Finishing strings, presenting structs

9/24/15
Announcements

• No class next Friday (10/2)

• Midterm
  – Take-home, likely Thursday-Monday or Tuesday
  – Covering C: Basic features (loops, conditions, etc), pointers (e.g. mystery functions), strings (including terse functions), dynamic memory allocation, structs (e.g. linked lists)
Recall: Pointer arithmetic

• Can add/subtract from pointers to advance/retreat by a given number of cells

• Use * to access what they’re currently pointing at
Recall: Dynamically-allocated memory

• Use malloc to get a given number of bytes worth of heap-allocated memory:
  
  ```
  int* array = (int*) malloc(100*sizeof(int));
  ```

• Must tell system when you’re done with it:
  
  ```
  free(array);
  ```
Which of the following is true for the code below?

```c
int nums[10];
char* s = (char*) malloc(100);
char* t = s;
```
A. free should not be called on nums
B. free should not be called on s
C. free should not be called on t
D. More than one statement above is true
E. None of the statements above are true

free can be called on either s or t, but not both.
Which of the following is true for the code below?

```c
int nums[10];
char* s = (char*) malloc(100);
char* t = s;
```

A. free should not be called on nums
B. free should not be called on s
C. free should not be called on t
D. More than one statement above is true
E. None of the statements above are true

(free can be called on either s or t, but not both)
C structs

• Basically classes without methods

```c
struct ListNode {
    int value;
    struct ListNode* next;
};
```

• Must have semicolon at the end (or it thinks you’re declaring one)

• We’ll typically use typedef to create an alias:

```c
typedef struct ListNode node;
```

• Access fields with a dot:

```c
printf("%d\n", n.value); // assumes n is a node
```
Which of the following lines will the compiler flag as a syntax error?

```c
struct obj {
    int x; double y;  //B
};  //C

...

obj s;  //D
s.x = 10; s.y = 2.3;  //E
```
Which of the following lines will the compiler flag as a syntax error?

```c
struct obj {            //A
    int x;  double y;  //B
};                     //C

...                
obj s;              //D
s.x = 10; s.y = 2.3; //E
```
Which of the following lines will the compiler flag as a syntax error?

```c
struct obj {
    int x;
    char s[10]; //A
}

int val = 3; //B

int main() {
    struct obj st; //C
    if(st.x) //D
        st.s[0] = 0; //E
}
```
Which of the following lines will the compiler flag as a syntax error?

```c
struct obj {
    int x;
    char s[10];   //A
}

int val = 3;       //B

int main() {
    struct obj st;  //C
    if(st.x)        //D
        st.s[0] = 0;  //E
}
```
Write some linked list code

and learn to love arrows  ->