**CDAC MUMBAI**

Object Oriented Programming using Java Lab Assignment

**Assignment 1**

**Q.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.

Input:

Enter score for Test 1: 78

Enter score for Test 2: 85

Output: Test 2 has higher score.

-> import java.util.Scanner;

public class HigherScore{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter score for Test1 : ");

int test1 = sc.nextInt();

System.out.print("Enter score for Test2 : ");

int test2 = sc.nextInt();

if(test1 > test2) {

System.out.println("Test 1 has the higher score. " ) ;

}else if (test2 > test1 ){

System.out.println("Test 2 has the higher score. " );

}else if (test1 == test2){

System.out.println("Both tests have equal marks. " );

}else {

System.out.println("Error Occured");

}

sc.close();

}

}

**Q.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.

Input:

Enter salary for Company 1: 45000

Enter salary for Company 2: 52000

Enter salary for Company 3: 50000

Output: Company 2 offers the highest salary.

-> import java.util.Scanner;

public class HighestSalary{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter the salary for Company 1: ");

int sal1 = sc.nextInt();

System.out.print("Enter the salary for Company 2: ");

int sal2 = sc.nextInt();

System.out.print("Enter the salary for Company 3: ");

int sal3 = sc.nextInt();

if(sal1 > sal2 && sal1 > sal3){

System.out.println("Company 1 offers higher salary.");

}else if (sal2 > sal1 && sal2 > sal3){

System.out.println("Company 2 offers higher salary.");

}else if (sal3 > sal1 && sal3 > sal2){

System.out.println("Company 3 offers higher salary.");

}else {

System.out.println("2 or more companies offers higher or the same salaries.");

}

sc.close();

}

}

**Q.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).

Input:

Enter transaction amount: -2500

Output: Withdrawal transaction.

-> import java.util.Scanner;

public class BankTransaction{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter transaction amount : ");

int amount = sc.nextInt();

if(amount > 0){

System.out.println("Deposit Transaction");

}else if(amount < 0) {

System.out.println("Withdrawal Transaction.");

}else{

System.out.println("No Transaction");

}

sc.close();

}

}

**Q.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.

Input: Enter locker number: 17

Output: Odd locker number

-> import java.util.Scanner;

public class LockerNumber{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter your Locker Number : ");

int lockernumber = sc.nextInt();

if(lockernumber % 2 == 0 ){

System.out.println("Your Locker Number is EVEN");

}else{

System.out.println("Your Locker Number is ODD");

}

sc.close();

}

}

**Q.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.

Input:

Enter length: 12

Enter breadth: 12

Output: Square garden

-> import java.util.Scanner;

public class Garden{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter length: ");

int length = sc.nextInt();

System.out.print("Enter breadth: ");

int breadth = sc.nextInt();

if (length == breadth) {

System.out.println("Square garden");

} else {

System.out.println("Rectangular garden");

}

sc.close();

}

}

**Q. 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.

Input: Enter year: 2024

Output: 2024 is a leap year.

-> import java.util.Scanner;

public class LeapYear{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter the year : ");

int year = sc.nextInt();

if ((year % 400 ==0) || (year %4 ==0 && year %100 !=0)){

System.out.println(year + " is LEAP year");

}else{

System.out.println(year + " is NOT LEAP year");

}

sc.close();

}

}

**Q. 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.

Input: Enter marks: 42

Output: Student has passed.

-> import java.util.Scanner;

public class ExamResult{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter your marks: ");

int marks = sc.nextInt();

if((marks >=35) && (marks <=100)){

System.out.println("Congratulations! You have PASSED the test");

}else if (marks > 100){

System.out.println("Invalid marks");

}else{

System.out.println("You have FAILED the test!");

}

sc.close();

}

}

**Q. 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.

Input: Enter total purchase amount: 1200

Output: Final cost after discount: 1080

-> import java.util.Scanner;

public 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;

if(amt > 1000){

finalCost = amt - (amt \* 0.10);

}else{

finalCost = amt;

}

System.out.println("Total Bill :"+ finalCost);

sc.close();

}

}

**Q.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. Input:

Enter salary: 50000

Enter years of service: 6

Output: Bonus amount: 2500

**->** import java.util.Scanner;

public class EmployeeBonus{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.println("Enter Salary : ");

double sal = sc.nextDouble();

