Sesión 10.1 – CS3102 EDA

Prof. Victor Flores

2 de Junio de 2022

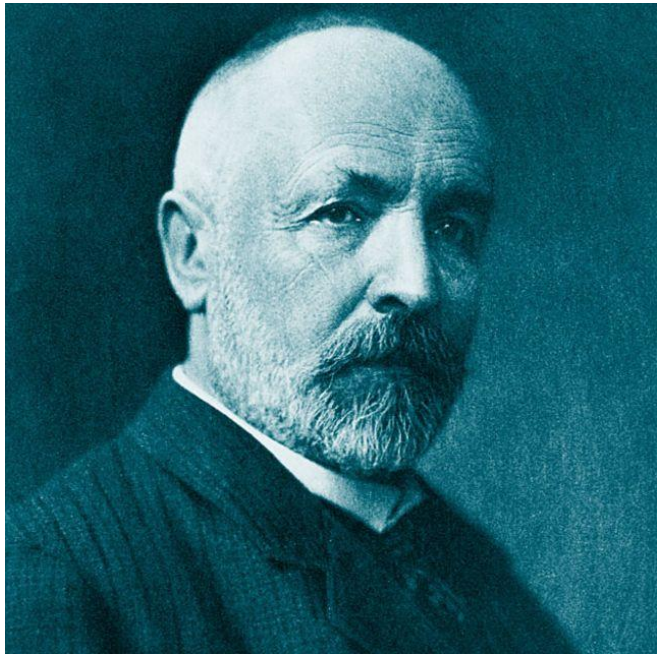
UTEC
UNIVERSIDAD DE INGENIERÍA Y TECNOLOGÍA

Contenido

- Space-filling curves
- Hilbert R-Tree

Space-filling curves

Los infinitos

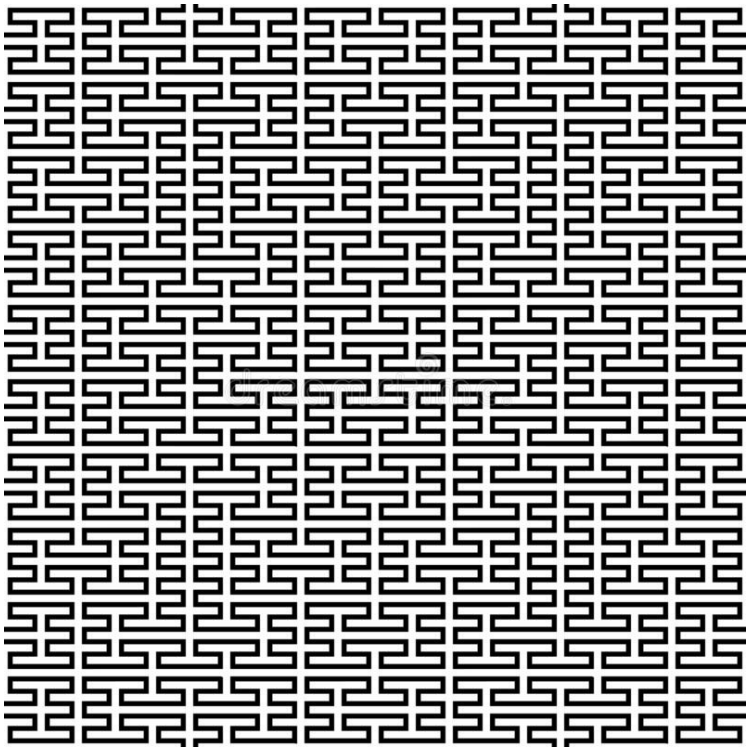


Georg Ferdinand Ludwig Philipp Cantor

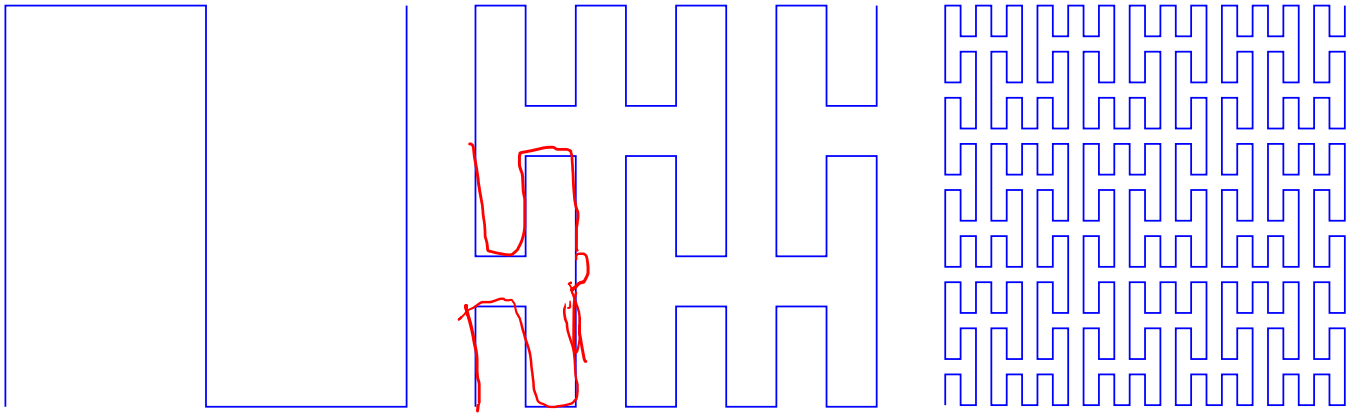
Llenar un infinito con otro infinito

Giuseppe Peano

Llenar un infinito con otro infinito



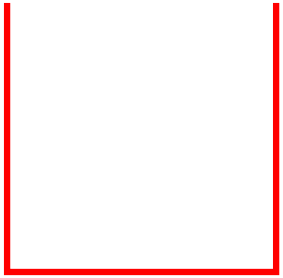
Curva de Peano



Llenar un infinito con… ondas?

