WEEK 5 LEVEL1

1. WriteaprogramtoinputthePrincipal,Rate,andTimevaluesandcalculate Simple Interest.

import java.util.Scanner;

public class SimpleInterestCalculator {

publicstaticdoublecalculateSimpleInterest(doubleprincipal,double rate, double time) {

return (principal \* rate \* time) / 100;

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("EnterPrincipalamount:"); double principal = scanner.nextDouble();

System.out.print("EnterRateofInterest:"); double rate = scanner.nextDouble();

System.out.print("EnterTimeperiod(inyears):"); double time = scanner.nextDouble();

double simpleInterest = calculateSimpleInterest(principal, rate,

time);

System.out.println("The Simple Interest is " + simpleInterest +

"forPrincipal"+principal+",RateofInterest"+rate+ "% and Time " + time + " years.");

scanner.close();

}

}

1. CreateaprogramtofindthemaximumnumberofhandshakesamongN number of students.

import java.util.Scanner;

public class HandshakeCalculator {

publicstaticintcalculateHandshakes(intn){ return (n \* (n - 1)) / 2;

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterthenumberofstudents:"); int n = scanner.nextInt();

if (n < 2) {

System.out.println("Atleasttwostudentsarerequiredfora handshake.");

} else {

int maxHandshakes = calculateHandshakes(n);

System.out.println("Themaximumnumberofhandshakespossibleis: " + maxHandshakes);

}

scanner.close();

}

}

1. CreateaprogramtofindthemaximumnumberofhandshakesamongN number of students.

import java.util.Scanner;

public class Handshake\_Calculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterthenumberofstudents:"); int numberOfStudents = scanner.nextInt();

if (numberOfStudents < 2) {

System.out.println("Atleasttwostudentsarerequiredfora handshake.");

} else {

int maxHandshakes = (numberOfStudents \* (numberOfStudents - 1)) /

2;

System.out.println("Themaximumnumberofhandshakespossibleis: " + maxHandshakes);

}

scanner.close();

}

}

1. Anathleterunsinatriangularparkwithsidesprovidedasinputbytheuserin meters. If the athlete wants to complete a 5 km run, then how many rounds must the athlete complete

import java.util.Scanner;

public class RunningRoundsCalculator {

publicstaticintcalculateRounds(doubleperimeter){ double distance = 5000;

return (int) Math.ceil(distance / perimeter);

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterthelengthofside1(inmeters):"); double side1 = scanner.nextDouble();

System.out.print("Enterthelengthofside2(inmeters):"); double side2 = scanner.nextDouble();

System.out.print("Enterthelengthofside3(inmeters):"); double side3 = scanner.nextDouble();

doubleperimeter=side1+side2+side3; if (perimeter <= 0) {

System.out.println("Invalid input. The sides must be positive

numbers.");

} else {

int rounds = calculateRounds(perimeter);

System.out.println("Theathleteneedstocomplete"+rounds+" rounds to run 5 km.");

}

scanner.close();

}

}

1. Writea programto checkwhether a numberis positive,negative, or zero.

import java.util.Scanner;

public class NumberChecker {

publicstaticintcheckNumber(intnumber){ if (number > 0) {

return 1;

}elseif(number<0){ return -1;

} else {

return 0;

}

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enteranumber:"); int number = scanner.nextInt();

int result = checkNumber(number);

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

scanner.close();

}

}

1. WriteaprogramSpringSeasonthattakestwointvaluesmonthanddayfrom the command line and prints “Its a Spring Season” otherwise prints “Not a Spring Season”.

importjava.util.Scanner;

public class SpringSeason {

public static boolean isSpringSeason(int month, int day) {

if((month==3&&day>=20)||(month==4)||(month==5)|| (month == 6 && day <= 20)) {

return true;

}

return false;

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterthemonth(1-12):"); int month = scanner.nextInt();

System.out.print("Entertheday(1-31):"); int day = scanner.nextInt();

if (isSpringSeason(month, day)) {

System.out.println("It's a Spring Season");

} else {

System.out.println("Not a Spring Season");

}

scanner.close();

}

}

1. Writea programto findthe sum ofn naturalnumbers using loop.

importjava.util.Scanner;

public class SumOfNaturalNumbers {

publicstaticintfindSum(intn){ int sum = 0;

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

}

return sum;

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterapositiveinteger:"); int n = scanner.nextInt();

if (n < 1) {

System.out.println("Please enter a positive integer.");

