Java Programs for Class 8 ICSE 💻

A Complete Guide for Students

Welcome to Java Programming! ✨

This guide is designed especially for Class 8 ICSE students who are beginning their journey into the exciting world of programming. Java is a powerful and popular programming language, and this document will help you understand it step by step.

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1. Introduction to Java 👋

What is Java?

Java is a **high-level programming language** developed by Sun Microsystems in 1995. It is used to create applications for computers, mobile phones, web browsers, and many other devices.

Key Features of Java:

- **Simple and Easy to Learn** – Java syntax is clean and easy to understand
- **Platform Independent** – Programs written in Java can run on any computer
- **Object-Oriented** – Java organizes code into objects and classes
- **Secure** – Java has built-in security features
- **Robust** – Java handles errors efficiently

Why Learn Java in School?

- Develops **logical thinking** and **problem-solving skills**
- Foundation for higher studies in computer science
- Widely used in industry and academics
- Prepares you for competitive exams and projects

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2. Basics of Java Program 📄

Structure of a Java Program

Every Java program follows a standard structure. Let's understand it step by step:

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

Breaking Down the Structure

Component	Explanation
class	Keyword used to define a class
HelloWorld	Name of the class (must match file name)
public static void main(String args[])	The main method – entry point of program
System.out.println()	Statement to print output on screen
{ }	Curly braces define the start and end of blocks

💡 **Tip:** The file name must be the same as the class name with `.java` extension.

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3. Rules for Writing Java Programs ✏️

Important Rules to Remember

Case Sensitivity

Java is case-sensitive

`Main` and `main` are different

Always write `main` in lowercase

Semicolon Usage

Every statement must end with a semicolon (`;`)

Example: `System.out.println("Hello");`

Correct Syntax

Use proper spelling and spacing

Follow exact structure

File Name and Class Name

File name = Class name + `.java`

Example: If class is `Student`, file must be `Student.java`

Use of Braces

Always open `{` and close `}` braces properly

Indentation helps readability

⚠️ **Common Mistake:** Forgetting the semicolon at the end of statements causes errors!

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4. Java Programs on Output Statements 🖨️

Program 1: Print Your Name

```
class PrintName {
    public static void main(String args[]) {
        System.out.println("My name is Rahul");
    }
}
```

Output:

```
My name is Rahul
```

Explanation:

`System.out.println()` prints text on screen

Text must be written inside **double quotes** (" ")

Program 2: Print School Name

```
class SchoolName {
    public static void main(String args[]) {
        System.out.println("Delhi Public School");
    }
}
```

Output:

```
Delhi Public School
```

Program 3: Print Multiple Lines

```
class MultipleLines {
    public static void main(String args[]) {
        System.out.println("Welcome to Java");
        System.out.println("This is Class 8");
        System.out.println("Happy Learning!");
    }
}
```

Output:

```
Welcome to Java
This is Class 8
Happy Learning!
```

Explanation:

Each `println()` prints on a new line

Use multiple statements for multiple lines

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5. Java Programs on Variables 📁

What is a Variable?

A **variable** is a container that stores data. Every variable has:

A **name** (identifier)

A **data type** (what kind of data it holds)

A **value** (the data stored)

Types of Variables

Data Type	Description	Example
int	Stores whole numbers	10, -5, 0
double	Stores decimal numbers	3.14, -2.5
char	Stores single character	'A', 'z', '5'
String	Stores text	"Hello", "Java"

Program 4: Integer Variable

```
class IntegerVariable {
    public static void main(String args[]) {
        int age = 13;
        System.out.println("My age is " + age);
    }
}
```

Output:

```
My age is 13
```

Explanation:

`int age = 13;` declares an integer variable named `age`

`+` is used to concatenate (join) text and variable

Program 5: Decimal Variable

```
class DecimalVariable {
    public static void main(String args[]) {
        double price = 99.50;
        System.out.println("Price: " + price);
    }
}
```