System.out.print("Enter years of service: ");

int years = sc.nextInt();

double bonus = 0;

if (years > 5){

bonus = sal \* 0.5;

}

System.out.println("Bonus amount: " + bonus);

sc.close();

}

}

**Q.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.

Input:

Enter total classes held: 100

Enter classes attended: 78

Output: Student is allowed to sit for the exam

->import java.util.Scanner;

public class Attendance{

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter total classes held: ");

int totalClasses = sc.nextInt();

System.out.print("Enter classes attended: ");

int attendedClasses = sc.nextInt();

// calculate attendance percentage

double attendancePercentage = (attendedClasses \* 100.0) / totalClasses;

if (attendancePercentage >= 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");

}

sc.close();

}

}

**Q.11. Grade Based on Percentage Scenario:**

Your friend got exam marks. Take percentage marks as input and print the grade:

● 90+ → A+

● 76–89 → A

● 66–75 → B+

● 51–65 → B

● 36–50 → C

● Below 35 → Fail

Input: Enter percentage marks: 82 Output: Grade: A

->import java.util.Scanner;

public class Grade{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter your percentage marks : ");

double per = sc.nextDouble();

String grade;

if (per >= 90) {

grade = "A+";

} else if (per >= 76) {

grade = "A";

} else if (per >= 66) {

grade = "B+";

} else if (per >= 51) {

grade = "B";

} else if (per >= 36) {

grade = "C";

} else {

grade = "Fail";

}

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

sc.close();

}

}

**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.

Input: Enter age of Friend 1: 22

Enter age of Friend 2: 25

Enter age of Friend 3: 20

Output: Oldest: Friend 2 Youngest: Friend 3

->import java.util.Scanner;

public class AgesOfFriends{

public static void main(String[] argrs){

Scanner sc = new Scanner(System.in);

System.out.print("Enter the age of Friend1 : ");

int age1 = sc.nextInt();

System.out.print("Enter the age of Friend2 : ");

int age2 = sc.nextInt();

System.out.print("Enter the age of Friend3 : ");

int age3 = sc.nextInt();

if(age1 > age2 && age1 > age3){

System.out.println("Friend1 is OLDEST");

}else if(age2 > age1 && age2 > age3){

System.out.println("Friend2 is OLDEST");

}else {

System.out.println("Friend3 is OLDEST");

}

if(age1 < age2 && age1 < age3){

System.out.println("Friend1 is YOUNGEST");

}else if(age2 < age1 && age2 < age3){

System.out.println("Friend2 is YOUNGEST");

}else {

System.out.println("Friend3 is YOUNGEST");

}

sc.close();

}

}

**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.

Input: Classes held: 100

Classes attended: 60

Medical cause (Y/N): Y

Output: Student is allowed to sit for the exam.

import java.util.Scanner;

public class MedicalCause{

public static void main(String[] args ){

Scanner sc = new Scanner(System.in);

System.out.print("Enter the total no. of classes: ");

int classes = sc.nextInt();

System.out.print("Enter the no. of Attended Classes : ");

int attended = sc.nextInt();

System.out.print("Medical cause (Y/N): ");

char medical = sc.next().charAt(0);

double attendancePer = (attended\*100.0) / classes;

if (attendancePer >= 75 || medical == 'Y' || medical == '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.");

}

sc.close();

}

}

**Q. 14. Reverse a 4-Digit Number**

Scenario: Take a 4-digit number and print its reverse. Input: Enter 4-digit number: 1234 Output: Reversed number: 4321

->import java.util.Scanner;

public class ReverseNum{

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a 4-digit number: ");

int num = sc.nextInt();

int rev = 0;

while(num > 0){

int digit = num % 10;

rev = rev \* 10 + digit;

num = num/10;

}

System.out.println("Reversed number: " + rev);

sc.close();

}

}

15. Lucky Number

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

Input: Enter 4-digit number: 3521

Output: Not a lucky number

->import java.util.Scanner;

public class LuckyNum {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a 4 digit number: ");

int num = sc.nextInt();

int A = num / 1000;

int B = (num / 100) % 10;

int C = (num / 10) % 10;

int D = num % 10;

if ((A + B) == (C + D)) {

System.out.println("Lucky number");

} else {

System.out.println("Not a lucky number");

