Assignment - 10 (B5)

Problem definition:
Write C++ program to generate hilbert curve using concept of fractals

Objective :
To be able to implement the hilbert space filling curve

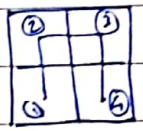
Outcome :
Understanding the concept of fractals & space filling curves.

H/w & S/w requirements :
- 64 bit OS
- Qt creator

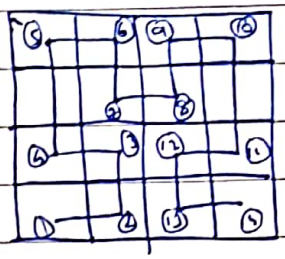
Theory :
Fractals are special curves that show the same pattern in them as you keep on increasing / zooming on their boundaries. This means that these shapes have infinite perimeter but can be ~~not~~ restricted in any area.
They occur in nature as in sea-shores, snowflakes, etc.

Hilbert curve is a special space filling curve that has finite but may have infinite length.

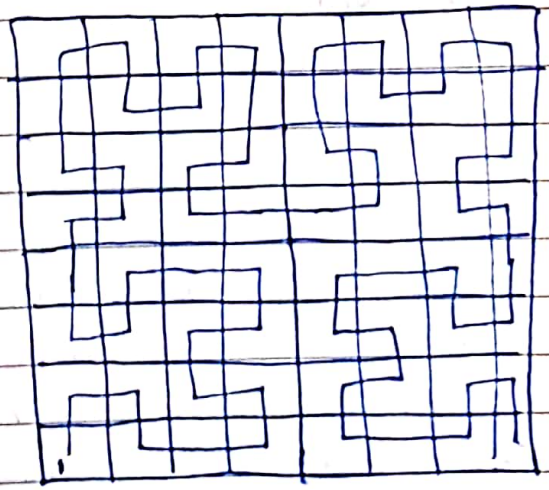
Hilbert curve degree 1:



Degree 2



Degree 3:

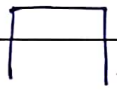
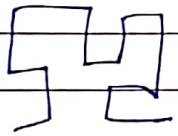
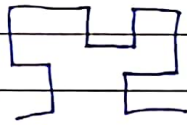


A pseudo hilbert curve of degree 'n+1' can be generated by simple transformation on pseudo hilbert curve of degree 'n' as follows:

② keep same	keep ③ same
rotate ① -90°	rotate 90° ④

-> A PHC of order 'n+1' can be created by joining 4 PHC of order 'n'

Test cases:

Input	expected o/p	actual o/p	result
degree 1			Pass.
degree 2			Pass.

Conclusion:

Thus using the concept of fractals, we were able to generate Hilbert curves of varying degrees.