Java Built-in Functions for CP & DSA

Array-related Functions (java.util.Arrays)

- Arrays.sort(arr);

  Sorts the array in ascending order.

- Arrays.binarySearch(arr, key);

  Searches for 'key' in sorted array, returns index or (-(insertion_point)-1).

- Arrays.fill(arr, val);

  Fills the entire array with the given value.

- Arrays.copyOf(arr, n);

  Copies the first n elements into a new array.

- Arrays.copyOfRange(arr, from, to);

  Copies elements from index 'from' (inclusive) to 'to' (exclusive).

- Arrays.equals(arr1, arr2);

  Checks if two arrays are equal.

- Arrays.toString(arr);

  Returns string representation of array.

ArrayList-related Functions (java.util.ArrayList)

- list.add(val);

  Adds element at the end of list.

- list.add(index, val);

  Inserts element at specific index.

- list.get(i);

  Returns element at index i.

- list.set(i, val);

  Updates element at index i.

- list.remove(i);

  Removes element at index i.

- list.size();

  Returns number of elements in list.

- list.contains(x);

  Checks if list contains x.

- list.indexOf(x);

  Returns index of first occurrence of x, -1 if not found.

- list.isEmpty();

  Checks if list is empty.

- list.clear();

  Removes all elements.

- Collections.sort(list);

  Sorts elements in ascending order.

- Collections.reverse(list);

  Reverses the order of list.

- Collections.max(list);

  Finds maximum element.

- Collections.min(list);

  Finds minimum element.

Collections Utility Functions (java.util.Collections)

- Collections.sort(list);

  Sorts list in ascending order.

- Collections.sort(list, Collections.reverseOrder());

  Sorts list in descending order.

- Collections.reverse(list);

  Reverses order of elements.

- Collections.shuffle(list);

  Randomly shuffles elements.

- Collections.max(list);

  Returns maximum element.

- Collections.min(list);

  Returns minimum element.

- Collections.frequency(list, x);

  Counts occurrences of x in list.

- Collections.swap(list, i, j);

  Swaps elements at indices i and j.

Math Functions (java.lang.Math)

- Math.abs(x);

  Returns absolute value of x.

- Math.max(a, b);

  Returns maximum of a and b.

- Math.min(a, b);

  Returns minimum of a and b.

- Math.pow(a, b);

  Computes a raised to power b.

- Math.sqrt(x);

  Returns square root of x.

- Math.cbrt(x);

  Returns cube root of x.

- Math.log(x);

  Returns natural logarithm (base e).

- Math.log10(x);

  Returns base 10 logarithm.

- Math.ceil(x);

  Rounds up to nearest integer.

- Math.floor(x);

  Rounds down to nearest integer.

- Math.round(x);

  Rounds to nearest integer.

- Math.random();

  Returns random double [0.0, 1.0).

- Math.PI, Math.E;

  Math constants for PI and e.

String Functions (java.lang.String)

- str.length();

  Returns length of string.

- str.charAt(i);

  Returns character at index i.

- str.substring(i, j);

  Extracts substring from i to j-1.

- str.indexOf("abc");

  Returns first index of substring.

- str.lastIndexOf("abc");

  Returns last index of substring.

- str.equals("abc");

  Checks if two strings are equal.

- str.equalsIgnoreCase("abc");

  Checks equality ignoring case.

- str.compareTo(str2);

  Lexicographically compares two strings.

- str.contains("abc");

  Checks if substring exists.

- str.replace("a", "b");

  Replaces all 'a' with 'b'.

- str.toCharArray();

  Converts string to char array.

- str.split(" ");

  Splits string by spaces.

- str.toLowerCase();

  Converts to lowercase.

- str.toUpperCase();

  Converts to uppercase.

- str.trim();

  Removes leading and trailing spaces.

StringBuilder Functions (java.lang.StringBuilder)

- StringBuilder sb = new StringBuilder("abc");

  Creates new StringBuilder with 'abc'.

- sb.append("xyz");

  Appends 'xyz' at the end.

- sb.insert(2, "hello");

  Inserts 'hello' at index 2.

- sb.delete(2, 5);

  Deletes characters from index 2 to 4.

- sb.reverse();

  Reverses the string.

- sb.toString();

  Converts StringBuilder back to string.

HashMap / HashSet (java.util.HashMap / HashSet)

- map.put(key, value);

  Inserts key-value pair.

- map.get(key);

  Returns value for given key.

- map.containsKey(key);

  Checks if key exists.

- map.containsValue(value);

  Checks if value exists.

- map.remove(key);

  Removes entry for key.

- map.keySet();

  Returns all keys as Set.

- map.values();

  Returns all values as Collection.

- set.add(x);

  Adds element to set.

- set.contains(x);

  Checks if set contains element.

- set.remove(x);

  Removes element from set.

- set.size();

  Returns number of elements in set.

Priority Queue (java.util.PriorityQueue)

- PriorityQueue<Integer> minHeap = new PriorityQueue<>();

  Creates min-heap.

- PriorityQueue<Integer> maxHeap = new PriorityQueue<>(Collections.reverseOrder());

  Creates max-heap.

- pq.add(x);

  Adds element to queue.

- pq.poll();

  Removes and returns smallest element.

- pq.peek();

  Returns smallest element without removing.

Deque (java.util.ArrayDeque)

- Deque<Integer> dq = new ArrayDeque<>();

  Creates new deque.

- dq.addFirst(x);

  Adds element at front.

- dq.addLast(x);

  Adds element at back.

- dq.removeFirst();

  Removes element from front.

- dq.removeLast();

  Removes element from back.

- dq.peekFirst();

  Returns front element without removing.

- dq.peekLast();

  Returns last element without removing.

Fast Input/Output (BufferedReader & StringTokenizer)

- BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

  Fast input reading.

- StringTokenizer st = new StringTokenizer(br.readLine());

  Tokenizes input line.

- int x = Integer.parseInt(st.nextToken());

  Parses next token as integer.

Extra Function

- Arrays.binarySearch(arr, key);

  Returns the index of 'key' if found in sorted array 'arr', else returns (-(insertion_point) - 1).