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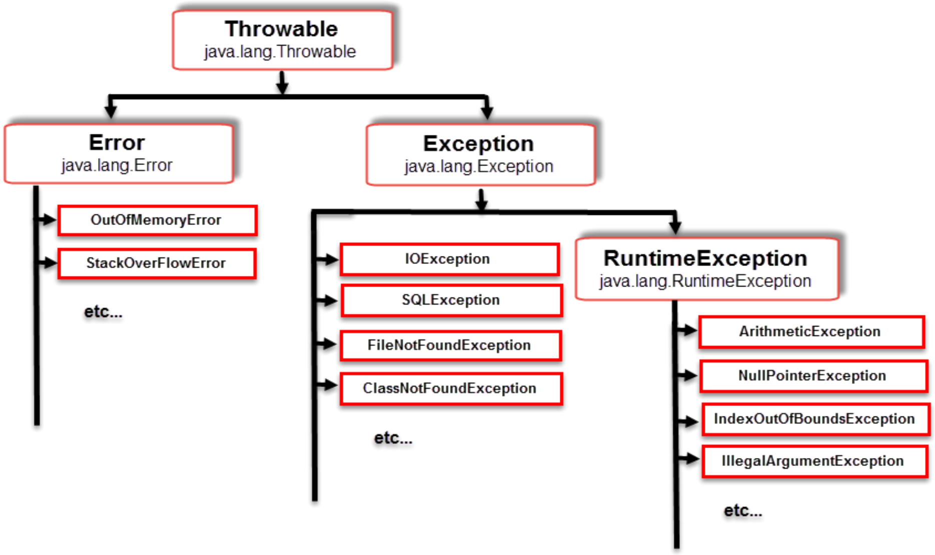
# EXCEPTION HANDLING

- An exception is an event, which occurs during the execution of a program, that disrupts the normal flow of the program's instructions.
- An exception can occur for many different reasons:
  - A user has entered invalid data.
  - A file that needs to be opened cannot be found
  - A network connection has been lost in the middle of communications.
- Some of these exception are caused by user error, others by program error,others by physical resources that have failed in some manner

# HIERARCHY OF JAVA EXCEPTION CLASSES:

- The java.lang.throwable class is the root class of java exception hierarchy inherited by two subclasses: Exception and error.The hierarchy of java Exception is given below:



- There are mainly two types of exceptions:
  - Checked Exception
  - Unchecked Exception

    - Error

## CHECKED EXCEPTION:

- The classes that directly inherit the Throwable class except RuntimeException and error are know as checked exception. For example, IOException , SQLException,etc. Checked exceptions are checkedat compile-time.

## UNCHECKED EXCEPTION:

- The classes that inherit the RuntimeException are known as unchecked exceptions. For example, Arithmetic Exception, Null Pointer Exception,ArraysOutOfBoundException etc.
- Unchecked Exceptions are not checked at compile-time,but they are checked at runtime.

## ERROR:

- Error is irrecoverable. Some examples of errors are outOfMemoryError,VirtualMachineError,AssertionError etc.

## JAVA EXCEPTION KEYWORDS:

- **try:**
    - The "**try**" keyword is used to specify a block where we should place an exception code. It means we can't use try block alone. The try block must be followed by either catch or finally.
- **catch:**
    - The "catch" block is used to handle the exception. It must be preceded by try block which means we can't use catch block alone. It can be followed by finally block later.
- **finally:**

    - The “finally” block is used to execute the necessary code of the program. It is executed whether an exception is handled or not.
- **throw:**
    - The “throw” keyword is used to throw an exception

- **throws:**
    - The “throws” keyword is used to declare exceptions. It specifies that there may occur an exception in the method. It doesn’t throw an exception. It is always used with method signature.

