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Assignment No 1

1. Greatest of Two Test Scores
Scenario: Your friend took two mock tests. Write a program to take the two test scores as input and print which test the friend scored higher in.

```
import java.util.Scanner;
class GreatestTestScore {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter score for Test 1: ");
      int t1 = sc.nextInt();
      System.out.print("Enter score for Test 2: ");
      int t2 = sc.nextInt();
      if (t1 > t2)
         System.out.println("Test 1 has higher score.");
      else if (t2 > t1)
         System.out.println("Test 2 has higher score.");
      else
         System.out.println("Both tests have equal score.");
   }
}
```

```
C:\> javac GreatestTestScore.java
C:\> java GreatestTestScore
Enter score for Test 1: 78
Enter score for Test 2: 85
Test 2 has higher score.
```

2. Highest Salary Among Three Offers
Scenario: You have three job offers. Take the offered salaries as input and print which company is offering the highest salary.

```
// 2. Highest Salary Among Three Offers
import java.util.Scanner;
class HighestSalary {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter salary for Company 1: ");
      int c1 = sc.nextInt();
      System.out.print("Enter salary for Company 2: ");
      int c2 = sc.nextInt();
      System.out.print("Enter salary for Company 3: ");
      int c3 = sc.nextInt();
```

```
        if (c1 >= c2 && c1 >= c3)
            System.out.println("Company 1 offers the highest salary.");
        else if (c2 >= c1 && c2 >= c3)
            System.out.println("Company 2 offers the highest salary.");
        else
            System.out.println("Company 3 offers the highest salary.");
    }
}
```

```
C:\> javac HighestSalary.java
C:\> java HighestSalary
Enter salary for Company 1: 45000
Enter salary for Company 2: 52000
Enter salary for Company 3: 50000
Company 2 offers the highest salary.
```

3. Bank Transaction Check

Scenario: You check your bank account and see a transaction amount. Print whether the transaction is a deposit (positive) or a withdrawal (negative).

```
import java.util.Scanner;
class BankTransaction {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter transaction amount: ");
        int amt = sc.nextInt();
        if (amt > 0)
            System.out.println("Deposit transaction.");
        else if (amt < 0)
            System.out.println("Withdrawal transaction.");
        else
            System.out.println("No transaction.");
    }
}
```

```
C:\> javac BankTransaction.java
C:\> java BankTransaction
Enter transaction amount: -2500
Withdrawal transaction.
```

4. Even or Odd Locker Number
Scenario: Your school assigns lockers with numbers. Take locker number as input and print whether it is even or odd.

```
import java.util.Scanner;
class LockerNumber {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter locker number: ");
      int n = sc.nextInt();
      if (n % 2 == 0)
         System.out.println("Even locker number");
      else
         System.out.println("Odd locker number");
   }
}
```

```
C:\> javac LockerNumber.java
C:\> java LockerNumber
Enter locker number: 17
Odd locker number
```

5. Square or Rectangle Garden
Scenario: You are designing a small garden. Take its length and breadth as input and check whether it is a square garden or rectangular.

```
import java.util.Scanner;
class GardenShape {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter length: ");
      int l = sc.nextInt();
      System.out.print("Enter breadth: ");
      int b = sc.nextInt();
      if (l == b)
         System.out.println("Square garden");
      else
         System.out.println("Rectangular garden");
   }
}
```

```
C:\> javac GardenShape.java
C:\> java GardenShape
Enter length: 12
Enter breadth: 12
Square garden
```

6. Leap Year Check for a Birthday
Scenario: You want to celebrate your friend's birthday on Feb 29 if it's a leap year. Take the year as input and check if it's a leap year.

```
import java.util.Scanner;
class LeapYear {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter year: ");
      int y = sc.nextInt();
      if ((y % 400 == 0) || (y % 4 == 0 && y % 100 != 0))
         System.out.println(y + " is a leap year.");
      else
         System.out.println(y + " is not a leap year.");
   }
}
```

```
C:\> javac LeapYear.java
C:\> java LeapYear
Enter year: 2024
2024 is a leap year.
```

