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> Reinventa el mundo <

Repaso Parcial 2

R-tree, kNN, Line QuadTree, PM QuadTree

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1.

R-*tree*

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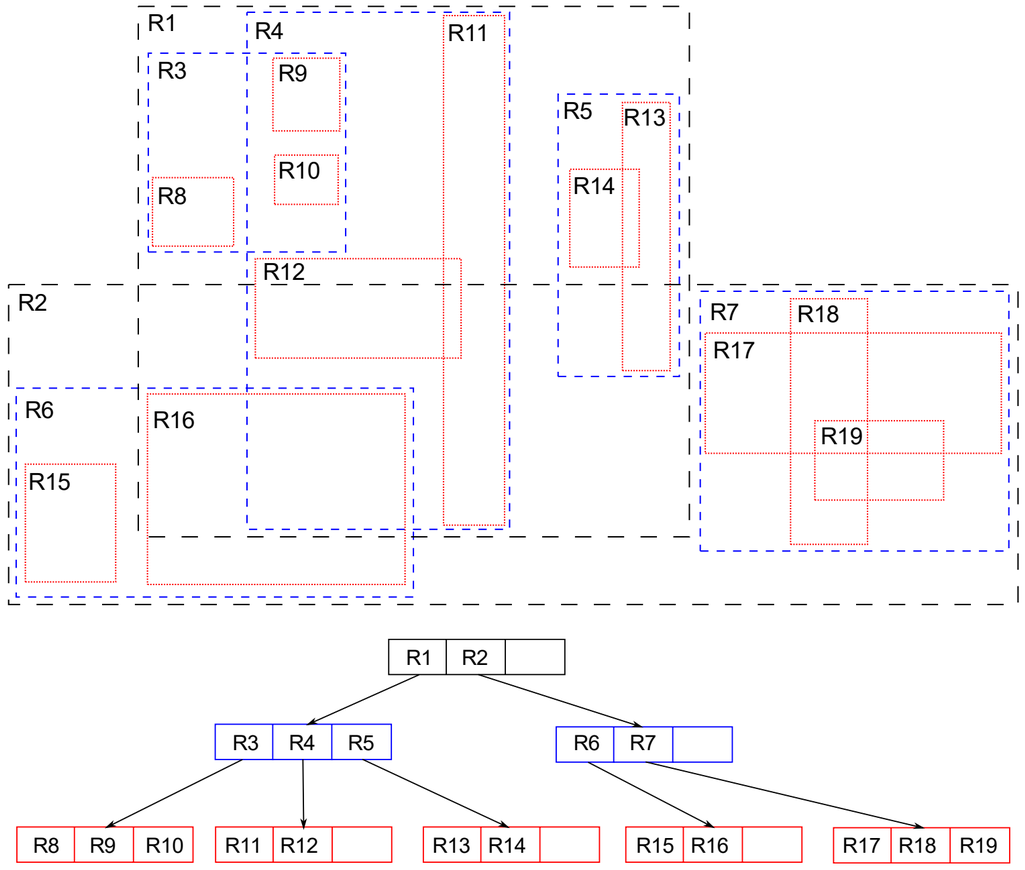
R-*tree*



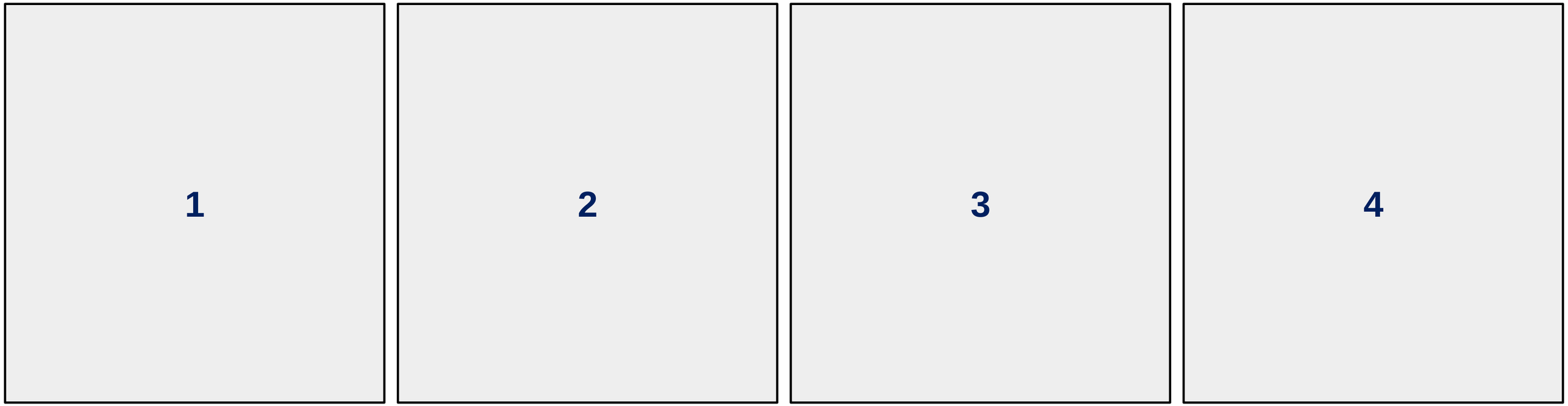
Linear Split

1. Elija dos objetos como semillas, de modo que estén lo más separados posible.
2. Considera cada objeto restante en un orden aleatorio y asígnalo al nodo que requiera la menor ampliación de su MBB.

Quadratic Split

1. Elija dos objetos como semillas para los dos nodos, de modo que crean el **mayor espacio muerto** posible.
2. Asigne los objetos restantes a uno de los dos grupos. Para cada objeto, calcule el aumento en el área de la MBB que resultaría de añadir el rectángulo a cada grupo. Asigne el objeto al grupo que suponga el **menor aumento de área**. En caso de empate, asigna el rectángulo al grupo con menor área o menor número de elementos.

