

What's exception

Things going wrong?

java throwable object created and could be caught

Message, stack trace

java 7: catch > 1 exception in one catch block

Three types of Exceptions

checked JVM: hi, something wrong, you should check or declare before I allow it compiled

unchecked JVM: never mind, I could handle it

Error JVM: don't try to handle it, something really really nasty happened, I will end it

Exception class inheritance

java.lang.Object super

java.lang.Throwable sub class of Object

java.lang.Exception sub class of Throwable

java.lang.RuntimeException sub class of Exception

java.lang.Error sub class of Throwable

Checked exceptions

must be handled or declared /throws by programmer must in try ... catch block, or throws explicitly

IOException FileNotFoundExce-ption, SQL, URI related exception

CloneNotSupportedException

all java.lang.Exception and its subclass are checked exception, exception java.lang.RuntimeException and its subclass.

Unchecked exception

java.lang.RuntimeException or its subclass

could handled or throws by programmer, but not required.

Common unchecked /runtime exceptions

1 ArithmeticEx- ception divided by 0

2 ArrayIndexOutOf- BoundsException IndexOutOfBound- sException

StringIndexOutOfBoundsException

3 ClassCastExc- eption parent-child relation

4 IllegalArgumentE- xception(app) NumberFormatExc- eption(app throw)

5 NullPointerException

6 IllegalStateExc- eption JVM env

7 SecurityException awt

Most exception are checked due to extends Exception, not RuntimeException

Compile but throw exception at runtime

Java Error

Should not be handled by programmer, java will terminate the program

ClassIninitializ- erError Error in Static initializ- ation of class

StackOverflow- Error memory stack space used

NoClassFo- undError class file not found in classpath

Syntax

try {} {} required even only one statement

catch (){} at lease one catch or finally block required

multiple catch() ordered by sub -super, or else compiler shout: never run code block found

Syntax (cont)

at most 1 catch blocks executed

finally always executed, exception {} System.exit() called before it

return will not prevent finally block run

Throwing an exception

throws in declar- ation statement throw new Exception("Error Message");

nested/ch- ained exceptions

Catch and/or finally{} throws exceptions

exception mask

nested exceptions, the last throw win, prior throw masked

put try..catch in finally{} to avoid exception mask

calling method w/ throws handled or throws again;req- uired for checked exception, optional for unchecked

subclass exception subclass of parent class exception thrown

Catch an exceptions

multiple catch block at most one executed

order sub..super, or else

Never run block found error

the first matched block win

catch block may not exist

Print exception message

```
//print exception type and message
System.out.println( e);
//print message
System.out.println( e.getMessage());
//print stack trace
e.printStackTrace();
//e.getCause()
//e.getStackTrace()
```

do not swallow exception, should always decide what to do next at exception

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By **Jianmin Feng** (taotao)
cheatography.com/taotao/

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