Stack - Heap Homework

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**What is mutable/immutable in Java?**

Mutable means object can be changed. StringBuilder and StringBuffer can be given as examples to mutable objects

Immutable means once created, cannot be changed anymore. String is an example.

**What is StringBuilder and StringBuffer and their differences?**

StringBuffer and StringBuilder has a lot of useful methods to manipulate data like append(), insert(), delete(), reverse(). StringBuffer and StringBuilder can be converted to String by toString() method. StringBuffer is synchronized i.e. thread safe. It means two threads can't call the methods of StringBuffer simultaneously. StringBuilder is non-synchronized i.e. not thread safe. It means two threads can call the methods of StringBuilder simultaneously.

**What is Stack and Heap in Java?**

Stack is where methods, local variables and object references are stored.

When you run a program, different layers will be created in stack and they will be executed in the order of program (Last in, first out).

Heap is where objects (instances) are stored.

Accessing object is slower compared to accessing an instance variable.

**What is Garbage Collection?**

Garbage means unreferenced objects (objects that lost their references). Garbage Collection is a process of destroying objects that lost references. Garbage Collection runs automatically (implicitly) for better memory management in Java. (Garbage Collection applies only to reference types data (objects))

**What does System.gc() or Runtime.getRunTime().gc() methods do in Java?**

In Java, Garbage Collection happens automatically (implicitly)

However, it can be done explicitly as well by calling System.gc() method or Runtime.getRunTime().gc()

**What is finalize() method and why it is used for?**

finalize() method can be used to run a block of code before object reference is garbage collected

Purpose of using this method is to do proper clean up before removing the object. By default, finalize method is empty. However, you can write your own finalize method to take certain action. This method is located in Object class and can be overridden wherever it is needed.