Assignment 1

CSE 1320

Spring 2019

1. The format and content of the output is not a suggestion – it is the specification given to you to follow so please follow it exactly. Points will be lost for not following the specification.
2. Please note that part of your grade is **how** you coded the program in addition to outputting valid responses.
3. Use the following algorithm to code your program

   Divide in Half, Ignore Remainder,

   Write 1 for odd numbers; 0 for even numbers

   Go back to the slides for a refresher on how to convert decimal to binary using the algorithm. For more help, watch

   https://www.youtube.com/watch?v=XdZqk8BXPwg
4. Make sure your name and student id are in a comment in the first line of your program.
5. Name your program Code1_studentid.c for submission to Blackboard.
6. Compile your code on Omega to ensure it is error and warning free and works as expected BEFORE submitting.
7. Check the rubric BEFORE submitting to ensure that you have fulfilled all requirements.

Pseudocode

`main()`

Prompt for a decimal number to convert

Check if number is between 0 and 255 – continue to prompt for input until a valid number is entered (hint – use a while loop)

Call function `ConvertDecimalToBinary()`

Call function `PrintBinary()`

`ConvertDecimalToBinary()`

Return type :

`void`

Parameters :

`int` containing the decimal value entered by user

`int` array (hint : the array is passed empty from `main()` and this function fills it so when the function finishes, the array back in `main()` will contain the values added in the function).

Use this algorithm for conversion

Divide in Half, Ignore Remainder,

Write 1 for odd numbers; 0 for even numbers

Required Elements

Use bitshifting instead of division for the "divide in half" part of the algorithm

Use a bitmask to determine if an array element if odd (1) or even (0)

`PrintBinary()`

Return type :

`void`

Parameter :

`int` array containing that 0's and 1's that make up the binary number output

Print binary number to screen – print should include all 8 digits – 0's in binary are not "leading" or "optional".

Output

```
Decimal to binary convertor

Please enter a decimal number between 0 and 255 123

Decimal 123 converts to binary 01111011
```

```
Decimal to binary convertor

Please enter a decimal number between 0 and 255 256

You entered a number not between 0 and 255

Please enter a decimal number between 0 and 255 66

Decimal 66 converts to binary 01000010
```

```
Decimal to binary convertor

Please enter a decimal number between 0 and 255 -7

You entered a number not between 0 and 255

Please enter a decimal number between 0 and 255 128

Decimal 128 converts to binary 10000000
```