7. Exam Pass or Fail
Scenario: A student gives an exam. Take marks (0–100) as input and print whether the student has passed (>=35) or failed.

```
import java.util.Scanner;
class PassFail {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter marks: ");
      int m = sc.nextInt();
      if (m >= 35)
```

```
            System.out.println("Student has passed.");


        else
            System.out.println("Student has failed.");
    }
}
```

```
C:\> javac PassFail.java
C:\> java PassFail
Enter marks: 42
Student has passed.
```

8. Shop Discount Calculation
Scenario: A shop offers 10% discount if the purchase amount exceeds 1000. Take total purchase amount as input and calculate final cost.

```
import java.util.Scanner;
class ShopDiscount {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter total purchase amount: ");
        double amt = sc.nextDouble();
        double finalCost = (amt > 1000) ? amt * 0.9 : amt;
        System.out.println("Final cost after discount: " + finalCost);
    }
}
```

```
C:\> javac ShopDiscount.java
C:\> java ShopDiscount
Enter total purchase amount: 1200
Final cost after discount: 1080.0
```

9. Employee Bonus Eligibility
Scenario: A company gives a 5% bonus to employees with more than 5 years of service. Take salary and years of service as input and print bonus amount.

```
import java.util.Scanner;
class BonusEligibility {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter salary: ");
      double sal = sc.nextDouble();
      System.out.print("Enter years of service: ");
      int yrs = sc.nextInt();
      if (yrs > 5)
         System.out.println("Bonus amount: " + (sal * 0.05));
      else
         System.out.println("No bonus");
   }
}
```

```
C:\> javac BonusEligibility.java
C:\> java BonusEligibility
Enter salary: 50000
Enter years of service: 6
Bonus amount: 2500.0
```

10. Exam Attendance Eligibility
Scenario: A student can sit in exams only if attendance >=75%. Take total classes held and attended as input, print allowance.

```
import java.util.Scanner;
class ExamAttendance {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter total classes held: ");
      int held = sc.nextInt();
      System.out.print("Enter classes attended: ");
      int attended = sc.nextInt();
      double perc = (attended * 100.0) / held;
      if (perc >= 75)
         System.out.println("Student is allowed to sit for the exam.");
      else
         System.out.println("Student is NOT allowed to sit for the exam.");
   }
}
```

```
C:\> javac ExamAttendance.java
C:\> java ExamAttendance
Enter total classes held: 100
Enter classes attended: 78
Student is allowed to sit for the exam.
```

11. Grade Based on Percentage
Scenario: Your friend got exam marks. Take percentage marks as input and print the grade:

```
import java.util.Scanner;
class GradePercentage {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter percentage marks: ");
      int p = sc.nextInt();
      if (p >= 90)
         System.out.println("Grade: A+");
      else if (p >= 76)
         System.out.println("Grade: A");
      else if (p >= 66)
         System.out.println("Grade: B+");
      else if (p >= 51)
         System.out.println("Grade: B");
      else if (p >= 36)
         System.out.println("Grade: C");
      else
         System.out.println("Fail");
   }
}
```

```
C:\> javac GradePercentage.java
C:\> java GradePercentage
Enter percentage marks: 82
Grade: A
```

12. Oldest and Youngest Among Three Friends
Scenario: You and two friends want to know who is oldest and youngest. Take ages as input and print the oldest and youngest.

```
import java.util.Scanner;
class OldestYoungest {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter age of Friend 1: ");
      int f1 = sc.nextInt();
      System.out.print("Enter age of Friend 2: ");
      int f2 = sc.nextInt();
      System.out.print("Enter age of Friend 3: ");
      int f3 = sc.nextInt();

      int oldest = Math.max(f1, Math.max(f2, f3));
      int youngest = Math.min(f1, Math.min(f2, f3));

      if (oldest == f1) System.out.println("Oldest: Friend 1");
      else if (oldest == f2) System.out.println("Oldest: Friend 2");
      else System.out.println("Oldest: Friend 3");

      if (youngest == f1) System.out.println("Youngest: Friend 1");
      else if (youngest == f2) System.out.println("Youngest: Friend 2");
      else System.out.println("Youngest: Friend 3");
   }
}
```

```
C:\> javac OldestYoungest.java
C:\> java OldestYoungest
Enter age of Friend 1: 22
Enter age of Friend 2: 25
Enter age of Friend 3: 20
Oldest: Friend 2
Youngest: Friend 3
```

