Project One

Python Fundamentals

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Project One

Write a python program to create the following classes :

1. Person Class
   - Attributes :
     - Name (Protected)
     - Address (Protected)
   - Methods
     - Consultctor (with all above attributes)
     - getName function that return Name
     - setName Method that sets the Name with new value
     - getAddress function that return Address
     - setAdress Method that sets the address with new value
     - Destructors that prints “ I have been deleted”

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2. Employee (parent Class Person)

- **Attributes** :
  - Employee Number (Public) (int)
  - Salary (Private) (float)
  - JobTitle (Private) (string)
  - loans (Private) (List)
- **Methods**
  - Constructor (with all above attributes)
  - getSalary Method that return Salary
  - setSalary Method that sets the Salary with new value
  - getJobTitle Method that return Job Title
  - setJobTitle Method that sets the JobTitle with new value
  - getTotalLoans Method that return the total loans
  - getMaxLon Method that return Maximum loan in loan list
  - getMinLon Method that return Minimum loan in loan list
  - setLoans Method that sets the Loan with new value
  - printInfo method that prints all employee information including employee's total Loans
  - Destructors that prints " I have been deleted"

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3. Student Class (Parent Class Person)

- Attributes :
  - Student Number (Public) (Number)
  - Subject(Private) (String)
  - Marks (Private) (Dictionary)
- Methods
  - Consultctor (with all above attributes)
  - getSubject Method that return Name
  - setSubject Method that sets the Name with new value
  - getMarks Method that return Address
  - setMarks Method that sets the Marks with new value
  - getAverage Method that return the Average (Marks Average)
  - getAMarks Method that return the A list of A Marks Average
  - printInfo method that prints all student information including student's Average
  - Destructors that prints " I have been deleted"

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Create the following objects from type Employee :

- Employee1
  - Employee Number =1000
  - Name =Ahmad Yazan
  - Address = Amman, Jordan
  - Salary =500
  - Job Title “HR Consultant”
  - Loans = [434,200,1020]
- Employee2
  - Employee Number =2000
  - Name =Hala Rana
  - Address = Aqaba, Jordan
  - Salary =750
  - Job Title “Department Manager”
  - Loans = [150,3000, 250]

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Create the following objects from type Employee :

- Employee3
  - Employee Number =3000
  - Name =Mariam Ali
  - Address = Mafraq, Jordan
  - Salary =600
  - Job Title “HR S Consultant”
  - Loans = [304,1000,250,300,500,235]
- Employee4
  - Employee Number =4000
  - Name =Yasmeen Mohammad
  - Address = Karak, Jordan
  - Salary =865
  - Job Title “Director”
  - Loans = []

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Create the following objects from type Student :

- Student1
  - Student Number =20191000
  - Name =Khalid Ali
  - Address = Irbid, Jordan
  - Subject = “History”
  - Marks = English=80,Arabic=90,Art = 95, Management=75
- Student2
  - Student Number =20182000
  - Name =Reem Hani
  - Address = Zarqa, Jordan
  - Subject = “Software Eng”
  - Marks = English=80,Arabic=90, Management=75, Calculus= 85, OS=73,Programming=90

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Create the following objects from type Student :

- Student3
  - Student Number =20161001
  - Name =Nawras Abdullah
  - Address = Amman, Jordan
  - Subject = “Arts”
  - Marks = English=83,Arabic=92,Art = 90, Management=70
- Student4
  - Student Number =20172030
  - Name =Amal Raed
  - Address = Tafelah, Jordan
  - Subject = “Computer Eng”
  - Marks = English=83,Arabic=92, Management=70, Calculus= 80, OS=79,Programming=91

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1. Put all employees objects in a list called EmployeesList
2. Put all Students objects in a list called StudentsList
3. Print out “Total Number of Employees”
4. Print out “Total Number of Students”
5. Print out all Employees Information (including loans and total loans)
6. Print out all Students Information (including Average)
7. Print out the highest student average from all students (you can use Lambda, Map, Filter, Reduce)
8. Print out the minimum loan across all employees
9. Print out the maximum loan across all employees

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10. Print out a list of employees loans, total for each employee, and the grand total loans across all employees
11. Extract a dictionary (LoanDictionary) that consistent of “key: employee Number: Value Loan list” and print the dictionary.
12. Write a function using “reduce” to read the dictionary and to get the lowest and highest loans for each employee in the dictionary.
13. Print all students Names, Subject(s), Mark(s) that got A scores(A scores is >=90)
14. Print the highs employees salary
15. Print the lowest employees salary
16. Print he totals employees salaries.
17. Delete all objects (for both employees and students)

Master in Software Engineering

Hussam Hourani has over 25 years of Organizations Transformation, VROs, PMO, Large Scale and Enterprise Programs Global Delivery, Leadership, Business Development and Management Consulting. His client experience is wide ranging across many sectors but focuses on Performance Enhancement, Transformation, Enterprise Program Management, Artificial Intelligence and Data Science.