

Java Fundamental Concepts for Interviews

1. String Handling

- Converting String to char[]: `str.toCharArray()`
- Iterating over chars: `for(char c : str.toCharArray())`
- Comparing Strings: `equals()` vs `==` (use `equals()` for value comparison)
- String concatenation: Use `+` or `StringBuilder` for efficiency

2. Input Handling

- Scanner basics: `Scanner sc = new Scanner(System.in);`
- `next()` → reads single word
- `nextLine()` → reads full line
- `nextInt()`, `nextDouble()` → reads numbers

3. Arrays

- Initialize: `int[] arr = {1,2,3};`
- Iterate: `for(int num : arr)` or traditional `for`
- Compare: `Arrays.equals(arr1, arr2)`
- Sort: `Arrays.sort(arr)`

4. Collections Framework

- List: `ArrayList list = new ArrayList<>();`
- Set: `HashSet set = new HashSet<>();`
- Map: `HashMap map = new HashMap<>();`
- Iteration: enhanced for loop or iterator

5. Wrapper Classes & Autoboxing

- Convert int → Integer: `Integer val = Integer.valueOf(5);`
- Convert Integer → int: `int x = val;`
- Autoboxing: automatic conversion between primitive and wrapper

6. Common Utility Classes

- Math: `Math.max(a,b)`, `Math.pow(a,b)`, `Math.abs(a)`
- Collections: `Collections.sort(list)`, `Collections.reverse(list)`
- StringBuilder: `append()`, `reverse()`

7. Loops & Iteration Techniques

- Enhanced for loop: `for(int x : arr)`
- forEach with lambda: `list.forEach(System.out::println);`
- While vs do-while

8. Exception Handling Basics

- try-catch:

```
try { int x = 5/0; } catch(Exception e) { e.printStackTrace(); }
```

- finally block: always executes

9. Object-Oriented Basics

- Class & Object: blueprint vs instance

- Inheritance: `extends`

- Polymorphism: method overloading & overriding

- Encapsulation: private variables + getters/setters

10. Key Interview Tips

- Always choose correct input method (`nextLine` vs `next`)

- Prefer `equals()` for String/Array comparison

- Know basic Collections usage (ArrayList, HashMap, HashSet)

- Be clear with difference between primitive and wrapper