13. Exam Eligibility with Medical Cause
Scenario: A student's attendance is low but may have medical cause. Take classes held, attended, and medical cause (Y/N) as input and decide if the student can sit in exam.

```
import java.util.Scanner;
class ExamMedical {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Classes held: ");
      int held = sc.nextInt();
```

```
        System.out.print("Classes attended: ");
        int att = sc.nextInt();
        System.out.print("Medical cause (Y/N): ");
        char med = sc.next().charAt(0);

        double perc = (att * 100.0) / held;

        if (perc >= 75 || med == 'Y' || med == 'y')
            System.out.println("Student is allowed to sit for the exam.");
        else
            System.out.println("Student is NOT allowed to sit for the exam.");
    }
}
```

```
C:\> javac ExamMedical.java
C:\> java ExamMedical
Classes held: 100
Classes attended: 60
Medical cause (Y/N): Y
Student is allowed to sit for the exam.
```

14. Reverse a 4-Digit Number
Scenario: Take a 4-digit number and print its reverse.

```
import java.util.Scanner;
class ReverseNumber {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter 4-digit number: ");
        int n = sc.nextInt();
        int rev = 0, temp = n;
        while (temp > 0) {
            rev = rev * 10 + temp % 10;
            temp /= 10;
        }
        System.out.println("Reversed number: " + rev);
    }
}
```

```
C:\> javac ReverseNumber.java
C:\> java ReverseNumber
Enter 4-digit number: 1234
Reversed number: 4321
```

15. Lucky Number Check
Scenario: A 4-digit number ABCD is lucky if A+B = C+D. Check if a number is lucky.

```
import java.util.Scanner;
class LuckyNumber {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter 4-digit number: ");
      int n = sc.nextInt();
      int a = n / 1000;
      int b = (n / 100) % 10;
      int c = (n / 10) % 10;
      int d = n % 10;

      if (a + b == c + d)
         System.out.println("Lucky number");
      else
         System.out.println("Not a lucky number");
   }
}
```

```
C:\> javac LuckyNumber.java
C:\> java LuckyNumber
Enter 4-digit number: 3521
Not a lucky number
```

16. Vowel or Consonant Checker
Scenario: Take a character input and print whether it is a vowel or consonant. Print error for invalid input.

```
import java.util.Scanner;
class VowelConsonant {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter a character: ");
      char ch = sc.next().toLowerCase().charAt(0);

      if (ch >= 'a' && ch <= 'z') {
         if ("aeiou".indexOf(ch) != -1)
            System.out.println("Vowel");
         else
            System.out.println("Consonant");
      } else {
         System.out.println("Invalid input");
      }
   }
}
```

```
C:\> javac VowelConsonant.java
C:\> java VowelConsonant
Enter a character: e
Vowel
```

17. Divisibility Check
Scenario: Check if a number is divisible by 2, 3, and 5 using nested if-else.

```
import java.util.Scanner;
class DivisibilityCheck {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter number: ");
      int n = sc.nextInt();

      if (n % 2 == 0) System.out.println("Divisible by 2");
      if (n % 3 == 0) System.out.println("Divisible by 3");
      if (n % 5 == 0) System.out.println("Divisible by 5");
   }
}
```

```
C:>javac DivisibilityCheck.java

C:>java DivisibilityCheck
Enter number: 30
Divisible by 2
Divisible by 3
Divisible by 5
```

18. Day of the Week
Scenario: Take day number (1–7) and print the day name.

```
import java.util.Scanner;
class DayOfWeek {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter day number: ");
      int d = sc.nextInt();
      String[] days =
{"Invalid","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday","Sunday"};
      if (d >= 1 && d <= 7)
         System.out.println("Day is " + days[d]);
      Else
```

```
            System.out.println("Invalid day number");
        }
    }
```

```
C:\> javac DayOfWeek.java
C:\> java DayOfWeek
Enter day number: 4
Day is Thursday
```

