UNITED INTERNATIONAL UNIVERSITY

United International University

Department of Computer Science & Engineering

Final Assignment: CSE 1110 (Introduction to Computer Systems)

1. Write a C program where you will declare two floating point variables, input them using scanf, and perform the basic arithmetic operations on them.

Sample input	Sample output
95.401 22.622	95.401 + 22.622 = 118.023 95.401 – 22.622 = 72.779 95.401 * 22.622 = 2158.161422 95.401 / 22.622 = 4.217178

2. Suppose that in a country, there are notes of 1, 5, 10, 50, 100 and 500 units of currencies. Write a C program which will take as input the amount of money to give, and find out the number of each note to provide this amount of money so that a minimal number of notes are given in total.

Sample input	Sample output
1627	3 note(s) of 500 1 note(s) of 100 0 note(s) of 50 2 note(s) of 10 1 note(s) of 5 2 note(s) of 1
789	1 note(s) of 500 2 note(s) of 100 1 note(s) of 50 3 note(s) of 10 1 note(s) of 5 4 note(s) of 1

3. Write a C program that will take as input a floating-point number, and print the floor and the ceiling of that number.

Sample input	Sample output
5.7	Floor = 5 Ceiling = 6
-5.7	Floor = -6 Ceiling = -5

4. Program that will evaluate the equation

   $2\,cos^2\,x\,-\sqrt{3}\,sinx\,+\,\,sin\frac{x}{2}$

   where 1<= x <=180 [No checking needed]

Sample input (x)	Sample output
30	1.810066
120	0.778151
180	3.954243

5. Program that will decide whether a year is leap year or not.

   Yes, if (Year % 4 == 0 && year % 100 != 0) || (Year % 400 ==0)

Sample input	Sample output
2000	Yes
2004	Yes
2014	No

6. Program that will categorize a single character that is entered at the terminal, whether it is an alphabet, a digit or a special character.
   (**Restriction:** Without math.h)

Sample input	Sample output
z	Alphabet
A	Alphabet
8	Digit
*	Special

7. Program for "Guessing Game":
   Player-1 picks a number **X** and Player-2 has to guess that number within **N = 3** tries. For each wrong guess by Player-2, the program prints "Wrong, **N-1** Chance(s) Left!" If Player-2 successfully guesses the number, the program prints "Right, Player-2 wins!" and stops allowing further tries (if any left). Otherwise after the completion of **N = 3** wrong tries, the program prints "Player-1 wins!" and halts.

Sample input (X, n1, n2, n3)	***Sample output***
5 12 8 5	Wrong, 2 Chance(s) Left! Wrong, 1 Chance(s) Left! Right, Player-2 wins!
100 50 100	Wrong, 2 Chance(s) Left! Right, Player-2 wins!
20 12 8 5	Wrong, 2 Chance(s) Left! Wrong, 1 Chance(s) Left! Wrong, 0 Chance(s) Left!

	Player-1 wins!

8. Write a program (WAP) that will print following series upto N^{th} terms.

1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, …….

Sample input	***Sample output***
1	1
2	1, 0
3	1, 0, 1
4	1, 0, 1, 0
7	1, 0, 1, 0, 1, 0, 1
13	1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1

9. Write a program (WAP) that will reverse the digits of an input integer.

Sample input	***Sample output***
13579	97531
4321	1234

10. Write a program (WAP) that will calculate the result for the first N^{th} terms of the following series. [In that series sum, dot sign (.) means multiplication]

$1^2.2 + 2^2.3 + 3^2.4 + 4^2.5 + \ldots\ldots$

Sample input	***Sample output***
2	Result: 14
3	Result: 50
4	Result: 130
7	Result: 924

11. Write a program (WAP) that will print the factorial (**N!)** of a given number **N**. Please see the sample input output.

Sample input	**Sample output**
1	1! = 1 = 1
2	2! = 2 X 1 = 2
3	3! = 3 X 2 X 1 = 6
4	4! = 4 X 3 X 2 X 1 = 24

12. WAP that will determine whether an integer is palindrome number or not.

Sample input	***Sample output***
9	Yes
91	No
222	Yes
12321	Yes
110	No