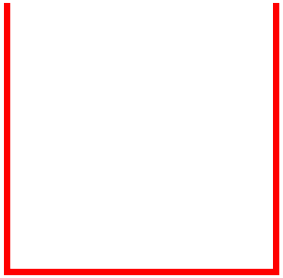
David Hilbert

Curva de Hilbert

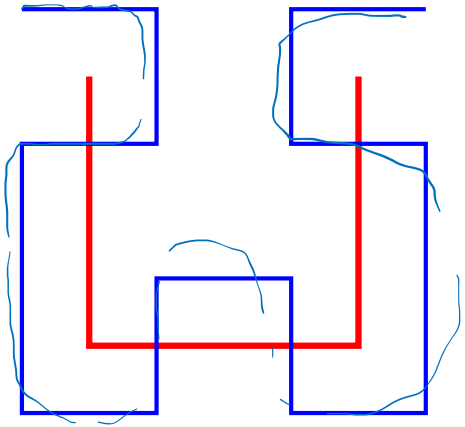


Primer orden

Curva de Hilbert

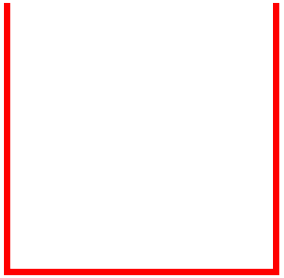


Primer orden

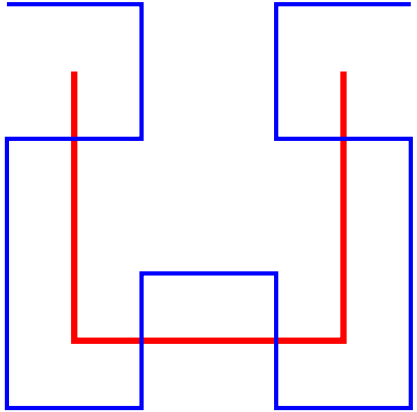


Segundo orden

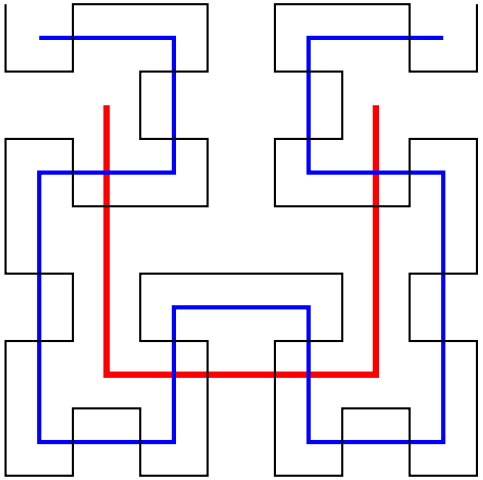