19. Days in a Month
Scenario: Take month number (1–12) and print number of days in that month.

```
import java.util.Scanner;
class DaysInMonth {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter month number: ");
        int m = sc.nextInt();
        switch (m) {
            case 1: case 3: case 5: case 7: case 8: case 10: case 12:
                System.out.println("31 days");
                break;
            case 4: case 6: case 9: case 11:
                System.out.println("30 days");
                break;
            case 2:
                System.out.println("28 or 29 days");
                break;
            default:
                System.out.println("Invalid month");
        }
    }
}
```

```
C:\> javac DaysInMonth.java
C:\> java DaysInMonth
Enter month number: 2
28 or 29 days
```

20. Basic Calculator Using If-Else
Scenario: Create a calculator that takes two numbers and an operator (+, -, *, /) and prints result using nested if-else.

```
import java.util.Scanner;
class CalculatorIfElse {
   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();
      System.out.print("Enter operator (+,-,*,/): ");
      char op = sc.next().charAt(0);

      if (op == '+') System.out.println("Result: " + (a+b));
      else if (op == '-') System.out.println("Result: " + (a-b));
      else if (op == '*') System.out.println("Result: " + (a*b));
      else if (op == '/') System.out.println("Result: " + (a/b));
      else System.out.println("Invalid operator");
   }
}
```

```
C:\> javac CalculatorIfElse.java
C:\> java CalculatorIfElse
Enter first number: 10
Enter second number: 5
Enter operator (+,-,*,/): *
Result: 50
```

21. Day of the Week (Ternary)
Scenario: Take an int (1–7) and print the corresponding day of the week using ternary operators.

```
import java.util.Scanner;
class DayTernary {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter day number: ");
      int d = sc.nextInt();
      String day = (d==1)?"Monday":(d==2)?"Tuesday":(d==3)?"Wednesday":
                   (d==4)?"Thursday":(d==5)?"Friday":(d==6)?"Saturday":
                   (d==7)?"Sunday":"Invalid";
      System.out.println("Day is " + day);
   }
}
```

```
C:\> javac DayTernary.java
C:\> java DayTernary
Enter day number: 3
Day is Wednesday
```

22. Month Name from Number
Scenario: Take month number (1–12) and print the month name using ternary operators or if-else.

```
import java.util.Scanner;
class MonthName {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter month number: ");
      int m=sc.nextInt();
      String month = (m==1)?"January":(m==2)?"February":(m==3)?"March":
                     (m==4)?"April":(m==5)?"May":(m==6)?"June":
                     (m==7)?"July":(m==8)?"August":(m==9)?"September":
                     (m==10)?"October":(m==11)?"November":(m==12)?"December":"Invalid";
      System.out.println("Month is " + month);
   }  }
```

```
C:>javac MonthName.java

C:>java MonthName
Enter month number: 8
Month is August
```

23. Basic Calculator Using Switch-Case
Scenario: Create a calculator that uses switch-case for operators (+, -, *, /) and prints result.

```
import java.util.Scanner;
class CalculatorSwitch {
   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();
      System.out.print("Enter operator (+,-,*,/): ");
      char op=sc.next().charAt(0);
      switch(op){
         case '+': System.out.println("Result: "+(a+b)); break;
         case '-': System.out.println("Result: "+(a-b)); break;
         case '*': System.out.println("Result: "+(a*b)); break;
         case '/': System.out.println("Result: "+(a/b)); break;
         default: System.out.println("Invalid operator");
      }
   }
}
```

```
C:\> javac CalculatorSwitch.java
C:\> java CalculatorSwitch
Enter first number: 15
Enter second number: 3
Enter operator (+,-,*,/): /
Result: 5
```