R-*tree*



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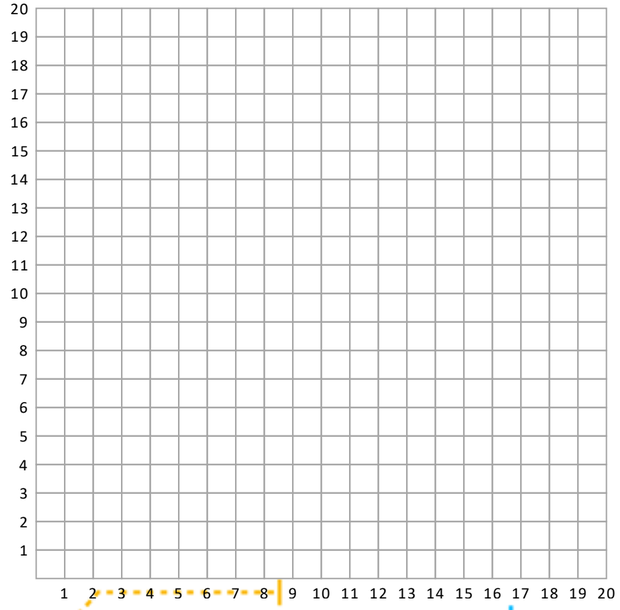
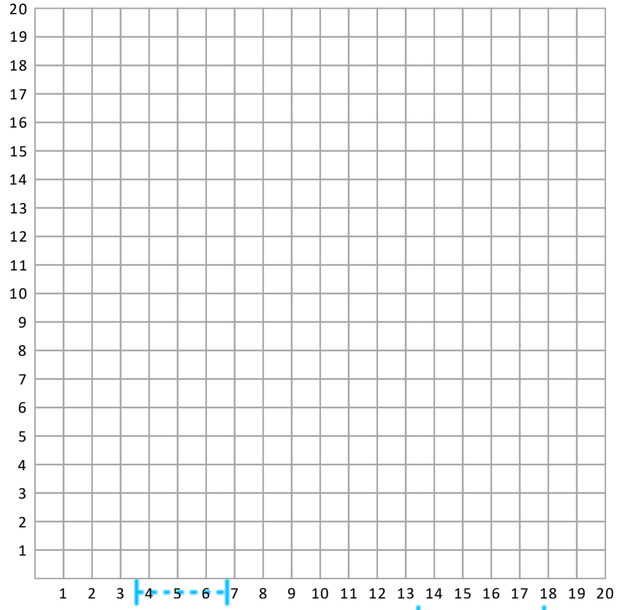
R-*tree*

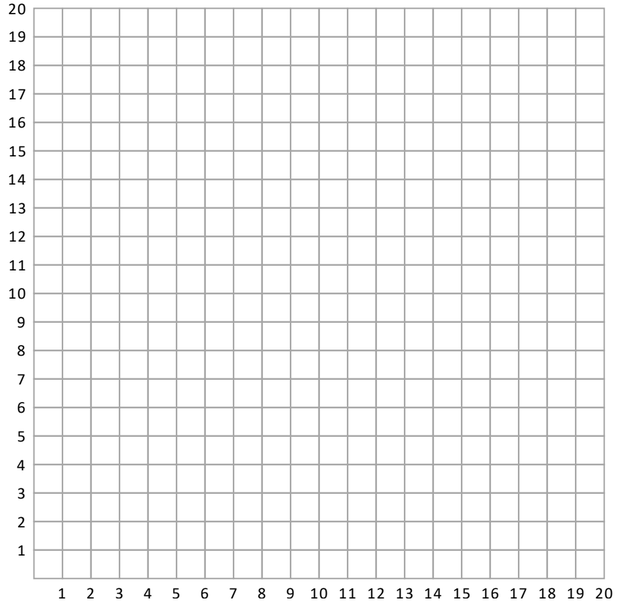
A: (19, 13)
B: (7, 7)
C: (19, 18)
D: (18, 5)
E: (7, 1)
F: (0, 17)
G: (18, 16)
H: (13, 10)
I: (5, 7)
J: (5, 11)



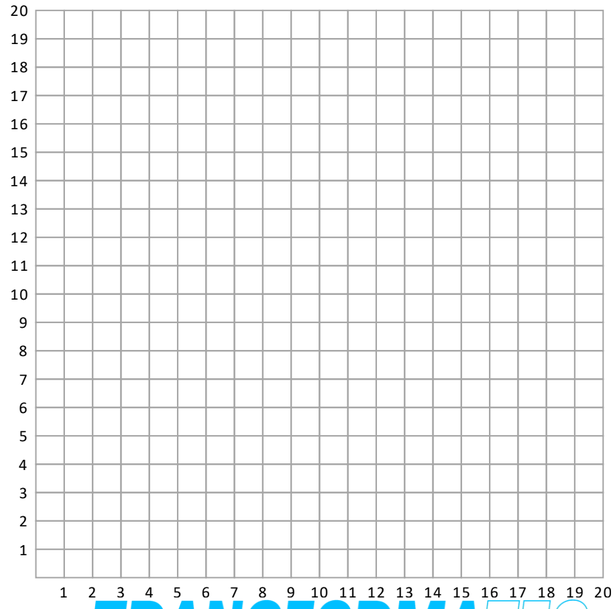
A: (2, 20)
B: (17, 6)
C: (3, 10)
D: (9, 12)
E: (17, 18)
F: (16, 20)
G: (10, 19)
H: (13, 20)
I: (19, 13)
J: (7, 8)



A: (6, 14)
B: (8, 11)
C: (14, 16)
D: (16, 16)
E: (1, 15)
F: (15, 9)
G: (10, 9)
H: (0, 10)
I: (3, 0)
J: (20, 10)



A: (14, 18)
B: (19, 18)
C: (11, 3)
D: (16, 14)
E: (17, 10)
F: (11, 13)
G: (13, 5)
H: (16, 17)
I: (5, 18)
J: (19, 4)