}

sc.close();

}

}

Q.16. Vowel or Consonant Checker

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

input. Input: Enter a character: e

Output: Vowel

->import java.util.Scanner;

public class VowelCons{

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.print("Enter a Character : ");

char ch = sc.next().charAt(0);

if((ch >='a' && ch <='z') || (ch >= 'A' && ch <= 'Z')){

char lowerch = Character.toLowerCase(ch);

if(lowerch == 'a' || lowerch =='e' || lowerch =='i'

|| lowerch =='o' || lowerch =='u'){

System.out.println("VOWELS");

}else{

System.out.println("CONSONANT");

}

} else {

System.out.println("Error: Invalid input");

}

sc.close();

}

}

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

Input: Enter number: 30

Output:

Divisible by 2

Divisible by 3

Divisible by 5

->import java.util.Scanner;

public class Divisibility{

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter number: ");

int num = sc.nextInt();

if (num % 2 == 0) {

System.out.println("Divisible by 2");

if (num % 3 == 0) {

System.out.println("Divisible by 3");

if (num % 5 == 0) {

System.out.println("Divisible by 5");

} else {

System.out.println("Not divisible by 5");

}

} else {

System.out.println("Not divisible by 3");

}

} else {

System.out.println("Not divisible by 2");

}

sc.close();

}

}

**Q. 18. Day of the Week**

Scenario: Take day number (1–7) and print the day name.

Input: Enter day number: 4

Output: Day is Thursday

->import java.util.Scanner;

public class DayOfWeek {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter day number (1-7): ");

int day = sc.nextInt();

String dayName;

if (day == 1) {

dayName = "Monday";

} else if (day == 2) {

dayName = "Tuesday";

} else if (day == 3) {

dayName = "Wednesday";

} else if (day == 4) {

dayName = "Thursday";

} else if (day == 5) {

dayName = "Friday";

} else if (day == 6) {

dayName = "Saturday";

} else if (day == 7) {

dayName = "Sunday";

} else {

dayName = "Invalid day number!";

}

System.out.println("Day is " + dayName);

sc.close();

}

}

**Q. 19. Days in a Month**

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

Input: Enter month number: 2

Output: 28 or 29 days

->import java.util.Scanner;

public class DaysInMonths {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter month number (1-12): ");

int month = sc.nextInt();

int days;

if (month == 1 || month == 3 || month == 5 || month == 7 ||

month == 8 || month == 10 || month == 12) {

days = 31;

System.out.println("31 days");

} else if (month == 4 || month == 6 || month == 9 || month == 11) {

days = 30;

System.out.println("30 days");

} else if (month == 2) {

System.out.println("28 or 29 days");

} else {

System.out.println("Invalid month number!");

}

sc.close();

}

}

**Q. 20. Basic Calculator Using If-Else**

Scenario: Create a calculator that takes two numbers and an operator (+, -, \*, /) and prints result using nested if-else.

Input: Enter first number: 10 Enter second number: 5 Enter operator: \*

Output: Result: 50

-> import java.util.Scanner;

public class DaysInMonths {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter month number (1-12): ");

int month = sc.nextInt();

int days;

if (month == 1 || month == 3 || month == 5 || month == 7 || month == 8 || month == 10 || month == 12) {

days = 31;

System.out.println("31 days");

} else if (month == 4 || month == 6 || month == 9 || month == 11) {

days = 30;

System.out.println("30 days");

} else if (month == 2) {

System.out.println("28 or 29 days");

} else {

System.out.println("Invalid month number!");

}

sc.close();

}

}

**Q. 21. Day of the Week (Ternary)**

Scenario: Take an int (1–7) and print the corresponding day of the week using ternary operators. Input: Enter day number: 3

Output: Day is Wednesday

->import java.util.Scanner;

public class DaysOfWeekTernaryOperator {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter day number (1-7): ");

int day = sc.nextInt();

String result = (day == 1) ? "Day is Monday"

: (day == 2) ? "Day is Tuesday"

: (day == 3) ? "Day is Wednesday"

: (day == 4) ? "Day is Thursday"

: (day == 5) ? "Day is Friday"

: (day == 6) ? "Day is Saturday"

: (day == 7) ? "Day is Sunday"

: "Invalid day number!";