Output:

```
Price: 99.50
```

Program 6: Character Variable

```
class CharVariable {
    public static void main(String args[]) {
        char grade = 'A';

        System.out.println("Grade: " + grade);
    }
}
```

Output:

```
Grade: A
```

ℹ️ **Note:** Characters are written in **single quotes** (' ')

Program 7: String Variable

```
class StringVariable {
    public static void main(String args[]) {
        String city = "Mumbai";
        System.out.println("City: " + city);
    }
}
```

Output:

```
City: Mumbai
```

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6. Java Programs on Arithmetic Operations +

Arithmetic Operators

Operator	Operation	Example
`+`	Addition	5 + 3 = 8
`-`	Subtraction	10 - 4 = 6
`*`	Multiplication	6 * 2 = 12
`/`	Division	20 / 4 = 5
`%`	Modulus (Remainder)	10 % 3 = 1

Program 8: Addition of Two Numbers

```
class Addition {
    public static void main(String args[]) {
        int a = 15;
        int b = 25;
        int sum = a + b;
        System.out.println("Sum = " + sum);
    }
}
```

Output:

```
Sum = 40
```

Program 9: Subtraction

```
class Subtraction {
    public static void main(String args[]) {
        int a = 50;
        int b = 20;
        int diff = a - b;
        System.out.println("Difference = " + diff);
    }
}
```

Output:

```
Difference = 30
```

Program 10: Multiplication

```
class Multiplication {
    public static void main(String args[]) {
        int a = 7;
        int b = 8;
        int product = a * b;
        System.out.println("Product = " + product);
    }
}
```

Output:

```
Product = 56
```

Program 11: Division

```
class Division {
    public static void main(String args[]) {
        int a = 100;
        int b = 5;
        int quotient = a / b;
        System.out.println("Quotient = " + quotient);
    }
}
```

Output:

```
Quotient = 20
```

Program 12: Modulus (Remainder)

```
class Modulus {
    public static void main(String args[]) {
        int a = 17;
        int b = 5;
        int remainder = a % b;
        System.out.println("Remainder = " + remainder);
    }
}
```

Output:

```
Remainder = 2
```

Explanation:

17 divided by 5 gives quotient 3 and **remainder 2**

`%` operator returns the remainder

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7. Java Programs Using User Input ⌨️

Introduction to Scanner Class

To take input from the user, we use the **Scanner** class.

Steps to use Scanner:

Import the Scanner class: `import java.util.Scanner;`

Create a Scanner object: `Scanner sc = new Scanner(System.in);`

Use methods like `nextInt()`, `nextDouble()`, `next()`, `nextLine()`

Program 13: Input an Integer

```
import java.util.Scanner;

class InputInteger {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();
        System.out.println("You entered: " + num);



    }
}
```

Sample Output:

```
Enter a number: 25
You entered: 25
```

Program 14: Input a String

```
import java.util.Scanner;

class InputString {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter your name: ");
        String name = sc.nextLine();
        System.out.println("Hello, " + name);
    }
}
```

Sample Output:

```
Enter your name: Priya
Hello, Priya
```

Program 15: Input Two Numbers and Add

```
import java.util.Scanner;

class AddTwoNumbers {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter first number: ");
        int a = sc.nextInt();
        System.out.print("Enter second number: ");
        int b = sc.nextInt();
        int sum = a + b;
        System.out.println("Sum = " + sum);
    }
}
```

Sample Output:

```
Enter first number: 12
Enter second number: 18
Sum = 30
```

---

8. Java Programs on Conditional Statements ?

What are Conditional Statements?

Conditional statements allow the program to make decisions based on conditions.

