**Lab Assignment**

**Python Programming (CSEN2153)**

**3rd Semester, CSE(AIML), HTIK**

**7th and 8th August 2024( Gr I and Gr II)**

Q1 Write a Python code to do the following:

(i) Create a class with name "**Library**"

(ii) Define two class variables to indicate the number of books in the library and the number of library users respectively. Define another class variable to indicate the total price of books in the library.

(iii) Define the Constructor which would initialize the instance of the class "Library" with Name of the Book, Price of the Book, and the Name of the User (depending on whether the user name is Null or the book name is Null.

This would also update the count of the book and the user, as the case may be.

The Total price of the books in the library will also be updated.

(iv) Define two functions to display the details of the book (name and price) or the details of the user (name only)

(v) Now take input from the user (names and prices of books) and initialize instances of the class.

(vi) Also, take input from the user (names of the users) and initialize an instance of the class.

(vii) Now use functions defined by you to display the details of the book (name and price) and

the details of the user (name only)

(viii) Also display the total numbers of users, total numbers of books and total price of books in

the library

Q2 Write a program that has a class Student that stores stdid, name, and marks of three subjects, Average marks and Grade of the students. The class has two variables college\_name which stores name of the college and student\_count which gives information about total number of students. Display college\_name , total number of students, Student information along with all marks and print Grade based on average Marks.

if(average>=90):grade='O',if (average <90 and average >=80):grade='A', if(average <80 and average >=70):grade='B', if(average <70 and average >=60): grade='C', if(average <60 and average >=50): grade='D' else: grade='F'

**Sample Output :**

College Name: HITK

Total Numbers of Students are: 5

ID Name Sub1 Sub2 Sub3 Average Grade

1 AAA 90 90 90 90.0 O

2 BBB 70 70 70 70.0 B

3 CCC 10 30 40 26.67 F

4 DDD 5 50 50 35.0 F

5 EEE 56 57 58 57.0 D

**Q3** Write a python program to implement a class Point with x, y as instance variables

Use of special function (double underscore or magic methods)

\_\_str\_\_ to print object

,\_\_add\_\_ , \_\_sub\_\_ , to perform addition and subtraction between two objects

\_\_mul\_\_ ,\_\_truediv\_\_, \_\_floordiv \_\_ to perform multiplication , division and integer division between objects and any integer number

\_\_pow\_\_ to find the nth power of x and y component of object

\_\_lt\_\_ , \_\_eq\_\_ ,\_\_gt\_\_ ,\_\_le\_\_ to compare two objects

**Sample Output:**

The first object is: (41,50)

The second object is: (2,3)

The sum of (41,50) and (2,3) is (43,53)

The difference of (41,50) and (2,3) is (39,47)

The product of (41,50) and 5 is (205,250)

The division of (41,50) and 5 is (8.2,10.0)

The integer division of (41,50) and 5 is (8,10)

The modulus of (41,50) and 5 is (1,0)

The Power of 3 of (2,3) is (8,27)

(41,50) = (2,3) is False

(41,50) >= (2,3) is True

(41,50) <= (2,3) is False

(41,50) > (2,3) is True

(41,50) < (2,3) is False

Q4 Write a program with class Employee that keeps a track of the number of employees in an

organization and stores their name, designation, and salary details.

Q5 Write a program that has class Person (name, age, gender). Create another class Publication

(no\_rp, no\_book, no\_art). Now inherit a class Faculty(desig,dept) from Person and Publication

to print the faculty information.

no\_rp : No of research papers published

no\_book : No of book chapters published

no\_art : No of articles published

desig: Designation

dept: Department

**Sample Output:**

Name of faculty: Pooja Sinha

Age: 48

Gender: Female

Designation: HOD

Department: CSE

No of research papers published: 5

No of book chapters published: 2

No of articles published: 3