Curva de Hilbert



Primer orden

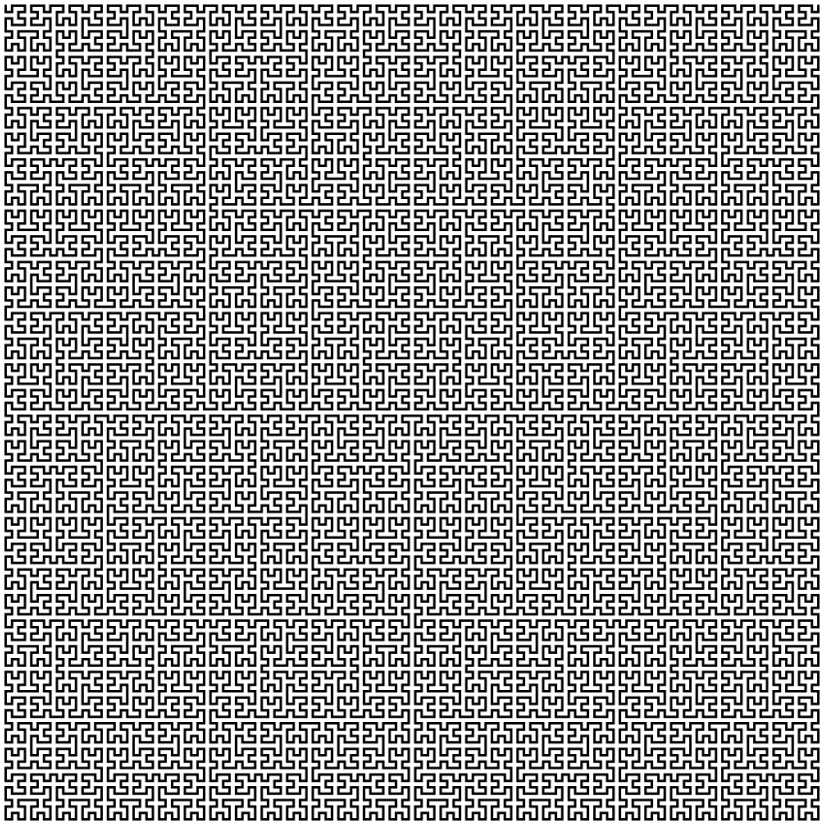


Segundo orden

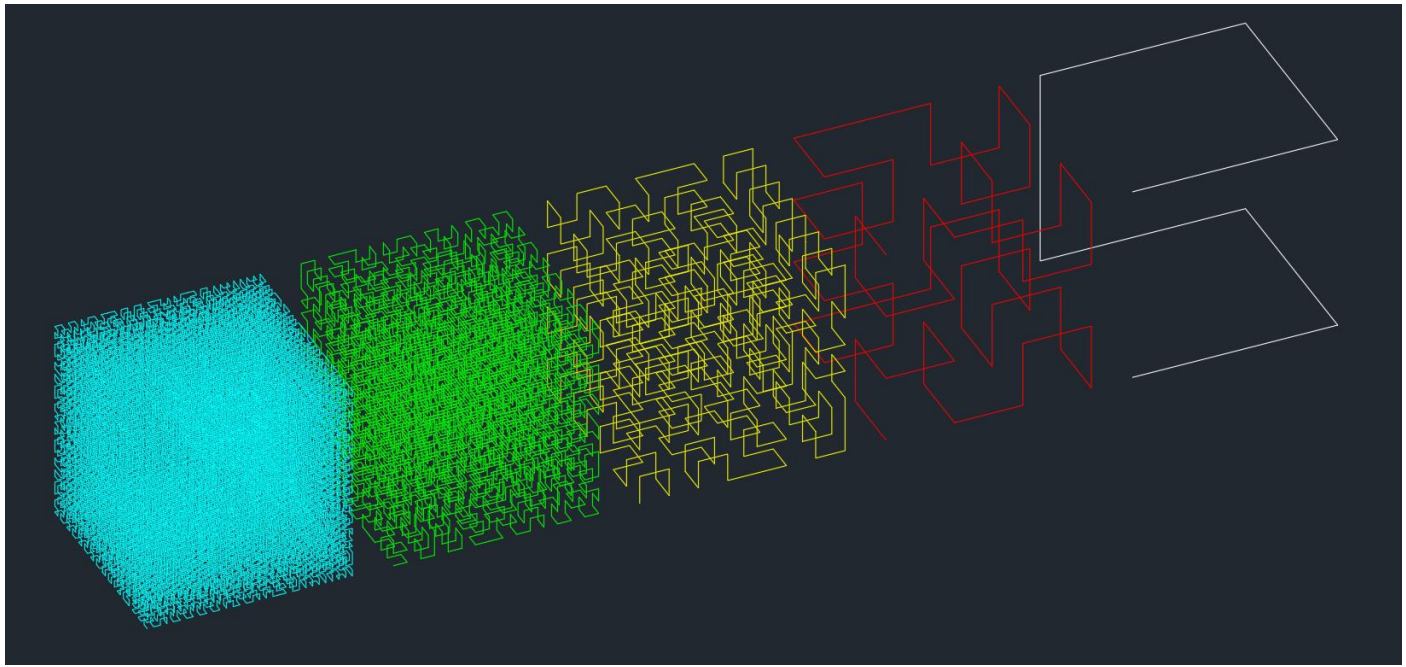


Tercer orden

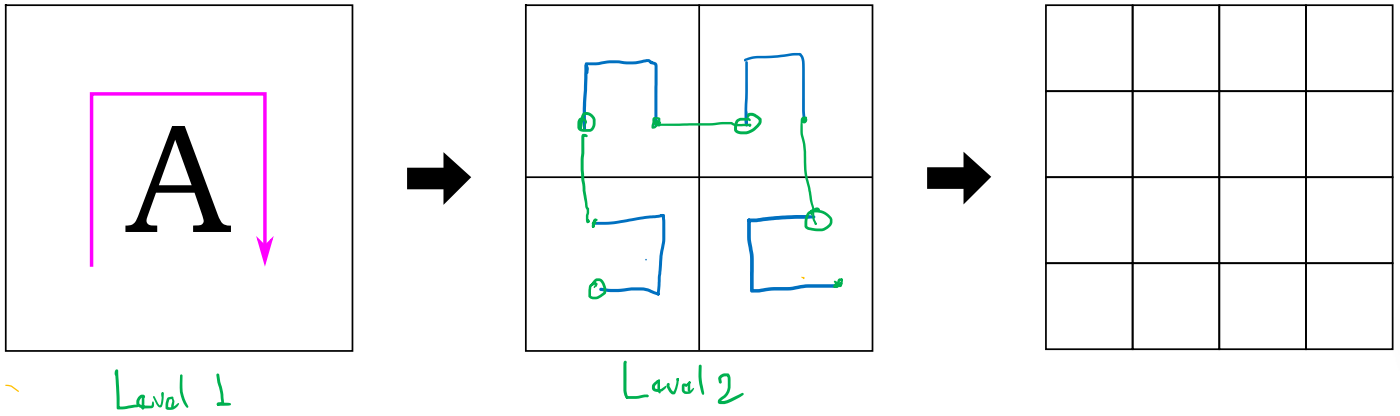
Curva de Hilbert



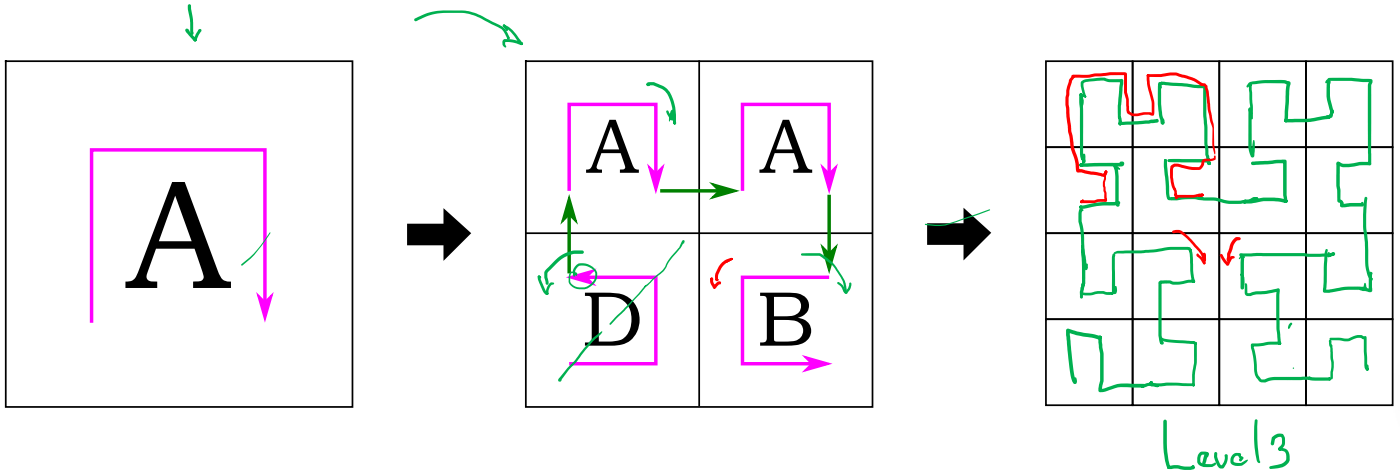
Curva de Hilbert



