Lab 7

CIS FIFTEEEN HUNDRED

Agenda

- General Announcements
- Array and Function Review
- Strings
- Program 1
- Program 2
- Program 3 / Challenge Problem

Announcements

- Lab Exam 2 is this week
  - will include loops, arrays, and functions
- Assignment 2 will be marked by Monday Marth 18th
- Assignment 3 is uploaded and is due March 29th

Review: Static Arrays

- Static arrays are defined at compile time
- Indices start at 0 and go up from there
- They can be declared and initialized:

```
int exampleArray[10]; //not initialized to anything
int anotherArray[10] {8,2,5,4,7,11,24,102,32,0}; //
```

  - You can also initialize a declared array using a for loop!
- Array indices are accessed by calling the variable with an index
  - int grabValue = anotherArray[3]; //will assign 4 to grabValue

Review: Static Arrays

- Iterating through a static array involves a for loop over all the values
- Use a variable to point to the index that you want to access
  - Ex.

```
for (int j=0; j<20;j++)
{
     printf(“Value at array %d: %d\n”, j, integerArray[ j ]);
}
```

- Remember to initialize your array before using it!

Review: Function Terms

- Function prototypes go at the top of your code!
  - Remember: proto = original = first, so it should be the first thing your code sees!
- Function definitions go below main()
  - Remember: DEFINE means that it will tell the compiler what the function is supposed to do!
- Return Value: What is being sent out of the function
- Arguments: What is being sent into the function
- Return Type: What is the data type of the value being sent back?

Review: Function Structure

- Function prototypes and function definitions should be (almost) identical in creation
  - The only difference is the '{' or ';' at the end!
- When calling the function in your program do not include the data types in the call
- See example code (covers arrays and functions):

  functionExamples.c

Program 1

Write a program that inputs a sequence of characters from the keyboard and stores them
in string1. It then uses strcpy function to copy the contents of string1 to string2. At the end,It prints both strings string1 and string2.

char string1[30], string2[30];

Sample Inout / Output:

```
Enter a sequence of characters: Hello

Original string: Hello
New string: Hello
```

Program 2

You are NOT allowed to use any built-in functions for this part

- Write a function called myStrlen that does exactly what strlen does

- Write a function called myStrcpy that does exactly what strcpy does - you must use function myStrlen in it

- Write a function called findP that finds and returns the total number of characters that are either 'p' or 'P' - you may use myStrlen in this function

- Write main to test your functions my_strlen, my_strcpy and findP

Program 3: Stretch From the Middle

Write a program that prompts the user to enter a string of length n (lets call it originalS). It then prompts the user to enter an integer value (num). The program then creates and prints
a new string that consists of the letters in originalS (in that order) with the middle character repeated num times.

For example,
if the user enters a string "Ritu", and value of num entered is 4, then the output
string is "rittttu".

Note that the middle character can be found using strlen:
middle = originalS [strlen (originalS) / 2];