C Language Programming: Homework #1
Assigned on 9/20/2016 (Tuesday), Due on 9/27/2016 (Tuesday)

Description:

1.1 Write a program that computes the volume of a sphere with a 10-meter radius, using the formula \( v = \frac{4}{3} \pi r^3 \). Write the fraction 4/3 as 4.0f/3.0f. (Try writing it as 4/3. What happens?)
   Hint: C doesn’t have an exponentiation operator, so you will need to multiple \( r \) by itself twice to compute \( r^3 \).

1.2 Write a program that asks the user to enter a value for \( x \) and then displays the value of the following polynomial: \( 3x^5 + 2x^4 - 5x^3 - x^2 + 7x - 6 \)
   Hint: C doesn’t have an exponentiation operator, so you will need to multiple \( x \) by itself repeatedly in order to compute the powers of \( x \). (For example \( x \times x \times x \) is \( x \) cubed. And \( x \) is an integer.)

1.3 Modify the program of 1.2 so that the polynomial is evaluated using the following formula: \( \left( \left( (3x + 2)x - 5 \right)x - 1 \right)x + 7 \) \( x - 6 \)
   Note that the modified program performs fewer multiplications. This technique for evaluating polynomials is known as Horner’s Rule.

1.4 Write a program that asks the user to enter a U.S. dollar amount and then shows how to pay that amount using the smallest number of $20, $10, $5, $1 bills:

Enter a dollar amount: 93
$20 bills : 4
$10 bills : 1
$5 bills : 0
$1 bills : 3
Command Line:

./hw1.1
./hw1_2 x  (x is an input integer, ex: ./hw1.2 10)
./hw1_3 x  (x is an input integer, ex: ./hw1.3 10)
./hw1_4 x  (x is an input integer, ex: ./hw1.4 93)

Output:

1.1: Output an integer or float.
1.2: Output an integer
1.3: Output an integer
1.4: Output ex:
    $20 bills : 4
    $10 bills : 1
    $5  bills : 0
    $1  bills : 3

Score:

hw1.1: 20%
hw1.2: 20%
hw1.3: 20%
hw1.4: 20%
Report: 20%