

Programming III

Laboratory 6

Objectives

- Collections
- Exceptions
- Streams

Exercises

1. Create the class Student that as a name, a class that it is in class should be between [0,12] and a map that contains a subject and the notes at that subject. Notes should have values between [1,10]. Resolve the following requirements. Try to use stream to solve the requirements.

- Implement your own Exception class
- Implement the student class and verify the values stored in the fields that have restrictions
- Create a list of students and display the list
- Add functions to student class that allows calculation of the mean for a student at a subject, general mean and add a mark.
- Sort the list of the students based on general mean
- Display all that attended a class and have pass marks
- For each class find the student with maximum, minimum general mean
- Using find algorithm from Collections find the student that attendances most subjects
- For each class display the list of students
- For each class display first 3 students means
- For a subject display a mark report (mark, number of students that obtained that mark)

Supplementary Exercises

- Create a class war ship that has like attributes a name, location (latitude and longitude coordinates) and a list of it's captains. Each captain has a name and start and end date when it was captain (use java Date class for dates)
 - Create a list of ships and display it

- b. Validate correctness of data when is introduced, ex. locations values, dates ...
- c. Add functions to manage captain list
- d. Add a facility that allows the location coordinates to be displayed as double values or using degrees
- e. Identify the ships from the list that are in range of other ship
- f. For each captain identify the ships and periods he was captain
- g. Display the list of ships based on their age (the age is determined from captains list)
- h. Document your project
- i. Create the class diagram

Where is possible provide both implementations using streams and not using streams