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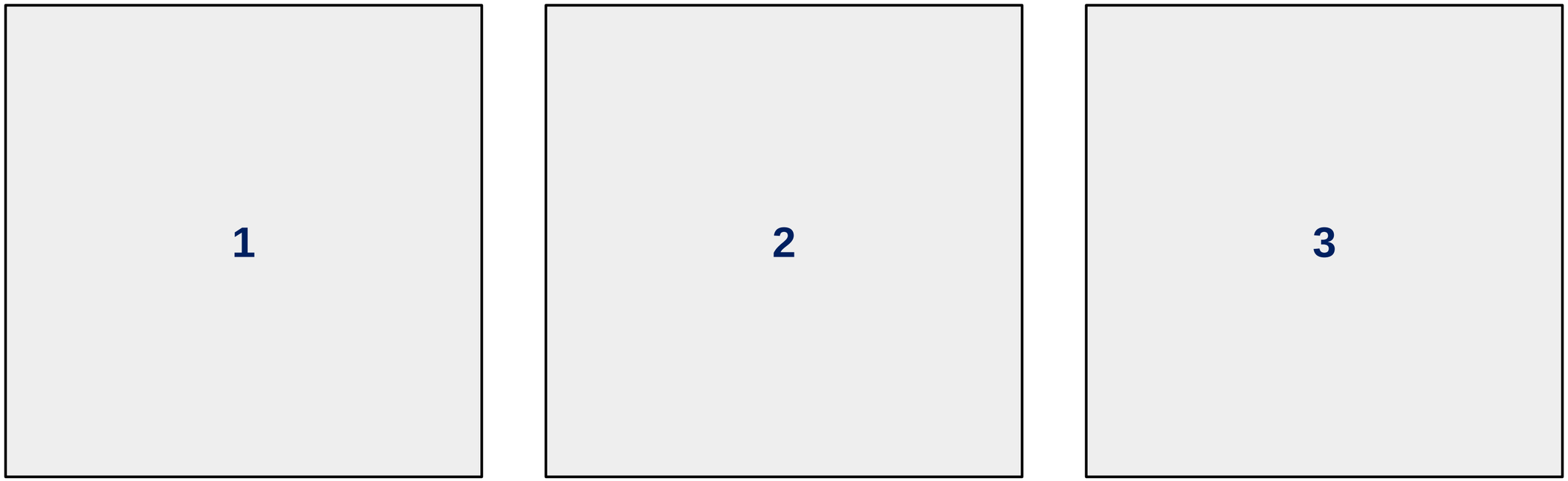
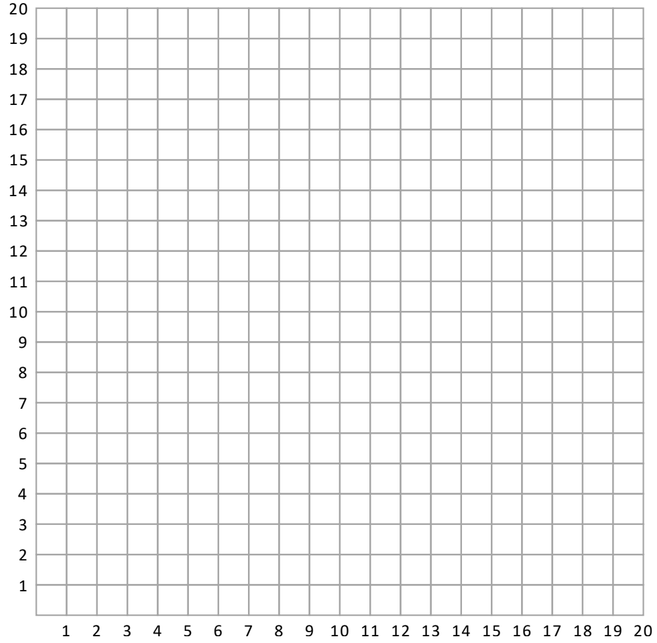
R-*tree*

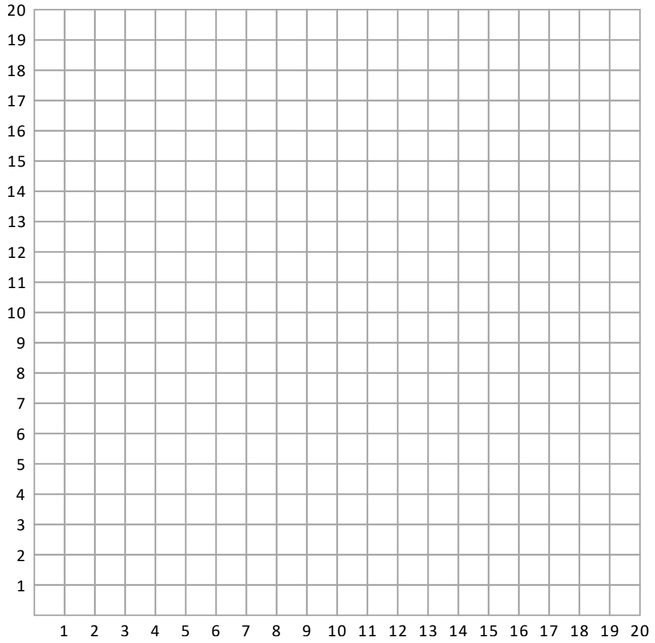


R-*tree*

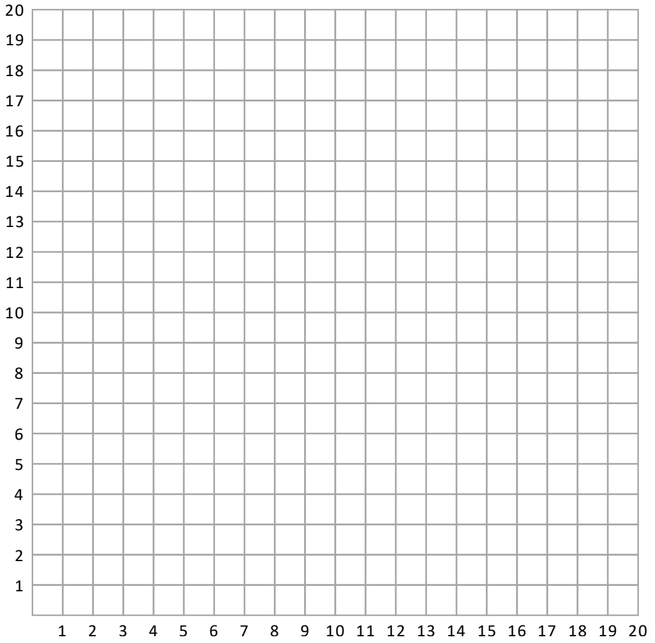
A: (9, 9)
B: (17, 1)
C: (17, 17)
D: (14, 1)
E: (1, 16)
F: (16, 18)
G: (10, 5)
H: (7, 20)
I: (0, 19)
J: (12, 2)



A: (8, 8)
B: (16, 2)
C: (5, 1)
D: (3, 13)
E: (16, 1)
F: (16, 8)
G: (18, 14)
H: (8, 6)
I: (17, 15)
J: (18, 5)



A: (1, 8)
B: (5, 15)
C: (6, 3)
D: (9, 19)
E: (15, 3)
F: (20, 10)
G: (7, 13)
H: (12, 18)
I: (17, 14)
J: (3, 1)



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2.

