HW #6: Iterations and Data Types

Due dates:

Part I: Monday Feb 22nd, at the beginning of the class. Make sure to write your name and msunetid on your paper.
Part II: Sunday Feb 21st, 11:59 pm through Handin (https://secure.cse.msu.edu/handin)

Part I: Comprehension Questions

1. Specify for each of the following C constants if it is represented in decimal, octal or hexadecimal form (2pts)
   101011
   0234
   34
   0x34

2. For each constant, state if it is a legal constant or not (2pts)
   0x899
   899
   0899
   0xGFF

3. What is the output? (3pts)
   char ch = 'A';
   int a2 = ch*2;
   int a3 = 3;
   a3 *= ch + 5;
   char ch2 = ch + 5;
   int x = sizeof(ch);
   printf("%d %c %c %d %d %d\n", ch, ch, ch2, a2, a3, x);

4. What is the largest signed integer that can be stored when 2 bytes are used to represent int variables? What is the largest unsigned integer? Show your work (3 pts)

Part II: Lab Assignment

Getting started

Change into the cse220 directory
Create a new directory called lab06
Change into the new directory
Implement the program below in your lab06 directory

Pyramids

Write a program PyramidUp.c that reads an integer from the user and outputs the following pattern where the number of stars at the bottom is equal to the number read.

```
    *
   ***
  *****
 *******
```

Write a program PyramidDown.c that reads an integer from the user and outputs the following pattern alternating stars and equal signs where the number of stars at the top is equal to the number read

```
*******
 =====
  ***
   =
```

Cubic Equation

Write a program CubicRoot.c that reads four decimals from the user: a, b, c, d and tries to find if the equation $ax^3 + bx^2 + cx + d = 0$ has any roots in the range -100..100. Your program should try decimals in the given range in small steps (eg. 0.01) and evaluate the equation at every step. If the equation evaluates to 0, the program should output the corresponding value of x.

Compile all programs and produce and executable with the same name as the program.

Handin

Submit through the handin system your C code and the executables generated.

The ‘‘handin’’ system has options to allow you to review your files online and to download them. You Should always verify that you submitted the correct files and they were received by the handin system. You can submit files as many times as you like for a particular assignment. Handin will only keep the last version of each file. Remember to submit your files prior to the deadline as you won’t be able to use handin if the deadline has passed.