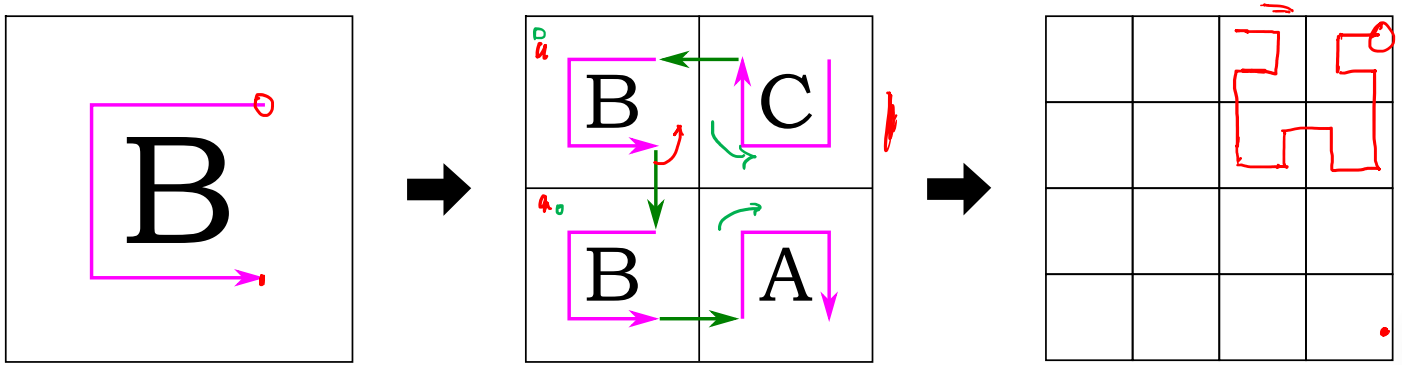
Curva de Hilbert



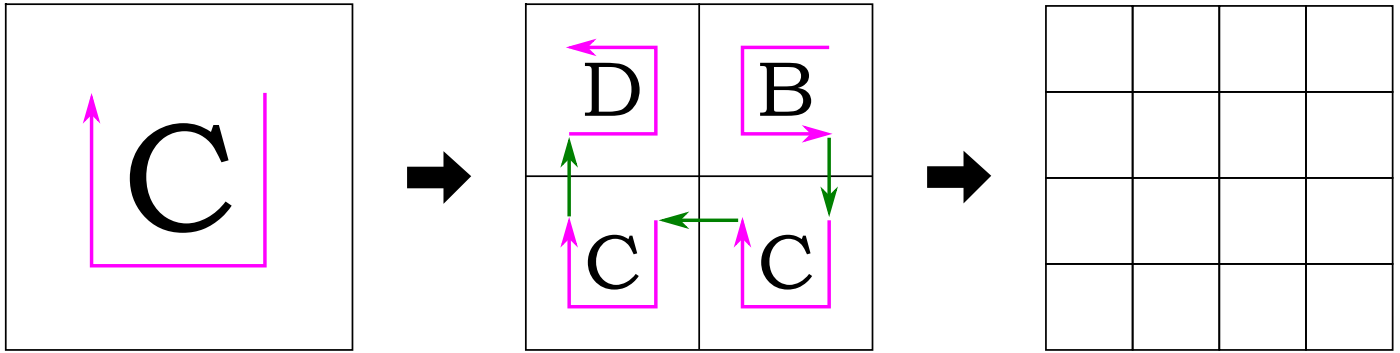
Curva de Hilbert



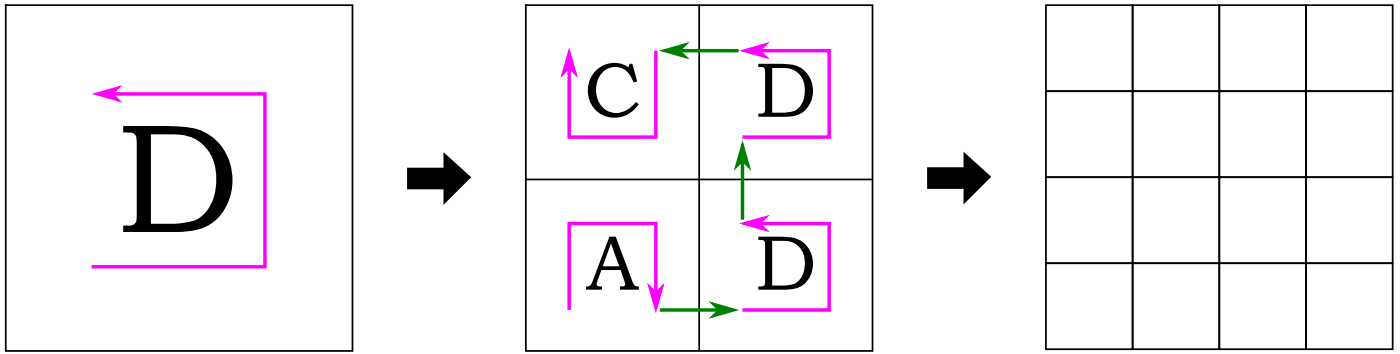
Curva de Hilbert



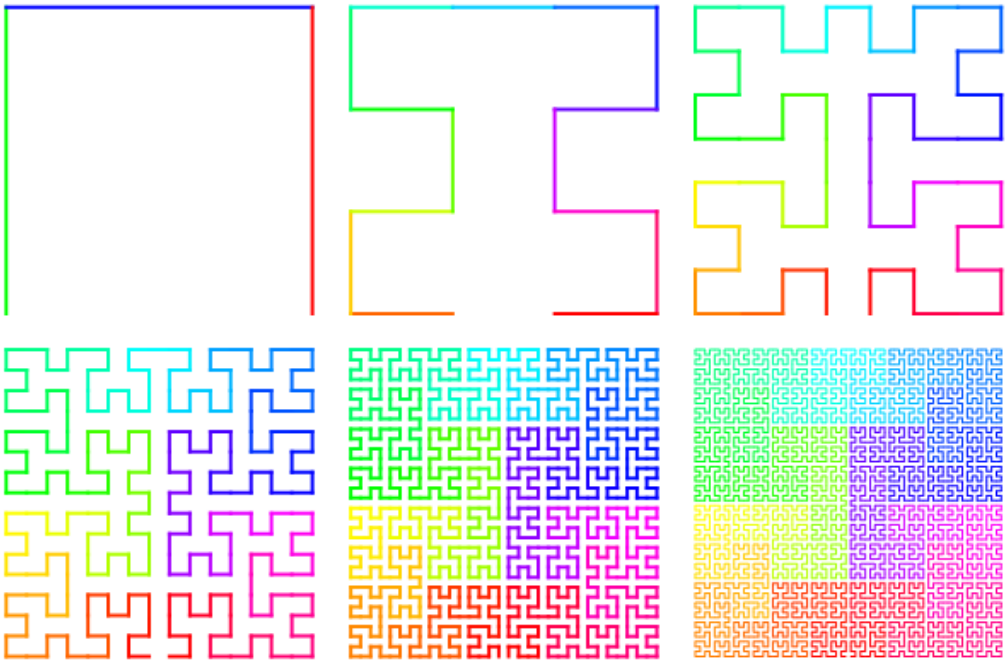
Curva de Hilbert



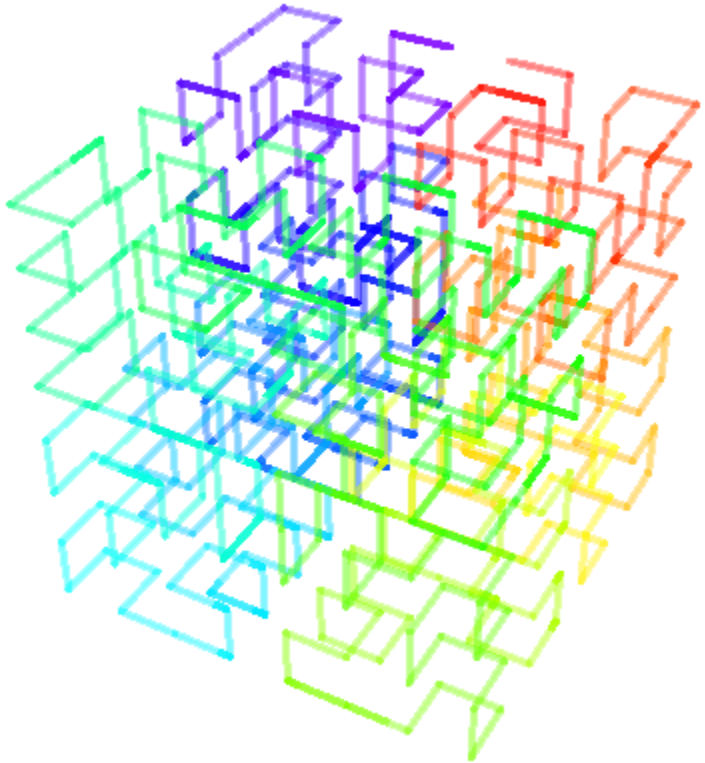
Curva de Hilbert