System.out.println(result);

sc.close();

}

}

**Q. 22. Month Name from Number**

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

Input: Enter month number: 8

Output: Month is August

->import java.util.Scanner;

public class MonthNameTernary {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter month number (1-12): ");

int month = sc.nextInt();

String result = (month == 1) ? "Month is January"

: (month == 2) ? "Month is February"

: (month == 3) ? "Month is March"

: (month == 4) ? "Month is April"

: (month == 5) ? "Month is May"

: (month == 6) ? "Month is June"

: (month == 7) ? "Month is July"

: (month == 8) ? "Month is August"

: (month == 9) ? "Month is September"

: (month == 10) ? "Month is October"

: (month == 11) ? "Month is November"

: (month == 12) ? "Month is December"

: "Invalid month number!";

System.out.println(result);

sc.close();

}

}

**Q. 23. Basic Calculator Using Switch-Case**

Scenario: Create a calculator that uses switch-case for operators (+, -, \*, /) and prints result. Input: Enter first number: 15 Enter second number: 3 Enter operator: /

Output: Result: 5

->import java.util.Scanner;

public class BasicCalculator {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter first number: ");

double num1 = sc.nextDouble();

System.out.print("Enter second number: ");

double num2 = sc.nextDouble();

System.out.print("Enter operator (+, -, \*, /): ");

char operator = sc.next().charAt(0);

double result;

switch (operator) {

case '+':

result = num1 + num2;

System.out.println("Result: " + result);

break;

case '-':

result = num1 - num2;

System.out.println("Result: " + result);

break;

case '\*':

result = num1 \* num2;

System.out.println("Result: " + result);

break;

case '/':

if (num2 != 0) {

result = num1 / num2;

System.out.println("Result: " + result);

} else {

System.out.println("Error: Division by zero not allowed!");

}

break;

default:

System.out.println("Invalid operator!");

}

sc.close();

}

}

**Q. 24. Grade Using Switch (Ranges)**

Scenario: Take marks (0–100) and print grade using switch-case grouping: ● 0–24 → F ● 25–44 → E ● 45–54 → D ● 55–69 → C ● 70–84 → B ● 85–100 → A

Input: Enter marks: 78

Output: Grade: B

->import java.util.Scanner;

public class GradeSwitchCase {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter marks (0-100): ");

int marks = sc.nextInt();

String grade;

if (marks < 0 || marks > 100) {

grade = "Invalid Marks!";

} else {

switch (marks / 10) {

case 10:

case 9:

case 8:

grade = "A"; // 85–100

break;

case 7:

grade = "B"; // 70–84

break;

case 6:

grade = "C"; // 55–69

break;

case 5:

grade = "D"; // 45–54

break;

case 4:

case 3:

grade = "E"; // 25–44

break;

default:

grade = "F"; // 0–24

}

}

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

sc.close();

}

}

**Q. 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.

Input: Enter a number: 3

Output: You selected option 3.

->import java.util.Scanner;

public class MessageBasedOnNum {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a number (1-5): ");

int num = sc.nextInt();

switch (num) {

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! Please enter a number between 1 and 5.");

}

sc.close();

}

}

**Q. 26. Season Based on Month**

Scenario: Print season based on month number: ● Dec–Feb → Winter ● Mar–May → Summer ● Jun–Aug → Monsoon ● Sep–Nov → Autumn

Input: Enter month number: 12

Output: Season is Winter

-> import java.util.Scanner;

public class SeasonByMonth {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter month number (1-12): ");

int month = sc.nextInt();

String season;

if (month < 1 || month > 12) {

season = "Invalid month!";

} else if (month == 12 || month == 1 || month == 2) {

season = "Winter";

} else if (month >= 3 && month <= 5) {

season = "Summer";

} else if (month >= 6 && month <= 8) {

season = "Monsoon";

} else { // 9–11

season = "Autumn";

}

System.out.println("Season is " + season);

sc.close();

}

}

**Q. 27. Print Message Based on Character (A–E)**

Scenario: Take a character (A–E) and print a specific message using switch-case.