24. Grade Using Switch (Ranges)
Scenario: Take marks (0–100) and print grade using switch-case grouping:

```
import java.util.Scanner;
class GradeSwitch {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter marks: ");
      int m=sc.nextInt();
      switch(m/10){
         case 10: case 9: System.out.println("Grade: A"); break;
         case 8: case 7: System.out.println("Grade: B"); break;
         case 6: System.out.println("Grade: C"); break;
         case 5: System.out.println("Grade: D"); break;
```

```
            case 4: System.out.println("Grade: E"); break;
            default: System.out.println("Grade: F");
        }
    }
}
```

```
C:\> javac GradeSwitch.java
C:\> java GradeSwitch
Enter marks: 78
Grade: B
```

25. Message Based on Number (1–5)
Scenario: Take a number (1–5) and print a message according to the case. Useful for simple menu selection.

```
import java.util.Scanner;
class NumberMessage {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter a number: ");
      int n=sc.nextInt();
      switch(n){
         case 1: System.out.println("You selected option 1."); break;
         case 2: System.out.println("You selected option 2."); break;
         case 3: System.out.println("You selected option 3."); break;
         case 4: System.out.println("You selected option 4."); break;
         case 5: System.out.println("You selected option 5."); break;
         default: System.out.println("Invalid option.");
      }
   }
}
```

```
C:\> javac NumberMessage.java
C:\> java NumberMessage
Enter a number: 3
You selected option 3.
```

26. Season Based on Month
Scenario: Print season based on month number:

```
import java.util.Scanner;
class Season {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter month number: ");
      int m=sc.nextInt();
      if(m==12 || m==1 || m==2)
         System.out.println("Season is Winter");
      else if(m>=3 && m<=5)
         System.out.println("Season is Summer");
      else if(m>=6 && m<=8)
         System.out.println("Season is Monsoon");
      else if(m>=9 && m<=11)
         System.out.println("Season is Autumn");
      else
         System.out.println("Invalid month");
   }
}
```

```
C:\> javac Season.java
C:\> java Season
Enter month number: 12
Season is Winter
```

27. Print Message Based on Character (A–E)
Scenario: Take a character (A–E) and print a specific message using switch-case.

```
import java.util.Scanner;
class CharMessage {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter a character: ");
      char ch=sc.next().charAt(0);
      switch(ch){
         case 'A': System.out.println("You selected option A."); break;
         case 'B': System.out.println("You selected option B."); break;
         case 'C': System.out.println("You selected option C."); break;
         case 'D': System.out.println("You selected option D."); break;
         case 'E': System.out.println("You selected option E."); break;
         default: System.out.println("Invalid option.");
      }
   }
}
```

```
C:\> javac CharMessage.java
C:\> java CharMessage
Enter a character: B
You selected option B.
```

28. Traffic Signal Instruction
Scenario: Take traffic signal color as input (Red, Green, Yellow) and print appropriate instruction.

```
import java.util.Scanner;
class TrafficSignal {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter traffic light color: ");
      String color=sc.next().toLowerCase();
      if(color.equals("red"))
```

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

        else if(color.equals("yellow"))
            System.out.println("Wait");
        else if(color.equals("green"))
            System.out.println("Go");
        else
            System.out.println("Invalid color");
    }
}
```

```
C:>javac TrafficSignal.java

C:>java TrafficSignal
Enter traffic light color: red
Stop

C:>java TrafficSignal
Enter traffic light color: yellow
Wait

C:>java TrafficSignal
Enter traffic light color: green
Go

C:>java TrafficSignal
Enter traffic light color: blue
Invalid color
```

29. Day Type Selection
Scenario: Take user input for day type (1–Workday, 2–Weekend) and print working status.

```
import java.util.Scanner;
class DayType {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter day type (1–Workday, 2–Weekend): ");
        int d=sc.nextInt();
        if(d==1)
            System.out.println("It’s a workday.");
        else if(d==2)
            System.out.println("It’s weekend. No work today.");
        else
            System.out.println("Invalid input.");
    }
```

}

```
C:\> javac DayType.java
C:\> java DayType
Enter day type (1-Workday, 2-Weekend): 2
It's weekend. No work today.
```

30. Menu-Based Simple Arithmetic Operations
Scenario: Implement a menu-based program that asks user to select operation (Addition, Subtraction, Multiplication, Division) and prints result.

