C Programming: Arrays, Functions

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Canvas timed quiz 2 and programming assignment 1

Programming assignment 1

1. Due Friday 2/9.
2. Arrays, pointers, recursion, beginning data structures.

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Lesson 5: Pointers are just variables that live in memory

- Pointers to pointer

Lesson 6: Arrays are just places in memory

- Three types of array in C: Fixed length, variable length, heap-allocated.
- name of array points to first element
- stack and heap
- `malloc()` and `free()`
- using pointers instead of arrays
- pointer arithmetic
- `char* argv[]` and `char** argv` are the same thing

Lesson 7: Passing-by-value

Using stack and heap picture, understand how pass by value and pass by reference are different.

- C functions are entirely pass-by-value
- `swap_pass_by_values()` doesn't actually succeed in swapping two variables.

Lesson 8: Passing-by-reference

Using stack and heap picture, understand how pass by value and pass by reference are different.

- You can create the illusion of pass-by-reference by passing pointers
- `swap_pass_by_references()` does succeed in swapping two variables.

Lesson 9: Passing an array leads to passing-by-reference

Lesson 10: How the stack works; recursion example

Low addresses		Global / static data
	Heap grows downward	Dynamic memory allocation
High addresses	Stack grows upward	Local variables, parameters

Table: Memory structure