balance[index])#removing the old ammount from the list and
adding the new list after draw.
            balance.insert(index,remainingBalalnce)
            print("\\t Successfully deposit ")
            availableBalance = print("Your available balance is: ",remainingBalalnce)
        break
    atm = input("\tEnter yes to contine the process and no to end ")
    if atm=='yes':
        break
    else:
        continue
print("\n\n\t\tThank you for using\n")
```

Output:

Successful Transaction:

```
In [*]: 1 ATM()
                    ------- Welcome-------

          Enter Pin Number: 1234

          Your account number is:  1652
          Your account balance is: Rs. 570000

          Do you want to withdraw or deposit cash (withdraw/deposite/no): withdraw

          Enter the amount you want to withdraw: 3000
          \t transaction successfull

          Your available balance is:  567000
                    ------- Welcome-------
```

Insufficient balance:

```
                ------- Welcome-------

Enter Pin Number: 1234

Your account number is:  1652
Your account balance is: Rs. 567000

Do you want to withdraw or deposit cash (withdraw/deposite/no): 5900000
```

Wrong Pin:

```
                ------- Welcome-------

Enter Pin Number: 2311
Wrong pin try again
                ------- Welcome-------


Enter Pin Number:
```

Deposit money:

```
                ------- Welcome-------

Enter Pin Number: 1234

Your account number is:  1652
Your account balance is: Rs. 570000

Do you want to withdraw or deposit cash (withdraw/deposite/no): deposite
Enter the amount you want to deposite: 345555
\t Successfully deposit
Your available balance is:  915555
                ------- Welcome-------
```

Task 4:

Design a calculator (+,-,*,/,pow) using functions

Code + Output:

All the functions definition:

In [1]:
```python
# This function adds two numbers
def add(x, y):
    return x + y
```

In [2]:
```python
# This function subtracts two numbers
def subtract(x, y):
    return x - y
```

In [3]:
```python
# This function multiplies two numbers
def multiply(x, y):
    return x * y
```

In [4]:
```python
# This function divides two numbers
def divide(x, y):
    return x / y
```

In [5]:
```python
# This function calculates power
def power(x, y):
    return x**y
```

Addition of two no:

```
                Calculator by Ayaz Mehmood
Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
5.Power
Enter choice(1/2/3/4/5): 1
Enter first number: 3.4
Enter second number: 2.3
3.4 + 2.3 = 5.699999999999999

Let's do next calculation? (yes/no):
```

Subtraction of two no:

```
                Calculator by Ayaz Mehmood
Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
5.Power
Enter choice(1/2/3/4/5): 2
Enter first number: 3.45
Enter second number: 1.34
3.45 - 1.34 = 2.1100000000000003

Let's do next calculation? (yes/no):
```

Multiplication of two no:

```
                Calculator by Ayaz Mehmood
Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
5.Power
Enter choice(1/2/3/4/5): 3
Enter first number: 2
Enter second number: 3
2.0 * 3.0 = 6.0

Let's do next calculation? (yes/no):
```

Division of two no:

```
                Calculator by Ayaz Mehmood
Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
5.Power
Enter choice(1/2/3/4/5): 4
Enter first number: 6
Enter second number: 2
6.0 / 2.0 = 3.0

Let's do next calculation? (yes/no):
```

Power of two no:

```
                Calculator by Ayaz Mehmood
Select operation.
1.Add
2.Subtract
3.Multiply
4.Divide
5.Power
Enter choice(1/2/3/4/5): 5
Enter first number: 2
Enter second number: 3
2.0 ** 3.0 = 8.0

Let's do next calculation? (yes/no):
```