16.216: ECE Application Programming

Fall 2013

Lecture 31: Key Questions
November 22, 2013

1. (Review) Briefly describe the memory allocation functions and their use.

2. What are the common pitfalls of dynamic memory allocation?

3. Explain how to use dynamic memory allocation with strings.

4. Explain how to use dynamic memory allocation with two-dimensional arrays.

5. **Example:** Write each of the following functions:

a. **`char *readLine():`** Read a line of data from the standard input, store that data in a dynamically allocated string, and return the string (as a **`char *`**)
Hint: Read the data one character at a time and repeatedly reallocate space in string

b. **`int **make2DArray(int total, int nR);`** Given the total number of values and number of rows to be stored in a two-dimensional array, determine the appropriate number of columns, allocate the array, and return its starting address
Note: if **nR** does not divide evenly into **total**, round up. In other words, an array with 30 values and 4 rows should have 8 columns, even though 30 / 4 = 7.5