Curva de Moore

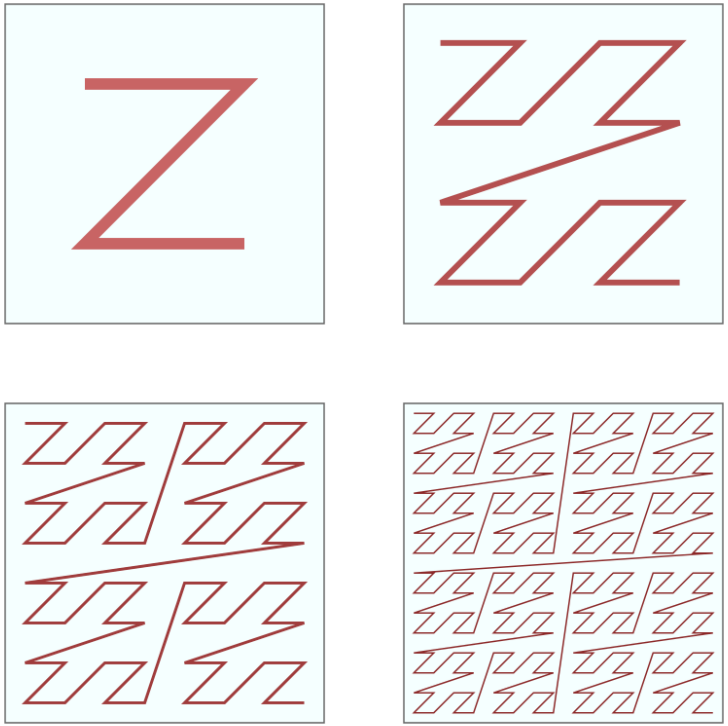


Curva de Moore



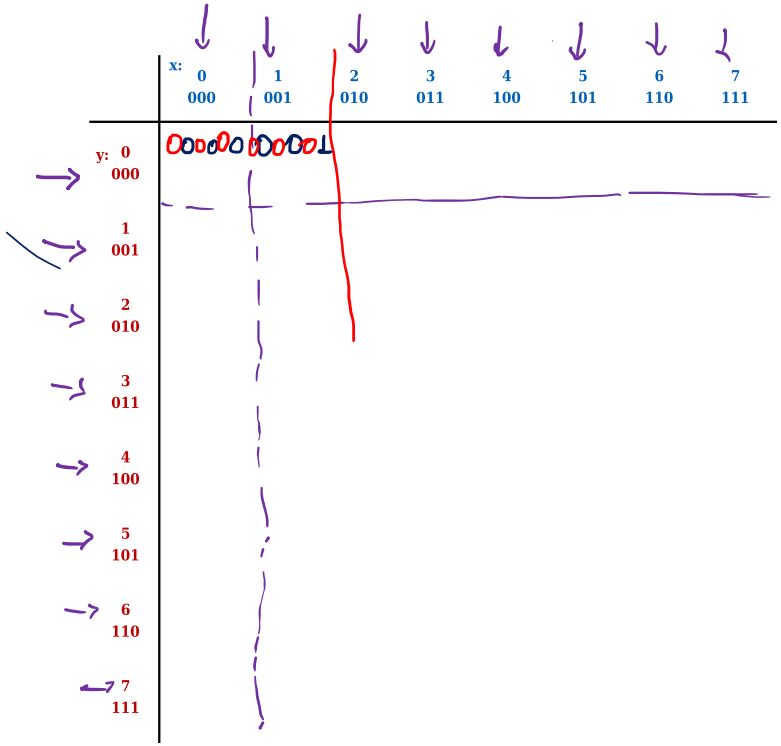
Morton order

(Z-order, Lebesgue curve)



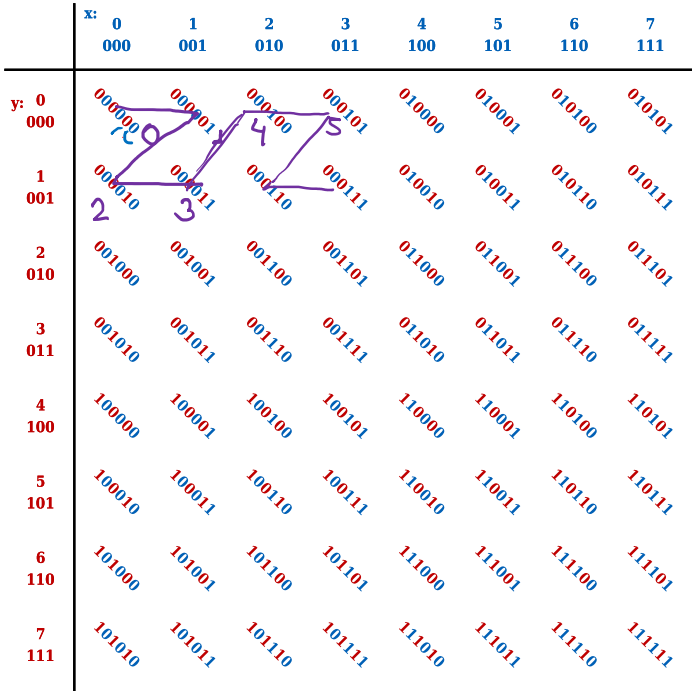
Morton order

(Z-order, Lebesgue curve)



Morton order

(Z-order, Lebesgue curve)

