A Definition of Java Garbage Collection

Java garbage collection is the process by which Java programs perform **automatic memory management.** Java programs compile to byte code that can be run on a Java Virtual Machine or JVM for short. When Java programs run on the JVM, objects are created on the heap, which is a portion of memory dedicated to the program. Eventually, some objects will no longer be needed. **The garbage collector finds these unused objects and deletes them to free up memory.**

OR

In java, garbage means unreferenced objects.

Garbage Collection is process of reclaiming the runtime unused memory automatically. In other words, it is a way to destroy the unused objects.

To do so, we were using free() function in C language and delete() in C++. But, in java it is performed automatically. So, java provides better memory management.

Advantage of Garbage Collection
- It makes java **memory efficient** because garbage collector removes the unreferenced objects from heap memory.
- It is **automatically done** by the garbage collector (a part of JVM) so we don't need to make extra efforts.

How can an object be unreferenced?

There are many ways:

- By nulling the reference
- By assigning a reference to another
- By annonymous object etc.

1) By nulling a reference:
```
Employee e=new Employee();
e=null;
```

2) By assigning a reference to another:
```
Employee e1=new Employee();
Employee e2=new Employee();
e1=e2;//now the first object referred by e1 is available for garbage collection
```

3) By annonymous object:
```
new Employee();
```

finalize() method

The finalize() method is invoked each time before the object is garbage collected. This method can be used to perform cleanup processing. This method is defined in Object class as:

public void finalize(){}

gc() method

The gc() method is used to invoke the garbage collector to perform cleanup processing. The gc() is found in **System** and Runtime classes.

public static void gc(){}

eg:

public class TestGarbage{

 public void finalize(){System.out.println("object is garbage collected");}

 public static void main(String args[]){
 TestGarbage s1=**new** TestGarbage();
 TestGarbage s2=**new** TestGarbage();

 s1=**null**;
 s2=**null**;
 System.gc();
 }
}
```
    Output:    object is garbage collected
               object is garbage collected
```