Week 9

Overview

- **Assignment 2 check-in**
- **Free**
- **Linked Lists**

Assignment 2 Check In

Where are we at as a class?

Where to go if stuck?

Need to download by this evening

malloc recap

We often want to allocate memory manually (i.e. most times you want to use a pointer)

malloc is the function we use for this

Syntax:

```
var_type *var_name = malloc(sizeof(var_type));
```

Free

We are going to model dynamically allocated memory as a class

Stand up if you are malloced, sit down if you are freed

Syntax:

```
var_type *var_ptr = malloc(sizeof(var_type));
                    free(var_ptr);
```

Free

We are going to model dynamically allocated memory as a class

Stand up if you are malloced, sit down if you are freed

What is the problem here?

Memory Leaks

When we malloc a block of memory, we need to run free on it too

When memory is allocated, the OS reserves that memory for the program to modify. Not freeing it creates problems (we'll run out of memory for one thing)

We can check this at compile time using dcc
(add the --leak-check flag to the command line input)

Use After Free

If we free a block and then try to dereference it, the memory may have been reallocated already

Either way, the program will yell at you

We still have to free everything at some point, so how might we go about this?

Linked List Exercises

copy

- Plan
- Diagram
- Code

list_append

- Plan
- Diagram
- Code