School of Electrical Engineering and Computer Science
The University of Newcastle
SENG1110/SENG6110 Object Oriented Programming

Lab Session - week 9

1. Copy the project Agency from Blackboard. **Listen the first video**. Create a project and compile and run the code using BlueJ. Do the following modifications:

    a. Add the option "averageAge" in the menu. This option will call a method in AgencyInterface class that will calculate the average age of the females and the average age of the males. **(you need to complete this exercise and show to your demonstrator using BlueJ)**

    b. Add the option "maxDifference" in the menu. This option will call a method in AgencyInterface class that will display information (name and age) of the couple that has the maximum difference of age.

    c. Add the option "averageDifference" in the menu. This option will call a method in AgencyInterface class that will calculate the average difference of ages.

    d. Implement the method resizeArray and test it. Try it first and then **listen the second video**.

2. Copy the project Tutor from Blackboard. Create a project and compile and run the code using BlueJ. Run the code and notice that the information in myTutor object is modified. Why? Modify the code such that the information in myTutor object is not modified. Try it first and then **listen the third video.**

3. Copy the project GradeReport from Blackboard. Create a project and compile and run the code using BlueJ.
    a. Understand the code. Discuss with your demonstrator. Use BlueJ debug to understand better what is happening.

    b. Try to add code to deal with errors. Input errors, try to display information of a student that does not exist, etc. Discuss with your demonstrator.

    c. Implement the toString method. Where could you implement it? How you could to use it?

4. Suppose a class with N students. Each student is enrolled in M different courses (M can be different for each student). Implement a Java code that read the marks of all students in all courses and store them in a 2 dimensional matrix. Now implement the methods below:
    a. Average mark of a student x.
    b. Minimum mark of a student x.
    c. Average mark of all students
    d. Think if more different methods.
    e. Try to implement a code that has only local variables, and all inputs and outputs will be done in the main method.

SENG6110 students

5. Implement a sorting algorithm for the Agency interface. Try to sort using different keys (name, age, average age, etc).
6. In GradeReport example there is a sort algorithm implemented. Check it.

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