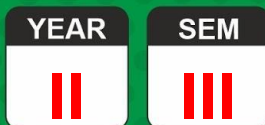




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SAIRAM
DIGITAL RESOURCES



CS8392

OBJECT ORIENTED PROGRAMMING
(Common to EEE, CSE, EIE, ICE, IT)



UNIT NO 3

EXCEPTION HANDLING AND I/O

3.3 BUILT-IN EXCEPTIONS

COMPUTER SCIENCE & ENGINEERING



EXCEPTIONS

- An exception (or exceptional event) is a problem that arises during the execution of a program.
- When an **Exception** occurs the normal flow of the program is disrupted and the program/Application terminates abnormally, which is not recommended, therefore, these exceptions are to be handled.
- An exception can occur for many different reasons. Following are some scenarios where an exception occurs.
 1. A user has entered an invalid data.
 2. A file that needs to be opened cannot be found.
 3. A network connection has been lost in the middle of communications or the JVM has run out of memory.
- Some of these exceptions are caused by user error, others by programmer error, and others by physical resources that have failed in some manner.

BUILT IN EXCEPTIONS

- Built-in exceptions are the exceptions which are available in Java libraries.
- These exceptions are suitable to explain certain error situations.
- Java defines several exception classes inside the standard package **java.lang**.
- The most general of these exceptions are subclasses of the standard type `RuntimeException`.
- Since `java.lang` is implicitly imported into all Java programs, most exceptions derived from `RuntimeException` are automatically available.

BUILT IN EXCEPTION TYPES

Sr.No.	Exception & Description
1	ArithmeticException Arithmetic error, such as divide-by-zero.
2	ArrayIndexOutOfBoundsException Array index is out-of-bounds.
3	ClassNotFoundException JVM tries to load a particular class and the specified class cannot be found in the classpath.
4	ClassCastException Invalid cast.
5	IllegalArgumentException Illegal argument used to invoke a method.
6	IllegalMonitorStateException Illegal monitor operation, such as waiting on an unlocked thread.
7	IllegalStateException Environment or application is in incorrect state.
8	IllegalThreadStateException Requested operation not compatible with the current thread state.

BUILT IN EXCEPTION TYPES Contd..

Sr.No.	Exception & Description
9	IndexOutOfBoundsException Some type of index is out-of-bounds.
10	NegativeArraySizeException Array created with a negative size.
11	NullPointerException Invalid use of a null reference.
12	NumberFormatException Invalid conversion of a string to a numeric format.
13	SecurityException Attempt to violate security.
14	StringIndexOutOfBoundsException Attempt to index outside the bounds of a string.
15	UnsupportedOperationException An unsupported operation was encountered.

ArithmeticException – EXAMPLE

```
public class JavaExceptionExample
{
    public static void main(String args[])
    {
        try
        {
            //code that may raise exception
            int data=100/0;
        }catch(ArithmeticException e){System.out.println(e);
        }
        //rest code of the program
        System.out.println("rest of the code...");
    }
}
```

Output:

Exception in thread main java.lang.ArithmeticException:/ by zero rest of the code...

ArrayIndexOutOfBoundsException – EXAMPLE

```
public class TryCatchExample
{
    public static void main(String[] args)
    {
        try
        {
            int arr[]={1,3,5,7};
            System.out.println(arr[10]); //may throw exception
        }
        // handling the array exception
        catch(ArrayIndexOutOfBoundsException e)
        {
            System.out.println(e);
        }
        System.out.println("rest of the code");
    }
}
```

Output:

java.lang.ArrayIndexOutOfBoundsException: 10 rest of the code

NullPointerException – EXAMPLE

```
class nullpointerexample
{
    public static void main(String args[])
    {
        try
        {
            String a=null; // null value
            System.out.println(a.charAt(0);
        }catch(NullPointerException e)
        {
            System.out.println("Null Pointer");
        }
    }
}
```

Output:

Null Pointer

VIDEO LINK

<https://www.youtube.com/watch?v=pi4Do-ETtTk>

QUIZ LINK

https://docs.google.com/forms/d/1JC8Ga-ks_BRnw-hY-0nTAIEejXQtJlIXbklEokqNbB0/edit