

The Scanner Class ([Java 8 API](#)):

The Scanner Class provides useful methods for reading in files and user input

Important Methods:

- nextInt(): pauses program execution and allows the user to input an integer value
- nextDouble(): pauses program execution and allows the user to input a double value
- nextLine(): pauses program execution and allows the user to input a line of text (String)

The Math Class ([Java 8 API](#)):

The Math Class provides useful methods for performing basic numeric operations.

Important Constants:

- Math.PI: provides a good approximation of PI
- Math.E: provides a good approximation of e

Important Methods:

- Math.max(a,b): returns the maximum value between a and b
- Math.min(a,b): returns the minimum value between a and b
- Math.pow(a,b): returns the value of a^b
- Math.abs(a): returns the value of $|a|$
- Math.random(): returns a random double between 0.0 and 1.0

The String Class (Java 8 API):

The String Class provides useful methods for performing operations on Strings as a whole and individual chars within Strings

Important Methods:

- `charAt(int index)`: Returns the char value at the specified index.
- `contains(String s)`: Returns whether or not the calling object contains the s
- `equals(String s)`: Returns whether or not the String objects are equal
- `length()`: Returns the length of the String
- `substring(int a, int b)`: Returns the String starting at index a up to b [a,b)
- `trim()`: removes leading and trailing whitespace
- `toLowerCase()`: returns the String all in lowercase
- `toUpperCase()`: returns the String all in UPPER CASE

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The Arrays Class (Java 8 API):

The Arrays class provides useful methods for manipulating arrays

Important Methods:

- `binarySearch(int[] arr, int key)`: performs a binary search on the array.
- `equals(int[] arr1, int[] arr2)`: returns true if the arrays are equal to each
- `sort(int[] arr)`: sorts the array in ascending order
- `toString()`: returns a String representation of the array

The ArrayList Class ([Java 8 API](#)):

The ArrayList class provides useful methods for manipulating ArrayLists

Important Methods:

- add(E e): Appends the element to the end of the list
- add(int index, E e): Appends the element at the specified index and shifts the rest of the elements accordingly
- clear(): removes all elements from the list
- contains(Object o): returns true if the Object is present in the list
- get(int index): returns the element at the given index
- isEmpty(): returns true if the list is empty
- remove(int index): removes the element at the given index
- remove(Object o): removes the first instance of Object o if it is present
- set(int index, E e): replaces the element at index with e
- size(): returns the size of the list
- toArray() returns an array filled with all elements of the list in proper order