Q1>What is Exception in java?

Ans == In java,an exception is an event that occurs during the execution of a program that disrupts the normal flow of the programs instruction. When an exceptional condition occurs,the java virtual machine (JVM) creates an object known as an “exception object”to represent the exception.this object contains information about the exception,such as its type,message,and the current state of the program’s execution.

Q2>What is Exception handling?

Ans == Exception handling is a programming concept and a mechanism used to manage and respond to exceptional conditions or errors that may occur during the execution of a program.Exception handling allows developers to gracefully deal with unexpected situations,such as runtime errors,logical errors,or external factors that could disrupt the normal flow of the programs.

In java and many other programming languages,exception handling is achieved using the following keywords:

1>try

2>catch

3>finnaly

4>throw

Q3>What is the difference between checked and unchecked Exception and Error?

Ans == 1.Checked Exception:

*Checked exceptions are a type of exception that the compiler requires the programmers to handle explicitly using ‘try-catch’ blocks or to declare them in the method signature using the ‘throws’ keyword.

*these exceptions typically represent condition that are beyond the control of the program and might occur due to external factor or exceptional conditions that the program should be able to handle gracefully.

*Examples of checked exception include “IOException”,”SQLException”,and “ClassNotFoundException”.

2.Unchecked Exceptions (Runtime Exceptions):

*Unchecked exceptions,also known as runtime exceptions,do not need to be declared using ‘throws’ or caught explicitly in ‘try-catch’ blocks.the compiler does not enforce handling or declaring them.

*these exceptions generally arise due to programming errors and are usually recoverable if the underlying issue is fixed.They represent situation where the code might not have been implemented correctly.

*Examples of unchecked exception include “NullPointerException”,ArrayIndexOutOfBoundsException”,and “ArithmeticException”.

3.Errors:

*Error are similar to unchecked exception in that they do not need to be caught or declared explicitly.However errors represent sever problems that are typically beyond the scope of a java program to handle effectively.

*Errors usually occur due to external factors,such as system failures,hardware issues,or resource exhaustion,and are not excepted to be recoverable programmatically.

*Examples of errors include “OutOfMemoryError”,”StackOverFlowError”,and “VirtualMachineError”.

Q4>What are the difference between throw and throws in java?

Ans == In java, ‘throw’ and ‘throws’ are two keywords used in exception handling,but they serve different purposes:

1>’throw’:

*The ‘throw’ keyword is used to manually throw an exception in java.

*When you encounter a situation where a certain condition results in an exceptional case or error,you can use the ‘throw’keyword to create and throw an exception explicitly.

2>’throws’:

*The ‘throws’ keyword is used in method declaration to specify that the method might throw one or more checked exceptions.

*When a method is declared with the ‘throws’ keyword,it means the method may throw certain exceptions,and the responsibility if handling those exception is passed to the calling code.

Q5>What is multithreading in java?mention its advantages.

Ans == Multithreading in java refers to the concurrent execution of multiple threads within a single java application. A thread is a lightweight sub-process that can independently and share resources with other threads of the same process.Java provides built-in support for multithreading through its ‘java.lang.thread’class and related APIs.

The advantages are:

1>Concurrency and Responsiveness.

2>Improved Performance.

3>Better Resource Utilization.

4>Simplified Task Organitation.

Q7>How can you handle exception in java?

Ans == you can handle exceptions using the ‘try-catch’ block and the ‘finally’ block.The ‘try-catch’blocks allow you to catch and handle exceptions that might occur during the execution of a blok of code,while the ‘fnally’block allows you to specify code thet will be executed regardless of whether an exception occurred or not.

Q8>What is Thread in java?

Ans == A thread is a lightweight sub-process that runs concurrently within a java application.Threads are independent sequences of execution that share the same resources,such as memory space,file handles,and open sockets,with other threads belonging to the same process.java provides built-in support for multithreading through the ‘java.lang.Thread’ class and related APIs.

Q9>What are the two ways of implementing thread in java?

Ans == Two main ways of implementing threads:

1>Extending the ‘Thread’ class: This method involves creating a new class that directly extends the ‘java.lang.Thread’ class and override the ‘run()’method. The ‘run()’ method contains the code that will be executed in the thread when it is started.

2>Implementing the ‘Runnable’ interface: This method involves creating a class that implements the ‘java.lang.Runnable’ interface.The ‘runnable’ interface has a single abstract method named ‘run()’,which should be overridden to contain the code that will be executed in the thread.

Q10>What do you mean by garbage collection?

Ans == Garbage collection is an automatic memory management mechanism used in programming language like java to reclaim memory occupied by objects that are no longer in use or reachable by the application.In language with manual memory management, like C and C++,developer are responsible for explicitly allocating and deallocating memory.However,garbage collection eliminates the need for manual memory management, making the memory allocation and deallocation process automatic and transparent to the programmer.