R*-*tree*

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R* tree: *overflow*

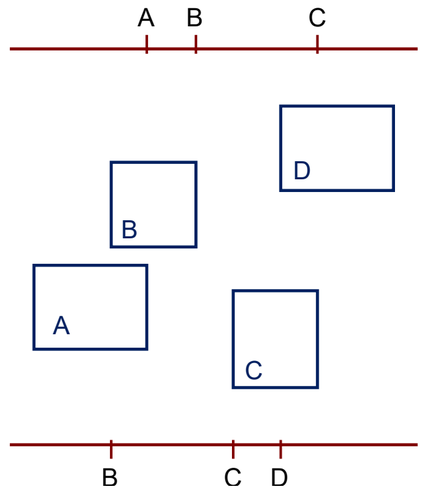
Split

- Seleccionar eje

a) Eje x

- Límite inferior
- Límite superior

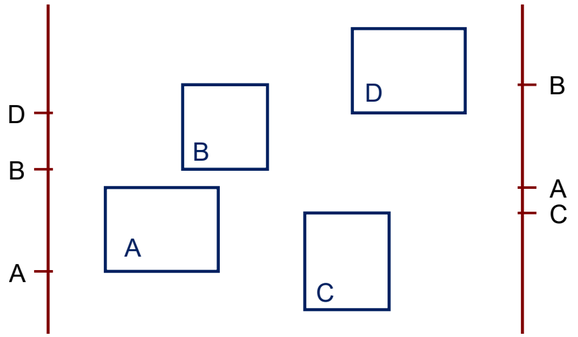
Suma de semiperímetros de las regiones



