JAVA Programming Questions Part II

Q.1 **What do you mean by an interface in Java?**

An interface in Java is a blueprint of a class or you can say it is a collection of abstract methods and static constants. In an interface, each method is public and abstract but it does not contain any constructor. Thus, interface basically is a group of related methods with empty bodies. Example:

```
public interface Animal {
  public void eat();
  public void sleep();
  public void run();
}
```

Q2. What is composition in Java?

Composition is again a specialized form of Aggregation and we can call this as a "death" relationship. It is a strong type of Aggregation. Child object does not have their lifecycle and if parent object deletes all child object will also be deleted. Let's take again an example of a relationship between House and rooms. House can contain multiple rooms there is no independent life of room and any room can not belongs to two different houses if we delete the house room will automatically delete

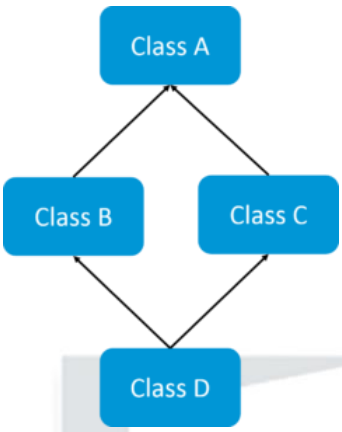
Q.3 **What is the role of JDBC DriverManager class?**

The DriverManager *class* manages the registered drivers. It can be used to register and unregister drivers. It provides factory method that returns the instance of Connection.

Q4. What are the differences between forward() method and sendRedirect() methods?

forward() method	SendRedirect() method
forward() sends the same request to another resource.	sendRedirect() method sends new request always because it uses the URL bar of the browser.
forward() method works at server side.	sendRedirect() method works at client side.
forward() method works within the server only.	sendRedirect() method works within and outside the server.

Q.5 **What is multiple inheritance? Is it supported by Java?**



If a child class inherits the property from multiple classes is known as multiple inheritance. Java does not allow to extend multiple classes.

The problem with multiple inheritance is that if multiple parent classes have the same method name, then at runtime it becomes difficult for the compiler to decide which method to execute from the child class.

Therefore, Java doesn't support multiple inheritance. The problem is commonly referred to as Diamond Problem.

Q.6 **What is runtime polymorphism or dynamic method dispatch?**

In Java, runtime polymorphism or dynamic method dispatch is a process in which a call to an overridden method is resolved at runtime rather than at compile-time. In this process, an overridden method is called through the reference variable of a superclass. Let's take a look at the example below to understand it better.

```
1  class Car {
2  void run()
3  {
4  System.out.println("car is running");
5  }
6  }
7  class Audi extends Car {
8  void run()
9  {
10 System.out.prinltn("Audi is running safely with 100km");
11 }
12 public static void main(String args[])
13 {
14 Car b= new Audi();    //upcasting
15 b.run();
16 }
17 }
```

Q.7 **What is the difference between Error and Exception?**

An error is an irrecoverable condition occurring at runtime. Such as OutOfMemory error. These JVM errors you cannot repair them at runtime. Though error can be caught in the catch block but the execution of application will come to a halt and is not recoverable.

While exceptions are conditions that occur because of bad input or human error etc. e.g. FileNotFoundException will be thrown if the specified file does not exist. Or a NullPointerException will take place if you try using a null reference. In most of the cases it is possible to recover from an exception (probably by giving the user feedback for entering proper values etc.

Q8. What are the important methods of Java Exception Class?

Exception and all of it's subclasses doesn't provide any specific methods and all of the methods are defined in the base class Throwable.

1. **String getMessage()** – This method returns the message String of Throwable and the message can be provided while creating the exception through it's constructor.
2. **String getLocalizedMessage()** – This method is provided so that subclasses can override it to provide locale specific message to the calling program. Throwable class implementation of this method simply use getMessage() method to return the exception message.
3. **Synchronized Throwable getCause()** – This method returns the cause of the exception or null id the cause is unknown.
4. **String toString()** – This method returns the information about Throwable in String format, the returned String contains the name of Throwable class and localized message.
5. **void printStackTrace()** – This method prints the stack trace information to the standard error stream, this method is overloaded and we can pass PrintStream or PrintWriter as an argument to write the stack trace information to the file or stream.

Q9 What is OutOfMemoryError in Java?

OutOfMemoryError is the subclass of java.lang.Error which generally occurs when our JVM runs out of memory.

Q10 . What do you mean by batch processing in JDBC?

Batch processing helps you to group related SQL statements into a batch and execute them instead of executing a single query. By using batch processing technique in JDBC, you can execute multiple queries which makes the performance faster.

Q11. What are the different types of garbage collectors in Java?

Garbage collection in Java a program which helps in implicit memory management. Since in Java, using the new keyword you can create objects dynamically, which once created will consume some memory. Once the job is done and there are no more references left to the object, Java using garbage collection destroys the object and relieves the memory occupied by it. Java provides four types of garbage collectors:

- Serial Garbage Collector
- Parallel Garbage Collector
- CMS Garbage Collector
- G1 Garbage Collector