

## **The way to verify the design of the house**

To ensure that whatever the number it enter, the programming will output the correct graph, I designed that the number of spaces and characters should not be restricted in a certain number. The variable numbers are arranged in my program to make the size and standard more flexible. I use `w_column` and `w_row` to make the glass amount of the window adjustable, and using functions to control the size of the roof.

## **Working experience**

The way I complete the assignment is by writing program by layers from top to the bottom in order, I follow the instruction and accomplish every requirement mentioned from the start. I separate the house in many different parts, including the frame of the roof, the roof, the frame of the house and the windows and the door. I finished writing each parts of the house and construct both parts into the completely house.

I started this assignment by building the roof from the top to the bottom, at first, I have not build the frame of the roof and just filled the inner part of the trapezoid as the roof. I was struggling about building the frame of the roof at first, I could not find the solution to build the top of the roof, the for loops I used kept ignoring my instruction and didn't come out with the correct figure. I change another way of my for loop and use `printf` at the last line of my for loop and I comes out my four sides of the frame of roof had completed.

Then I wrote the main part of the house, starting by the upper parts of the frame to the top before the windows and the door. I piled up each layers and finish this part.

Following by is the most complicated part in this assignment, with the wall covering the window and the door, I choose to write in each lines individually, it turns out that the programs come in too many lines and it is easy to get errors in it. I calculate the spaces and each characters accurately in each lines but it get my program up to 700 lines.

I tried to simplify my program and separate the window into each square of glass by rows and columns. With each single glass of window can build up the whole window. I use the for loop in four layers to control the number of row and columns in vertical side and horizontal side just like the recurrence relation and finally success to construct the whole part of the window in both side.

The last part of the house is the part below the window and the door, which is similar as the part above the window and the door, which I piled each layers and complete the assignment.

After I complete the program, my figure will randomly deviate in different shapes with words crossing between it. Finally, I use `#include <stdlib.h>` and `system("pause");` to ensure the stability of the program.