Q1.What is Exception in Java?

Ans - An exception is an event, which occurs during the execution of a program, that disrupts the normal flow of the program's instructions. When an error occurs within a method, the method creates an object and hands it off to the runtime system.

Q2.What is Exception Handling?

Ans - Java Exception handling framework is used to handle runtime errors only. The compile-time errors have to be fixed by the developer writing the code else the program won't execute

Q3.What is the difference between Checked and Unchecked Exceptions and Error?

Ans -

Checked Exception	Unchecked Exception
Checked exceptions occur at compile time.	Unchecked exceptions occur at runtime.
The compiler checks a checked exception.	The compiler does not check these types of exceptions.
These types of exceptions can be handled at the time of compilation.	These types of exceptions cannot be a catch or handle at the time of compilation, because they get generated by the mistakes in the program.
They are the sub-class of the exception class.	They are runtime exceptions and hence are not a part of the Exception class.
Here, the JVM needs the exception to catch and handle.	Here, the JVM does not require the exception to catch and handle.

Q4.What are the difference between throw and throws in Java?

Ans -

Parameters	Throw in Java	Throws in Java
Definition	The throw keyword helps in throwing an exception in the program, explicitly inside some block of code or inside any function.	We use the throws keyword in the method signature. We use it to declare some exceptions thrown by a function when the code is getting executed.
Internal Implementation	The throw keyword is implemented internally because it is only allowed to throw a single exception at once. It means that it is not possible to throw multiple exceptions when we are using the throw keyword.	With the throws keyword, on the other hand, one can easily declare various exceptions. These could be thrown by any function when using the throws keyword.
Type of Exception	One can only propagate the unchecked exceptions using the throw keyword. It means that no checked exception can be propagated when we use the throw keyword.	When we use the throws keyword, we can declare both unchecked and checked exceptions. The checked expression must always use the throws keyword for propagation followed by a specific name of the exception class.
Syntax	The instance variable follows the throw keyword.	The exception class names follow the throws keyword.

Q5.What is multithreading in Java? mention its advantages

Ans - Multithreading refers to a process of executing two or more threads simultaneously for maximum utilization of the CPU. A thread in Java is a lightweight process requiring fewer resources to create and share the process resources.

Advantages :
      Simplified and streamlined program coding
       Improvised GUI responsiveness
      Simultaneous and parallelized occurrence of tasks
      Better use of cache storage by utilization of resources
      Decreased cost of maintenance
      Better use of CPU resource

Q6.Write a program to create and call a custom exception

Ans -
```java
// Custom exception class
class CustomException extends Exception {
   public CustomException(String message) {
      super(message);
   }
}

// Main class to test the custom exception
public class CustomExceptionExample {
   // Method that throws the custom exception
   public static void divideNumbers(int dividend, int divisor) throws CustomException {
      if (divisor == 0) {
         throw new CustomException("Divisor cannot be zero!");
      }

      int result = dividend / divisor;
      System.out.println("Result: " + result);
   }

   public static void main(String[] args) {
      int dividend = 10;
      int divisor = 0;

      try {
         divideNumbers(dividend, divisor);
      } catch (CustomException e) {
         System.out.println("Exception caught: " + e.getMessage());
      }
   }
}
```

Q7.How can you handle exceptions in Java?

Ans - **The "catch" block is used to handle the exception**. It must be preceded by try block which means we can't use catch block alone. It can be followed by finally block later. The "finally" block is used to execute the necessary code of the program

Q8.What is Thread in Java?
Ans - A thread is **a thread of execution in a program**. The Java Virtual Machine allows an application to have multiple threads of execution running concurrently. Every thread has a priority. Threads with higher priority are executed in preference to threads with lower priority.

Q9. What are the two ways of implementing thread in Java?
Ans - **implementing an interface and extending a class**. Extending a class is the way Java inherits methods and variables from a parent class.

Q10.What do you mean by garbage collection?
Ans - Garbage collection **ensures that a program does not exceed its memory quota or reach a point that it can no longer function**. It also frees up developers from having to manually manage a program's memory, which, in turn, reduces the potential for memory-related bugs.