# The different kinds of exceptions

Checked Exceptions Environmental error that cannot necessarily be detected by testing; e.g. disk full, broken socket, database unavailable, etc. Errors Virtual machine error: class not found, out of memory, no such method, illegal access to private field, etc. Runtime Exceptions Programming errors that should be detected in testing: index out of bounds, null pointer, illegal argument, etc.

Checked exceptions must be handled at compile time. Runtime exceptions do not need to be. Errors often cannot be.

## The Throwable class hierarchy

java.lang.Object  
 |  
 +----java.lang.Throwable  
 |  
 +----java.lang.Error  
 |  
 +----java.lang.Exception  
 |  
 +----java.io.IOException  
 |  
 +----java.lang.RuntimeException  
 |  
 +----java.lang.ArithmeticException  
 |  
 +----java.lang.ArrayIndexOutOfBoundsException  
 |  
 +----java.lang.IllegalArgumentException  
 |  
 +----java.lang.NumberFormatException

Almost all the code is in the java.lang.Throwable class. Almost all of its subclasses only provide new constructors that change the message of the exception.

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