Design Manual

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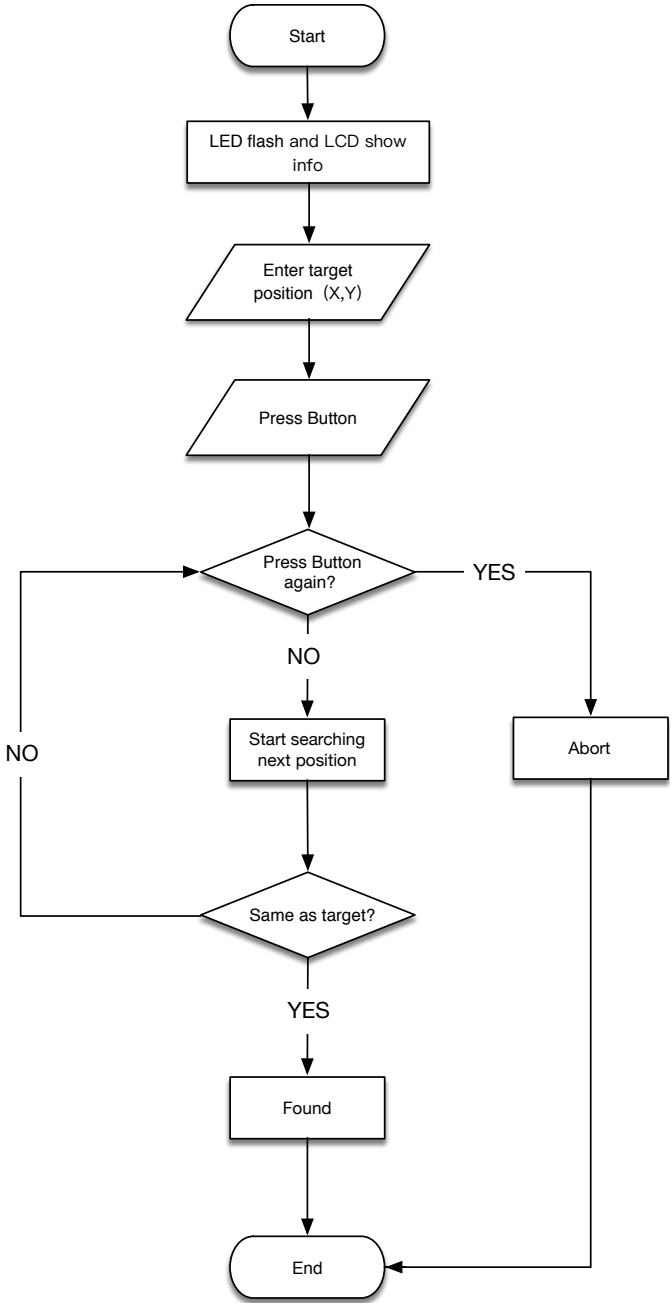
23 October 2017

GENERAL VIEW OF WHOLE PROGRAM

PROGRAM FLOW CHART

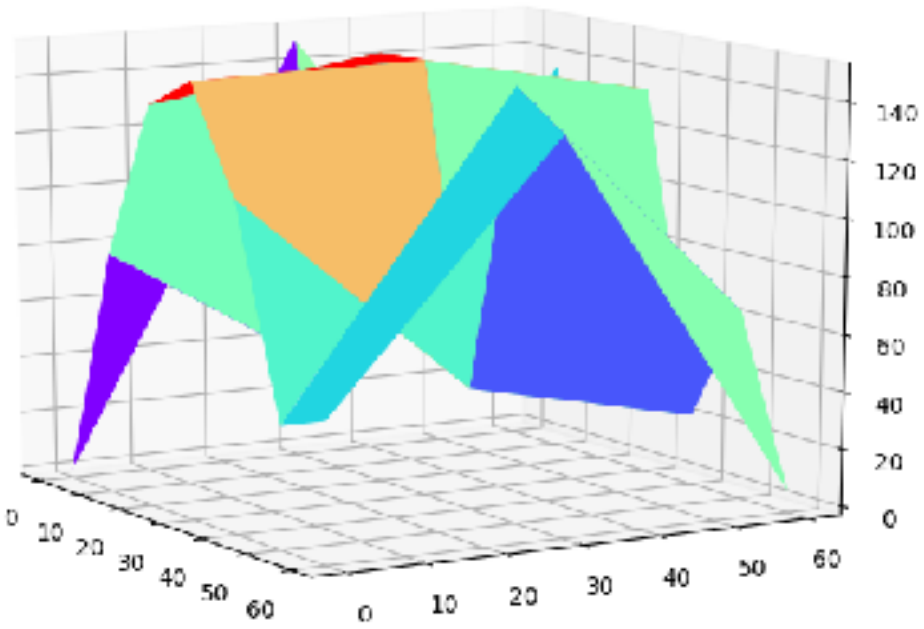
Here is a flow chart which provide a general view of the program. But data should be provide before the program running. In next section, it will show how to generate a natural mountain.



MOUNTAIN MATRIX

To generate a more natural mountain matrix

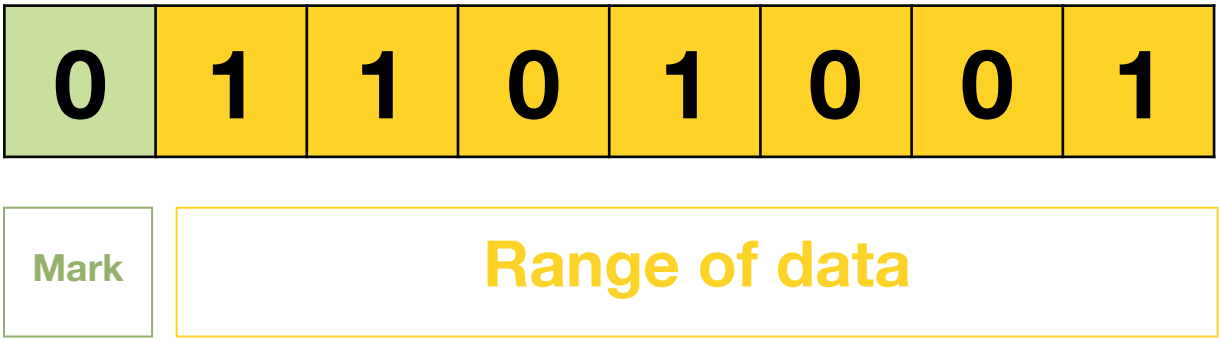
In project requirements, the mountain matrix should be 64x64, which means there are 4096 points in the matrix. It's hard to generate those point manually. So it's necessary to write a program to figure it out. One of the easy way to generate the matrix is using random number. However, it look not like a natural mountain. Because its curve is sharp and not like a natural mountain. Matlab is a great solution to generate a more natural mountain by using equation. Using python with Matlab's library as program language to produce the matrix. There is the picture of the mountain.



MARK SEARCHED POINT

Mark the point

According to the project describe, the range of height in the mountain is between 10 to 127. In this way, we just need 7 bits to store the data of height. However, a byte have 8 bits. Thus, there still have a bit available. We can use it as a mark bit. Once the position have been searched, the valued will be added 0b10000000. So if the height is bigger than 127, it mean this position have been scanned. It's easy to found out whether the place have been searched or not.



SEARCH METHOD

Path of searching

Here is the searching path in program. Assume the size of matrix is 10x10. The drone start from position (0.0) then it'll search the position on right part, when it reach the edge of matrix. It'll go next line and change the direction. In this way, all the position in mountain can be found. Meanwhile the height of drone will keep 5 meter higher than the mountain. So it'll hit any object on the mountain.