Types of Conditional Statements

if statement – Executes code if condition is true **if-else**

statement – Executes one block if true, another if false

Nested if – if statement inside another if

Program 16: Check if Number is Positive

```
class PositiveCheck {
    public static void main(String args[]) {
        int num = 10;
        if (num > 0) {
            System.out.println("Number is positive");
        }
    }
}
```

Output:

```
Number is positive
```

Program 17: Check Even or Odd

```
import java.util.Scanner;

class EvenOdd {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();

        if (num % 2 == 0) {
            System.out.println(num + " is Even");
        } else {
            System.out.println(num + " is Odd");
        }
    }
}
```

Sample Output:

```
Enter a number: 7
7 is Odd
```

Explanation:

If `num % 2 == 0`, number is divisible by 2 (even)

Otherwise, it is odd

Program 18: Find Largest of Two Numbers

```
import java.util.Scanner;

class LargestOfTwo {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
```

```
        System.out.print("Enter first number: ");
        int a = sc.nextInt();
        System.out.print("Enter second number: ");
        int b = sc.nextInt();

        if (a > b) {
            System.out.println(a + " is larger");
        } else {
            System.out.println(b + " is larger");
        }
    }
}
```

Sample Output:

```
Enter first number: 45
Enter second number: 32
45 is larger
```

Program 19: Check Positive, Negative, or Zero

```
import java.util.Scanner;

class CheckNumber {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();

        if (num > 0) {
            System.out.println("Positive");
        } else if (num < 0) {
            System.out.println("Negative");
        } else {
            System.out.println("Zero");
        }
    }
}
```

Sample Output:

```
Enter a number: -5
Negative
```

---

9. Java Programs on Loops 🔁

What are Loops?

Loops are used to repeat a block of code multiple times.

Types of Loops **for loop** – Used when number of iterations is known **while loop** – Used when condition is checked before execution **do-while loop** – Executes at least once, then checks condition

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Program 20: Print Numbers 1 to 10 (for loop)

```
class ForLoop {
    public static void main(String args[]) {
        for (int i = 1; i <= 10; i++) {
            System.out.println(i);
        }
    }
}
```

Output:

```
1
2
3
4
5
6
7
8
```

```
9
10
```

Explanation:

- `int i = 1` – Initialize counter
- `i <= 10` – Condition to check
- `i++` – Increment counter after each iteration

Program 21: Print Numbers 1 to 5 (while loop)

```
class WhileLoop {
    public static void main(String args[]) {
        int i = 1;
        while (i <= 5) {
            System.out.println(i);
            i++;
        }
    }
}
```

Output:

```
1
2
3
4
5
```

Program 22: Print Numbers 1 to 3 (do-while loop)

```
class DoWhileLoop {
    public static void main(String args[]) {
        int i = 1;
        do {
            System.out.println(i);
            i++;
        } while (i <= 3);
    }
}
```

Output:

```
1
2
3
```

Program 23: Multiplication Table

```
import java.util.Scanner;

class MultiplicationTable {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = sc.nextInt();

        for (int i = 1; i <= 10; i++) {
            System.out.println(num + " x " + i + " = " + (num * i));
        }
    }
}
```

Sample Output:

```
Enter a number: 5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
```

```
5 x 9 = 45
5 x 10 = 50
```

---

10. Java Programs on Patterns 🎨

Program 24: Star Pattern (Square)

```
class StarPattern {
    public static void main(String args[]) {
        for (int i = 1; i <= 4; i++) {
            for (int j = 1; j <= 4; j++) {
                System.out.print("* ");
            }
            System.out.println();
        }
    }
}
```

Output:

```
* * * *
* * * *
* * * *
* * * *
```

Program 25: Number Pattern

```
class NumberPattern {
    public static void main(String args[]) {
        for (int i = 1; i <= 4; i++) {
            for (int j = 1; j <= i; j++) {
                System.out.print(j + " ");
            }
            System.out.println();
        }


    }
}
```

Output:

```
1
1 2
1 2 3
1 2 3 4
```

Program 26: Right-Angled Triangle Pattern

```
class TrianglePattern {
    public static void main(String args[]) {
        for (int i = 1; i <= 5; i++) {
            for (int j = 1; j <= i; j++) {
                System.out.print("* ");
            }
            System.out.println();
        }
    }
}
```

