Navrachana University

School of Engineering and Technology

BCA

Course: CMP404 Introduction to Data Science

Programming Assignment-2

Date : 12th Jan, 2024

Instructions

- Implement the given Questions using Object Oriented concepts in Python programming language.
- Use meaningful and descriptive variable/identifier names:
  Good variable names (camelCase): rollNo, studentName, empSalary, salesPrice, taxRate,
  Every Program should have header and footer having following information in multi-line comments
  '''
  @author: RollNo Firstname Lastname
  @description: Program No. - write short purpose/ description here
  '''
- Every Program should be with output of the Program in multi-line comment after the code of respective program.

- **Submission details:** Submit your assignment on **lms.nuv.edu.in** before the given submission date. Create one **.ZIP file** containing **all Python programs** (.py files) and **one word file.** Keep filename as **RollNo-Name-Assignment1.zip**.

- Programs submitted by a student should be the result of individual work based on his/her own efforts. Full or part of the code should not be copied from internet or from peer students or other sources. A student should not share/circulate the code/programs developed by them (for individual assignments) with their peers in any form. Violation of above will be considered as academic dishonesty and any such case will be strictly dealt with and liable to get zero in the evaluation.

1. Write a OOP in python to input empid, name, basic salary, no. of experience in yrs.
Calculate hra(35% of basic), da (58% of basic) and pf (9.5% of basic).
Also calculate bonus based on experience in years.
If experience in years is >= 30, bonus must be 59% of basic,
If experience in years is >=23, bonus must be 51% of basic,
If experience in years is >=15, bonus must be 45% of basic,
If experience in years is >=7, bonus must be 33% of basic,
If experience in years is <7, bonus must be 16% of basic
Calculate netsalary as basic+da+hra-pf+bonus.
Create a class, constructor to create instance variables, getter-setter for each variable, calculative functions for operative variables. A class methods/function should not contain

display specific and input specific code. Such code should be added in driver part of python program.

2. Write an OOP based Python program which inputs n numbers in a list from keyboard. If 8 numbers are inputted, calculate sum of 0th and 7th element and save it in another list say newlist[0], sum of 1st and 6th to newlist[1], sum of 2nd and 5th to newlist[2], sum of 3rd and 4th to newlist[3] and so on. Remove duplicates from newlist if any by converting to set. Later convert it to tuple and display.

3. Write an OOP program to perform addition, base and power, concatenation, max, min of two numbers stored in two different objects created from same class.

```
n1=MyNumber(2)
n2=MyNumber()
n2.setNum(5)
n3=n1.add(n2)
print("Addition is ",n3.getNum())  #7
n3=n1.raisedTo(n2)
print(n1.getNum()," raised to ",n2.getNum()," is ",n3.getNum())  #32
n3=n1.concat(n2)
print("Concat answer is ",n3.getNum())  #25
n3=n1.max(n2)
print("Max is ",n3.getNum())
```