# Career Services Assignment 3 – Java Flash Cards

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| **Front of Card** | **Back of Card** |
| Waht is Abstraction versus Encapsulation in OOP? | Abstraction provides implementation hiding. Encapsulation provides information hiding. |
| What is Polymorphism in OOP? | Wherein a single variable may denote one of many objects. Vital to the principle of coding to an interface not an implementation. |
| What is the difference between abstract class and interface? | An interface may only declare a declaration. An abstact class may contain both declartion and concrete implementation. A subclass may inherit multiple interfaces but only one abstact class. |
| Is final public abstract fooClass{}; compilable? | No. abstract classes may not be final. |
| What is the difference between method overloading and method overriding? | Method overloading changes the method signature. Method overriding retains the signature but the binding changes. |
| What is the difference between array and linklist | An array can not be resized and is created in contiguous area of memory with an access time of O(1). A linked list may be resized and is not necessarily in a contiguous memory area but access time is O(n). |
| What is the difference between a string literal and string object | A string literal exists in the PermMem String pool. A string object exists in the heap. |
| What is meant by autoboxing in Java |  |
| What is the difference between Hashtable and HashMap | Hashtable is an obsolete sychronized thread safe collection that does not allow nulls.  HashMap is a nonthread safe collection which allows nulls. |
| What is a map in Java? | A map is an associative array of <Key, Value> pairs. |
| What two methods should the map key Object provide? | equals() and hashCode() |
| What is a priority queue? Why would you use one? | A priority queue implements the Queue structure wherein the lowest or highest priority item will be at the head of the queue.  PriorityQueues provide constant time access to the highest or lowest priority object enqueued. |
| What is a thread in Java? | A thread is a indepent path of execution. All threads of a process share a common data space. |
| What is the Difference between thread and runnable? | A class inherits from the java.lang.Thread class but implements Runnable. Runnable tasks may be reused and restarted while Threads may not. |
| What is the difference between sleep() and wait()? | Wait is used inside synchronized context for inter-thread communication and releases the lock on the monitor object while sleep pauses the calling thread without releasing the lock. |
| What is a deadlock? | When multiple threads are waiting for each other to release the resource they need and get stuck for infinite time, |
| What is the difference between the stack and the heap | Stack memory is used to store local variables and function calls. The Heap is used to store objects |
| When is an object garbage collected? | When a created object is no longer reachable , including circularly referenced chains, or used it is eligible for garbage collection. |
| How do I create a memory leak in Java? | Using ClassLoader (Tomcat is an egregious example of this) with thread pools pointing to strong references, the references are never released. |
| What is Big O of n? | A representation of space/time complexity. O(n) implies dependence of the number (n) of elements |