Output:

```
*
* *
* * *
* * * *
* * * * *
```

---

11. Java Programs on Mathematical Logic 🔢

Program 27: Swap Two Numbers

```
class SwapNumbers {
    public static void main(String args[]) {
        int a = 10, b = 20;
        System.out.println("Before Swap: a = " + a + ", b = " + b);

        int temp = a;
        a = b;
        b = temp;

        System.out.println("After Swap: a = " + a + ", b = " + b);
    }
}
```

Output:

```
Before Swap: a = 10, b = 20
After Swap: a = 20, b = 10
```

Program 28: Find Sum of First N Natural Numbers

```
import java.util.Scanner;

class SumNatural {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter N: ");
        int n = sc.nextInt();
        int sum = 0;

        for (int i = 1; i <= n; i++) {
            sum = sum + i;
        }

        System.out.println("Sum = " + sum);


    }
}
```

Sample Output:

```
Enter N: 5
Sum = 15
```

Explanation: 1 + 2 + 3 + 4 + 5 = 15

Program 29: Find Factorial

```
import java.util.Scanner;

class Factorial {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int n = sc.nextInt();
        int fact = 1;

        for (int i = 1; i <= n; i++) {
            fact = fact * i;
        }

        System.out.println("Factorial = " + fact);
    }
}
```

Sample Output:

```
Enter a number: 5
Factorial = 120
```

Explanation: 5! = 5 × 4 × 3 × 2 × 1 = 120

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12. Java Programs on School Level Practice 🏫

Program 30: Simple Interest

```
import java.util.Scanner;

class SimpleInterest {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter Principal: ");
        double p = sc.nextDouble();
        System.out.print("Enter Rate: ");
        double r = sc.nextDouble();
        System.out.print("Enter Time: ");
        double t = sc.nextDouble();

        double si = (p * r * t) / 100;
        System.out.println("Simple Interest = " + si);
    }
}
```

Sample Output:

```
Enter Principal: 1000
Enter Rate: 5
Enter Time: 2
Simple Interest = 100.0
```

Formula: SI = (P × R × T) / 100

Program 31: Area of Rectangle

```
import java.util.Scanner;

class AreaRectangle {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter length: ");
        double length = sc.nextDouble();
        System.out.print("Enter breadth: ");
```

```
        double breadth = sc.nextDouble();

        double area = length * breadth;
        System.out.println("Area = " + area);
    }
}
```

Sample Output:

```
Enter length: 10
Enter breadth: 5
Area = 50.0
```

Formula: Area = Length × Breadth

Program 32: Perimeter of Square

```
import java.util.Scanner;

class PerimeterSquare {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter side: ");
        double side = sc.nextDouble();

        double perimeter = 4 * side;
        System.out.println("Perimeter = " + perimeter);
    }
}
```

Sample Output:

```
Enter side: 6
Perimeter = 24.0
```

Formula: Perimeter = 4 × Side

Program 33: Percentage Calculator

```
import java.util.Scanner;

class Percentage {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter marks obtained: ");
        double obtained = sc.nextDouble();
        System.out.print("Enter total marks: ");
        double total = sc.nextDouble();

        double percentage = (obtained / total) * 100;
        System.out.println("Percentage = " + percentage + "%");
    }
}
```

Sample Output:

```
Enter marks obtained: 450
Enter total marks: 500
Percentage = 90.0%
```

Program 34: Convert Celsius to Fahrenheit

```
import java.util.Scanner;

class CelsiusToFahrenheit {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter temperature in Celsius: ");
        double celsius = sc.nextDouble();

        double fahrenheit = (celsius * 9/5) + 32;
        System.out.println("Fahrenheit = " + fahrenheit);
    }
}
```

Sample Output:

```
Enter temperature in Celsius: 25
Fahrenheit = 77.0
```

Formula: F = (C × 9/5) + 32

---

13. Important Viva Questions 💬

Q1: What is a class in Java?

Answer: A class is a blueprint or template that defines the structure and behavior of objects. It contains variables and methods.

Q2: What is the main method?

Answer: The main method is the entry point of a Java program. Execution starts from the main method.

```
public static void main(String args[])
```

Q3: What is the Scanner class?