Input: Enter a character: B

Output: You selected option B

->import java.util.Scanner;

public class CharMessageSwitch {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a character (A–E): ");

char ch = sc.next().charAt(0); // take first character input

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! Please enter A–E.");

}

sc.close();

}

}

Q. 28. Traffic Signal Instruction Scenario: Take traffic signal color as input (Red, Green, Yellow) and print appropriate instruction. Input: Enter traffic light color: Green Output: Go

->import java.util.Scanner;

public class TrafficSignal {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter traffic light color (Red/Yellow/Green): ");

String color = sc.next().toLowerCase(); // convert input to lowercase

switch (color) {

case "red":

System.out.println("Stop");

break;

case "yellow":

System.out.println("Ready to go");

break;

case "green":

System.out.println("Go");

break;

default:

System.out.println("Invalid color! Please enter Red, Yellow, or Green.");

}

sc.close();

}

}

Q. 29. Day Type Selection Scenario: Take user input for day type (1–Workday, 2–Weekend) and print working status. Input: Enter day type (1–Workday, 2–Weekend): 2 Output: It’s weekend. No work today.

->import java.util.Scanner;

public class DayTypeSelection {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter day type (1–Workday, 2–Weekend): ");

int dayType = sc.nextInt();

switch (dayType) {

case 1:

System.out.println("It’s a workday. Time to work!");

break;

case 2:

System.out.println("It’s weekend. No work today.");

break;

default:

System.out.println("Invalid choice! Please enter 1 or 2.");

}

sc.close();

}

}

Q. 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. Input: Select operation (1-Addition, 2-Subtraction): 1 Enter first number: 20 Enter second number: 30 Output: Result: 50

->import java.util.Scanner;

public class MenuArithmetic {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Select operation:");

System.out.println("1 - Addition");

System.out.println("2 - Subtraction");

System.out.println("3 - Multiplication");

System.out.println("4 - Division");

System.out.print("Enter your choice: ");

int choice = sc.nextInt();

System.out.print("Enter first number: ");

int num1 = sc.nextInt();

System.out.print("Enter second number: ");

int num2 = sc.nextInt();

int result;

switch (choice) {

case 1:

result = num1 + num2;

System.out.println("Result: " + result);

break;

case 2:

result = num1 - num2;

System.out.println("Result: " + result);

break;

case 3:

result = num1 \* num2;

System.out.println("Result: " + result);

break;

case 4:

if (num2 != 0) {

double div = (double) num1 / num2; // to handle decimal division

System.out.println("Result: " + div);

} else {

System.out.println("Error: Division by zero not allowed!");

}

break;

default:

System.out.println("Invalid choice!");

}

sc.close();

}

}

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. Input: Enter first number: 45 Enter second number: 30 Output: Greatest number: 45

-> import java.util.Scanner;

public class GreatestTwoTernary {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter first number: ");

int num1 = sc.nextInt();

System.out.print("Enter second number: ");

int num2 = sc.nextInt();

// Ternary operator to find greatest

int greatest = (num1 > num2) ? num1 : num2;

System.out.println("Greatest number: " + greatest);

sc.close();

}

}

32. Positive, Negative, or Zero (Ternary) Scenario: Take a number and determine if it is positive, negative, or zero using ternary operator. Input: Enter a number: -12 Output: Number is Negative C-DAC MUMBAI

-> import java.util.Scanner;

public class PositiveNegative {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a number: ");

int num = sc.nextInt();

String result = (num > 0) ? "Number is Positive"

: (num < 0) ? "Number is Negative"

: "Number is Zero";

System.out.println(result);

sc.close();

}

}

33. Even or Odd (Ternary) Scenario: Take a number and check if it is even or odd using ternary operator. Input: Enter a number: 17 Output: Number is Odd

->import java.util.Scanner;

public class EvenOddTernary {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a number: ");

int num = sc.nextInt();

String result = (num % 2 == 0) ? "Number is Even" : "Number is Odd";

System.out.println(result);

sc.close();

}

}

34. Voting Eligibility (Ternary) Scenario: Ask user age and print “Eligible” or “Not Eligible” to vote using ternary operator. Input: Enter age: 20 Output: Eligible to vote

->import java.util.Scanner;

public class VotingEligibility {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter age: ");

int age = sc.nextInt();

String result = (age >= 18) ? "Eligible to vote" : "Not Eligible to vote";

System.out.println(result);

sc.close();

}

}

35. Pass/Fail Check (Ternary) Scenario: Take marks as input and print Pass or Fail using ternary operator (Pass if >=35). Input: Enter marks: 28 Output: Fail

