PE0802.java: Write a method that returns the sum of all the elements in a specified column in a matrix using the following header:

```
public static double sumColumn(double[][] m, int columnIndex)
```

Write a test program that reads a 4-by-4 matrix and displays the sum of each column. Here is a sample run:

```
mrdagler:> java PE0802
Enter a 4-by-4 matrix row by row:
1.5 2.1 3.5 4.7
5.5 6.3 7.1 8.2
9.5 1.6 3.0 1.9
2.1 7.1 8.5 6.4
Sum of the elements at column 0 is 18.6
Sum of the elements at column 1 is 17.1
Sum of the elements at column 2 is 22.1
Sum of the elements at column 3 is 21.2
```

PE0804.java: This program needs to read in 5 employees' names and how many hours they worked each day of the week. Once this is down, the program needs to output each employees name and how many hours he/she worked. *Hint: Create a 1D array of Strings for the employee names and a 2D array of integers for the hours they worked each day.*

```
mrdagler:> java PE0804
Enter each employees name and how many hours they worked each day:
Dave 0 5 5 5 5 2 0
Linda 0 8 8 8 8 8 0
Jill 2 10 8 8 8 3 0
Mike 7 7 7 7 7 7 7
Matt 0 10 10 10 10 10 0

Dave 22
Linda 40
Jill 39
Mike 49
Matt 50
```

PE0805.java Write a method that finds the sum of two 3 by 3 matrices. The header of the method is as follows:

```
public static int[][] addMatrix(int[][] a, int[][] b)
```

The main method for this program needs to read in the two matrices, use this method to find their sum, and then output the results.

```
mrdagler:> java PE0805
Enter the first matrix:
  1 3 7
  5 2 8
  6 4 1
Enter the second matrix:
  2 0 4
  8 3 2
  9 2 5

The sum of the matrices:
  3 3 11
  13 5 10
  15 6 6
```

Dist3D.java: Write a method that finds the distance between two points in 3D. The header of the method is as follows:

```
public static double dist3D(double[] p1, double[] p2)
```

Where `p1` and `p2` are 1D arrays of length three and hold the x, y, and z values for each point. The formula for computing the distance between two points (x_1, y_1, z_1) and (x_2, y_2, z_2) is

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

```
mrdagler:> java Dist3D
Enter the first point [x1 y1 z1]: 3 7 9
Enter the second point [x2 y2 z2]: 1 4 -3

The distance between the two points is 12.529964
```

PE0807.java: Write a program that first reads in how many 3D points the user wants to input and then read in all of the points. After this is done, output the two points that are closest to each other. Using the method `dist3D` that you created in the last problem. *Hint: see Listing 8.3 in our book.*

```
mrdagler:> java PE0807
How many points do you want to input: 4
Enter the points [x y z]
1 2 3
9 5 6
2 1 4
-8 -7 -1

The closest two points are (1.0, 2.0, 3.0) and (2.0, 1.0, 4.0)
```