



# Java Programming Basics Cheat Sheet

## Basic Structure of a Java Program

```
java Copy code

public class Main {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

## Variables and Data Types

### Variables

```
java Copy code

int number = 10;           // Integer
double pi = 3.14;          // Double
char letter = 'A';         // Character
String greeting = "Hello"; // String
boolean isTrue = true;     // Boolean
```

### Data Types

```
java Copy code

byte b = 100;              // 8-bit integer
short s = 10000;           // 16-bit integer
int i = 100000;            // 32-bit integer
long l = 100000L;          // 64-bit integer
float f = 10.5f;           // 32-bit floating point
double d = 10.5;           // 64-bit floating point
char c = 'A';              // Single 16-bit Unicode character
boolean bool = true;       // Boolean (true or false)
```

## Control Flow

### If Statements

```
java Copy code

if (condition) {
    // code block
} else if (anotherCondition) {
    // another code block
} else {
    // another code block
}
```

### Switch Statement

```
java Copy code

int day = 2;
switch (day) {
    case 1:
        System.out.println("Monday");
        break;
    case 2:
        System.out.println("Tuesday");
        break;
    // other cases
    default:
        System.out.println("Invalid day");
}
```

## Operators

### Arithmetic Operators

```
java Copy code

+ // Addition
- // Subtraction
* // Multiplication
/ // Division
% // Modulus
++ // Increment
-- // Decrement
```

### Comparison Operators

```
java Copy code

== // Equal to
!= // Not equal to
> // Greater than
< // Less than
>= // Greater than or equal to
<= // Less than or equal to
```

### Logical Operators

```
java Copy code

&& // Logical AND
|| // Logical OR
! // Logical NOT
```

## Arrays

### Defining and Using Arrays

```
java Copy code

int[] numbers = {1, 2, 3, 4, 5};

// Access elements
System.out.println(numbers[0]); // Output: 1

// Loop through array
for (int i = 0; i < numbers.length; i++) {
    System.out.println(numbers[i]);
}

// Enhanced for loop
for (int number : numbers) {
    System.out.println(number);
}
```



## Loops

### For Loop

```
java Copy code

for (int i = 0; i < 5; i++) {
    System.out.println(i);
}
```

### While Loop

```
java Copy code

int i = 0;
while (i < 5) {
    System.out.println(i);
    i++;
}
```

### Do-While Loop

```
java Copy code

int i = 0;
do {
    System.out.println(i);
    i++;
} while (i < 5);
```

## Commonly Used Built-in Methods

### String Methods

```
java Copy code

String s = "Hello, World!";
System.out.println(s.length());           // Output: 13
System.out.println(s.toUpperCase());       // Output: HELLO, WORLD!
System.out.println(s.toLowerCase());       // Output: hello, world!
System.out.println(s.indexOf("World"));    // Output: 7
System.out.println(s.substring(7, 12));    // Output: World
```

### ArrayList Methods

```
java Copy code

import java.util.ArrayList;

ArrayList<String> list = new ArrayList<>();
list.add("Apple");
list.add("Banana");
list.add("Cherry");

System.out.println(list.size());           // Output: 3
System.out.println(list.get(1));           // Output: Banana

list.remove(1);
System.out.println(list);                   // Output: [Apple, Cherry]
```