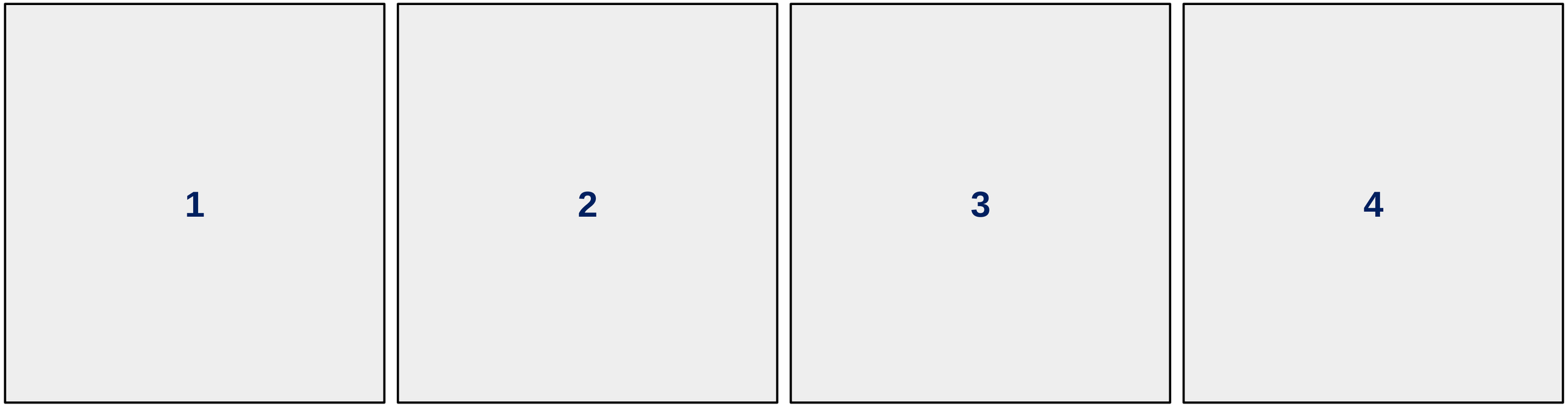
b) Eje y

- Límite inferior
- Límite superior

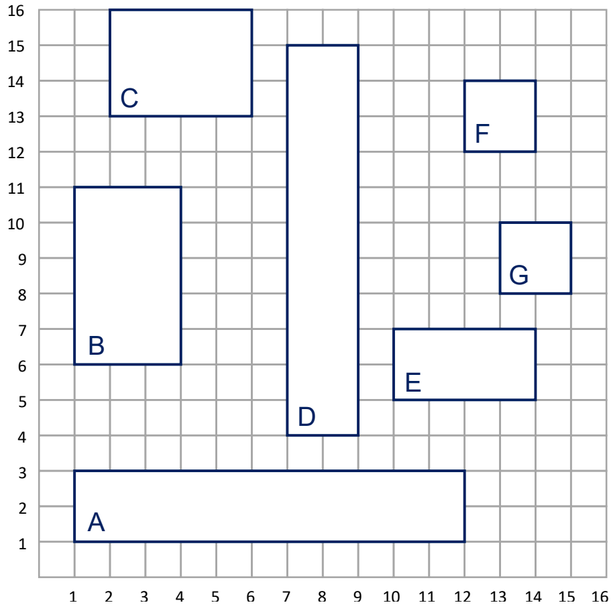
Suma de semiperímetros de las regiones

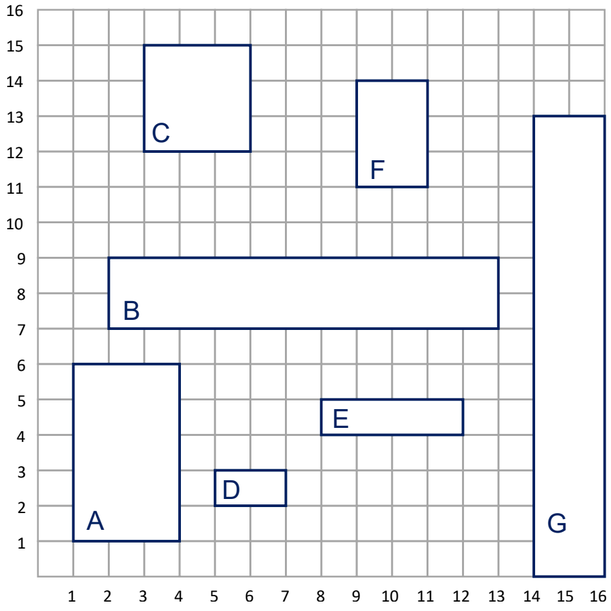


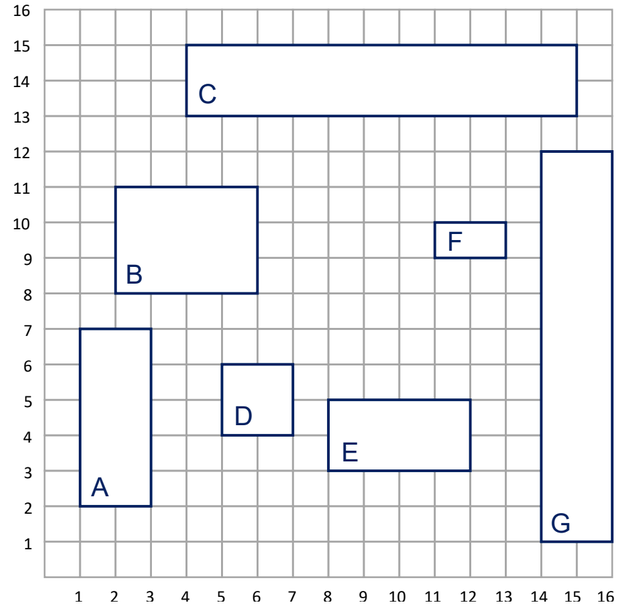
R*-tree

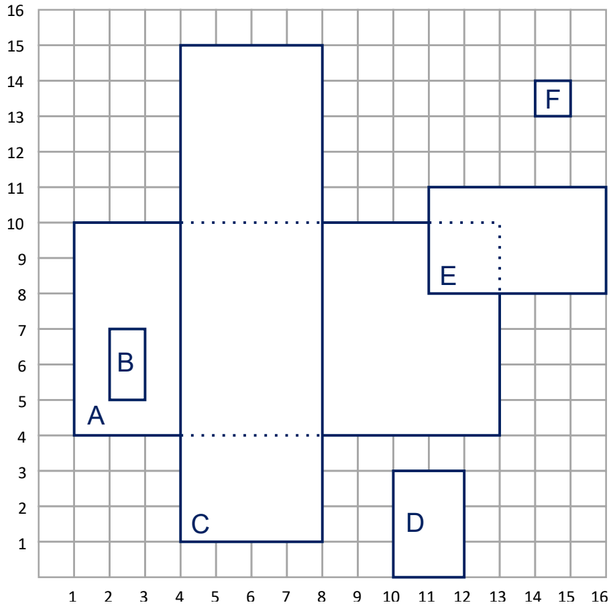