Answer: Scanner class is used to take input from the user. It is part of `java.util` package.

Q4: What is the difference between `print()` and `println()` ?

Answer:

- `print()` – Prints text without moving to next line
- `println()` – Prints text and moves to next line

Q5: What is a variable?

Answer: A variable is a container that stores data values. It has a name, data type, and value.

Q6: What are data types?

Answer: Data types specify what kind of data a variable can hold. Examples: int, double, char, String.

Q7: What is a loop?

Answer: A loop is used to execute a block of code repeatedly until a condition is met.

Q8: What is the difference between `for` and `while` loop?

Answer:

for loop – Used when number of iterations is known **while**

loop – Used when number of iterations is not known

Q9: What is an if-else statement?

Answer: It is a conditional statement that executes one block if condition is true, and another block if false.

Q10: What does `%` operator do?

Answer: The `%` (modulus) operator returns the remainder after division.

---

14. Common Errors in Java ⚠️

Error 1: Missing Semicolon

Incorrect:

```
System.out.println("Hello")
```

Correct:

```
System.out.println("Hello");
```

Error 2: Wrong Brackets

Incorrect:

```
class Test (
    public static void main(String args[]) {
```

```
)
```

Correct:

```
class Test {
    public static void main(String args[]) {
    }
}
```

Error 3: Variable Not Declared Incorrect:

```
System.out.println(x);
```

Correct:

```
int x = 10;
System.out.println(x);
```

Error 4: Class Name Mismatch

File name: `Test.java`

Incorrect:

```
class Hello {
    // code
}
```

```
class Test {
    // code
```

Correct:

```
}
```

ℹ️ **Note:** Class name must match file name exactly.

Error 5: Case Sensitivity

Error Incorrect:

```
public static void Main(String args[])
```

Correct:

```
public static void main(String args[])
```

---

15. 30 Important Java Programs with Output 📋

1. Print "Hello Java"

```
class HelloJava {
    public static void main(String args[]) {
        System.out.println("Hello Java");
    }
}
```

Output: `Hello Java`

---

2. Print Your Age

```
class PrintAge {
    public static void main(String args[]) {
        int age = 13;
        System.out.println("My age is " + age);
```

Output: `My age is 13`

---

3. Add Two Numbers

```
class AddNumbers {
    public static void main(String args[]) {
        int a = 10, b = 20;
        System.out.println("Sum = " + (a + b));
    }
}
```

Output: `Sum = 30`

---

4. Subtract Two Numbers

```
class Subtract {
    public static void main(String args[]) {
        int a = 50, b = 30;
        System.out.println("Difference = " + (a - b));
    }
}
```

Output: `Difference = 20`

---

5. Multiply Two Numbers

```
class Multiply {
    public static void main(String args[]) {
        int a = 5, b = 6;
        System.out.println("Product = " + (a * b));
```

Output: `Product = 30`

---

6. Divide Two Numbers

```
class Divide {
    public static void main(String args[]) {
        int a = 100, b = 5;
        System.out.println("Quotient = " + (a / b));
    }
}
```

Output: `Quotient = 20`

---

7. Find Remainder

```
class Remainder {
    public static void main(String args[]) {
        int a = 17, b = 5;
        System.out.println("Remainder = " + (a % b));
    }
}
```

Output: `Remainder = 2`

---

8. Check Even Number

```
class CheckEven {
    public static void main(String args[]) {
        int num = 10;
        if (num % 2 == 0) {
            System.out.println("Even");
        }
```

Output: `Even`

---

9. Check Odd Number

```
class CheckOdd {
    public static void main(String args[]) {
        int num = 7;
        if (num % 2 != 0) {
            System.out.println("Odd");
        }
    }
}
```

Output: `Odd`

---

10. Find Largest of Two

```
class Largest {
    public static void main(String args[]) {
        int a = 25, b = 15;
        if (a > b) {
            System.out.println(a + " is larger");
        } else {
            System.out.println(b + " is larger");
        }
    }
}
```

