

## Homework #3

### Drawing with Loops

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**Due:** Oct. 4 by 11:59:59 pm

**Assigned:** Septempter 27, 2018

Write a C++ program which draws three different shapes using the '#' character. The constraints for drawing a shape are as follows:

**ONLY** three specific cout statements are required, per shape. They must appear ONCE, per shape. They are

```
cout << '#';  
cout << ' ';  
cout << '\n';
```

Use comments to clearly identify the code segments for each shape. Each cout statement is allowed to appear only once per shape being drawn. For example:

```
int main(void)  
{  
    // TRIANGLE  
    YOUR CODE HERE, EACH COUT MAY APPEAR ONCE  
    //TRIANGLE  
  
    cout << "\n\n";  
  
    // DIAMOND  
    YOUR CODE HERE, EACH COUT MAY APPEAR ONCE  
    // DIAMOND  
  
    cout << "\n\n";  
  
    // X-SHAPE  
    YOUR CODE HERE, EACH COUT MAY APPEAR ONCE  
    // X-SHAPE  
  
    cout << "\n\n";  
  
    // Rectangle  
    YOUR CODE HERE, EACH COUT MAY APPEAR ONCE  
    // Rectangle  
  
    return 0;  
}
```

#### Requirements:

- Name the source file for your program program3.cpp
- The program does not take any input from the user. Upon executing the program, the four shapes should be printed to the screen

- In order to draw each shape, the `cout` statements above are allowed to appear **once**, and **only once**, per shape
- You are allowed to discuss this problem, but sharing code is **not** allowed
- The output displayed by the program must be formatted **exactly** as shown in the sample run below. If the shapes do not look exactly the same, points will be deducted.
- A sample run of your program should look like this:

```
x999x999@cs1ab-node-X:hw03$ ./prog3
```

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# #
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```
#####
```

```
x999x999@cs1ab-node-X:hw03$
```

There should be two (2) blank lines between the shapes

- Compile your program using `g++ -Wall program3.cpp`

### Hints:

- Before writing *any* code, plan it out
- What *exactly* needs to be printed to the screen?

- What programming concept(s) can help me draw these shapes?
- What should the overall structure of the code look like to draw a shape?
- Can I change my counting range to my advantage?
- The library `<cstdlib>` contains an absolute value function, `int abs(int)`.

**Reminders:**

- Be sure that your program includes your name, ID, etc. as listed in the document posted on Blackboard called "General Homework Requirements".
- Use good style including indentation, comments, etc. Part of the grade will be for style
- Carefully test your program
- You are welcome to write your program at home. If you do, be sure to compile and test it in the lab before submitting it

**How to submit your program:**

- Submit the file `program3.cpp` electronically using the following terminal command:

For the 12:30 lecture section:

```
~cs211a/bin/handin 3 program3.cpp
```

For the 5:35 lecture section:

```
~cs211b/bin/handin 3 program3.cpp
```