### JavaExceptionExample.java

```
public class ExceptionExample{
public static void main(String args[]){
try{
int data = 100/0;
}catch(ArithmeticException e){
System.out.println(e);
  }
                                        System.out.println(“rest of the code...”)
                               }
                      }
```

## COLLECTIONS:

- A Collection represents a single unit of objects
- The collection in java is a framework that provides an architecture to store and manipulate the group of objects.

- Java Collections can achieve all the operations that you perform on a data such as searching, sorting,insertion,manipulation and deletion.
- Java collection framework provides many interfaces(set,list,queue,Deque) and classes (Array List, vector,LinkedList,PriorityQueue.HashSet,LinkedHashSet, TreeSet)

## FRAMEWORK:

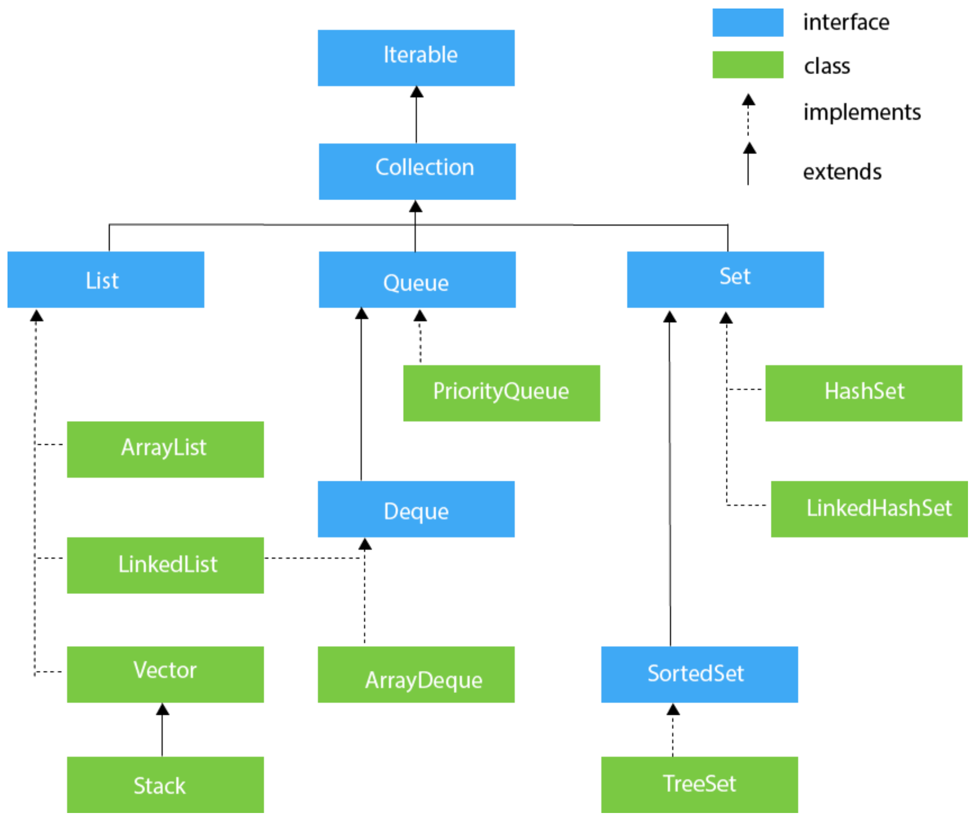
- It provides a readymade architecture.
- It represents a set of classes and interfaces.
- It is optional.

## Collection Framework:

- The collection framework represents a unified architecture for storing and manipulating a group of objects. It has:
    - Interfaces and its implementations I.e. classes
    - Algorithm

## HIERARCHY OF COLLECTION FRAMEWORK:

The **java.util** package contains all the classes and interfaces for the collection framework.


Iterable
Collection
List
Queue
Set
PriorityQueue
HashSet
ArrayList
Deque
LinkedHashSet
LinkedList
Vector
ArrayDeque
SortedSet
Stack
TreeSet
interface
class
implements
extends