

## Problem Set 1 Exercise #12: Travel

**Reference:** Week 3 Lecture notes

**Learning objectives:** Writing functions; Math functions

**Estimated completion time:** 25 minutes

### Problem statement:

Every day, Dr. Zhou will travel from **home** to his **office** in the morning. After work, he will visit NTUC FairPrice for groceries before returning to **home**.

Suppose we represent the locations: home, office and NTUC as two-dimensional Cartesian coordinate (x, y), write a program **travel.c** to calculate the total distance travelled by Dr. Zhou every day. The distance of travel is to be displayed in 2 decimal places.

For your information, mathematically the distance between two points (x<sub>1</sub>, y<sub>1</sub>) and (x<sub>2</sub>, y<sub>2</sub>) is calculated as follows:

$$distance = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

You should exercise good sense of modular programming and define a function **distance()** to calculate the distance between two places; invoke it whenever you need to calculate distance.

### Sample run #1:

```
Enter X Y coordinates for Home: 3 7
Enter X Y coordinates for Office: 3 15
Enter X Y coordinates for NTUC: 9 15
Distance of travel is 24.00
```

### Sample run #2:

```
Enter X Y coordinates for Home: 1.5 2
Enter X Y coordinates for Office: 4.25 5.75
Enter X Y coordinates for NTUC: 7 10.2
Distance of travel is 19.76
```