-> import java.util.Scanner;

public class PassFailTer {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter marks: ");

int marks = sc.nextInt();

String result = (marks >= 35) ? "Pass" : "Fail";

System.out.println(result);

sc.close();

}

}

36. Smallest of Three Numbers (Nested Ternary) Scenario: Take three numbers as input and print the smallest using nested ternary operator. Input: Enter numbers: 12, 8, 19 Output: Smallest number: 8

->import java.util.Scanner;

public class SmallestOfThree {

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 third number: ");

int c = sc.nextInt();

// Nested ternary operator

int smallest = (a < b) ? ((a < c) ? a : c) : ((b < c) ? b : c);

System.out.println("Smallest number: " + smallest);

sc.close();

}

}

37. Leap Year Check (Ternary) Scenario: Take a year as input and check if it is a leap year using ternary operator. Input: Enter year: 2024 Output: Leap Year C-DAC MUMBAI

->import java.util.Scanner;

public class LeapYearTernary {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter year: ");

int year = sc.nextInt();

// Leap year condition using ternary

String result = (year % 400 == 0) ? "Leap Year"

: (year % 100 == 0) ? "Not a Leap Year"

: (year % 4 == 0) ? "Leap Year"

: "Not a Leap Year";

System.out.println(result);

sc.close();

}

}

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

->import java.util.Scanner;

public class VowelConsonantTer {

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); // convert to lowercase for easy check

// Check if input is alphabet

String result = (ch >= 'a' && ch <= 'z')

? ((ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u')

? "Vowel" : "Consonant")

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. Input: Enter salary: 50000 Enter years of service: 6 Output: Bonus: 2500

->import java.util.Scanner;

public class BonusEligibility {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter salary: ");

double salary = sc.nextDouble();

System.out.print("Enter years of service: ");

int years = sc.nextInt();

// Ternary operator to calculate bonus

double bonus = (years > 5) ? (salary \* 0.05) : 0;

System.out.println("Bonus: " + bonus);

sc.close();

}

}

40. Discount on Purchase (Ternary) Scenario: A shop gives 10% discount if purchase amount > 1000. Take purchase amount and print total cost using ternary. Input: Enter purchase amount: 1200 Output: Total cost after discount: 1080

->import java.util.Scanner;

public class DiscountTernary {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter purchase amount: ");

double amount = sc.nextDouble();

// Apply 10% discount if amount > 1000

double finalCost = (amount > 1000) ? (amount \* 0.90) : amount;

System.out.println("Total cost after discount: " + finalCost);

sc.close();

}

}

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). Input: Enter number: 153 Output: 153 is an Armstrong number C-DAC MUMBAI C-DAC MUMBAI

-> import java.util.Scanner;

public class Armstrong {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a 3-digit number: ");

int num = sc.nextInt();

int original = num;

int sum = 0;

// Extract each digit and add its cube

while (num > 0) {

int digit = num % 10; // get last digit

sum += digit \* digit \* digit; // cube and

42. Armstrong Numbers Between 100–500 Scenario: Print all Armstrong numbers between 100 and 500. Output: 153 370 371 407

->public class ArmstrongRange {

public static void main(String[] args) {

System.out.println("Armstrong numbers between 100 and 500:");

for (int num = 100; num <= 500; num++) {

int original = num;

int sum = 0;

int temp = num;

// Calculate sum of cubes of digits

while (temp > 0) {

int digit = temp % 10;

sum += digit \* digit \* digit;

temp /= 10;

}

43. Sum of Digits of a Number Scenario: Take a number as input and print the sum of its digits. Input: Enter number: 482 Output: Sum of digits: 14  
->import java.util.Scanner;

public class SumOfDigits {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter number: ");

int num = sc.nextInt();

int sum = 0;

int temp = num;

// Extract digits and add them

while (temp > 0) {

int digit = temp % 10; // get last digit

sum += digit; // add to sum

temp /= 10; // remove last digit

}

System.out.println("Sum of digits: " + sum);

sc.close();

}

}

44. Reverse 4-Digit Number and Palindrome Check Scenario: Take a 4-digit number, reverse it, and check if it is a palindrome. Input: Enter 4-digit number: 1221 Output: Reversed number: 1221 Palindrome: Yes