```
import java.util.Scanner;
class MenuCalculator {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.println("Select operation (1-Addition, 2-Subtraction, 3-Multiplication, 4-
Division): ");
      int choice=sc.nextInt();
      System.out.print("Enter first number: ");
      int a=sc.nextInt();
      System.out.print("Enter second number: ");
      int b=sc.nextInt();
      switch(choice){
         case 1: System.out.println("Result: "+(a+b)); break;
         case 2: System.out.println("Result: "+(a-b)); break;
         case 3: System.out.println("Result: "+(a*b)); break;
         case 4: System.out.println("Result: "+(a/b)); break;
         default: System.out.println("Invalid choice");
      }
   }
}
```

```
C:\> javac MenuCalculator.java
C:\> java MenuCalculator
Select operation (1-Addition, 2-Subtraction, 3-Multiplication, 4-Division):
1
Enter first number: 20
Enter second number: 30
Result: 50
```

31. Greatest of Two Numbers (Ternary)
Scenario: You want to quickly compare two numbers. Take two numbers as input and print the greatest using a ternary operator.

```
import java.util.Scanner;
class GreatestTernary {
   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 max=(a>b)?a:b;
      System.out.println("Greatest number: " + max);
   }
}
```

```
C:\> javac GreatestTernary.java
C:\> java GreatestTernary
Enter first number: 45
Enter second number: 30
Greatest number: 45
```

32. Positive, Negative, or Zero (Ternary)
Scenario: Take a number and determine if it is positive, negative, or zero using ternary operator.

```
import java.util.Scanner;
class PosNegZeroTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter a number: ");
      int n=sc.nextInt();
      String result=(n>0)?"Number is Positive":(n<0)?"Number is Negative":"Number is Zero";
      System.out.println(result);
   }
}
```

```
C:\> javac PosNegZeroTernary.java
C:\> java PosNegZeroTernary
Enter a number: -12
Number is Negative
```

33. Even or Odd (Ternary)
Scenario: Take a number and check if it is even or odd using ternary operator.

```
import java.util.Scanner;
class EvenOddTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter a number: ");
      int n=sc.nextInt();
      String ans=(n%2==0)?"Number is Even":"Number is Odd";
      System.out.println(ans);
   }
}
```

```
C:\> javac EvenOddTernary.java
C:\> java EvenOddTernary
Enter a number: 17
Number is Odd
```

34. Voting Eligibility (Ternary)
Scenario: Ask user age and print “Eligible” or “Not Eligible” to vote using ternary operator.

```
import java.util.Scanner;
class VotingEligibility {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter age: ");
      int age=sc.nextInt();
      String res=(age>=18)?"Eligible to vote":"Not Eligible to vote";
      System.out.println(res);
   }
}
```

```
C:\> javac VotingEligibility.java
C:\> java VotingEligibility
Enter age: 20
Eligible to vote
```

35. Pass/Fail Check (Ternary)
Scenario: Take marks as input and print Pass or Fail using ternary operator (Pass if >=35).

```
import java.util.Scanner;
class PassFailTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter marks: ");
      int m=sc.nextInt();
      String res=(m>=35)?"Pass":"Fail";
      System.out.println(res);
   }
}
```

```
C:\> javac PassFailTernary.java
C:\> java PassFailTernary
Enter marks: 28
Fail
```

36. Smallest of Three Numbers (Nested Ternary)
Scenario: Take three numbers as input and print the smallest using nested ternary operator.

```
import java.util.Scanner;
class SmallestOfThree {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter three numbers: ");
      int a=sc.nextInt(), b=sc.nextInt(), c=sc.nextInt();
      int min=(a<b)?(a<c?a:c):(b<c?b:c);
      System.out.println("Smallest number: " + min);
   }
}
```

```
C:\> javac SmallestOfThree.java
C:\> java SmallestOfThree
Enter three numbers: 12 8 19
Smallest number: 8
```

37. Leap Year Check (Ternary)
Scenario: Take a year as input and check if it is a leap year using ternary operator.

