Exceptions in Java

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Create

Your Future

Consider the following points

- Understanding Exceptions
- Hierarchy of Exceptions
- Types of Exceptions
- Handling Exceptions
- Throwing Exceptions

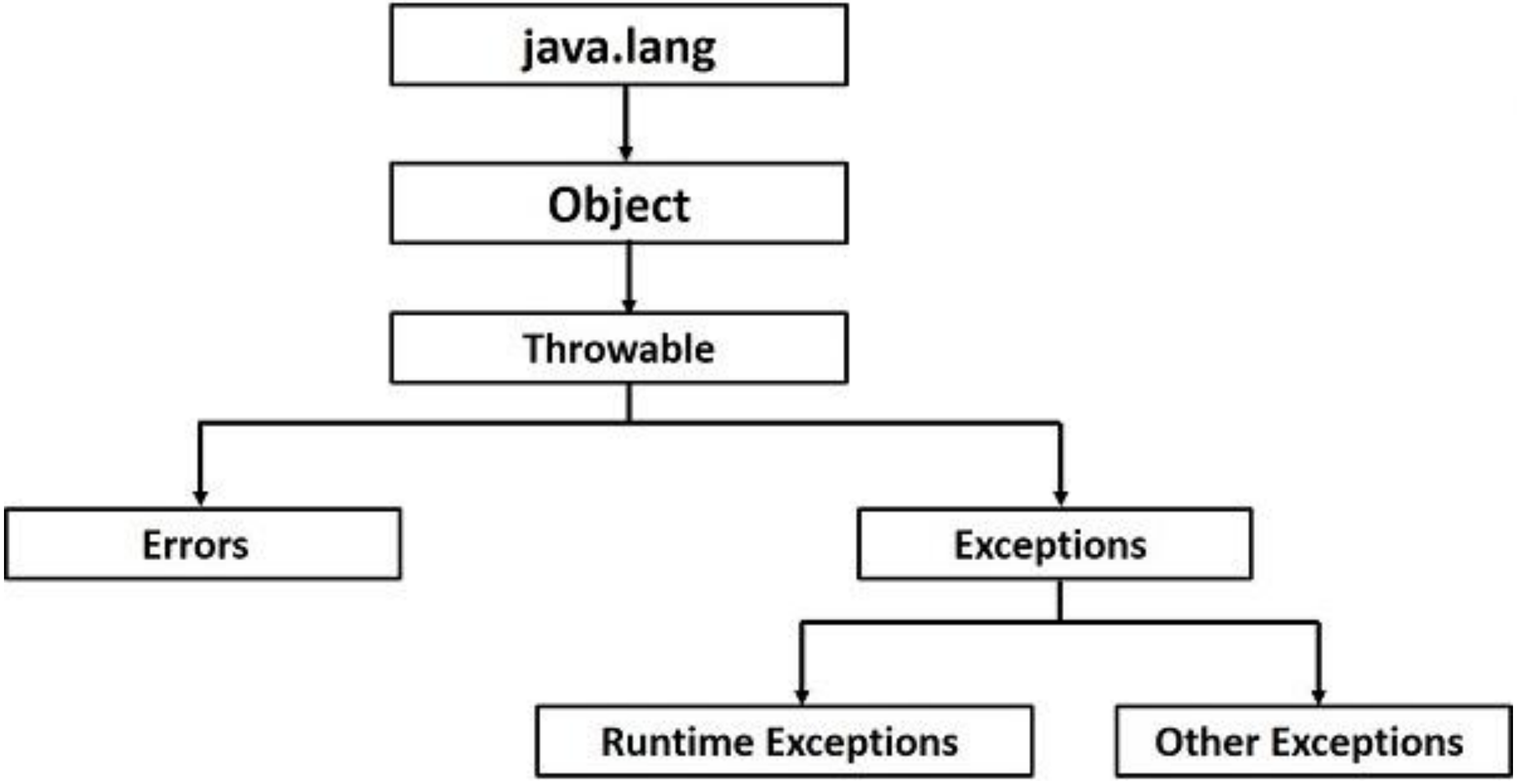
Understanding Exceptions

A program can fail for just about any reason:

- The code tries to connect to a website, but the Internet connection is down.
- You made a coding mistake and tried to access an invalid index in array.

