Backend and Database Development

13 classes

Day 4 : 29 Apr 2024

Java Technologies

Exception Handling :

Exception : exception is a type of error which generate when unexpected or abnormal conditions occurs during the execution of a programs. To handle the generated exception using some technique is known as exception handling.

Java program

Compile the program Run the program

javac Demo.java java Demo

javac compiler java interpreter

compile time error run time error

syntax error or typo error

run time error

Exception Error

Exception and Error both are pre define classes part of lang package. By default every java program imported lang package.

Exception : it is a type pre defined class. it is a type of error which generated at run time which we can handle it. Divided by zero, array index out of bounds exception etc.

Error : it is a type of pre defined class. it isa type of error which generated at run time which we can’t handle it. Out of memory, JVM crash etc. software or hardware issue etc.

Exception

Checked exception Unchecked exception

RuntimeException

IOException ArithmeticException

FileNotFoundException NullPointerException

SQLException ArrayIndexOutOfBoundsException

To handle both type of exception it can be checked or unchecked java provided totally 5 keywords.

1. try
2. catch
3. finally
4. throw
5. throws

try catch block

syntax

try {

}catch(Exception e) {

}

Try with multiple catch block

Syntax

try {

}catch(ArithmeticException e) {

}catch(NumberFormatException e) {

}

Try with single catch : generic catch block is ready to handle all type of exception. Whenever if any exception generate if we want to do common task as well as if we don’t known name of the exception or the code generate type of exception then we can use try with single catch block.

Try with multiple catch block : depends upon type of exception we want to do different task we well as we know which code generate what type of exception then it is advisable try with multiple catch block.

Finally block

The code which generate exception those code we need to keep to try block.

Catch block: this block execute only if any exception generate. No exception no catch block.

Finally block : this block execute 100% sure if any exception generate or not.

try

catch catch catch catch finally

catch finally catch

catch finally

file handling program

database connectivity program

try{

open the file

read or write

}catch(Exception e) {

}finally {

close the file

}

Finally block is use to close the resources like file handling or database etc.

throw : throw keyword is use to generate or raise pre defined as well as user defined exception depending upon the conditions.

Syntax

throw new Exception()

or

throw new ExceptionSubClass();

by default every sub class constructor contains super(). Which help to call super class constructor( constructor chaining). Super() by default they call super class empty constructor.

throws : throws keyword is use to throw the exception to caller method.

syntax

void methodName() throws Exception, ExceptionSubClass {

}

Checked exception check twice compile time as well as run time.

Un checked exception check at run time only.

Checked exception we can’t avoid it we need to handle using try – catch or throws mandatory.

Un checked exception w can avoid some extends.

Multi threading Overview

Program : set of instruction to perform a specific task.

Process : time taken to execute the code or program in execution

Processor : processor is responsible to execute the code.

Thread : it is a small execution of code within a process. Thread also known as light weighted process.

By default java is thread base programming language.

Inside a main method always one default thread execute

In java Thread is a pre defined class part of lang package. Which contains currentThread method and this method is static we can call with help of class name.

Thread t = Thread.currentThread();

t -🡪 [main,5,main]

main 🡪 name of the thread

5 🡪priority of the thread

Main 🡪 group of the thread

Min priority 🡪1

Max priority 🡪 10

Norm priority 🡪 5

Multi tasking :

Process base

Thread base

Within a one process using some code we can create multiple thread. every thread execute independently.

In java we can create custom thread using two ways

1. using extends Thread class
   1. we need to create user defined class and that class must be extends pre defined class thread.
   2. then create user defined class object which consider as thread class reference.
   3. Using object we need to call start method. start() is a pre defined method which is part of thread class which help to start the thread ie ready to run (Runnable state).
   4. Start method internally call run() method of thread class. the run method part of thread class empty implementation or coding. So if we want to execute custom code we need to override run method and provide the logic for thread.
2. using implements Runnable interface
   1. we need to create user defined class and that class must be implements Runnable interface. Runnable is a pre defined interface part of lang package which contains one method run().
   2. We need to create thread class reference.

Synchronization : which is use to block or lock the thread. if we want to execute only one thread at time then we can use synchronization concept.

To achieve synchronization we need to use synchronized keyword.