**Exception Handling :**

Exception is a object(memory) which occurs when unexpected or abnormal condition occurs during the execution of a program.

Java Program

javac Demo.java java Demo

java compiler java interpreter

compile time error run time error

syntax error

or

typo error

**run time error**

Error Exception

Both are pre-defined classes part of lang package.

**Error :** It is a type of run time error which we can’t handle it.

JVM Crash, Out of memory, software or hardware issue.

**Exception :** It is a type of run time error which we can handle it.

Divided by zero.

Index out of bound exception

Null pointer exception

Object

Throwable extends Object

Exception extends Throwable

Checked exception unchecked exception

RuntimeException

extends Exception

IOException ArithmeticException

FileNotFoundException ArrayIndexOutOfBoundsException

SQLException NumberFormatException

NullPointerException

Etc etc

All unchecked exception extends RuntimeException class.

But all checked exception extends directly or indirectly Exception class.

To handle checked as well as unchecked exception java provided 5 keywords.

try

catch

finally

throw

throws

**try and catch block**

syntax

try {

}catch(Exception e) {

}

Try block : the code which makes problem one line or multiple that we have to keep in try block.

Catch : This block execute only if any exception generate. Catch block is known as exception solver.

**ArithmeticException**

**Array topic**

In java array is known as reference data type.

Array is use to store more than one value of same types.

int a;

int b=10;

syntax

datatype arrayName[];

int []abc; declaration of array

int []xyz={10,20,30,40,50,60}

we have to retrieve the value using index position. Index position start from 0.

Scanner is a pre-defined class part of util package which help to take the value through keyboards.

**Syntax to create the memory size for the array and take the value through keyboards.**

datatype arrayName[]=new datatype[size];

int abc[]=new int[10];

float xyz[]=new float[20];

String name[]=new String[5];

Try with multiple catch block

**Finally block**

This block will execute 100% sure if any exception generate or not.

try

catch catch catch catch finally

catch finally catch

catch catch

finally

**finally block is use to close resources or clean up activity.**

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

Syntax

throw new Exception();

or

throw new **ExceptionSubClass**();

**throws** : This keyword is use to throw checked or unchecked exception to caller methods.

Syntax

returnType methodName() throws Exception, ExceptionSubclass {

}

void dis1() throws Exception {

}

void dis2() throws ArithemticException {

}

ArithmeticException : divided by zero

ArrayIndexOutOfBoundsException : wrong index position

**Checked Exception**

We have to handle it.

Using try catch or throws mandatory

Checked Exception check twice at compile time as well as run time.

**IO Package**

**Input and Output Operation**

In Java we can achieve IO operation using **stream.**

**Stream:** Flow of data or it is abstraction between source and destination.

Input -🡪 Keyboards, File, Database, Networking etc.

Output 🡪 Console(Monitor), File, Database, Networking etc.

Stream

Byte Char

1 byte memory 2 byte memory

Input Output Input Output

InputStream OutputStream Reader Writer

They are type of abstract classes.

Byte wise classes

DataInputStream DataOutputStream

BufferedInputStream BufferedOutputStream

FileInputStream FileOutputStream

ObjectInputStream ObjectOutputStream

PrintStream

Char wise classes

InputStreamReader OutputStreamWriter

BufferedReader BufferedWriter

FileReader FileWriter

PrintWriter

System.out.println();

Scanner obj = new Scanner(System.in);

System is a pre-defined class part of lang package.

PrintStream ps = System.out;(console reference)

ps.println(“Welcome to Java”);

PrintStream always refers to standard output device.

Console or monitor.

InputStream is = System.in(keyboard reference)

InputStream reference always refer to standard input device ie keyword.

**Byte wise :**

**1st Example**

**Source :** keyboard

**Target :** Console

**2nd Example**

**Source : keyboard**

**Target : File**

**Buffer : It is a temporary which help to improve input as well as output operation.**

**1000 times improve performance.**

**File Buffer Program Buffer File**

**Char wise classes**

**Source : keyboard**

**Target : console**

1. Copy the file in upper case.
2. Copy each world first letter upper case.
3. Display the number of words present in the file.

**Object Serialization**