An Exception is Java’s way of saying, “I give up, I don’t know what to do right now. You deal

Hierarchy of



java.lang

Object

Throwable

Errors

Exceptions

Runtime Exceptions

Other Exceptions

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Types of Exceptions

Type	How to recognize	Ok for program to catch?	Is program required to handle or declare?
Runtime exception	Subclass of RuntimeException	Yes	No
Checked exception	Subclass of Exception but not subclass of RuntimeException	Yes	Yes
Error	Subclass of Error	No	No

Runtime Exceptions

ArithmeticException – thrown by the JVM when code attempts to divide by zero.

ArrayIndexOutOfBoundsException – thrown by the JVM when code uses an illegal index to access an array.

ClassCastException – thrown by the JVM when an attempt is made to cast an exception to a subclass of which it is not an instance.

IllegalArgumentException – thrown by the programmer to indicate that a method has been passed an illegal or inappropriate argument.

NullPointerException – thrown by the JVM when there is a null reference where an object is required.

NumberFromatException – thrown by the programmer when an attempt is made to convert a string to a numeric type but the string doesn’t have an

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Checked Exceptions

FileNotFoundException – thrown programmitacally when code tries to reference a file that does not exist.
IOException – thrown programmatically when there is a problem reading or writing a file.

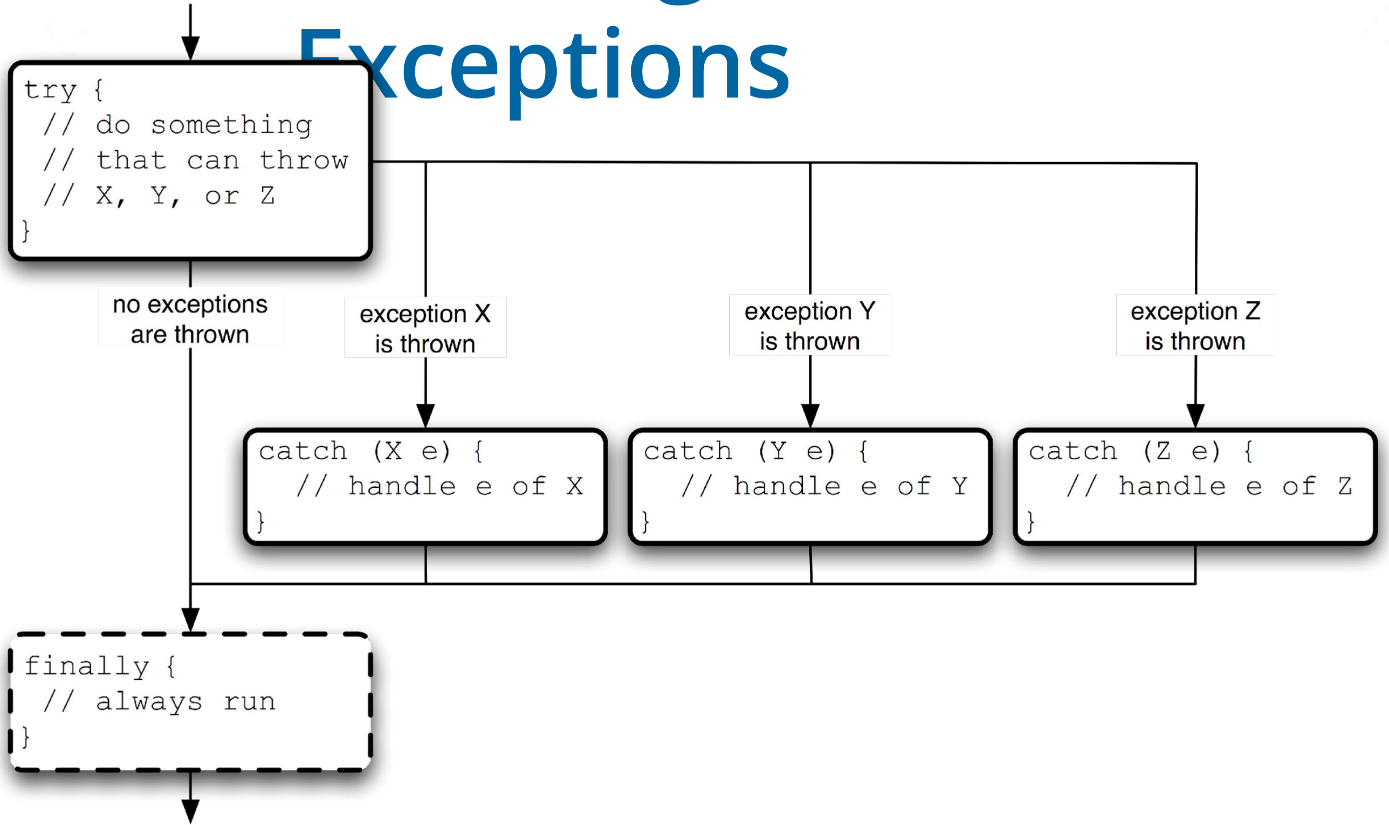
Errors

ExceptionInInitializerError – thrown by the JVM when a static initializer throws an exception and doesn’t handle it.

