**CSC-1200 Lab 3**

In this lab we will design a menu-based program. The program will allow users to decide if they want to convert a binary number to base 10 (decimal) or convert a decimal number to base 2 (binary). It should have four functions menu(), reverse(), base2(), and base10(). Each will be outlined in detail below. A rubric will be included at the bottom of this document.

**Menu()**

The goal of menu() is to be the function that orchestrates the flow of the program. menu() should be the first thing called and should do the following:

* Print a welcome message
* Print the following options:
  + 1. Convert Binary to Decimal
  + 2. Convert Decimal to Binary
  + 3. Quit
* Prompt the user for input
* Evaluate the input and execute the appropriate function call, break, or print “Invalid input” based as on the user input.
* The menu should continue looping until the user quits

**Base2()**

This function should take a number from the user and convert it into its binary representation then print it to the user. You can use your code from Lab1.

**Base10()**

This function should prompt the user for a binary number represented by a string and calculate the decimal number. Base10() should do the following:

* Prompt user for binary number
* Declare a sum variable and set it to zero
* Store the return value of a function call to reverse() (included below) into a variable (for the sake of example let’s call it st0.
* Use:

for i in range(0,len(st)):

sum+=(int(st[i])\*(2\*\*i))

print(sum)

Remember that len returns the number of characters in a string and we can access a character by using the string name and an index number. st[0] would return the first character of the string in variable st. If we think about the conversion, we take the number and multiple by 2 raised to the power of the position number. If we reverse the string, we can use the index number as this position number because the string is indexed left-to-right. Which is the opposite of number positions are right-to-left. Thus, I can be used as our exponent.

**Reverse()**

**#Name: Reverse**

**#Input: String s**

**#Output: String r**

**#Description: This function takes a string as input and reverses that string**

**#returning it as output.**

def reverse(s):

r=""

for i in s:

r=i+r

return r

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| --- | --- |
| 20 pts. | The Menu() function achieves the goals given above. |
| 20 pts. | Base2() takes in an int from the user and accurately converts it to binary |
| 20 pts. | Base10() takes in and accurately converts a binary number to a decimal. The binary number is entered by the user. |
| 20 pts. | Reverse() is implemented and called correctly. |
| 20 pts. | Comments-There should be a comment block at the top that contains:   * Your name * Program name * Date * Program Description   There should also be a comment before each function explaining   * Function name * Input(parameters) * Output(return statements) * Description   See reverse above. |