Homework Assignment 3

Part A (30%)

1. Each row of the following table is to contain an equal value expressed in binary(**0b**), hexadecimal(**0x**), and decimal. Complete the missing values. Assume the values are **unsigned**. The first row illustrates the process. (Please review the knowledge of binary and hexadecimal number system for this question.)

binary	hexadecimal	decimal
0b 01101001	**0x** 69	105
	0x 50	
		48
0b 11001111		

2. What will be output of the following c program?

```c
#include <stdio.h>
int main()
{
    int i = 2, j = 3;
    int m, n;
    m = i++;
    n = ++j;

    printf("m = %d \t i= %d \n", m, i);
    printf("m = %d \t i= %d \n", n, j);

    return 0;
}
```

A. m = 4 i= 4
   m = 5 i= 5

B. m = 3 i= 3
   m = 4 i= 4

C. m = 2 i= 3
   m = 4 i= 4

D. m = 2 i= 2
   m = 3 i= 3

Part B (70%) Programming Exercises:

1. Writing a C program that converts the number of minutes to days and years. Assumes that all years have 365 days.
    a. The program should ask the user to enter the number of minutes via the terminal.
    b. The program should display as output the minutes and then its equivalent in years and days.
    c. Need to perform a calculation and use arithmetic operators.
    d. The expected output (***You can customize your own display***):

```
Please enter the number of minutes: 3824
3824 minutes is approximately 0.007275 years and 2.655556 days
```

2. Writing a C program that displays the perimeter and area of a rectangle.
    a. The program should create 4 variables of type **double**, which store the width, height, perimeter and area of the rectangle, respectively.
    b. The program should **read input from the keyboard for the width and height**.
    c. The program should perform the calculation for the perimeter of a rectangle
        i. Use the + operator addition and the * operator for multiplication
        ii. Perimeter is calculated by adding the height and width and then multiplying by two
        iii. Area is calculated by multiplying the width*height variables
    d. The program should display the height, width, perimeter and area variables in the correct format in one statement (**Two Decimal Places**).
    e. The output from your terminal should be looks like:

```
This program will calculate the perimeter and area of
a rectangle.

Please enter the height: 2
```

```
Please enter the width: 3

Rectangle's height:        2.00
Rectangle's width:         3.00

Rectangle's area:          6.00
Rectangle's perimeter:     10.00
```

Please reference the assignment submission guide on the iLearn for submission.