Output: `25 is larger`

---

11. Print 1 to 5

```
class PrintNumbers {
    public static void main(String args[]) {
        for (int i = 1; i <= 5; i++) {
            System.out.println(i);
        }
    }
}
```

Output:

```
1
2
3
4
5
```

---

12. Sum of 1 to 10

```
class SumNumbers {
    public static void main(String args[]) {
        int sum = 0;
        for (int i = 1; i <= 10; i++) {
            sum += i;
        }
        System.out.println("Sum = " + sum);
    }
}
```

Output: `Sum = 55`

---

13. Table of 2

```
class TableTwo {
    public static void main(String args[]) {
        for (int i = 1; i <= 10; i++) {
            System.out.println("2 x " + i + " = " + (2 * i));
```

```
        }
    }
}
```

Output:

```
2 x 1 = 2
2 x 2 = 4
...
2 x 10 = 20
```

---

14. Print Stars (5 times)

```
class PrintStars {
    public static void main(String args[]) {
        for (int i = 1; i <= 5; i++) {
            System.out.print("* ");
        }
    }
}
```

Output: `* * * * *`

---

15. Area of Circle

```
class AreaCircle {
    public static void main(String args[]) {
        double r = 7;
        double area = 3.14 * r * r;
        System.out.println("Area = " + area);
    }
}
```

Output: `Area = 153.86`

---

16. Perimeter of Rectangle

```
class PerimeterRect {
    public static void main(String args[]) {
        int l = 10, b = 5;
        int perimeter = 2 * (l + b);
        System.out.println("Perimeter = " + perimeter);
    }
}
```

Output: `Perimeter = 30`

---

17. Swap Without Temp

```
class SwapWithoutTemp {
    public static void main(String args[]) {
        int a = 5, b = 10;
        System.out.println("Before: a = " + a + ", b = " + b);
        a = a + b;
        b = a - b;
        a = a - b;
        System.out.println("After: a = " + a + ", b = " + b);
    }
}
```

Output:

```
Before: a = 5, b = 10
After: a = 10, b = 5
```

---

18. Check Positive

```
class CheckPositive {
    public static void main(String args[]) {
        int num = 15;
        if (num > 0) {
            System.out.println("Positive");
        }
```

```
    }
}
```

Output: `Positive`

---

19. Check Negative

```
class CheckNegative {
    public static void main(String args[]) {
        int num = -5;
        if (num < 0) {
            System.out.println("Negative");
        }
    }
}
```

Output: `Negative`

---

20. Count Digits

```
class CountDigits {
    public static void main(String args[]) {
        int num = 12345;
        int count = 0;
        while (num > 0) {
            num = num / 10;
            count++;
        }
        System.out.println("Digits = " + count);
    }
}
```

Output: `Digits = 5`

---

21. Reverse a Number

```
class ReverseNumber {
    public static void main(String args[]) {
        int num = 123, rev = 0;
        while (num > 0) {
            rev = rev * 10 + num % 10;
            num = num / 10;
        }
        System.out.println("Reversed = " + rev);
    }
}
```

Output: `Reversed = 321`

---

22. Check Palindrome Number

```
class Palindrome {
    public static void main(String args[]) {
        int num = 121, original = num, rev = 0;
        while (num > 0) {
            rev = rev * 10 + num % 10;
            num = num / 10;
        }
        if (original == rev) {
            System.out.println("Palindrome");
        } else {
            System.out.println("Not Palindrome");
        }
    }
}
```

Output: `Palindrome`

---

23. Sum of Digits

```
class SumDigits {
    public static void main(String args[]) {
        int num = 123, sum = 0;
```

```
        while (num > 0) {
            sum += num % 10;
            num = num / 10;
        }
        System.out.println("Sum of digits = " + sum);
    }
}
```

