November 20, 2018

MPP - Final

Please write Very Very Clearly! If I can Not read your writing, I can NOT give you credit.

1) and 2). (one point). What is your name?

3) True or False (two points each) :

a) In JavaFX the "handle" method of EventHandler is used to register a listener with a source _____

b) Consider the following signature for method 1 (m1)
m1 (? extends T). For example if we have m1 (? extends Employee), this means the argument can be an Employee object, or any parent of Employee _____

c) A functional interface is an interface that has only one abstract method that must be implemented _____

4) Consider the following class :

```
public class Company
{
 private String companyName; // for example Microsoft
 private String companyCity; // for example Seattle
 private String companyState; // for example Washington
 private double totalProfitForThisYear;
```

Assume we have an arraylist of all companies in the United States, maybe 10,000 companies, and assume the arraylist is completely populated with data.

```
List <Company> arr1 = new ArrayList <Company>;
```

se **Lambdas and Streams** to do the following. **(7 points each).**

a) Print out all of the company cities whose city name begins with the letter 'M', in sorted order, and get of all the duplicates. Print out only the company city data.

b) Print out the average of all the totalProfitForThisYear.

c) Use the **'reduce'** method to get the total(sum) of All totalProfitForThisYear data.

d) Print out all of the company objects, but if the city name begins with the letter 'T', then capitalize the me. You must use only one Stream pipeline for this problem.

Create a list of all Company objects whose company state is Nebraska, and whose fitForThisYear is greater than $4,000,000.

Print out All of the company objects with the following restriction. Sort (by companyState) only the hose companyState begins with the letter 'D' (All other company objects are Not sorted), and Pri sorted objects at the very beginning, BEFORE all of the Unsorted objects have been printed out. only one Stream pipeline for this problem.

g) Save to a list, all of the company objects, but if the city name begins with the letters "Mo", then capitalize all of the city name. For this problem you can Not change the original data. We do Not want to change the original data. Hint : Use new ...

h) Print out All of the company objects with the following restriction. If the 'companyCity' begins with the letter 'C', then print these first. If the "companyCity" begins with the letter 'H', then print all of these second, immediately after all of the 'C' cities. Then at the end, after the 'C' cities, and after the 'H' cities, print out All of the rest of the company objects. You Must use only ONE 'System.out.println' statement in your code. All of the objects must be printed out with the same one statement.

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5) (3 points). Write a paragraph or two relating SCI to JavaFX.
You should have "Clear Connections, Stern Logic, Utter Simplicity".

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6) a) (8 points). There is a diagram below of a real estate agency that looks like a class diagram. Assume it is a class diagram. In the Staff class, write an "equals" method which overrides the equals method from the Object class. Include only the following data members in your code, Not all of the data members.
Include : String staffNo (the staff number), double salary (we add this to the diagram), and Date DOB (date of birth).
Write only the 'equals' method inside the Staff class, only this one method.

b) (8 points). In the same Staff class as in 6a) up above, considering **Only the Same data members** that we used in 6a) up above, write the clone( ) method. Write only the 'clone' method inside the Staff class, only this one method.

c) (5 points). In the same Staff class as in 6a) up above, considering **Only the Same data members** that we used in 6a) up above, write the toString( ) method. Write only the 'toString' method inside the Staff class, only this one method.

d) (5 points). In the same Staff class as in 6a) up above, considering **Only the Same data members** that we used in 6a) up above, write the hashCode( ) method. Write only the 'hashCode' method inside the Staff class, only this one method.

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7) (8 points). Consider the same diagram below of a real estate agency. In the Staff class add a method called 'averageRent' (rent is a double) which gives us the average of all the 'rent' for all PropertyForRent objects, for that one Staff member. To find the average you **must use Streams**! Assume we already have a collection that has PropertyForRent Objects inside it.

See the next page (There are three pages in total).