} else {

int sum = findSum(n);

System.out.println("The sum of first " + n + " natural numbers is:

" + sum);

}

scanner.close();

}

}

1. Writea programto find thesmallest andthe largest ofthe 3 numbers.

importjava.util.Scanner;

public class SmallestAndLargest {

publicstaticint[]findSmallestAndLargest(intnumber1,intnumber2,int number3) {

intsmallest=Math.min(number1,Math.min(number2,number3)); int largest = Math.max(number1, Math.max(number2, number3)); return new int[]{smallest, largest};

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterfirstnumber:"); int number1 = scanner.nextInt();

System.out.print("Entersecondnumber:"); int number2 = scanner.nextInt();

System.out.print("Enterthirdnumber:"); int number3 = scanner.nextInt();

int[]result=findSmallestAndLargest(number1,number2,number3); System.out.println("Smallest number: " + result[0]);

System.out.println("Largest number: " + result[1]);

scanner.close();

}

}

1. Writea programto take2 numbers andprint theirquotient and reminder

importjava.util.Scanner;

public class QuotientAndRemainder {

publicstaticint[]findRemainderAndQuotient(intnumber,intdivisor){ int quotient = number / divisor;

int remainder = number % divisor;

return new int[]{quotient, remainder};

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterthenumber:"); int number = scanner.nextInt();

System.out.print("Enterthedivisor:"); int divisor = scanner.nextInt();

if (divisor == 0) {

System.out.println("Divisor cannot be zero.");

} else {

int[]result=findRemainderAndQuotient(number,divisor); System.out.println("Quotient: " + result[0]);

System.out.println("Remainder: " + result[1]);

}

scanner.close();

}

}

1. CreateaprogramtodivideNnumberofchocolatesamongMchildren.Print the number of chocolates each child will get and also the remaining chocolates

importjava.util.Scanner;

public class ChocolateDistributor {

publicstaticint[]findRemainderAndQuotient(intnumberOfChocolates,int numberOfChildren) {

int chocolatesPerChild = numberOfChocolates / numberOfChildren; intremainingChocolates=numberOfChocolates%numberOfChildren; return new int[]{chocolatesPerChild, remainingChocolates};

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enterthenumberofchocolates:"); int numberOfChocolates = scanner.nextInt();

System.out.print("Enterthenumberofchildren:"); int numberOfChildren = scanner.nextInt();

if (numberOfChildren == 0) {

System.out.println("Number of children cannot be zero.");

} else {

int[]result=findRemainderAndQuotient(numberOfChocolates, numberOfChildren);

System.out.println("Eachchildgets:"+result[0]+" chocolates");

System.out.println("Remaining chocolates: " + result[1]);

}

scanner.close();

}

}

1. Writeaprogramcalculatethewindchilltemperaturegiventhetemperature and wind speed.

importjava.util.Scanner;

public class WindChillCalculator {

publicstaticdoublecalculateWindChill(doubletemperature,double windSpeed) {

return 35.74 + 0.6215 \* temperature + (0.4275 \* temperature - 35.75) \*

Math.pow(windSpeed, 0.16);

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("EnterthetemperatureinFahrenheit:"); double temperature = scanner.nextDouble();

System.out.print("Enterthewindspeedinmph:"); double windSpeed = scanner.nextDouble();

if (temperature > 50 || windSpeed < 3) {

System.out.println("Windchillformulaisvalidonlyfor temperatures <= 50°F and wind speeds >= 3 mph.");

} else {

doublewindChill=calculateWindChill(temperature,windSpeed); System.out.printf("The wind chill temperature is: %.2f°F%n",

windChill);

}

scanner.close();

}

}

1. WriteaprogramtocalculatevarioustrigonometricfunctionsusingMathclass given an angle in degrees.

importjava.util.Scanner;

public class TrigonometricCalculator {

publicstaticdouble[]calculateTrigonometricFunctions(doubleangle){ double radians = Math.toRadians(angle);

double sine = Math.sin(radians);

double cosine = Math.cos(radians); double tangent = Math.tan(radians);

return new double[]{sine, cosine, tangent};

}

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Entertheangleindegrees:"); double angle = scanner.nextDouble();

double[]results=calculateTrigonometricFunctions(angle); System.out.printf("Sine: %.4f%n", results[0]);

System.out.printf("Cosine: %.4f%n", results[1]);

System.out.printf("Tangent:%.4f%n", results[2]);

scanner.close();

}

}