

- StackTraceElements
- Case studies: File Management + Consume Web services (XML + JSON)
- Stack trace elements:

#### Example#1: StackTraceElementsDemo

- Case Study 1: Manage a text file

1st step: get the data from the input file; 2nd step: transfer to the output file  
I/O operations => using streams

Stream? Collection of characters/bytes that are either flowing into or flowing out of your application.

5 vs '5'

Input/output streams: FileWriter is an example of an output stream

Character-based / Byte-based streams: Input output data either as a sequence of bytes/characters

If the class has Writer/Reader suffix, then it is considered as a character-based stream

If the class has Stream suffix, then it serves as byte-based stream.

#### Example#2: Character-based stream to copy a text file (TextFileManagement)

Buffering is used a performance enhancement technique.

- Case study 2: Manage binary files
- 3048 bytes: 1024          1024      1000

#### Example#3: BinaryFileManagement

read(byte[] buffer): it gets you the bytes, stores them in a buffer, and returns the number of obtained bytes.

#### Example#4: external libraries (Apache commons)

UsingExternalLibraryDemo

- Case study 3: (Jsoup)
- DownloadTextFile

URL? HTTP, TCP, SMTP, SNMP, FTP (IETF) - WiFi (IEEE 802.11)