

# CS170 Week 3 Lecture 2 Notes

*Disclaimer: These notes are meant to be read in parallel with Professor Mead's online notes if you have missed class. Topics will not be covered extensively. Here, you will only see the minor details Prof. Mead spoke about which were not on his topic notes.*

## Dynamic Memory Allocation in C++

### Dynamic Memory Allocation in C++:

Remember- don't mix malloc/delete, new/free.

“new” does three things. -Allocates memory, calls constructors, and casts to the correct type.

When you have pointers inside of structs, you must first allocate the struct and then allocate memory for anything else which happens inside of the struct.

We'll learn more about memory management in CS280.

Going forward, we won't use malloc or free anymore.

The most important thing is to remember the difference between “delete” and “delete []”.

“[]” must be empty and to the left of the identifier. - for example: “delete [] p3;”

## Assignment #1 / Lab #3 Info / Post Class Mentions

Assignment:

- Use enumerations, no magic numbers
- All the boats will have four spaces
- Have to implement five functions
- You don't know how many boats you'll get or the dimensions of the ocean
- For clarity- 8x12 = 8 columns by 12 rows
- Two hardest functions- PlaceBoat and TakeShot
- Watch for the edge cases, memory is not actually two-dimensional, it wraps around
- The challenging part of the assignment is making sure you can calculate when a boat is not placed in the correct place
- **Draw diagrams**
- Due February 4<sup>th</sup>, midnight Thursday
- The next assignment builds off of this one, so you must do this one

Lab:

- Need a file header comment and function header comment
- Half hour work for makefile and doxygen
- Last makefile to do in the labs
- The last simple lab

Dr Memory:

- Don't use drmemory on warboats for your first test
- Use it on the sample file given
- Run drmemory every time you compile, not when you're almost done
- Fix your code as you go
- To turn off drmemory summary, in cmd prompt add -no\_summary when you run dr memory