■ Java DSA Cheat Sheet — Complete & Updated

■ Arrays

Method	Description	Example
Arrays.sort(arr)	Sorts the array in ascending order	Arrays.sort(arr);
Arrays.sort(arr, Collections.reverseOrder())	Sorts array in descending order (for objects)	Arrays.sort(arr, Collections.reverseOrder());
Arrays.toString(arr)	Converts array to readable string	System.out.println(Arrays.toString(arr));
Arrays.equals(arr1, arr2)	Compares two arrays	Arrays.equals(a, b);
Arrays.fill(arr, val)	Fills entire array with value	Arrays.fill(arr, 0);
Arrays.copyOf(arr, newLength)	Copies array	int[] b = Arrays.copyOf(a, 5);
Arrays.binarySearch(arr, key)	Binary search (sorted array only)	int idx = Arrays.binarySearch(arr, 10);
arr.length	Returns length of array	int n = arr.length;

■ Strings

Method	Description	Example
s.length()	Returns string length	int len = s.length();
s.charAt(i)	Returns character at index	char c = s.charAt(0);
s.substring(start, end)	Extract substring	s.substring(1, 3);
s.equals(str)	Compare content	s.equals("hi");
s.equalsIgnoreCase(str)	Case-insensitive comparison	s.equalsIgnoreCase("hi");
s.contains(str)	Checks substring presence	s.contains("el");
s.indexOf(ch)	Finds first index of character	s.indexOf('e');
s.lastIndexOf(ch)	Finds last index	s.lastIndexOf('l');
s.replace(old, new)	Replaces characters	s.replace('l','x');
s.toLowerCase() / s.toUpperCase()	Converts case	s.toUpperCase();
s.trim()	Removes spaces at both ends	s.trim();
s.split(' ')	Splits string into array	String[] arr = s.split(" ");
new StringBuilder(s).reverse()	Reverses string	

■ ArrayList

Method	Description	Example
list.add(val)	Add element	list.add(5);
list.add(index, val)	Add at specific index	list.add(1, 10);

list.get(i)	Get element	int x = list.get(0);
list.set(i, val)	Replace element	list.set(1, 20);
list.remove(i)	Remove element at index	list.remove(0);
list.size()	Get list size	list.size();
list.contains(x)	Check if element present	list.contains(10);
list.isEmpty()	Check if list empty	list.isEmpty();
Collections.sort(list)	Sort ascending	Collections.sort(list);
Collections.reverse(list)	Reverse order	Collections.reverse(list);
list.clear()	Remove all elements	list.clear();

■■ HashMap (Complete)

Method	Description	Example
map.put(key, value)	Inserts key-value pair (overwrites if key exists)	map.put(1, "One");
map.putIfAbsent(key, value)	Inserts only if key not already present	map.putIfAbsent(2, "Two");
map.get(key)	Returns value for key or null	map.get(1);
map.getOrDefault(key, def)	Returns value if present, else default	map.getOrDefault(3, "N/A");
map.remove(key)	Removes entry	map.remove(1);
map.remove(key, value)	Removes only if key maps to given value	map.remove(2, "Two");
map.replace(key, newVal)	Replaces value if key exists	map.replace(2, "Second");
map.replace(key, oldVal, newVal)	Replaces only if matches old value	map.replace(2, "Two", "Second");
map.compute(key, (k,v)->newVal)	Updates a key's value using lambda	map.compute(2, (k,v)->v+" updated");
map.computeIfAbsent(key, k->newVal)	Adds key if missing	map.computeIfAbsent(4, k->"Four");
map.computeIfPresent(key, (k,v)->newVal)	Updates only if key exists	map.computeIfPresent(2, (k,v)->v+"!");
map.merge(key, val, (v1,v2)->v1+v2)	Merges existing and new values	map.merge(2, "X", (v1,v2)->v1+v2);
map.containsKey(key)	Checks if key exists	map.containsKey(1);
map.containsValue(val)	Checks if value exists	map.containsValue("One");
map.keySet()	Returns all keys	for(int k : map.keySet())
map.values()	Returns all values	for(String v : map.values())
map.entrySet()	Returns all entries	for(Map.Entry<Integer,String> e : map.ent
map.size()	Returns number of entries	map.size();
map.isEmpty()	Checks if empty	map.isEmpty();
map.clear()	Clears all entries	map.clear();

■ HashSet

Method	Description	Example

set.add(x)	Add element	set.add(10);
set.remove(x)	Remove element	set.remove(10);
set.contains(x)	Check existence	set.contains(10);
set.size()	Count elements	set.size();
set.isEmpty()	Check empty	set.isEmpty();
set.clear()	Remove all	set.clear();
set.addAll(otherSet)	Union of sets	set.addAll(otherSet);
set.retainAll(otherSet)	Intersection of sets	set.retainAll(otherSet);

■ Stack

Method	Description	Example
st.push(x)	Push element	st.push(10);
st.pop()	Remove and return top	st.pop();
st.peek()	Return top without removing	st.peek();
st.isEmpty()	Check empty	st.isEmpty();
st.size()	Get size	st.size();

■ Queue

Method	Description	Example
q.add(x)	Add element to queue	q.add(10);
q.poll()	Removes front element	q.poll();
q.peek()	View front element	q.peek();
q.isEmpty()	Check if empty	q.isEmpty();

■■ PriorityQueue (Min/Max Heap)

Method	Description	Example
pq.add(x)	Add element	pq.add(5);
pq.poll()	Removes smallest/largest element	pq.poll();
pq.peek()	View top element	pq.peek();
pq.size()	Get size	pq.size();

■ Collections Utility

Method	Description	Example
Collections.sort(list)	Sort list	Collections.sort(list);
Collections.reverse(list)	Reverse list	Collections.reverse(list);
Collections.max(list)	Find max element	Collections.max(list);
Collections.min(list)	Find min element	Collections.min(list);
Collections.frequency(list, val)	Count occurrences	Collections.frequency(list, 2);

■ Integer & Character Helpers

Method	Description	Example
Integer.parseInt('123')	Convert String to int	Integer.parseInt('123');
String.valueOf(123)	Convert int to String	String.valueOf(123);
Character.isDigit(ch)	Check if digit	Character.isDigit('5');
Character.isLetter(ch)	Check if letter	Character.isLetter('a');
Character.toLowerCase(ch)	Convert to lowercase	Character.toLowerCase('A');