```
import java.util.Scanner;

class LeapYearTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter year: ");
      int y=sc.nextInt();
      String res=((y%400==0)||(y%4==0 && y%100!=0))?"Leap Year":"Not Leap Year";
      System.out.println(res);
   }
}
```

```
C:\> javac LeapYearTernary.java
C:\> java LeapYearTernary
Enter year: 2024
Leap Year
```

38. Vowel or Consonant (Ternary)
Scenario: Take a character and check if it is a vowel or consonant using ternary operator.

```
import java.util.Scanner;
class VowelConsonantTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter character: ");
      char ch=sc.next().toLowerCase().charAt(0);
      String ans=(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u')?"Vowel":"Consonant";
      System.out.println(ans);
   }
}
```

```
C:\> javac VowelConsonantTernary.java
C:\> java VowelConsonantTernary
Enter character: i
Vowel
```

39. Bonus Eligibility (Ternary)
Scenario: A company gives 5% bonus if years of service > 5. Take salary and years of service, print bonus eligibility using ternary.

```
import java.util.Scanner;
class BonusTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter salary: ");
      double sal=sc.nextDouble();
      System.out.print("Enter years of service: ");
      int yrs=sc.nextInt();
      double bonus=(yrs>5)?sal*0.05:0;
      System.out.println("Bonus: " + bonus);
   }
}
```

```
C:\> javac BonusTernary.java
C:\> java BonusTernary
Enter salary: 50000
Enter years of service: 6
Bonus: 2500.0
```

40. Discount on Purchase (Ternary)
Scenario: A shop gives 10% discount if purchase amount > 1000. Take purchase amount and print total cost using ternary.

```
import java.util.Scanner;
class DiscountTernary {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter purchase amount: ");
      double amt=sc.nextDouble();
      double total=(amt>1000)?amt*0.9:amt;
      System.out.println("Total cost after discount: " + total);
   }
}
```

```
C:\> javac DiscountTernary.java
C:\> java DiscountTernary
Enter purchase amount: 1200
Total cost after discount: 1080.0
```

41. Check Armstrong Number (3-Digit)
Scenario: Take a 3-digit number and check if it is an Armstrong number (sum of cubes of digits = number).

```
import java.util.Scanner;
class Armstrong {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter number: ");
      int n=sc.nextInt(), temp=n, sum=0;
      while(n>0){
         int d=n%10;
         sum+=d*d*d;
         n/=10;
      }
      if(sum==temp) System.out.println("Armstrong number");
      else System.out.println("Not Armstrong");
   }
}
```

```
C:\> javac Armstrong.java
C:\> java Armstrong
Enter number: 153
Armstrong number
```

Armstrong Numbers Between 100–500
Scenario: Print all Armstrong numbers between 100 and 500.

```
class ArmstrongRange {
   public static void main(String[] args) {
      for(int n=100; n<=500; n++){
         int temp=n, sum=0;
         while(temp>0){
            int d=temp%10;
            sum+=d*d*d;
            temp/=10;
         }
         if(sum==n) System.out.println(n);
      }
   }
}
```

```
C:\> javac ArmstrongRange.java
C:\> java ArmstrongRange
153
370
371
407
```

42. Sum of Digits of a Number
Scenario: Take a number as input and print the sum of its digits.

```
import java.util.Scanner;
class SumDigits {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter number: ");
      int n=sc.nextInt(), sum=0;
      while(n>0){ sum+=n%10; n/=10; }
      System.out.println("Sum of digits: " + sum);
   }
}
```

```
C:\> javac SumDigits.java
C:\> java SumDigits
Enter number: 482
Sum of digits: 14
```

43. Reverse 4-Digit Number and Palindrome Check
Scenario: Take a 4-digit number, reverse it, and check if it is a palindrome.

```
import java.util.Scanner;
class ReversePalindrome {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter 4-digit number: ");
      int n=sc.nextInt(), temp=n, rev=0;
      while(n>0){ rev=rev*10+n%10; n/=10; }
      System.out.println("Reversed number: " + rev);
      System.out.println("Palindrome: " + ((rev==temp)?"Yes":"No"));
   }

}
```

```
C:\> javac ReversePalindrome.java
C:\> java ReversePalindrome
Enter 4-digit number: 1221
Reversed number: 1221
Palindrome: Yes
```

44. Sort Three Numbers in Ascending Order
Scenario: Take three numbers and print them in ascending order.

