

COMP 249: Object Oriented Programming II

Tutorial 6:

Exception Handling

Exception handling in Java

Which is the parent class for all exceptions and errors in Java?

- A. Exception
- B. Runtime Exception
- C. Throwable
- D. Error

What is the difference between throw and throws?

- A. throw is used to throw an exception, throws is used to declare an exception.
- B. throws is used to throw an exception, throw is used to declare an exception.
- C. throw is used in the method signature, throws is used inside the method.
- D. throws is a keyword in Java, throw is not.

If an exception is thrown in a nested try block and not caught, where is it handled?

- A. In the same try block.
- B. In the next outer catch block.
- C. In the main method.
- D. It is ignored.

Which of these is a valid syntax for handling multiple exceptions?

- A. `catch(Exception1 | Exception2 e)`
- B. `catch(Exception1 & Exception2 e)`
- C. `catch(Exception1 , Exception2 e)`
- D. `catch(Exception1 || Exception2 e)`

What will happen if you call `throw new Exception("Error");` in a method without a `throws` clause?

- A. The exception will be caught automatically.
- B. The method will compile successfully.
- C. A compilation error will occur.
- D. The exception will be ignored.

In which case will a finally block not be executed?

- A. When an exception is caught in a catch block.
- B. When a `System.exit()` call is made in a try block.
- C. When no exception occurs.
- D. When an exception is thrown and caught in the catch block.

What is an unchecked exception?

- A. An exception that must be caught or declared.
- B. An exception that is checked at compile-time.
- C. An exception that does not need to be caught or declared.
- D. An exception that is thrown manually.

If a method does not handle an exception, what must it do?

- A. Terminate the program.
- B. Declare it using the throws keyword.
- C. Rethrow it using throw.
- D. Ignore it.

What is the superclass of all exception classes in Java?

- A. Object
- B. Throwable
- C. Exception
- D. Error

Which method is used to retrieve the detail message from an exception object

- A. `getDetail()`
- B. `getException()`
- C. `getMessage()`
- D. `getError()`

What happens if an exception is not caught in the method where it is thrown?

- A. The program continues to the next line.
- B. The program terminates.
- C. The exception is propagated up the call stack.
- D. The method automatically catches the exception.

What is the purpose of the throw statement in Java?

- A. To declare an exception.
- B. To execute code when no exception occurs
- C. To manually throw an exception.
- D. To define a custom exception.

What happens when an exception is thrown in the main method?

- A. The program continues execution normally.
- B. The exception is ignored.
- C. The program terminates with an exception message and stack trace.
- D. The exception is caught automatically.

Can we have multiple catch blocks for a single try block?

- A. Yes, each catch block can handle a different type of exception.
- B. No, only one catch block is allowed per try block.
- C. No, catch blocks are not allowed in Java.
- D. Yes, but only for unchecked exceptions.

True or False: The code will print "ArithmeticException caught" followed by "Finally block executed."

```
public class Test {  
    public static void main(String[] args) {  
        try {  
            int result = 10 / 0;  
        } catch (ArithmeticException e) {  
            System.out.println("ArithmeticException caught");  
        } finally {  
            System.out.println("Finally block executed.");  
        }  
    }  
}
```

True or False: The following code will result in a compilation error due to unreachable code.

```
public class Test {
    public static void main(String[] args) {
        try {
            return;
        } finally {
            System.out.println("Finally block executed.");
        }
        System.out.println("This will not execute.");
    }
}
```

True or False: The code will result in a compilation error due to unhandled checked exceptions.

```
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader;

public class Test {
    public static void main(String[] args) {
        try {
            File file = new File("test.txt");
            FileReader fr = new FileReader(file);
        } catch (Exception e) {
            System.out.println("Exception caught.");
        }
    }
}
```

True or False: The program will print "Outer catch" and then "Inner catch" in the output.

```
public class Test {
    public static void main(String[] args) {
        try {
            try {
                throw new RuntimeException("Inner Exception");
            } catch (Exception e) {
                System.out.println("Inner catch");
                throw e;
            }
        } catch (Exception e) {
            System.out.println("Outer catch");
        }
    }
}
```

True or False: The code will result in a compilation error

```
import java.io.IOException;

public class Test {
    public static void main(String[] args) {
        try {
            throw new IOException("IO Exception");
        } catch (Exception e) {
            System.out.println("General catch block");
        } catch (IOException e) {
            System.out.println("IOException catch block");
        }
    }
}
```

Exercise I

Write a Java program to create a method that takes a string as input and throws a `NoVowelsException` if the string does not contain vowels.

Hint

- `NoVowelsException` should extend the `Exception` class

Sample Output:

```
Original string: Java handling and managing exceptions  
String contains vowels.
```

```
Original string: Typy gyps fly.  
Error: String does not contain any vowels
```

Exercise II

Write a Java program that reads a list of integers from the user and throws an exception if any numbers are duplicates.

Hint

-

Duplicate_Number_Exception
should extend the
Exception class

Sample Output:

```
How many numbers do you want to input? 5
Input the integers:
1
2
3
4
5
No duplicate numbers!
```

```
How many numbers do you want to input? 6
Input the integers:
1
2
3
3
4
5
Error: Duplicate number found: 3
```