

16.216: ECE Application Programming

Spring 2015

Lecture 21: Key Questions

March 25, 2015

1. Describe how to declare, initialize, and access two-dimensional arrays.

2. **Example:** Complete the following program:

```
#include <stdio.h>
#define NRows 3      // # of rows
#define NCols 4      // # of columns
int main() {
    double x[NRows][NCols] =          // 2-D array
        { { 10, 2.5, 0, 1.5},
          {-2.3, -1.1, -0.2, 0},
          {10.5, -6.1, 23.4, -9.2} };

    int negCnt[NRows] = {0};          // Initialize entire row
                                        // count array to 0
    int i, j;                          // Row and column indices

    /* INSERT CODE HERE--Visit every element in array x and
       count the number of negative values in each row */

    // Now print the row counts
    for (i = 0; i < NRows; i++)
        printf("Row %d has %d negative values.\n",
               i, negCnt[i]);

    return 0;
}
```

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6 (cont.) **Example:** Write a function for each of the following:

- Given an array of ints and the # of elements, find the largest element in the array
- Given an array of test scores (`tests`), the # of elements in the array (`n`), and an amount to scale those scores by (`s`), add `s` to every element in `tests` and print the scaled scores

5. Explain the relationship between pointers and arrays.