



CS F213 - Object Oriented Programming

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<https://github.com/JenniferRanjani/Object-Oriented-Programming-with-Java>



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Queries asked during the previous class



- During serialization, will it be a compilation error if we try to write an int variable first followed by a float variable and read the float first followed by int?
 - There will not be a compilation error. But, junk values are printed.
- The close() method of the autocloseable interface is implemented in classes like BufferedReader, PrintWriter etc

Object Class



- It is present in java.lang package
- Every class in Java is directly or indirectly derived from Object class
 - If a class extends another class it is indirectly derived
- Methods of the Object class is available to all Java classes
- Object class is the root of inheritance hierarchy.

Methods in Object Class

- `toString()`
- `hashCode()`
 - For every object, JVM generates a unique number which is hashcode.
 - It is not the internal address of the object, but the hash based on the address
 - Advantage of saving objects based on hash code is searching becomes easy
- `equals()`
 - When `hashCode()` method is overridden a general contract is to be maintained which generates equal hash codes for equal objects.
- `getClass()`
 - Returns the actual runtime class of the object.

Java Garbage Collection



- Garbage means unreferenced objects
- Garbage collection is the process of reclaiming the runtime unused memory automatically
- Advantage:
 - Memory efficient because it removes unreferenced objects from heap
 - Automatically done by garbage collector

Object unreferencing



- Nulling the reference
 - `Test t = new Test();`
 - `t = null;`
- Assigning a reference to another
 - `Test t1 = new Test();`
 - `Test t2 = new Test();`
 - `t1 = t2;`
 - Now the first object reference by t1 is available for garbage collection
- By anonymous object
 - `new Test();`

- **finalize()**
 - This method is called before garbage collection when an object has no more references.
 - It could be overridden to dispose system resources, perform clean up and minimize memory leaks.
 - finalize() method is called just once on an object
 - protected void finalize()
- **gc()**
 - It is used to invoke the garbage collector to perform clean up
 - It is found in System and Runtime classes.
 - public static void gc()

Java Runtime class



- It is used to interact with the Java runtime environment
- It provides methods to execute a process, invoke GC, get total and free memory etc.
- Only one instance of the `java.lang.Runtime` class is available for one Java application