

## 30.1 LAB: Drawing an upside down triangle



This section has been set as optional by your instructor.

Write a recursive function called `DrawTriangle()` that outputs lines of '\*' to form an upside down isosceles triangle. Function `DrawTriangle()` has one parameter, an integer representing the base length of the triangle. Assume the base length is always odd and less than 20. Output 9 spaces before the first '\*' on the last line for correct formatting.

Hint: The number of '\*' decreases by 2 for every line drawn.

Ex: If the input of the program is:

3

the function `DrawTriangle()` outputs:

\* \* \*

Ex: If the input of the program is:

19

the function `DrawTriangle()` outputs:

[illegible]

Note: No space is output before the first '\*' on the first line when the base length is 19.

## main.cpp

[Load default template...](#)

```
1 #include <iostream>
2 using namespace std;
3
4 /* TODO: Write recursive DrawTriangle() function here. */
5
6
7 int main() {
8     int baseLength;
9
10    cin >> baseLength;
11    DrawTriangle(baseLength);
12    return 0;
13 }
```

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**Develop mode****Submit mode**

Run your program as often as you'd like, before submitting for grading. Below, type any needed input values in the first box, then click **Run program** and observe the program's output in the second box.

Enter program input (optional)

If your code requires input values, provide them here.

**Run program**

Input (from above)



**main.cpp**  
(Your program)



Output

Program output displayed here

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Coding trail of your work [What is this?](#)

History of your effort will appear here once you begin working on this zyLab.

## 30.2 LAB: Reverse a string



This section has been set as optional by your instructor.

Write a recursive function called `ReverseString()` that takes in a string as a parameter and returns the string in reversed order. The main function is provided to read a string from the user and call the `ReverseString()` function.

Ex: If the input of the program is:

Hello

the `ReverseString()` function returns and the program outputs:

Reverse of "Hello" is "olleH".

Ex: If the input of the program is:

Hello, world!

the `ReverseString()` function returns and the program outputs:

Reverse of "Hello, world!" is "!dlrow ,olleH".

Hint: Move the first character to the end of the returning string and pass the remaining sub-string to the next `ReverseString()` function call.

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LAB  
ACTIVITY

30.2.1: LAB: Reverse a string

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main.cpp

Load default template...

```
1 #include <iostream>
2 using namespace std;
3
4 /* TODO: Write recursive ReverseString() function here. */
5
6 int main() {
7     string input, result;
8
9     getline(cin, input);
10    result = ReverseString(input);
```

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```
11 cout << "Reverse of \"" << input << "\" is \"" << result << "\"." << endl;  
12  
13 return 0;  
14 }  
15
```

**Develop mode****Submit mode**

Run your program as often as you'd like, before submitting for grading. Below, type any needed input values in the first box, then click **Run program** and observe the program's output in the second box.

Enter program input (optional)

If your code requires input values, provide them here.

**Run program**

Input (from above)

**main.cpp**

(Your program)



Output

Program output displayed here

Coding trail of your work [What is this?](#)

History of your effort will appear here once you begin working on this zyLab.