

## Presentation Cheat Sheet

### Pointers

#### Pointer Operators

& - contents of operator (gets a memory address)

\* - dereference operator (gets the value stored in memory at the address)

#### The Stack and the Heap

The stack is automatic memory allocation.

The heap is dynamic.

#### Allocating Memory on the Heap

When we use data structures, we don't always know what the size will be. For example, in C++, vectors can be dynamically resized using `push_back()` because we store vector elements on the heap.

To store things on the heap, we must ask the operating system to allocate memory for that purpose. Variable sizes can vary between compilers and systems, so we use the `sizeof()` operator to determine the amount of memory needed.

The memory must be returned to the heap after it is no longer needed in order to avoid memory leaks.

#### Memory Management

Note: for this section I am pretty much quoting the Stalling O.S. book word for word.

Paging and segmentation.

#### Virtual Memory

Using the hard disk drive to supplement main memory.