```
import java.util.Scanner;
import java.util.Arrays;
class SortThree {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      int[] arr=new int[3];
      System.out.print("Enter numbers: ");
      for(int i=0;i<3;i++) arr[i]=sc.nextInt();
      Arrays.sort(arr);
      System.out.println("Ascending order: "+arr[0]+", "+arr[1]+", "+arr[2]);
   }
}
```

```
C:\> javac SortThree.java
C:\> java SortThree
Enter numbers: 45 12 78
Ascending order: 12, 45, 78
```

45. Character Type Checker
Scenario: Take a character as input and print whether it is an alphabet, digit, or special character.

```
import java.util.Scanner;
class CharType {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter character: ");
      char ch=sc.next().charAt(0);
      if(Character.isLetter(ch))
         System.out.println("Alphabet");
      else if(Character.isDigit(ch))
         System.out.println("Digit");
      else
         System.out.println("Special Character");
   }
}
```

```
C:\> javac CharType.java
C:\> java CharType
Enter character: %
Special Character
```

46. Even/Odd Status of Two Numbers
Scenario: Take two numbers and print if both are even, both odd, or mixed.

```
import java.util.Scanner;
class EvenOddTwo {
   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%2==0 && b%2==0)
         System.out.println("Both numbers are even");
      else if(a%2!=0 && b%2!=0)
         System.out.println("Both numbers are odd");
      else
         System.out.println("Numbers are mixed (one even, one odd)");
   }
}
```

```
C:\> javac EvenOddTwo.java
C:\> java EvenOddTwo
Enter first number: 12
Enter second number: 17
Numbers are mixed (one even, one odd)
```

47. Grade with Plus/Minus
Scenario: Take marks and print grade with plus/minus (e.g., 85 → A, 78 → A−).

```
import java.util.Scanner;
class GradePlusMinus {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter marks: ");
      int m=sc.nextInt();
      if(m>=85) System.out.println("Grade: A");
      else if(m>=75) System.out.println("Grade: A−");
      else if(m>=65) System.out.println("Grade: B+");
      else if(m>=55) System.out.println("Grade: B");
      else if(m>=35) System.out.println("Grade: C");
      else System.out.println("Fail");
   }
}
```

```
C:\> javac GradePlusMinus.java
C:\> java GradePlusMinus
Enter marks: 78
Grade: A-
```

48. Days in Month Considering Leap Year
Scenario: Take a year and month number, print days in that month considering leap years.

```
import java.util.Scanner;
class DaysInMonthLeap {
   public static void main(String[] args) {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter year: ");
      int y=sc.nextInt();
      System.out.print("Enter month number: ");
      int m=sc.nextInt();
      int days=0;
      switch(m){
         case 1:case 3:case 5:case 7:case 8:case 10:case 12: days=31; break;
         case 4:case 6:case 9:case 11: days=30; break;
         case 2: days=((y%400==0)||(y%4==0 && y%100!=0))?29:28; break;
         default: System.out.println("Invalid month"); return;
      }
      System.out.println(days+" days");
   }
}
```

```
C:\> javac DaysInMonthLeap.java
C:\> java DaysInMonthLeap
Enter year: 2024
Enter month number: 2
29 days
```

49. Divisibility by 2, 3, 5 with Custom Messages
Scenario: Take a number and check divisibility by 2, 3, and 5, printing custom messages for each.

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

```
        System.out.print("Enter number: ");
        int n=sc.nextInt();
        if(n%2==0) System.out.println("Divisible by 2");
        if(n%3==0) System.out.println("Divisible by 3");
        if(n%5==0) System.out.println("Divisible by 5");
    }
}
```

```
C:\> javac DivisibilityCustom.java
C:\> java DivisibilityCustom
Enter number: 30
Divisible by 2
Divisible by 3
Divisible by 5
```