import java.util.Scanner;

public class DecimalToHex {

public static void main(String[] args) {

// Create a Scanner object for reading input

Scanner scanner = new Scanner(System.in);

// Prompt the user to enter a decimal value

System.out.print("Enter a decimal value (0 to 15): ");

int decimalValue = scanner.nextInt();

// Check if the input is within the valid range

if (decimalValue >= 0 && decimalValue <= 15) {

// Convert the decimal value to hexadecimal

String hexValue = Integer.toHexString(decimalValue).toUpperCase();

System.out.println("The hex value is " + hexValue);

} else {

// Display invalid input message

System.out.println(decimalValue + " is an invalid input");

}

// Close the scanner

scanner.close();

}

}

import java.util.Scanner;

import java.lang.Math;

public class PentagonArea {

public static void main(String[] args) {

// Create a Scanner object for reading input

Scanner scanner = new Scanner(System.in);

// Prompt the user to enter the length from the center to a vertex

System.out.print("Enter the length from the center to a vertex of the pentagon: ");

double r = scanner.nextDouble();

// Close the scanner as we no longer need it

scanner.close();

// Calculate the side length using the formula s = 2r \* sin(π/5)

double s = 2 \* r \* Math.sin(Math.PI / 5);

// Calculate the area of the pentagon using the formula

double area = (5 \* Math.pow(s, 2)) / (4 \* Math.tan(Math.PI / 5));

// Round up the area to two decimal places

double roundedArea = Math.round(area \* 100.0) / 100.0;

// Display the result

System.out.println("The area of the pentagon is " + roundedArea);

}

}

import java.util.Scanner;

public class VowelOrConsonant {

public static void main(String[] args) {

// Create a Scanner object for reading input

Scanner scanner = new Scanner(System.in);

// Prompt the user to enter a letter

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

String input = scanner.nextLine();

// Check if the input is a single character

if (input.length() == 1) {

char ch = input.charAt(0);

// Check if the character is a letter

if (Character.isLetter(ch)) {

// Convert the character to lowercase for easier comparison

ch = Character.toLowerCase(ch);

// Check if the character is a vowel

if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {

System.out.println(input + " is a vowel");

} else {

System.out.println(input + " is a consonant");

}

} else {

System.out.println(input + " is an invalid input");

}

} else {

System.out.println(input + " is an invalid input");

}

// Close the scanner

scanner.close();

}

}

import java.util.Scanner;

public class OrderCities {

public static void main(String[] args) {

// Create a Scanner object for reading input

Scanner scanner = new Scanner(System.in);

// Prompt the user to enter three cities

System.out.print("Enter the first city: ");

String city1 = scanner.nextLine();

System.out.print("Enter the second city: ");

String city2 = scanner.nextLine();

System.out.print("Enter the third city: ");

String city3 = scanner.nextLine();

// Close the scanner as we no longer need it

scanner.close();

// Initialize an array with the three cities

String[] cities = {city1, city2, city3};

// Sort the array in ascending order using bubble sort

for (int i = 0; i < cities.length - 1; i++) {

for (int j = 0; j < cities.length - 1 - i; j++) {

if (cities[j].compareTo(cities[j + 1]) > 0) {

// Swap cities[j] and cities[j + 1]

String temp = cities[j];

cities[j] = cities[j + 1];

cities[j + 1] = temp;

}

}

}

// Display the sorted cities

System.out.println("The three cities in alphabetical order are:");

for (String city : cities) {

System.out.println(city);

}

}

}

import java.util.Scanner;

public class StudentMajorAndStatus {

public static void main(String[] args) {

// Create a Scanner object for reading input

Scanner scanner = new Scanner(System.in);

// Prompt the user to enter two characters

System.out.print("Enter two characters: ");

String input = scanner.nextLine();

// Check if the input length is exactly 2

if (input.length() != 2) {

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

return;

}

// Extract the major and status characters

char majorChar = input.charAt(0);

char statusChar = input.charAt(1);

// Determine the major

String major = "";

switch (majorChar) {

case 'M':

major = "Mathematics";

break;

case 'C':

major = "Computer Science";

break;

case 'I':

major = "Information Technology";

break;

default:

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

return;

}

// Determine the status

String status = "";

switch (statusChar) {

case '1':

status = "Freshman";

break;

case '2':

status = "Sophomore";

break;

case '3':

status = "Junior";

break;

case '4':

status = "Senior";

break;

default:

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

return;

}

// Display the results

System.out.println(major + " " + status);

}

}