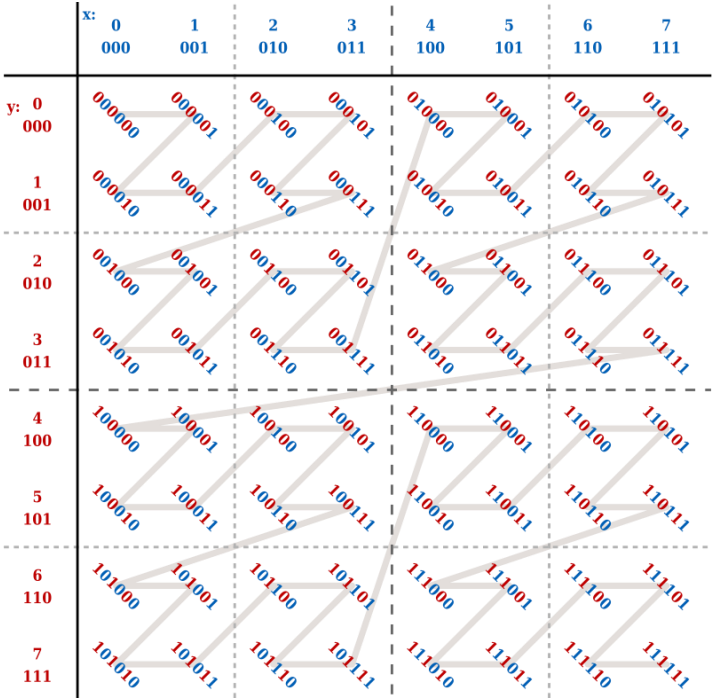


Morton order

$\{4^0, 4^1, 4^2, 4^3, 4^4, \ldots\}$

$SM = 1, 4, 5, 1$

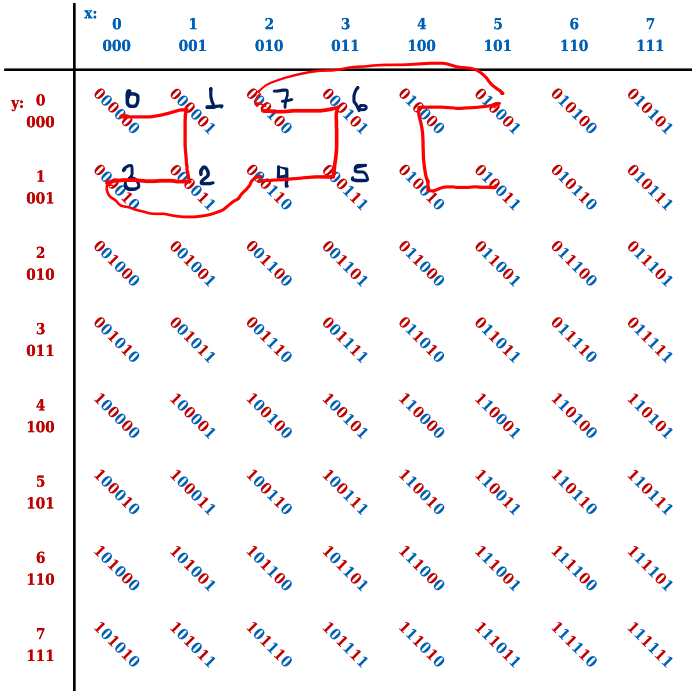
(Z-order, Lebesgue curve)



Gray order

x:	0 000	1 001	2 010	3 011	4 100	5 101	6 110	7 111
y: 0 000								
1 001								
2 010								
3 011								
4 100								
5 101								
6 110								
7 111								

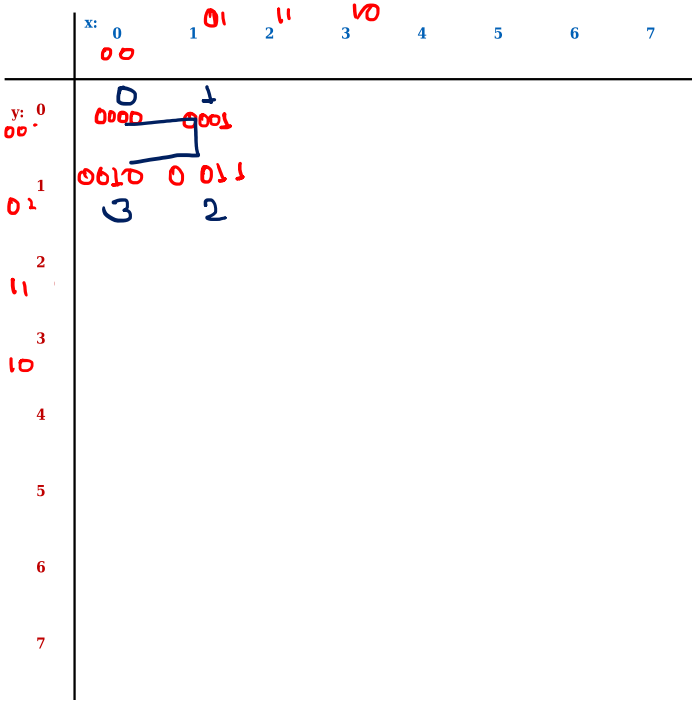
Gray order



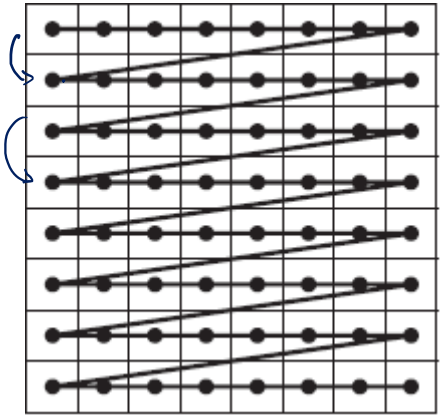
Decimal	Binary	Gray	Decimal of Gray
0	0000	0000	0
1	0001	0001	1
2	0010	0011	3
3	0011	0010	2
4	0100	0110	6
5	0101	0111	7
6	0110	0101	5
7	0111	0100	4
8	1000	1100	12
9	1001	1101	13
10	1010	1111	15
11	1011	1110	14
12	1100	1010	10
13	1101	1011	11
14	1110	1001	9
15	1111	1000	8

Double Gray order

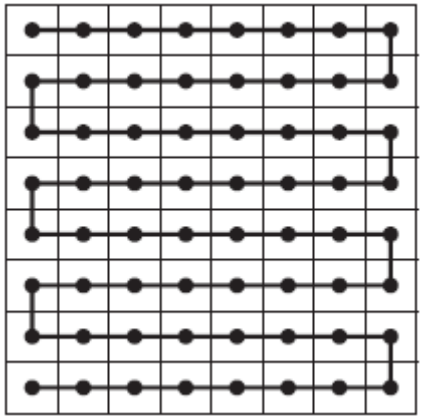
Decimal	Binary	Gray	Decimal of Gray
0	0000	0000	0
1	0001	0001	1
2	0010	0011	3
3	0011	0010	2
4	0100	0110	6
5	0101	0111	7
6	0110	0101	5
7	0111	0100	4
8	1000	1100	12
9	1001	1101	13
10	1010	1111	15
11	1011	1110	14
12	1100	1010	10
13	1101	1011	11
14	1110	1001	9
15	1111	1000	8



