Write a method that sums all the numbers in the major diagonal in an  matrix of **double** values using the following header:

Write a test program that reads a 4-by-4 matrix and displays the sum of all its elements on the major diagonal. Here is a sample run:

<output>

Enter a 4-by-4 matrix row by row:

1 2 3 4.0 **<enter icon>**

5 6.5 7 8 **<enter icon>**

9 10 11 12 **<enter icon>**

13 14 15 16 **<enter icon>**

Sum of the elements in the major diagonal is 34.5

import java.util.Scanner;

public class PFinal1 {

public static void main(String[] args) {

System.out.println("Enter a 4-by-4 matrix row by row: ");

double[][] matrix = new double[4][4];

Scanner scanner = new Scanner(System.in);

for (int i = 0; i < 4; i++) {

for (int j = 0; j < 4; j++) {

matrix[i][j] = scanner.nextDouble();

}

}

System.out.println("Sum of the elements in the major diagonal is " + sumMajorDiagonal(matrix));

}

public static double sumMajorDiagonal(double[][] m) {

double sum = 0.0;

for (int i = 0; i < m.length; i++) {

sum += m[i][i];

}

return sum;

}

}

Write a class named Clock that meets the following requirements:

The class has three instance variables: One of type int called hours, another of type boolean called isTicking, and the last one of type Integer called diff.

The class has a constructor that takes three parameters: an int for hour, a boolean for isTicking, and another int for diff. The constructor constructs a Clock with the specified values.

A method named increment with no arguments and no return value. It increases the hours by 1 if the hour is less than 12.

A method named decrement with no arguments and no return value. It decreases the hours by 1 if hour is greater than 0.

Override the toString() method that returns a string. The string is

"hours: " + hours + " isTicking: " + isTicking + " diff: " + diff

Write a test program to perform the following operations:

1. Prompt the user to enter an integer for hours, a Boolean value for isTicking, and an integer for diff.
2. Create a Clock object using the input values.
3. Display the object by invoking its toString() method.
4. Invoke the increment method twice and then the decrement method once.
5. Display the object by invoking its toString() method.

<output>

Enter an integer for hours: 7

Enter a Boolean value for isTicking: true

Enter an integer for diff: 5

hours: 7 isTicking: true diff: 5

hours: 8 isTicking: true diff: 5

<end output>

import java.util.Scanner;

public class PFinal2 {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter an integer for hours: ");

int hours = scanner.nextInt();

System.out.print("Enter a Boolean value for isTicking: ");

boolean isTicking = scanner.nextBoolean();

System.out.print("Enter an integer for diff: ");

int diff = scanner.nextInt();

Clock myClock = new Clock(hours, isTicking, diff);

System.out.println(myClock);

myClock.increment();

myClock.increment();

myClock.decrement();

System.out.println(myClock);

}

}

class Clock {

private int hours; boolean isTicking; int diff;

public Clock(int hours, boolean isTicking, int diff) {

this.hours = hours;

this.isTicking = isTicking;

this.diff = diff;

}

public void increment() {

if (hours < 12) {

hours++;

}

}

public void decrement() {

if (hours > 0) {

hours--;

}

}

@Override

public String toString() {

return "hours: " + hours + " isTicking: " + isTicking + " diff: " + diff;

}

}