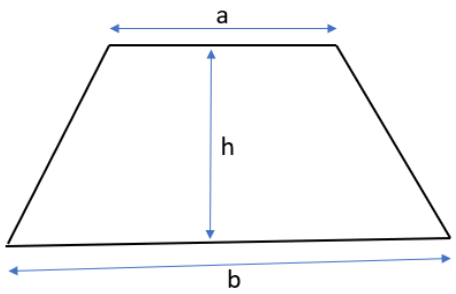
Homework 2

EET 122

Programming Fundamental with C/C++

Total Points: 100

Write a program to print out an isosceles trapezoid using loops. For reference, following diagram refers to the isosceles trapezoid.



1. Program prompts the user and reads in an odd integer between 1 to 15, inclusively, to use as a top base, a, of the trapezoid. If the integer is out of range or not valid, you will continually re-prompt the user to enter the integer again until the user enters a valid integer.
2. Once a valid integer has been entered, program prompts the user and reads in a second odd integer between 3 to 17, inclusively, to use as a bottom base, b, of the trapezoid. You also need to consider that **b is greater than a**. If the integer is out of range or not valid, you will continually re-prompt the user to enter the integer again until the user enters a valid integer.
3. Program will prompt for and read in a printable character which will be used to draw the trapezoid.
4. You need to print the trapezoid using the character entered by the user. While drawing the trapezoid, maintain the followings:
   - ❖ b indicates the number of characters in the bottom row of the trapezoid.
   - ❖ a indicates the number of characters in the top row of the trapezoid.
   - ❖ Each row contains two less characters than the row beneath it. For example, if bottom base b is denoted by 15 characters, then the row on top of the bottom base should contain 13 characters, and so forth.
   - ❖ The height of the trapezoid is the number of rows it takes to print the bottom base, b, to the top base, a. For example, if b=15 and a= 7, then the height of the trapezoid is 5 rows (b=15, next row=13, next row=11, then 9, and finally a=7).

- You can use `cout` statement to print a single character or a single space. You need to maximize the use of nested `for` loop and minimize the use of `cout` statements .

Sample Output 1 (Inputs are in red color):

```
Enter odd integer in the range 1 - 15: 3
Enter odd integer (base 2> base1) in the range of 3 - 17: 9
Please enter a printable character to draw trapezoid: &
   &&&
  &&&&&
 &&&&&&&
&&&&&&&&&
```

Sample Output 2 (Inputs are in red color):

```
Enter odd integer in the range 1 - 15: 11
Enter odd integer (base 2> base1) in the range of 3 - 17: 9
Enter odd integer (base 2> base1) in the range of 3 - 17: 17
Please enter a printable character to draw trapezoid: G
   GGGGGGGGGGG
  GGGGGGGGGGGGG
 GGGGGGGGGGGGGGG
GGGGGGGGGGGGGGGGG
```

Sample Output 3 (Inputs are in red color):

```
Enter odd integer in the range 1 - 15: 3
Enter odd integer (base 2> base1) in the range of 3 - 17: 5
Please enter a printable character to draw trapezoid: @
 @@@
@@@@@
```

Sample Output 4 (Inputs are in red color):

```
Enter odd integer in the range 1 - 15: 7
Enter odd integer (base 2> base1) in the range of 3 - 17: 17
Please enter a printable character to draw trapezoid: *
     *******
    *********
   ***********
  *************
 ***************
*****************
```

SUBMISSION PROCEDURE

Name the project as Homework2. Then, you will zip the `Homework2` project. Finally upload the zipped Homework2 project on the Canvas. Or, you can simply submit the source file.