CIS*1500 W16 – Assignment #1

Due: Friday January 29, 3pm.

Upload the first 6 questions in a TYPED document in .pdf or .txt format.
Upload your C program for question 7 separately.

1. [**4 marks**] Provide a series of `printf` statements to output the following:

```
x "hi" x
x *hi* x
x \hi\ x
x %hi% x
```

2. [**5 marks**] **True** or **False**

   (a) Every C program must have a function called `main`.

   (b) Every C program must include the line `#include` ⟨`stdio.h`⟩

   (c) Variable names are not case sensitive. Thus the identifiers `radius` and `Radius` refer to the same variable.

   (d) There is a limit to the maximum value that can be stored in an integer variable.

   (e) A variable represents a memory location used to store data.

3. [**5 marks**] Which of the following are valid C identifier names for variables?

HiThere	last name	single	union
double	triple	under_score	intersection
_score	name123	123name	unless
j&p	ALLCAPS	john.smith	iAMhere#8

4. [**5 marks**] **True** or **False**, the following statements follow valid C syntax:

   (a) `#DEFINE PI 3.14`

   (b) `#define pi 3.145;`

   (c) `c = a%b;`

   (d) `a+b = c;`

   (e) `a+=5;`

5. [**4 marks**] **Output Art**: Provide a series of at least 5 `printf` statements to produce a visually pleasing output. If your creativity is low, output the first 3 characters of your name.

6. [**8 marks**] You are designing a new online census. As part of the interface, you wish to display how old the user is in terms of both years and months. For example, if the current day is Jan 25, 2011 and the user is born on Jan 26, 2001, then you want to display: "You are 9 years old and have been alive for 119 months". But currently you do not have any information about the user. How can you get and display this information?

(a) What are the inputs and outputs required in this problem?

(b) What are the subproblems that should be considered when designing an algorithm?

(c) Design an algorithm (pseudocode) for this problem.

7. **[10 marks]** Write a C program to compute the area and perimeter of a rectangle. You should prompt the user to enter two integers: the `length` and the `width`. The output should be formatted exactly as follows given the user inputs a length of 15 and width of 4:

```
The area of the rectangle is 15 x 4 = 60.
The perimeter of the rectangle is equal to (2 x 15) + (2 x 4) = 38.
```

Include appropriate comments. A marking key for this program is provided separately in the Assignments folder. Upload the C program into the Assignment 1 - Q7 folder using the Courselink Dropbox. Your file **must be** named *username_ass1.c* where *username* is your University username.