Exception Handling

Sensitivity: Internal & Restricted

Agenda

1. Introduction to Exception Handling
2. Exception Handling Keywords

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Introduction to Exception Handling

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Scenario

Meera is flying to NewYork

What are these?

Scenario (Contd.).

- The previous slide depicts an air hostess giving a demonstration of steps that we have to take as passengers, in case of emergency.
- Why this demonstration is important?
- Why the air line staff insists on fastening our seat belts?

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Scenario (Contd.).

- You have to be aware of how to tackle a situation in case of an emergency while you are flying aboard an aircraft.
- You have to fasten your seat belts to protect yourself from mishaps that can occur during take off and landing.
- This example demonstrates how you have to think in advance the many possibilities of mishaps that can occur and what are the preventive measures that can be taken.

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Exception Handling

- Similarly, when we write programs as part of an application, we may have to visualize the challenges that can disrupt the normal flow of execution of the code.
- Once we know what are the different situations that can disrupt the flow of execution, we can take preventive measures to overcome these disruptions.
- In java, this mechanism comes in the form of Exception Handling.

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What is an Exception?

- In procedural programming, it is the responsibility of the programmer to ensure that the programs are error-free in all aspects
- Errors have to be checked and handled manually by using some error codes
- But this kind of programming was very cumbersome and led to **spaghetti code**
- Java provides an excellent mechanism for handling runtime errors

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What is an Exception? (Contd.).

- An exception is an event that occurs during the execution of a program that disrupts the normal flow of instructions

- The ability of a program to intercept run-time errors, take corrective measures and continue execution is referred to as exception handling

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What is an Exception? (Contd.).

- There are various situations when an exception could occur:
  - Attempting to access a file that does not exist
  - Inserting an element into an array at a position that is not in its bounds
  - Performing some mathematical operation that is not permitted
  - Declaring an array using negative values

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Uncaught Exceptions

```
class  Demo {
  public static void main(String args[]) {
    int x = 0;
    int y = 50/x;
    System.out.println("y  = " +y);
  }
 }
```

Although this program will compile, but when you execute it, the Java run-time-system will generate an exception and displays the following output on the console :

```
java.lang.ArithmeticException: / by zero
at Demo.main(Demo.java:4)
```


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Exception Handling Techniques

- There are several built-in exception classes that are used to handle the very fundamental errors that may occur in your programs
- You can create your own exceptions also by extending the **Exception** class
- These are called user-defined exceptions, and will be used in situations that are unique to your applications

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Handling Runtime Exceptions

- Whenever an exception occurs in a program, an object representing that exception is created and thrown in the method in which the exception occurred
- Either you can handle the exception, or ignore it
- In the latter case, the exception is handled by the Java run-time-system and the program terminates
- However, handling the exceptions will allow you to fix it, and prevent the program from terminating abnormally

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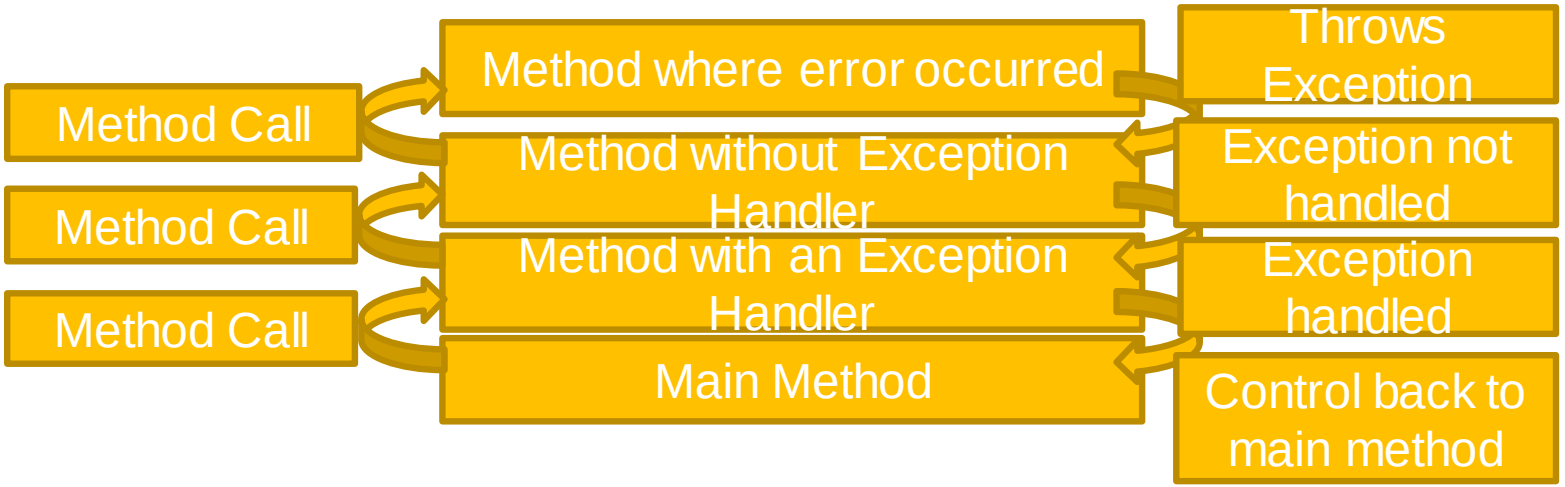
Advantages - Exceptions

1. Separating Error-Handling Code from "Regular" Code

2. Propagating Errors Up the Call Stack



3. Grouping and Differentiating Error Types

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Exception Handling Keywords





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Exception Handling Keywords

Java's exception handling is managed using the following keywords: **try, catch, throw, throws and finally.**

```
try {
   // code comes here
   }
catch(TypeofException  obj) {
    //handle the exception
    }
finally  {
             //code to be executed before the program ends
   }
```


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Summary

In this session, you were able to :

- Learn brief introduction on exception and techniques to handle exception
- Learn about exception handling keywords

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Thank You

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