Lab 2 – Primitive Data Types and Operations (Java Solutions)

# Demo - FeetToMeters

import java.util.Scanner;  
  
public class FeetToMeters {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter value in feet: ");  
 double feet = sc.nextDouble();  
 double meters = feet \* 0.305;  
 System.out.printf("Meters = %.3f%n", meters);  
 sc.close();  
 }  
}

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# 1) FahrenheitToCelsius

import java.util.Scanner;  
  
public class FahrenheitToCelsius {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter temperature in Fahrenheit: ");  
 double f = sc.nextDouble();  
 double c = (f - 32) \* 5.0 / 9.0;  
 System.out.printf("Celsius = %.2f%n", c);  
 sc.close();  
 }  
}

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# 2) CylinderVolume

import java.util.Scanner;  
  
public class CylinderVolume {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter radius: ");  
 double r = sc.nextDouble();  
 System.out.print("Enter length: ");  
 double len = sc.nextDouble();  
 double area = r \* r \* Math.PI;  
 double volume = area \* len;  
 System.out.printf("Area = %.4f%n", area);  
 System.out.printf("Volume = %.4f%n", volume);  
 sc.close();  
 }  
}

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# 3) DigitSum

import java.util.Scanner;  
  
public class DigitSum {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter an integer between 0 and 1000: ");  
 int n = sc.nextInt();  
 if (n < 0 || n > 1000) {  
 System.out.println("Invalid input. Must be in [0, 1000].");  
 } else {  
 int sum = 0, x = n;  
 while (x > 0) {  
 sum += x % 10;  
 x /= 10;  
 }  
 System.out.println("Sum of digits = " + sum);  
 }  
 sc.close();  
 }  
}

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# 4) UppercaseToLowercase

import java.util.Scanner;  
  
public class UppercaseToLowercase {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter a single letter (A–Z): ");  
 String s = sc.nextLine();  
 if (s.length() != 1 || !Character.isLetter(s.charAt(0))) {  
 System.out.println("Please enter exactly one letter.");  
 } else {  
 char lower = Character.toLowerCase(s.charAt(0));  
 System.out.println("Lowercase = " + lower);  
 }  
 sc.close();  
 }  
}

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# 5) AsciiToChar

import java.util.Scanner;  
  
public class AsciiToChar {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter an ASCII code (0–128): ");  
 int code = sc.nextInt();  
 if (code < 0 || code > 128) {  
 System.out.println("Invalid ASCII code.");  
 } else {  
 char ch = (char) code;  
 System.out.println("Character = '" + ch + "'");  
 }  
 sc.close();  
 }  
}

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# 6) DaysInMonth

import java.util.Scanner;  
  
public class DaysInMonth {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter month (1-12): ");  
 int month = sc.nextInt();  
 System.out.print("Enter year: ");  
 int year = sc.nextInt();  
 if (month < 1 || month > 12) {  
 System.out.println("Invalid month.");  
 sc.close();  
 return;  
 }  
 boolean leap = (year % 400 == 0) || (year % 4 == 0 && year % 100 != 0);  
 int days;  
 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;  
 default: days = leap ? 29 : 28;  
 }  
 String[] names = {"","January","February","March","April","May","June","July","August","September","October","November","December"};  
 System.out.println(names[month] + " " + year + " has " + days + " days.");  
 sc.close();  
 }  
}

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# 7) GradeFromMarks

import java.util.Scanner;  
  
public class GradeFromMarks {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Enter assignment marks (0–100): ");  
 int m = sc.nextInt();  
 if (m < 0 || m > 100) {  
 System.out.println("Invalid marks.");  
 sc.close();  
 return;  
 }  
 String grade, desc;  
 if (m < 40) { grade = "F"; desc = "Fail"; }  
 else if (m < 50) { grade = "F+"; desc = "Marginal Fail"; }  
 else if (m < 55) { grade = "D"; desc = "Pass"; }  
 else if (m < 65) { grade = "C"; desc = ""; }  
 else if (m < 70) { grade = "B"; desc = "Credit"; }  
 else if (m < 75) { grade = "B+"; desc = ""; }  
 else if (m < 80) { grade = "A"; desc = "Distinction"; }  
 else { grade = "A+"; desc = ""; }  
 System.out.println("Grade = " + grade + (desc.isEmpty() ? "" : (" (" + desc + ")")));  
 sc.close();  
 }  
}

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# 8) SumArrayDoubles

import java.util.Scanner;  
import java.util.Arrays;  
  
public class SumArrayDoubles {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 double[] arr = new double[100];  
 System.out.print("How many numbers (1–100)? ");  
 int n = sc.nextInt();  
 if (n < 1 || n > 100) {  
 System.out.println("Invalid size.");  
 sc.close();  
 return;  
 }  
 for (int i = 0; i < n; i++) {  
 System.out.print("Enter value #" + (i + 1) + ": ");  
 arr[i] = sc.nextDouble();  
 }  
 double sum = 0.0;  
 for (double v : Arrays.copyOf(arr, n)) {  
 sum += v;  
 }  
 System.out.printf("Sum = %.4f%n", sum);  
 sc.close();  
 }  
}

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# 9) TuitionAfterTenYears

public class TuitionAfterTenYears {  
 public static void main(String[] args) {  
 double tuition = 10000.0;  
 double rate = 0.05;  
 for (int year = 1; year <= 10; year++) {  
 tuition \*= (1 + rate);  
 }  
 System.out.printf("Tuition after 10 years = RM%.2f%n", tuition);  
 }  
}

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# 10) ContinueProgram

import java.util.Scanner;  
  
public class ContinueProgram {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 String ans;  
 do {  
 System.out.println("Program is running...");  
 System.out.print("Continue? (Yes/No): ");  
 ans = sc.nextLine().trim();  
 } while (ans.equalsIgnoreCase("Yes") || ans.equalsIgnoreCase("Y"));  
 System.out.println("Terminated.");  
 sc.close();  
 }  
}

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# 11) FutureInvestmentValue

import java.util.Scanner;  
  
public class FutureInvestmentValue {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.in);  
 System.out.print("Investment amount: ");  
 double investmentAmount = sc.nextDouble();  
 System.out.print("Annual interest rate (e.g., 8 for 8%): ");  
 double annualRatePercent = sc.nextDouble();  
 System.out.print("Number of years: ");  
 int years = sc.nextInt();  
 double monthlyRate = annualRatePercent / 1200.0;  
 double futureInvestmentVal = investmentAmount \* Math.pow(1 + monthlyRate, years \* 12);  
 System.out.printf("Future investment value = %.2f%n", futureInvestmentVal);  
 sc.close();  
 }  
}

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