COSC 1P03 Tutorial 1 (Winter 2021)
January 18th - 22nd

Arrays

In this exercise we will look at the processing of arrays. By the end of this exercise you should be able to develop loping structures to process array elements in a variety of patterns.

Try this tutorial and show up to the Teams meeting to earn the participation mark.

Problems

In each of the following, write the skeleton of code that will process the array `a` as described. Unless specified otherwise, write only the code necessary to perform the processing (e.g. loops) and in place of the body just write the array and its indices (e.g. …`a[i][j]`…) as required.

1. Declare `a` as a two dimensional array of integer values.
2. Create `a` as a 100x100 regular (rectangular) array.
3. Write a looping structure to process the elements of `a` in row-major order. (Done for you as an example.)
4. Write a looping structure to process the elements of `a` in column-major order.
5. Write a looping structure to process the elements on the main diagonal of `a` (i.e. only the elements on the diagonal starting from the top left and proceeding to the bottom right).
6. Write a looping structure to process the elements on the back diagonal of `a` (i.e. from top right to bottom left).
7. Write a looping structure to process the elements in the lower triangular portion of `a` (i.e. the first element in the first row, the first two elements in the second row, etc.)
8. Write a looping structure to process the nine elements centered on (`x`,`y`) (i.e. (`x`,`y`) and the eight neighboring cells one row and/or column away from (`x`,`y`)).

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Answer Sheet

1

2

3

```
for ( int i=0 ; i<a.length ; i++ ) {
    for ( int j=0 ; j<a[i].length ; j++ ) {
        …a[i][j]…
    }
}
```

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