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| --- | --- | --- | --- | --- | --- | --- |
| **1.** | Make a super class ‘Batch’ that has two attributes ‘department’ and ‘\_ \_batchNo’. There are two subclasses named “SectionB”‘ and “SectionC”. Every subclass has two attributes ‘name’ and ‘\_id’ and a method ‘status()’. Make any change that you need. Make an object of each class and print all the attributes.  Note: You can give your own information.   |  |  | | --- | --- | | input | output | | Objects | Sourav's id is 191-15-12000 and belongs to batch-53, department of CSE  Nusrat's id is 191-15-12001 and belongs to batch-54, department of SWE | | **[7]** |
| **2.** | ​Suppose​​ Asrafh Chowdhury has one son ​​Akash Chowdhury. ​​​ ​Akash ​Chowdhury has one son and one daughter Ashique and ​​Natasha. All of them have Chowdhury titles by default. Asrafh Chowdhury has 100 Acres of land as property. Which by default ​has​ become the property of Akash Chowdhury​ after his death​. Akash Chowdhury himself has 150 Acres of land, 2 ready flats, 3 cars and 10 crores of money in his bank account. He made an agreement that after his death exactly ​ of his land and money will be donated to an orphanage. And from the remaining, ​all his land and flat will be divided equally among ​his​ son and daughter. But cars and bank ​money will be divided among son and daughter by 2:1. ​​Ashique Chowdhury himself has 10 acres of land, one car and 1 crores of money in his bank account.  N​ow your task is to implement ​the whole scenario using python with OOP concepts. Then you have to display the following things:   * Total properties of ​Asrafh Chowdhury * ​Total properties of ​Akash Chowdhury * Total present properties of ​ ​Ashique Chowdhury * Total future properties of ​ ​Ashique Chowdhury (after his fathers’ death) * Total present properties of ​Natasha Chowdhury * Total future properties of Natasha Chowdhury (after his fathers’ death) * Total property donated to ​the​ orphanage | **[10]** |
| **3.** | Which of the OOP concepts has been used here? Describe the concept and justify your answer. | **[3]** |
| **4.** | A list is following:  a = [[2,1,3,4,5], [6,7,8,9,10], [12,11,13,14,15], [16,17,18,19,20]]  and now list should be matched with list b using Numpy. If it matches then shows true otherwise false.  b  = [2,1,3,4,5]               **True**, as it equals with the row 0.       [16,17,20,19,18]          **False**, as it doesn’t equal with any row.       [3,2,5,-4,5]              **False**, as it doesn’t equal with any row.       [12,11,13,14,15]         **True**, as it equals with the row 2. | **[3]** |
| **5.** | Write a program to make a weather dataset where attributes are considered as Temperature, Humidity, Wind Speed, and Rain in mm using Numpy array. The dataset will contain at least 10 data for every attributes. After that, you have to calculate the maximum and minimum value in every attributes. You also have to calculate the standard deviation, mean and variance. See the following websites which will help you to calculate the standard deviation, mean and variance.  <https://www.mathsisfun.com/data/standard-deviation-formulas.html>  <https://www.mathsisfun.com/mean.html>  <https://www.mathsisfun.com/data/standard-deviation.html> | **[10]** |
| **6.** | Why transpose is required in data analysis phase? Write a program to make this transformation with the help of Numpy. | **[3]** |
| **7.** | Write a function which will take two input arrays as arguments and then multiply element wise on the diagonal elements of the two matrices and then display the multiplied elements in another array. N.B. Create array using Numpy. | **[4]** |

Printf(“Best of Luck”)