Programming III

Laboratory 5

Objectives

- Collections
- Comparing objects
-Streams

Exercises

1. Resolve the following requests:

   a) Create a class Person that has like attributes first name, last name, last attendee studies and year of birth.
   b) Create a generic class Pair that has two members the (x,y). Create set/get methods, constructor, a method that allows the displaying of an object of type pair and a method for switching the order of pair members.
   c) Create a list of type pairs of Persons and display the list
   d) Sort the list of pairs of persons based on first pair member last name, and if 2 persons have the same last name, based on second pair member last name
   e) Create a map that has like key the last attendee studies and like value the list of persons that done that studies (from the list of pair). Display the map
   f) From Person class derive classes Employee that has a salary and a class Student that has an attribute telling how many semesters it performed without taxes.
   g) Crete a method that allows to display list of Persons, list of Employee and lists of Students but does not allow to display list of pairs of persons
   h) Modify the pair class in order to allow the creation only just of pairs of persons
   i) Find the oldest Person from the list of pairs.

2. Create a class Flower that has a name, a species and a price.

   a) Create a list of lowers and display it
   b)   using aggregate operation
      a. calculate the average price from the flower list
      b. display the flowers that belongs to a species that is passed like argument on command line
      c. extract a list of flowers that name starts with a substring

OBS: For each requirement create a separate method

Supplementary Exercises

1.   Define the class Movie that has like attributes the director and a budget. From it derive the class Documentary that has like attributes the number of episodes and a short description of the subject and the class Musical that has like attributes the list of distributed Actors. Each actor has a name and contains information about its dancing and singing abilities.
   a. Create a list of Movies and display it

b. Extract from the list of movies the list of musicals that uses less that n actors, n is passed like command line parameter, use the display method create at point a) to display the list of Musicals
c. From the list of movies count how many documentaries have in their description a set of words
d. For each distinct actor that appears in the movie list display the movie title and its director
e. Sort the list of movies base on the budget and if two movies have same budget based on director
f. Document your project

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