->import java.util.Scanner;

public class ReversePalindrome {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter 4-digit number: ");

int num = sc.nextInt();

int original = num;

int reversed = 0;

// Reverse the number

while (num > 0) {

int digit = num % 10;

reversed = reversed \* 10 + digit;

num /= 10;

}

// Print reversed number

System.out.println("Reversed number: " + reversed);

// Check palindrome

if (original == reversed) {

System.out.println("Palindrome: Yes");

} else {

System.out.println("Palindrome: No");

}

sc.close();

}

}

45. Sort Three Numbers in Ascending Order Scenario: Take three numbers and print them in ascending order. Input: Enter numbers: 45, 12, 78 Output: Ascending order: 12, 45, 78

->import java.util.Scanner;

public class SortThreeNumbers {

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 third number: ");

int c = sc.nextInt();

int temp;

// Swap to sort

if (a > b) { temp = a; a = b; b = temp; }

if (a > c) { temp = a; a = c; c = temp; }

if (b > c) { temp = b; b = c; c = temp; }

System.out.println("Ascending order: " + a + ", " + b + ", " + c);

sc.close();

}

}

46. Character Type Checker Scenario: Take a character as input and print whether it is an alphabet, digit, or special character. Input: Enter character: % Output: Special Character

->import java.util.Scanner;

public class CharacterTypeChecker {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter a character: ");

char ch = sc.next().charAt(0); // take first character input

if (Character.isLetter(ch)) {

System.out.println("Alphabet");

} else if (Character.isDigit(ch)) {

System.out.println("Digit");

} else {

System.out.println("Special Character");

}

sc.close();

}

}

47. Even/Odd Status of Two Numbers Scenario: Take two numbers and print if both are even, both odd, or mixed. Input: Enter first number: 12 Enter second number: 17 Output: Numbers are mixed (one even, one odd)

->import java.util.Scanner;

public class EvenOddStatus {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter first number: ");

int num1 = sc.nextInt();

System.out.print("Enter second number: ");

int num2 = sc.nextInt();

if (num1 % 2 == 0 && num2 % 2 == 0) {

System.out.println("Both numbers are even");

} else if (num1 % 2 != 0 && num2 % 2 != 0) {

System.out.println("Both numbers are odd");

} else {

System.out.println("Numbers are mixed (one even, one odd)");

}

sc.close();

}

}

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

->

import java.util.Scanner;

public class GradePlusMinus {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter marks: ");

int marks = sc.nextInt();

String grade;

if (marks < 0 || marks > 100) {

grade = "Invalid Marks!";

} else if (marks >= 90) {

grade = "A+";

} else if (marks >= 80) {

grade = "A";

} else if (marks >= 70) {

grade = "A−";

} else if (marks >= 60) {

grade = "B+";

} else if (marks >= 50) {

grade = "B";

} else if (marks >= 40) {

grade = "C";

} else {

grade = "F";

}

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

sc.close();

}

}

49. Days in Month Considering Leap Year Scenario: Take a year and month number, print days in that month considering leap years. Input: Enter year: 2024 Enter month number: 2 Output: 29 days

->import java.util.Scanner;

public class DaysInMonthLeap {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter year: ");

int year = sc.nextInt();

System.out.print("Enter month number (1-12): ");

int month = sc.nextInt();

int days = 0;

switch (month) {

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:

// Leap year check

if ((year % 400 == 0) || (year % 4 == 0 && year % 100 != 0)) {

days = 29;

} else {

days = 28;

}

break;

default:

System.out.println("Invalid month number!");

sc.close();

return;

}

System.out.println(days + " days");

sc.close();

}

}

50. 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. Input: Enter number: 30 Output: Divisible by 2 Divisible by 3 Divisible by 5

->import java.util.Scanner;

public class DivisibilityCheck {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter number: ");

int num = sc.nextInt();

if (num % 2 == 0) {

System.out.println("Divisible by 2");

}

if (num % 3 == 0) {

System.out.println("Divisible by 3");

}

if (num % 5 == 0) {

System.out.println("Divisible by 5");

}

if (num % 2 != 0 && num % 3 != 0 && num % 5 != 0) {

System.out.println("Not divisible by 2, 3, or 5");

}

sc.close();

}

}