INFO6205_Spring2020_Sect... 25 minutes

Question - 1
Ticket Number

SCORE: **0 points**

Please enter your ticket number below:

Question - 2
Java Collection

SCORE: **5 points**

What is a Collection in Java?

● A group of objects

○ A group of classes

○ A group of interfaces

○ None of the above

Question - 3
Performance

SCORE: **5 points**

You have a problem whose execution time is a polynomial function of N, the number of elements in the problem.
That's to say: $t = cN^k$
Which of the following techniques might you consider to reduce the execution time (check all that apply)?

● lessen the coefficient c (e.g. by running on a faster computer);

●

Effectively reduce the size of N by dividing the problem into smaller, independent sub-problems (provided that the cost of recombining the solutions doesn't outweigh the benefit).

○ Specifying a different value of the exponent k.

Question - 4
Hashcodes and Equality

SCORE: **5 points**

Which of the following is/are true. (Select all that apply)

● If x.equals(y), x.hashCode() must be equal to y.hashCode().

○ If x.hashCode()=y.hashCode(), then x.equals(y).

● If x.equals(y), x.compareTo(y) must be equal to 0

○ All of the above

Question - 5

Sort by Grade and Id

SCORE: **35 points**

In this question, it reads in a list of Students (Id and Grade) and maintains an ordered list of Student (where Grade is more significant than Id).

As each word **"S"** is added to the list, we search until we find a word **"T"** that is greater than **"S"**. Then we insert **"S"** just before **"T"**.
You need to write the **compareTo** function for Student and position(this will return the correct position of new node to insert)

Example1: (Id, Grade)
Input 1 - "2009101" "C"
Input 2 - "200899" "B"

Output - "200899" "B", "2009101" "C"
As B < C

Example2: (Id, Grade)
Input 1 - "200899" "B"
Input 2 - "200890" "B"

Output - "200890" "B", "200899" "B"
Grades are equal but id 200890 < 200899