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UNIT II – Control Statements and Constructors

Control structures – Arrays - Objects and classes: Classes – Access Specifiers – methods and attributes -   **constructors: Default Constructor** – Parameterized Constructor – Copy Constructor- Garbage collection.

Garbage collection

- 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 anonymous object etc.

By nulling a reference:

   Employee e=**new** Employee();

   e=**null**;

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

By anonymous 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:

protected void finalize(){}

Note: The Garbage collector of JVM collects only those objects that are created by new keyword. So if you have created any object without new, you can use finalize method to perform cleanup processing (destroying remaining objects).

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(){}

Example

```
public class TestGarbage1{
public void finalize(){System.out.println("object is garbage collected");}
public static void main(String args[]){
TestGarbage1 s1=new TestGarbage1();
TestGarbage1 s2=new TestGarbage1();
s1=null;
s2=null;
System.gc();  } }
```

object is garbage collected

object is garbage collected