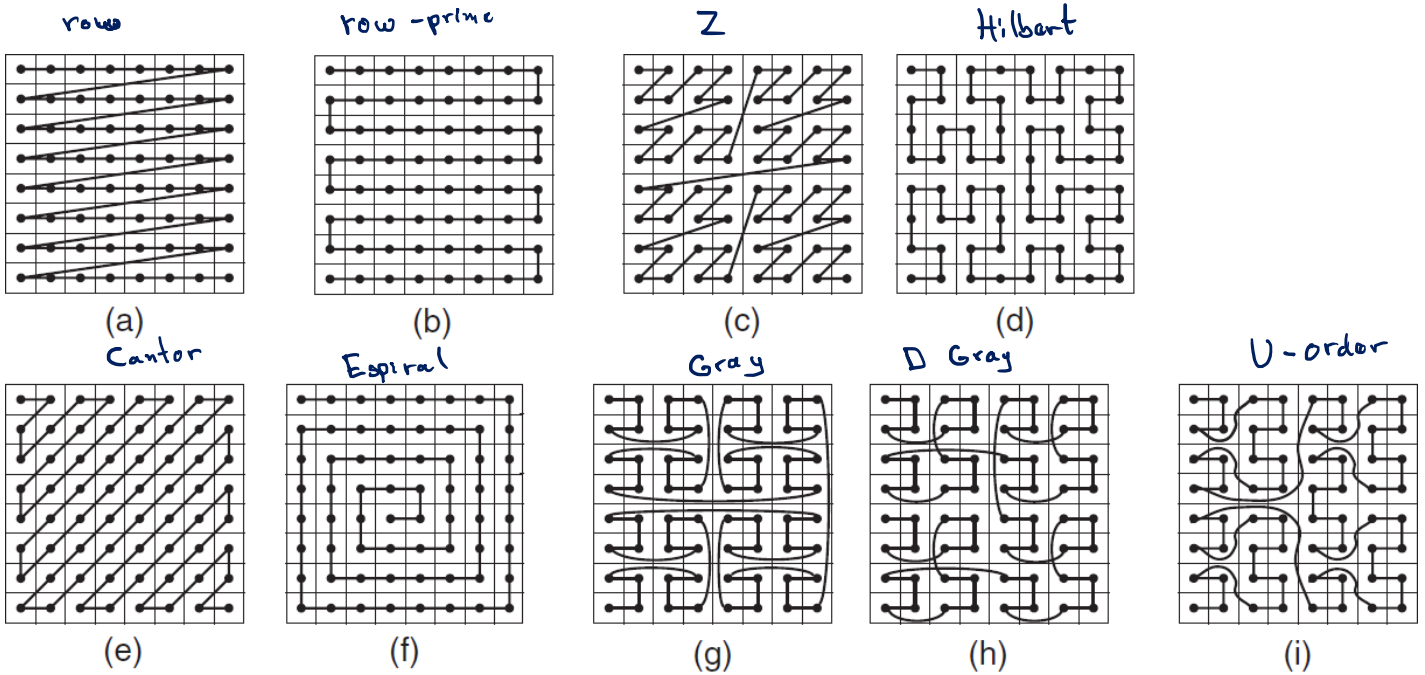
Row order



Row-prime order



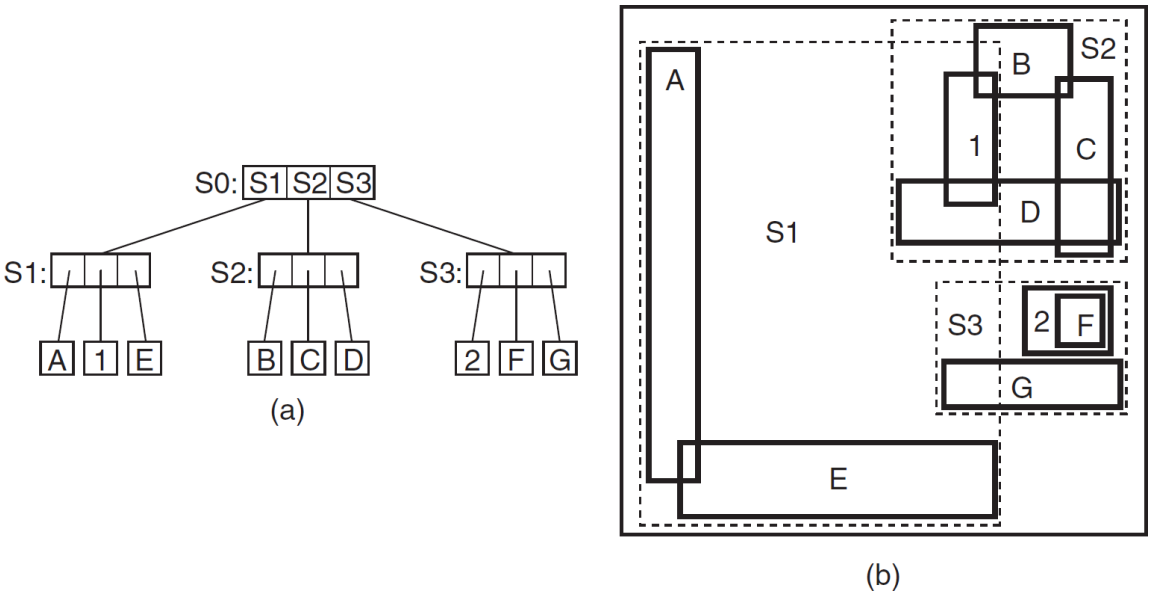
Resumen


row
row -prime
Z
Hilbart
(a)
(b)
(c)
(d)
Cantor
Espiral
Gray
D Gray
U-order
(e)
(f)
(g)
(h)
(i)

