Core Specific- Java Assignment 5

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: Differences between Checked and Unchecked Exceptions in Java

S.No.	Checked Exception	Unchecked Exception
1.	Checked exceptions happen at compile time when the source code is transformed into an executable code.	Unchecked exceptions happen at runtime when the executable program starts running.
2.	The checked exception is checked by the compiler.	These types of exceptions are not checked by the compiler.
3.	Checked exceptions can be created manually.	They can also be created manually.
4.	This exception is counted as a sub-class of the class.	This exception happens in runtime, and hence it is not included in the exception class.

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

Ans:

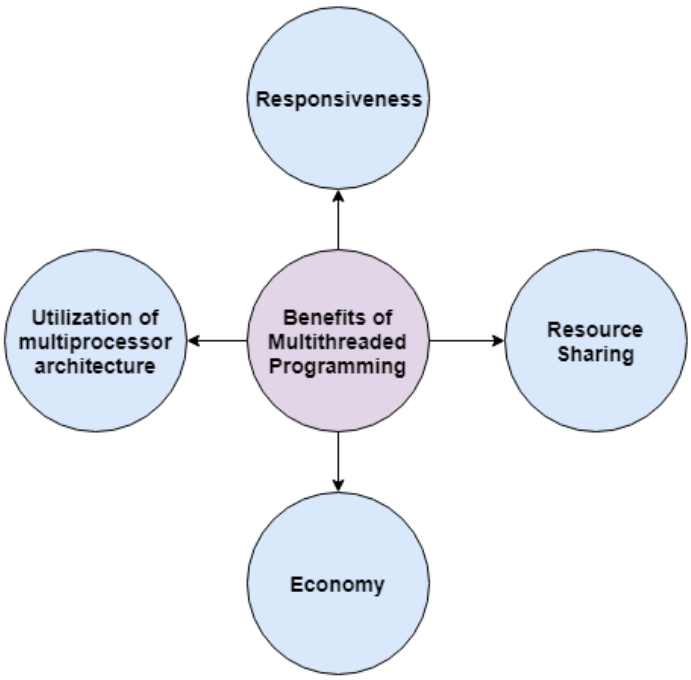
Throw: The Throw keyword in java is used to explicitly throw an exception inside a method or a block of code in a java program.

Throws: The Throws keyword in java is used at the method signature to declare all the exceptions that might be thrown by the method during its execution.

Q5. What is multithreading in Java? mention its advantages

Ans:

Multithreading allows the execution of multiple parts of a program at the same time. These parts are known as threads and are lightweight processes available within the process. So multithreading leads to maximum utilization of the CPU by multitasking.



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

Ans:

```
import java.util.ArrayList;
import java.util.Arrays;
```

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```
// create a checked exception class
class CustomException extends Exception {
  public CustomException(String message) {
    // call the constructor of Exception class
    super(message);
  }
}

class Main {

  ArrayList<String> languages = new ArrayList<>(Arrays.asList("Java", "Python", "JavaScript"));

  // check the exception condition
  public void checkLanguage(String language) throws CustomException {

    // throw exception if language already present in ArrayList
    if(languages.contains(language)) {
      throw new CustomException(language + " already exists");
    }
    else {
      // insert language to ArrayList
      languages.add(language);
      System.out.println(language + " is added to the ArrayList");
    }
  }
  public static void main(String[] args) {

    // create object of Main class
    Main obj = new Main();
    // exception is handled using try...catch
    try {
      obj.checkLanguage("Swift");
      obj.checkLanguage("Java");
    }
    catch(CustomException e) {
      System.out.println("[" + e + "] Exception Occured");
    }
  }
}
```

Output

```
Swift is added to the ArrayList
[CustomException: Java already exists] Exception Occured
```

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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:

In Java, multithreading a thread can be created by the following two ways:

1. By extending the *thread* class
2. By implementing a *Runnable* interface

Q10. What do you mean by garbage collection?

Ans:

Garbage collection (GC) is a memory recovery feature built into programming languages such as C# and Java. A GC-enabled programming language includes one or more garbage collectors (GC engines) that automatically free up memory space that has been allocated to objects no longer needed by the program.