R*-tree

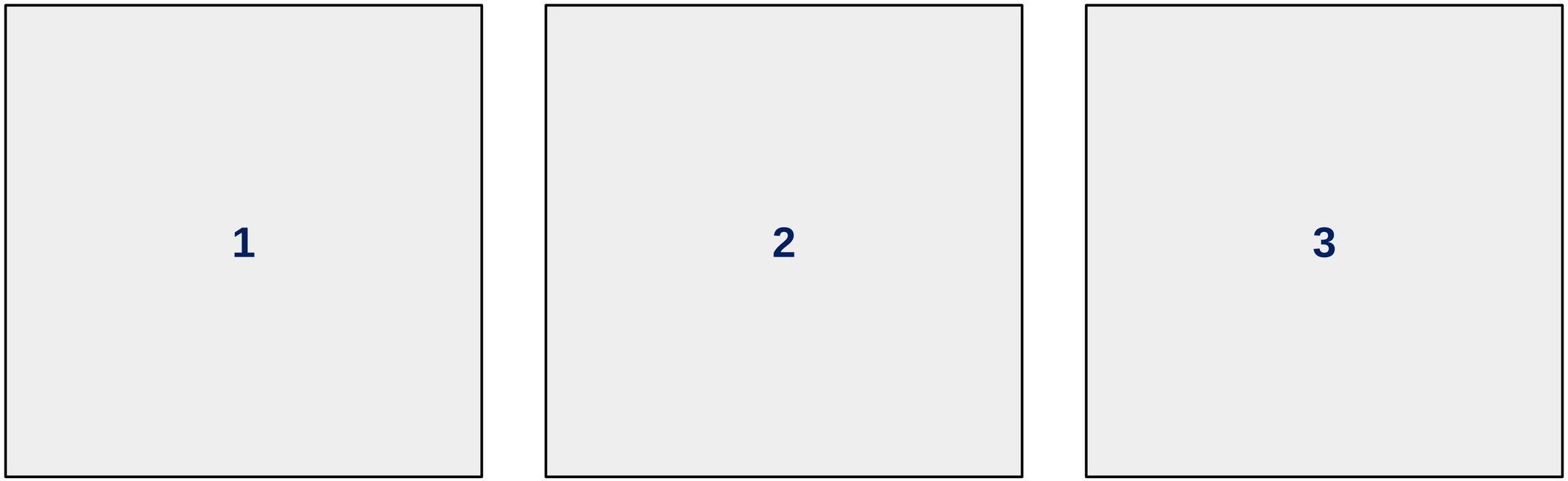




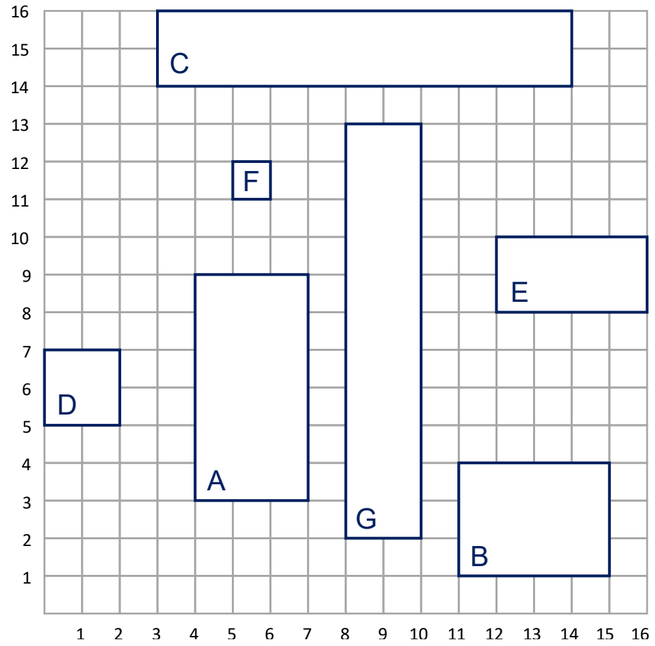


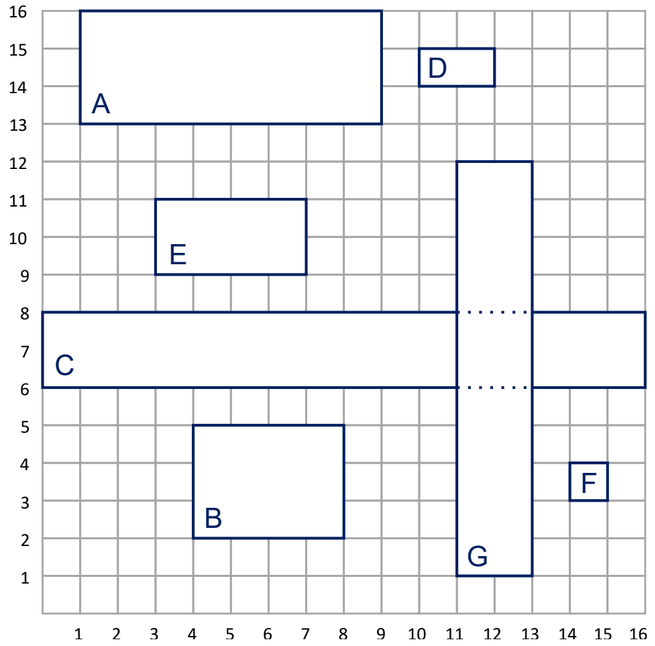


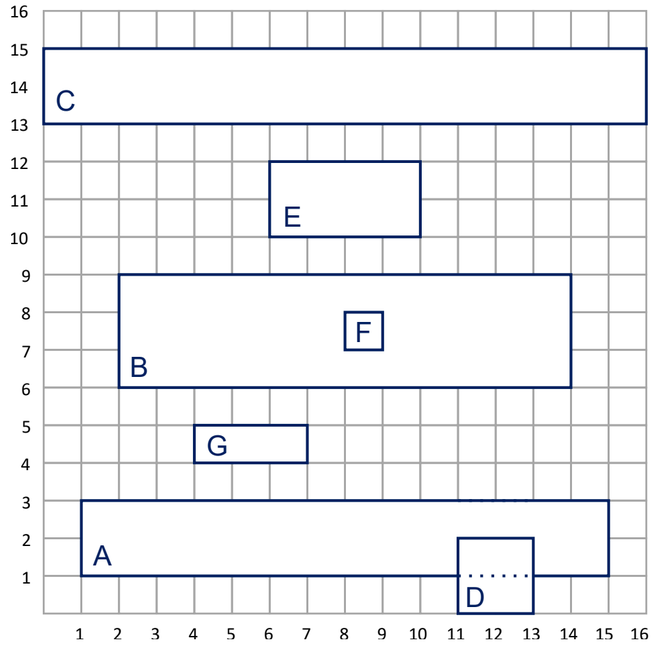
R*-tree



R*-tree







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3.

