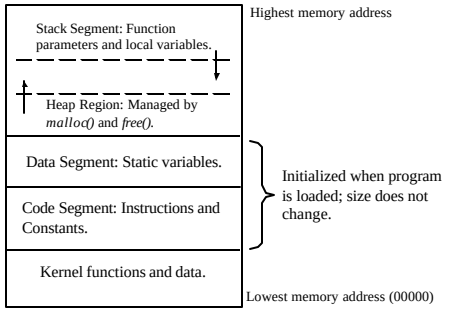
# CS-701 Lecture 7

February 22, 2001

## Pointers Are Not Arrays

- But, if you use an array name without subscripts, the compiler will generate an anonymous pointer to the first element of the array.
  - char *msg_1, msg_2[10]; msg_1 = msg_2;
    - Puts a pointer to the first byte of msg_2 into msg_1.
    - But msg_2 = msg_1 won't work because you cannot assign a value to an anonymous pointer.

## Memory Regions




## *malloc()* and *free()*

- Used for dynamic memory allocation.
  - *malloc()* takes the number of bytes to allocate and returns a void pointer to the first byte, which must be cast to the proper pointer type:
    - int *x; … x = ( int *)malloc(3 * sizeof(int));
      - Allocates memory for an array of three ints.
  - *free()* takes a pointer previously returned by *malloc()* and does the housekeeping to allow the memory to be reallocated again later.
    - Does nothing to the pointer value passed to it. Beware of dangling pointers! (Pointers that still point to heap (or stack) variables that are no longer allocated.)

## Assigment 3

- Write a command interpreter (shell).
  - Version 1.1 Due February 27th, but do NOT submit it!
    - Use the *man* command to learn about the *getenv()* function.
    - Write a program that uses *getenv()* to obtain the value of the the "PS1" environment variable, and print that value.