HW #3: C Formatted Input/Output

Due dates:

Part I: Monday Feb 1st, at the beginning of the class. Make sure to write your name and msunetid on your paper.

Part II: Sunday Jan 31st, 11:59 pm through Handin (https://secure.cse.msu.edu/handin)

Part I: Comprehension Questions

1. State if each of the following is a legal C identifier: (2 pts)

Main	2016Average	$alpha	_username
Legal	illegal	illegal	legal

2. What is the output of the following? If the program outputs any spaces, clarify how many. (2 pts)
   ~ is used to visualize a space
   a) printf("Output is: %+5d", 35, 75);
      Output is:~~~+35

      Explanation: A plus sign is printed because of the flag +. One space is added for the space typed right after the colon. Two spaces are added to make +35 reach size 5.

   b) printf("%10.4E", 12.51);
      1.2510E+01

      Explanation: the value is printed in scientific notation with capital E.
      $12.51 = 1.251 \times 10^1$. This translates to 1.251E+01. The precision is 4, so 4 digits after the decimal points are printed: 1.2510E+01. The minimum size must be 10, but already 10 characters are used so no additional spaces are needed.

3. Write calls to printf to display the float x in the following format: (2 pt)
   a) Exponential notation, left justified, in field size of 7 with 2 digits after the decimal point
      printf("%-7.2E", x);

   b) Decimal notation, with +/- sign always written, right justified, in field size of 10, with 3 digits after the decimal point, and 0 used for any padding necessary
      printf("%+010.3f", x);

4. Assume that a and b are int variables and x is a float variable. What is the value of each variable after the following scanf is called: (2 pts)

   scanf("%d%f%d", &a, &x, &b);

   if the user enters:

   5.5 7 10

   a has value 5
   x has value 0.5
   b has value 7

5. Write a statement to read the time from standard input in the form of hh:mm:ss and store it in three integer variables denoting the hours, minutes and seconds. (2pts)

   scanf("%d:%d:%d", &hours, &minutes, &seconds);

Part II: Lab Assignment

Getting started

Change into the cse220 directory
Create a new directory called lab03
Change into the new directory
Implement the program below in your lab03 directory

Project Description

You are to write a program that converts weights from pounds to ounces and grams. Call your program weightConversion.c
Your program should ask the user to enter 4 weights, read the weights entered in the following format:

weight1/weight2/weight3/weight4

The program should then convert each weight from pounds to ounces and from pounds to grams and output the result as the following example:

Weight 1:	2.50 lbs =	40.00 Oz =	1133.98 g
Weight 2:	15.00 lbs =	240.00 Oz =	6803.89 g
….			

All values must be right justified, in a field of size 10, showing two digits after the decimal point.
Compile your program and generate an executable file called weightConversion.

```c
#include<stdio.h>

#define LBS_TO_OZ 16
#define LBS_TO_GRAMS 453.592f


int main(void) {
	float weightLbs1, weightLbs2, weightLbs3, weightLbs4,
		weightGr1, weightGr2, weightGr3, weightGr4,
		weightOz1, weightOz2, weightOz3, weightOz4;

	printf("Enter 4 weights in weight1/weight2/weight3/weight4 format:\n");
	scanf("%f/%f/%f/%f", &weightLbs1,
			&weightLbs2, &weightLbs3, &weightLbs4);

	//Convert to ounces
	weightOz1 = weightLbs1*LBS_TO_OZ;
	weightOz2 = weightLbs2*LBS_TO_OZ;
	weightOz3 = weightLbs3*LBS_TO_OZ;
	weightOz4 = weightLbs4*LBS_TO_OZ;

	//Convert to grams
	weightGr1 = weightLbs1*LBS_TO_GRAMS;
	weightGr2 = weightLbs2*LBS_TO_GRAMS;
	weightGr3 = weightLbs3*LBS_TO_GRAMS;
	weightGr4 = weightLbs4*LBS_TO_GRAMS;

	//Print the values obtained
	printf("Weight1:%10.2f lbs = %10.2f Oz = %10.2f g\n",
		weightLbs1, weightOz1, weightGr1);
	printf("Weight2:%10.2f lbs = %10.2f Oz = %10.2f g\n",
		weightLbs2, weightOz2, weightGr2);
	printf("Weight3:%10.2f lbs = %10.2f Oz = %10.2f g\n",
		weightLbs3, weightOz3, weightGr3);
	printf("Weight4:%10.2f lbs = %10.2f Oz = %10.2f g\n",
		weightLbs4, weightOz4, weightGr4);

	return 0;
}
```

Handin

Submit through the handin system the following files: weightConversion.c and weightConversion

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.