kNN: *Best First*

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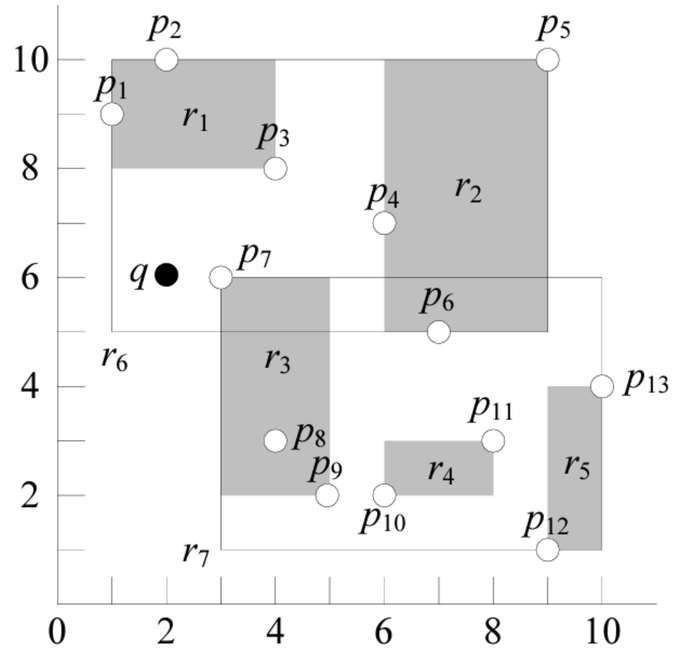
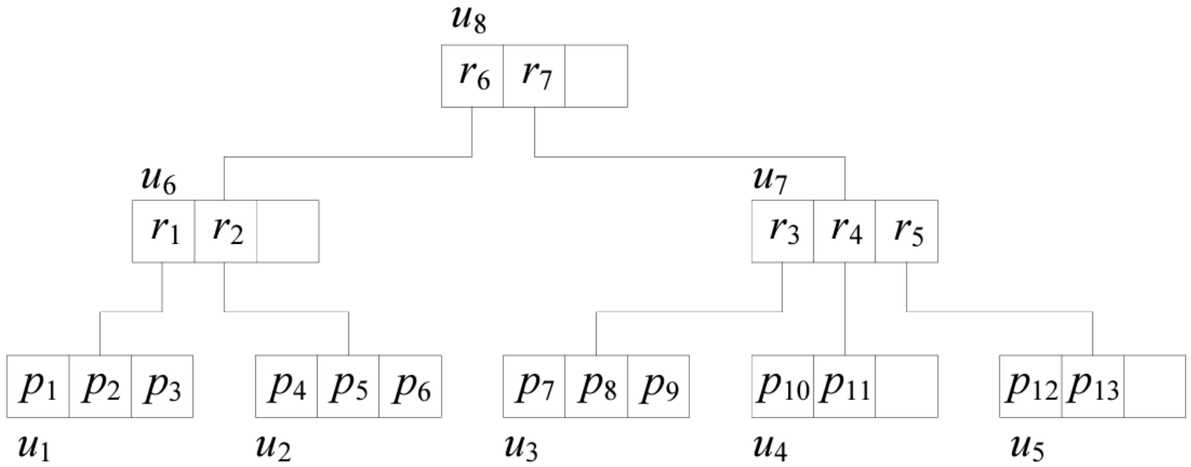
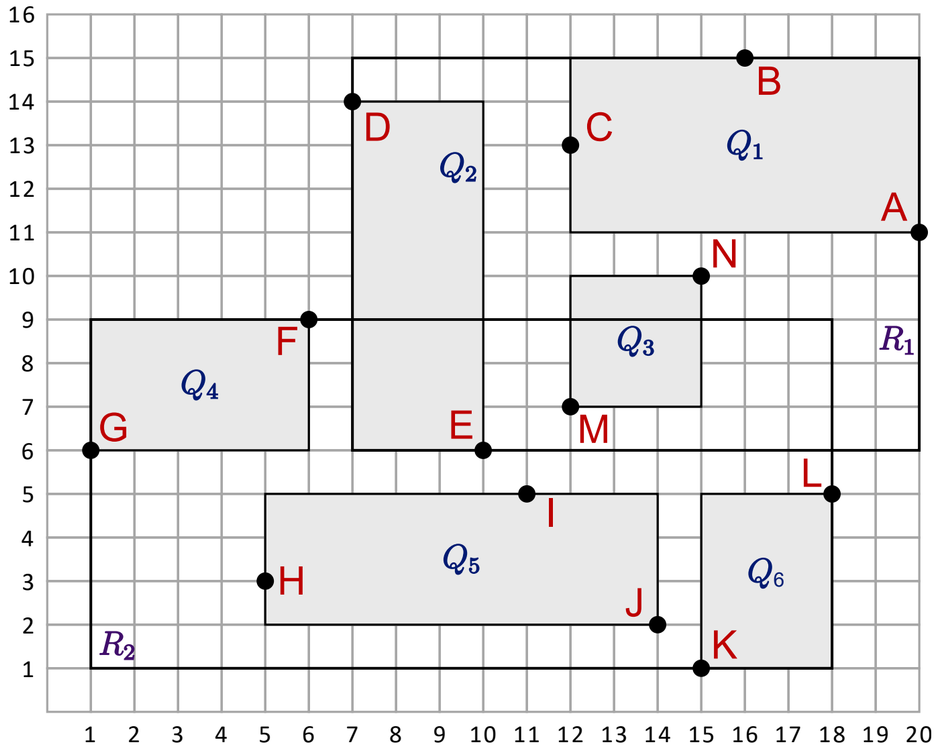
kNN: *Best First*

