Week 1: Array Scan Exercises

This week you will start practising some arrays scanning exercises.This will be useful in the following weeks when we'll start learning about sorting algorithms.

You are required to implement 9 scanning algorithms for arrays.

We have added on Blackboard a java project (ScanningArray.java) for you to complete and a typical output for each exercise (ScanningArray.docx)

Check the java file, it generates an array for you.
All you have to do is fill the scanning methods below:

Ex1 - Scan an array from left to right
Ex2 - Scan an array from right to left
Ex3 - Scan an array from left to centre, then from right to centre.
Ex4 - Scan an array from centre to left, then centre to right
Ex5 - Scan an array from left to right, then right to left
Ex6 - Scan an array from left to right, then right to left, as many times as there are items in the array
Ex7 - Scan an array from left to right, then back to left, then repeat process but at right end, each time, one cell short than the previous pass
Ex8 - scan array from left to right, then right to left, then repeat process but at left end, each time, one cell short than the previous pass
Ex9 - scan array from left to right, then right to left, then repeat process but at each end, each time, one cell short than the previous pass

Useful from Exercise 3.
You can use arraySize/2 to find the center of an array.

Should you come across any issue, ask your tutor.

If you are not sure about how to get started, have a look at the example below:

```
// scan array from left to right
static void ex1()
{
    // YOUR CODE GOES HERE
    for (int i=0; i< arraySize; i++){
       visitCell(i);
    }

    }
```

Check your Output

Now that you have completed all the exercises, open the file ScanningArray_output.pdf on Blackboard and check the output of each exercise.

Can you reproduce the same output structure for Ex8 and Ex9? How would you do that?

Extension Tasks – Project Euler

Project Euler is a series of challenging mathematical/computer programming problems that will require more than just mathematical insights to solve. Although mathematics will help you arrive at elegant and efficient methods, the use of a computer and programming skills will be required to solve most problems.

Use the link below to access the website, start from problem 1 and keep practising every week. You can sign-up to save your progress (it's free), or you can simply implement the problems without signing up.

https://projecteuler.net/archives