



Throw Clause

Agenda

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User Defined Exception

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User Defined Exception



User Defined Exceptions

- Java provides extensive set of in-built exceptions
- But there may be cases where we may have to define our own exceptions which are application specific

For ex: If we have are creating an application for handling the database of eligible voters, the age should be greater than or equal to 18

In this case, we can create a user defined exception, which will be thrown in case the age entered is less than 18

User Defined Exceptions (Contd.).

- While creating user defined exceptions, the following aspects have to be taken care :
 - The user defined exception class should extend from the Exception class and its subclass
 - If we want to display meaningful information about the exception, we should override the toString() method

Example on User Defined Exceptions

```
class MyException extends Exception {  
    public MyException() {  
        System.out.println("User defined Exception thrown");  
    }  
    public String toString() {  
        return "MyException Object : Age cannot be < 18 " ;  
    }  
}
```

Contd..

Example on User Defined Exceptions (Contd.).

```
class MyExceptionDemo{
    static int flag=0;
    public static void main(String args[]) {
        try {
            int age=Integer.parseInt(args[0]);
            if(age < 18)
                throw new MyException();
        }
        catch (ArrayIndexOutOfBoundsException e) {
            flag=1;
            System.out.println("Exception : "+ e);
        }
    }
}
```

Example on User Defined Exceptions (Contd.).

```
    catch (NumberFormatException e) {  
        flag=1;  
        System.out.println("Exception : "+ e);  
    }  
    catch (MyException e) {  
        flag=1;  
        System.out.println("Exception : "+ e);  
    }  
    if(flag==0)  
        System.out.println("Everything is fine");  
}  
}
```


Explain the flow of Code ...

```
class InvalidInputException extends Exception {
    InvalidInputException(String s) {
        super(s);
    }
}

class Input {
    void method() throws InvalidInputException {
        throw new InvalidInputException("Invalid Input");
    }
}

class TestInput {
    public static void main(String[] args){
        try {
            new Input().method();    // whats happening here?
        }
        catch(InvalidInputException iie) {
            System.out.println(iie.getMessage());
        }
    }
}
```

Guess the Output ...

```
class MyException extends Exception{
    String str1;
    MyException(String str2) {
        str1=str2;
    }
    public String toString(){
        return ("Exception: "+str1) ;
    }
}

class Tester{
    public static void main(String args[]){
        try{
            throw new MyException("User Defined Exception Thrown");
            // throwing user defined custom exception above
        }
        catch(MyException e){
            System.out.println("Inside Exception Handler") ;
            System.out.println(e) ;
        }
    }
}
```

What is the use of toString() method ?

Inside Exception Handler
Exception: User Defined Exception Thrown

Throw Clause



Using throw

- System-generated exceptions are thrown automatically
- At times you may want to throw the exceptions explicitly which can be done using the **throw** keyword
- The exception-handler is also in the same block
- The general form of throw is:
 - throw **ThrowableInstance**
- Here, **ThrowableInstance** must be an object of type **Throwable**, or a subclass of **Throwable**

Using throw (Contd.).

```
class ThrowDemo{  
    public static void main(String args[]) {  
        try {  
            int age=Integer.parseInt(args[0]);  
            if(age < 18)  
                throw new ArithmeticException();  
            else  
                if(age >=60)  
                    throw new ArithmeticException("Employee is retired");  
        }  
        catch(ArithmeticException e) {  
            e.printStackTrace();  
        }  
        System.out.println("After Catch");  
    }  
}
```

What is
ArithmeticException ?

What is
e.printStackTrace() ?

Match the following :

Match the content of Column A with the most appropriate content from column B :

Column A	Column B
a) An exception is	a) Used to throw an exception explicitly
b) Throwable	b) Caused by Dividing an integer by zero
c) ArithmeticException is	c) An event that can disrupt the normal flow of instructions
d) Catch Block	d) This class is at the top of exception hierarchy
e) "throw" is	e) Exception Handler

Quiz

Debug the code & Tell Whats the output ?

```
import java.io.*;
class ThrowTester {

    void method() throws IOException {
        throw new IOException("Method Error");
    }

    public static void main(String args[]) {
        ThrowTester m = new ThrowTester();
        m.method();
        System.out.println("main ends...");
    }
}
```

Summary

In this session, you were able to :

- Learn about throw clause
- Learn about user defined exception

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Assignment





Thank You