CPSC 3125, Operating Systems Lab Assignment

Lab 04

1 Instructions

Write a C program that takes as input a binary (base 2) integer and returns a decimal (base 10) integer. Print both integers. See below for the expected output. Please work together in pairs. The word " pair" means exactly two people. (Exception: one trio will be permitted if the class has an odd number of students and no student elects to work alone.)

The input will be a string, consisting of zeros and ones, i.e. $input = \{0, 1\}$. You must validate the input and convert the input to an integer consisting of just ones and zeros.

Please note carefully that the places of a binary digit are, right to left, 1s, 2s, 4s, 8s, 16s, etc. In other words, each place can be calculated by multiplying the digit in that place be the appropriate power of 2, i.e.: $2^0 = 1$, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$, and so on. Here is the algorithm to use:

```
1. accept a binary integer from the user
2. declare a decimal integer
3. while the binary integer is not 0:
    a. multiply the rightmost digit by the appropriate factor
    b. addthe result to the decimal integer
    c. update the binary digit by removing the rightmost digit
```

2 Output

Your program should produce the following output:

```
This is lab04_carter
Please enter a binary number:  1111
1111 is a valid binary number, continuing ...
---------------------------------------
The decimal is 15
```

3 Lab deliverable

Your deliverable consists of (1) the C source code, and (2) a text document showing the output of the program.