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Error & Exception Introduction in Java

=> What is difference between Error & Exception :-

Error	Exception
-> Galti	-> Bhool
-> Error is the problem which will not allow us to compile and execute the program	-> Exception is the problem which is occured at runtime and which we can handle programmatically
-> Error is occured due to lack of java concepts or lack of system resourses	-> Exception occures due to our programs

-> Types of Error :-
   1. Compile Time Error
   2. Runtime Error
	-> Types of Exception :-
	   1. Predefined Exceptions
	   2. User-Defined Exceptions

=> Types of Errors :-

➔ Compile Time Error
- o Lexical Error (if we have any mistake in java keywords for example static - statc, void - viod)
- o Syntax Error (if we have any mistake in java predefined syntax for example variable declaration, method declaration, method calling etc)

o Semantic Error (it is the meaning-less statement)
o Etc

➔ Runtime Error

1. Runtime errors cannot be handled programmatically

2. Runtime errors occurs because of JVM (memory error)

=> Exception :-

➔ Exception is any unwanted event which disturb the normal flow of the program

➔ Types of Exceptions :-

= Predefined Exceptions
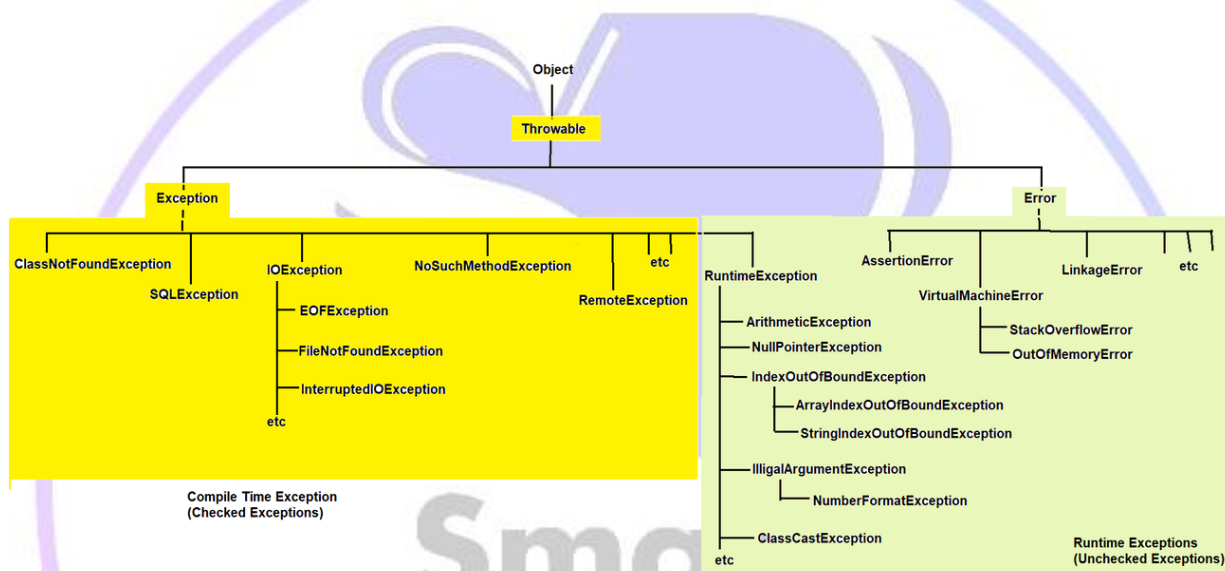
= User-Defined Exceptions

(above both can be of 2 types - Checked Exceptions & Unchecked Exceptions)

=> Hierarchy of Error & Exception class :-

```
                                      Object
                                        |
                                    Throwable
          _____|_____
         |                                                          |
      Exception                                                   Error
  _____|_____            _____|_____
 |          |           |            |     |           |      |        |      |     |
ClassNotFound  IOException  NoSuchMethod  etc      RuntimeException  AssertionError  LinkageError  etc
Exception      |            Exception                    |          VirtualMachineError
  SQLException |              RemoteException         ArithmeticException    StackOverflowError
              EOFException                            NullPointerException   OutOfMemoryError
              FileNotFoundException                   IndexOutOfBoundException
              InterruptedIOException                    ArrayIndexOutOfBoundException
            etc                                          StringIndexOutOfBoundException
                                                       IlligalArgumentException
         Compile Time Exception                           NumberFormatException
         (Checked Exceptions)                           ClassCastException
                                                      etc
                                                          Runtime Exceptions
                                                          (Unchecked Exceptions)
```

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