StackOverflowError – thrown by the JVM when a method calls itself too many times.

NoClassDefFoundError – thrown by the JVM when a class that the code uses is available at compile time but not runtime.

Handling Exceptions



```
try {
 // do something
 // that can throw
 // X, Y, or Z
}
```

no exceptions are thrown

exception X is thrown

exception Y is thrown

exception Z is thrown

```
catch (X e) {
  // handle e of X
}
```

```
catch (Y e) {
  // handle e of Y
}
```

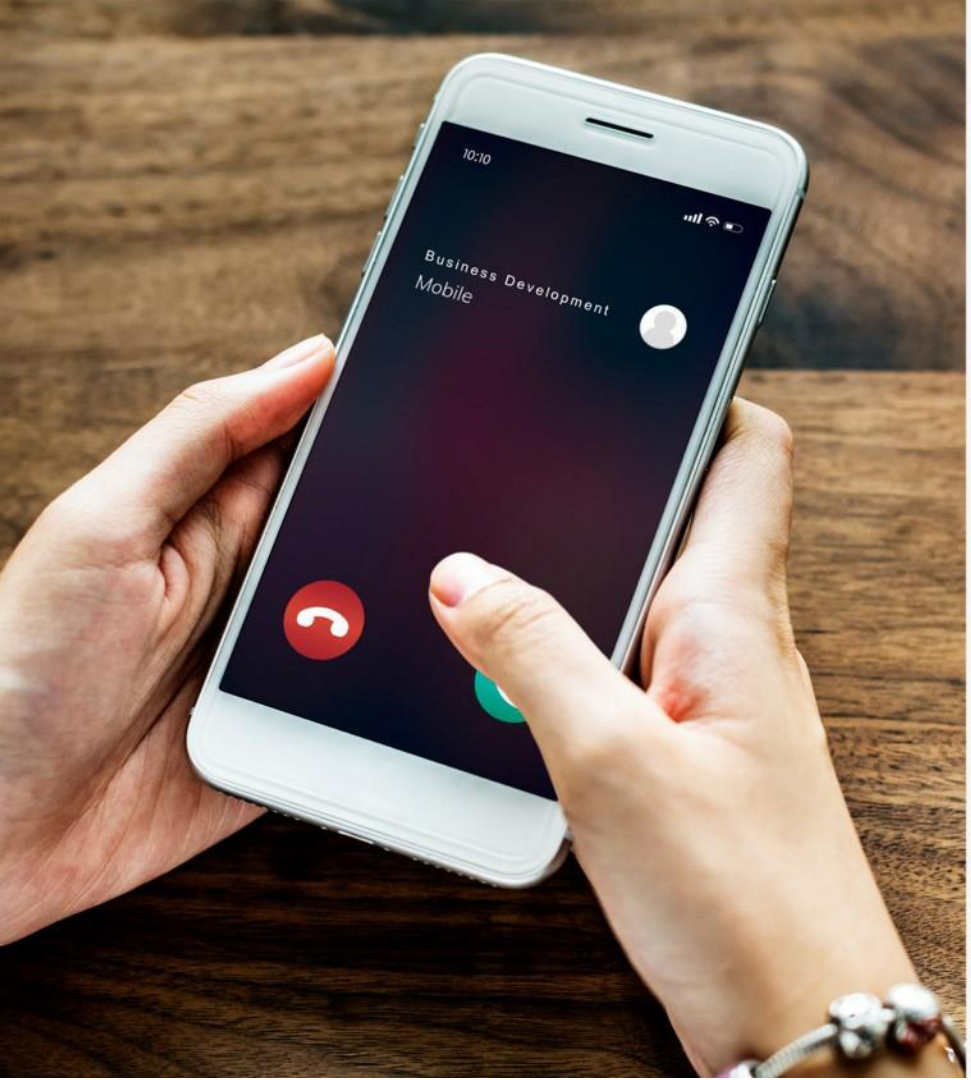
```
catch (Z e) {
  // handle e of Z
}
```

```
finally {
 // always run
}
```

Throwing Exceptions

A method that generates an unhandled exception is said to *throw* an exception:

- It generates an exception to signal an exceptional condition
- A method it calls throws an exception



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