16.216: ECE Application Programming

Fall 2013

Lecture 31: Key Questions
November 22, 2013

1. (Review) Explain how pointers are used to access structure variables.

2. (Review) Explain how structures are passed to and returned from functions.

3. **Example:** Write the following functions that use the `StudentInfo` structure
*   Given a pointer to a single `StudentInfo` variable, print all of the student info to
    the screen using the following format:
    o `Michael J. Geiger`
    o `ID #12345678`
    o `GPA: 1.23`

*   Given an array of `StudentInfo` variables, compute and return the average GPA of
    all students in the list

- Prompt the user to enter 3 lines of input (using the format below), read the
  appropriate values into `StudentInfo` elements, and return a value of type
  `StudentInfo`
  o Format (user input <u>underlined</u>)
  o `Enter name:` <u>`Michael J. Geiger`</u>
  o `Enter ID #:` <u>`12345678`</u>
  o `Enter GPA:` <u>`1.23`</u>

4. Explain the reasons for using dynamic memory allocation.

5. Explain the `malloc()` function.

6. Explain the use of type casting, and why it is necessary with the allocation functions.

7. Explain the `calloc()` function.

8. Explain the `realloc()` function.