CSE225 Data Structures, 2015-2016(FALL)

PROJECT #1 (Due October 24, 2015, SATURDAY, 24:00)

BINARY MULTIPLICATION

This project is a programming assignment in C which aims to build an algorithm that will multiply **binary numbers** and returns the result in **binary**.

Some examples for binary multiplications are as follows:

Example -1:

```
Decimal Multiplication:


        10
       x6
       60

Binary Multiplication:

     1010
    x0110
      0000
    1010
   1010
 +0000
   0111100
```

Example -2:

```
Decimal Multiplication:


        13
       x14
       182

Binary Multiplication:

     1101
    x1110
      0000
    1101
   1101
+1101
  10110110
```

A Standard Scenario of a Test Case:

After the program starts to run; it needs to ask the user to enter two input numbers as follows;

   Please enter the first number in binary: 1101

After the user enters the first number, the program needs to ask for the second binary number:

Please enter the second number in binary:**1110**

Please do not forget to check if the numbers are binary or not.

After that the system needs to multiply the numbers and returns the result in binary.

Results is: 10110110

Important Notes:

Remember: Multiplying by 2^i is to left-shift the number i times.

The program will let the user to enter any arbitrarily long binary numbers.

Please be careful about the 'carry'.

You can ignore any details related to signed/unsigned numbers.

In your demo, we will run your program by **entering arbitrary binary numbers.** We want to see if they are **working correctly or not**, **and your demo grade will be calculated based on number of your test cases which are working correctly.**

Of course, other questions based on your implementation and coding structure will be asked you during your demo. These questions will be those kinds of questions which could be answered by only the students who really implement his/her project.

The main goal of this project is to be familiar with linked-list. So, if you use arrays instead of linked-lists then you will get zero, unfortunately.

In this project you are expected to develop an algorithm that is capable of finding a solution to the above problem and *implement this algorithm in ANSI C that runs under either UNIX or Windows*.

You are responsible for demonstrating your program to your TA Berna Altinel on the Scheduled day that will be announced later.

CODE SUBMISSION:

You should use the following email address in order to submit your code:
datastr.mufe at gmail dot com

Your any submission after the project submission due date, will not taken into consideration.

You are required to exhibit an *individual effort* on this project. Any potential violation of this rule will lead everyone involved to **failing from the course** and necessary disciplinary actions will be taken.

Good luck!!!