Output: `Sum of digits = 6`

---

24. Check Armstrong Number

```
class Armstrong {
    public static void main(String args[]) {
        int num = 153, original = num, sum = 0;
        while (num > 0) {
            int digit = num % 10;
            sum += digit * digit * digit;
            num = num / 10;
        }
        if (original == sum) {
            System.out.println("Armstrong");
        } else {
            System.out.println("Not Armstrong");
        }
    }
}
```

Output: `Armstrong`

---

25. Print Even Numbers 1 to 20

```
class EvenNumbers {
    public static void main(String args[]) {
        for (int i = 2; i <= 20; i += 2) {
            System.out.print(i + " ");
        }
```

```
    }
}
```

Output: `2 4 6 8 10 12 14 16 18 20`

---

26. Print Odd Numbers 1 to 19

```
class OddNumbers {
    public static void main(String args[]) {
        for (int i = 1; i <= 19; i += 2) {
            System.out.print(i + " ");
        }
    }
}
```

Output: `1 3 5 7 9 11 13 15 17 19`

---

27. Fibonacci Series (5 terms)

```
class Fibonacci {
    public static void main(String args[]) {
        int a = 0, b = 1;
        System.out.print(a + " " + b + " ");
        for (int i = 1; i <= 3; i++) {
            int c = a + b;
            System.out.print(c + " ");
            a = b;
            b = c;
        }
    }
}
```

Output: `0 1 1 2 3`

---

28. Check Prime Number

```
class PrimeCheck {
    public static void main(String args[]) {
        int num = 7, count = 0;
        for (int i = 1; i <= num; i++) {
            if (num % i == 0) {
                count++;
            }
        }
        if (count == 2) {
            System.out.println("Prime");
        } else {
            System.out.println("Not Prime");
        }
    }
}
```

Output: `Prime`

---

29. Find GCD

```
class GCD {
    public static void main(String args[]) {
        int a = 12, b = 18, gcd = 1;
        for (int i = 1; i <= a && i <= b; i++) {
            if (a % i == 0 && b % i == 0) {
                gcd = i;
            }
        }
        System.out.println("GCD = " + gcd);
    }
}
```

Output: `GCD = 6`

---

30. Find LCM

```
class LCM {
    public static void main(String args[]) {
        int a = 4, b = 6, lcm;
        lcm = (a > b) ? a : b;
        while (true) {
            if (lcm % a == 0 && lcm % b == 0) {
                System.out.println("LCM = " + lcm);
                break;
            }
            lcm++;
        }
    }
}
```

Output: `LCM = 12`

---

16. Revision Notes 

Key Points to Remember

Java Basics:

- Java is platform-independent and object-oriented
- Every Java program must have a `class`
- Execution starts from `main()` method
- File name must match class name

Data Types:

- **int** – whole numbers
- **double** – decimal numbers
- **char** – single character
- **String** – text

Operators:

- **Arithmetic:** `+` , `-` , `*` , `/` , `%`

Relational: `==`, `!=`, `>`, `<`, `>=`, `<=`

Logical: `&&`, `||`, `!`

Input/Output:

Use `Scanner` class for input

Use `System.out.println()` for output

Import: `import java.util.Scanner;`

Control Statements: if –

single condition **if-else**

– two alternatives

Nested if – multiple conditions

Loops:

for – known iterations **while** –

condition-based **do-while** –

executes at least once

Common Errors:

Missing semicolon

Wrong brackets

Variable not declared

Class name mismatch

Case sensitivity

Important Formulas:

Simple Interest: `SI = (P × R × T) / 100`

Area of Rectangle: `A = L × B`

Perimeter of Square: `P = 4 × S`

Celsius to Fahrenheit: `F = (C × 9/5) + 32`

Final Tips for Exam Success 🏆

- **Practice Regularly** – Write programs daily
- **Understand Logic** – Don't memorize, understand
- **Debug Errors** – Learn from mistakes
- **Write Neatly** – Maintain proper indentation
- **Revise Programs** – Go through all 30 programs before exam
- **Attempt Viva** – Prepare answers for common questions
- **Time Management** – Practice writing programs within time limit

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✨ **Best of Luck for Your Exams!** ✨

End of Document