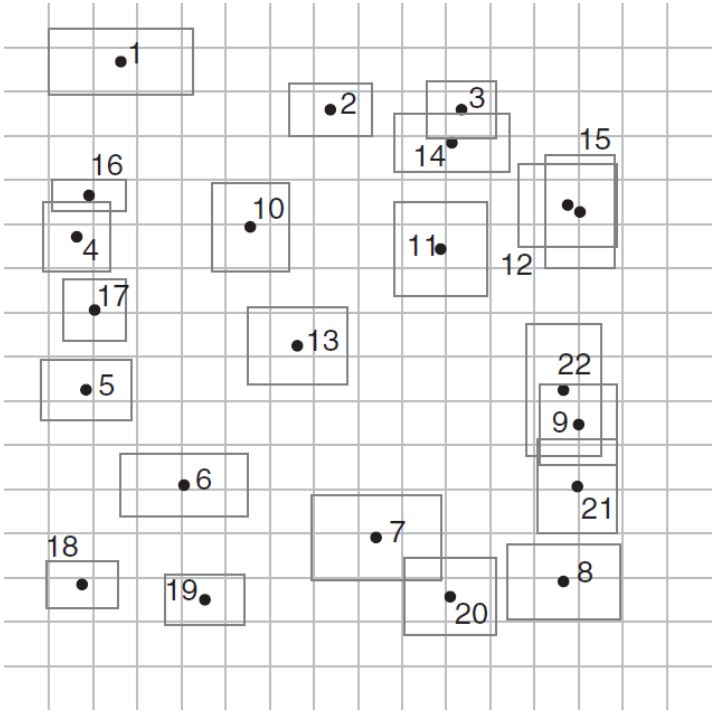
Hilbert R-Tree

Hilbert R-Tree

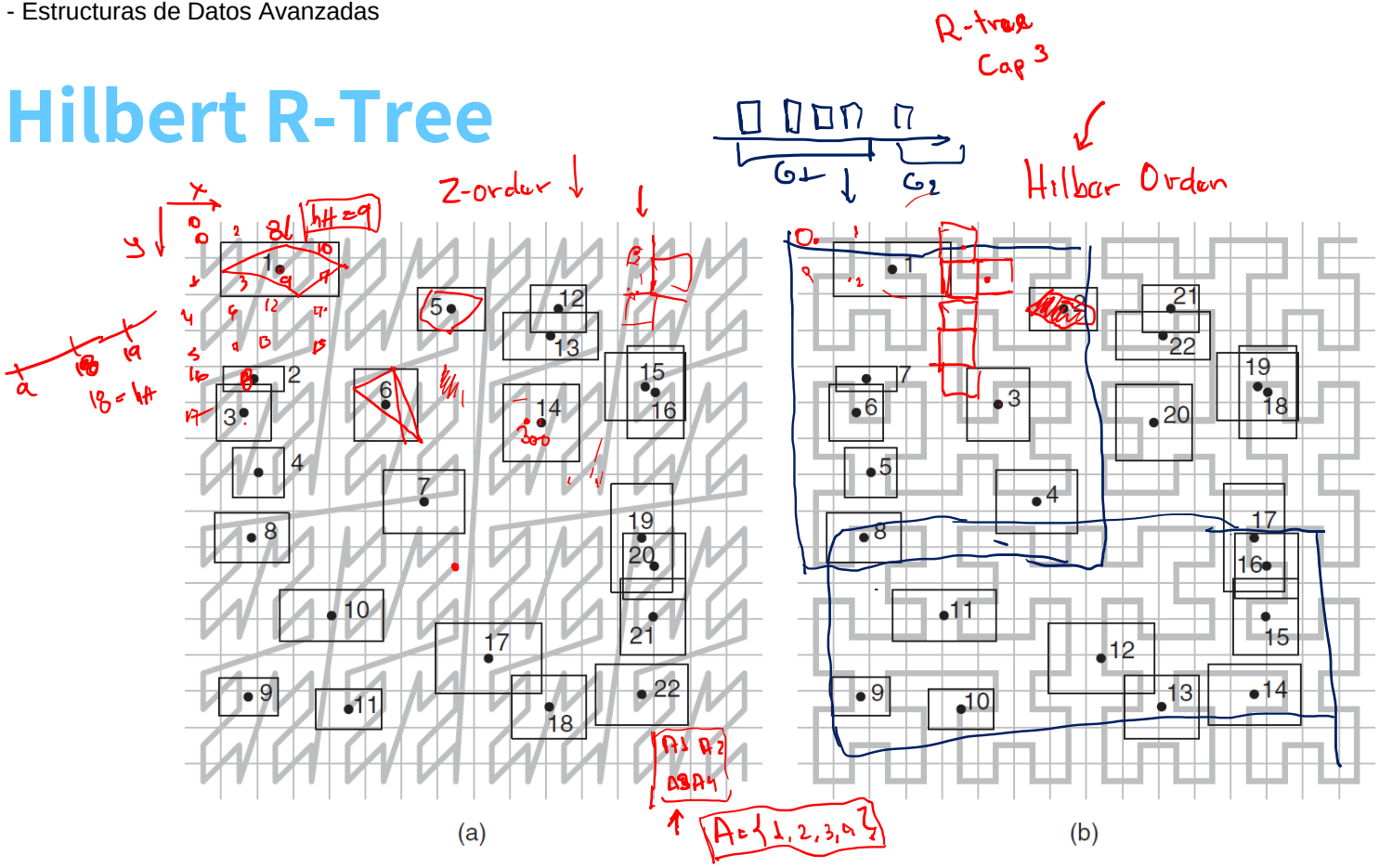
Objet-based → Busqueda a Regiones



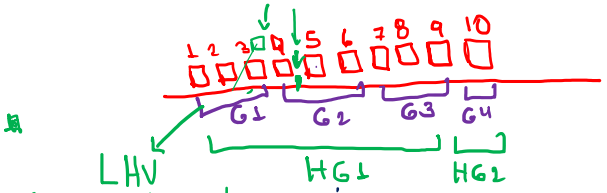
Hilbert R-Tree

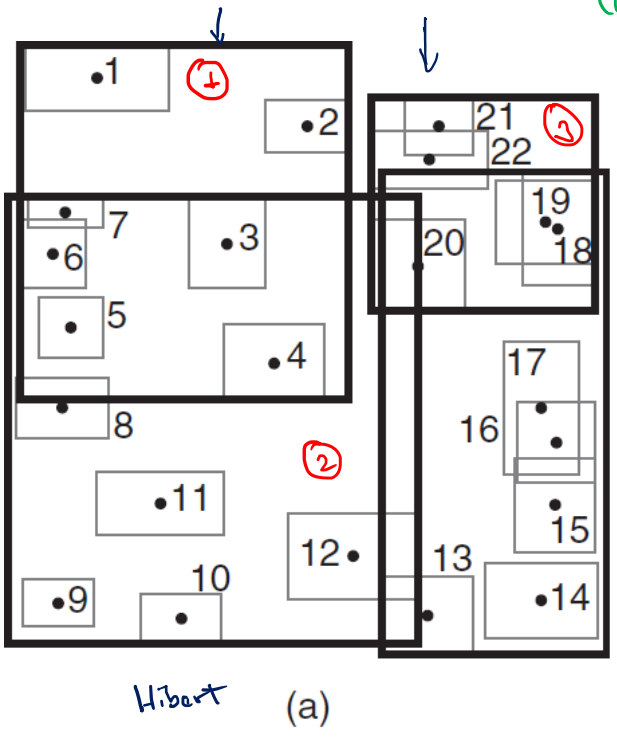


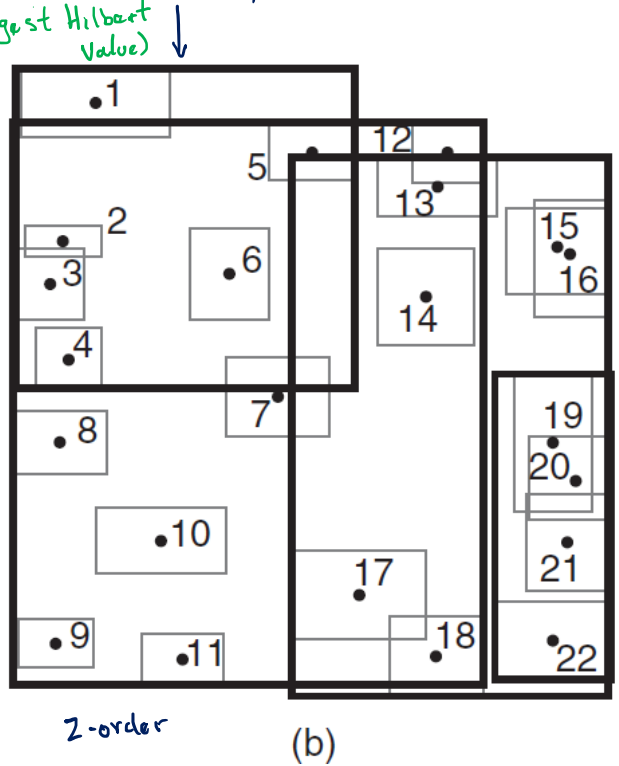
Hilbert R-Tree



Hilbert R-Tree







¿Preguntas?

UTEC
UNIVERSIDAD DE INGENIERÍA Y TECNOLOGÍA