Files, Junit Testing

JUnit Testing

- Unit Testing is the first level of software testing where the smallest testable parts of a software are tested. This is used to validate that each unit of the software performs as designed.
- Different types of tests are available
  - assertEquals
  - assertTrue
  - assertFalse
  - …

File Handling

- File handling means reading and writing data to a file.
- Java works with Streams
  - In Java, a sequence of data is known as a stream.
  - This concept is used to perform I/O operations on a file.
    - InputStream
    - OutputStream

Methods of InputStream

1	read()	Reads one byte of data from the input stream.
2	read(byte[] array)()	Reads byte from the stream and stores that byte in the specified array.
3	mark()	It marks the position in the input stream until the data has been read.
4	available()	Returns the number of bytes available in the input stream.
5	markSupported()	It checks if the mark() method and the reset() method is supported in the stream.
6	reset()	Returns the control to the point where the mark was set inside the stream.
7	skips()	Skips and removes a particular number of bytes from the input stream.
8	close()	Closes the input stream.

Methods of OutputStream

1.	write()	Writes the specified byte to the output stream.
2.	write(byte[] array)	Writes the bytes which are inside a specific array to the output stream.
3.	close()	Closes the output stream.
4.	flush()	Forces to write all the data present in an output stream to the destination.

Data types and Streams

- **Byte Stream:**
  - This stream is used to read or write byte data. The byte stream is again subdivided into two types which are as follows:
    - **Byte Input Stream:** Used to read byte data from different devices.
    - **Byte Output Stream:** Used to write byte data to different devices.
- **Character Stream:**
  - This stream is used to read or write character data. Character stream is again subdivided into 2 types which are as follows:
    - **Character Input Stream:** Used to read character data from different devices.
    - **Character Output Stream:** Used to write character data to different devices.

File Class Methods

canRead()	It tests whether the file is readable or not.	Boolean
canWrite()	It tests whether the file is writable or not.	Boolean
createNewFile()	It creates an empty file.	Boolean
delete()	It deletes a file.	Boolean
exists()	It tests whether the file exists or not.	Boolean
length()	Returns the size of the file in bytes.	Long
getName()	Returns the name of the file.	String
list()	Returns an array of the files in the directory.	String[]
mkdir()	Creates a new directory.	Boolean
getAbsolutePath()	Returns the absolute pathname of the file.	String

Code Examples

- Task 1:
  - Create a project with unit testing framework, e.g. Junit, integrated
  - Create a main class with one or two methods
  - Create a test class that tests those methods in Unit Testing Fashion
- Task 2:
  - Create a single program with inputstream and outputstream, i.e., create a file and then read it.
    - Please make sure that the file exists before you start reading.