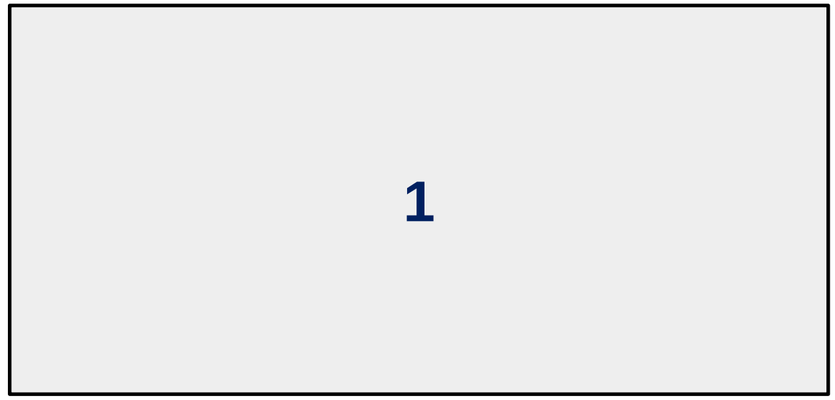




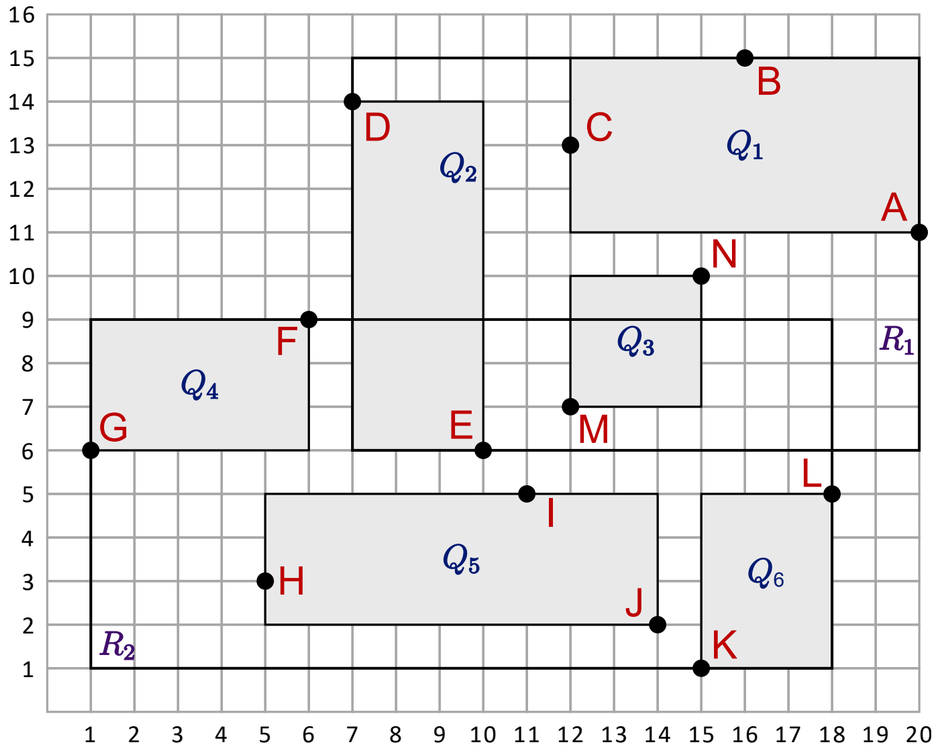
kNN: *Best First*



+3 pts



kNN: *Best First*

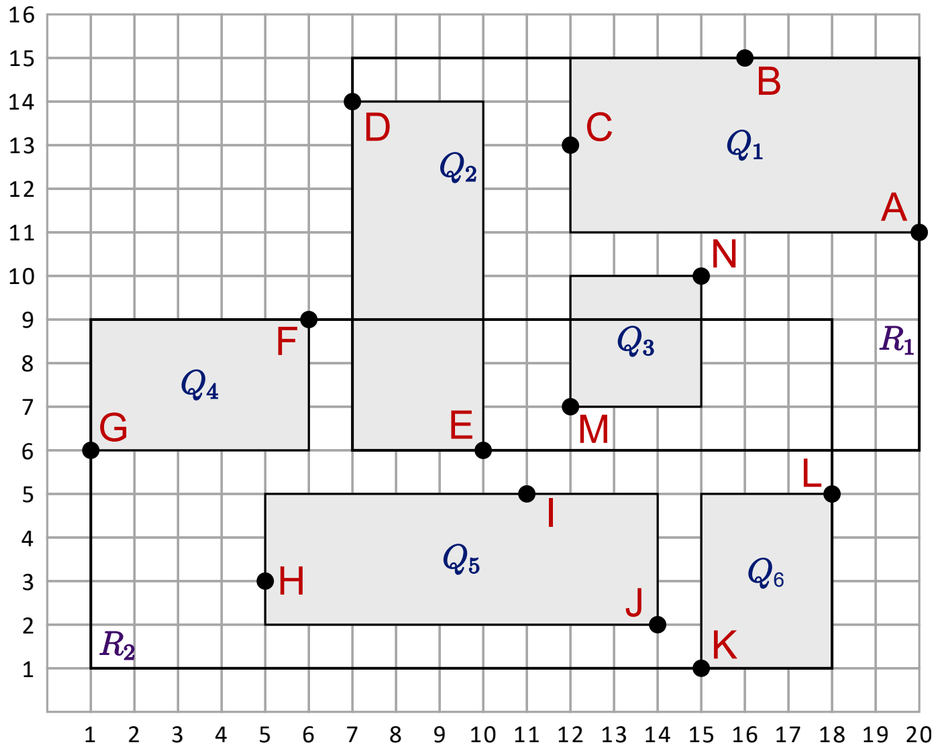


+3 pts

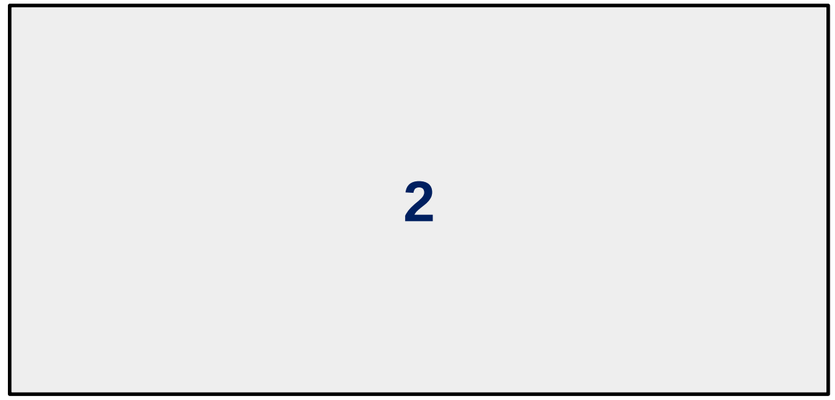
query: (11, 7)

Buscamos **3** vecinos más cercanos

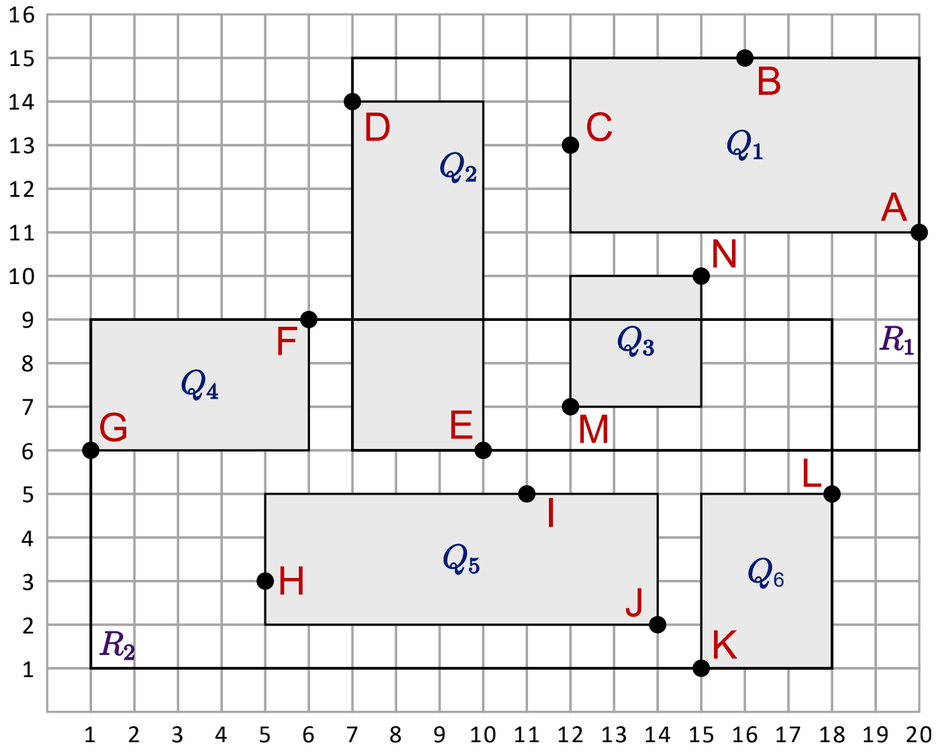
kNN: *Best First*



+2.5 pts



kNN: *Best First*

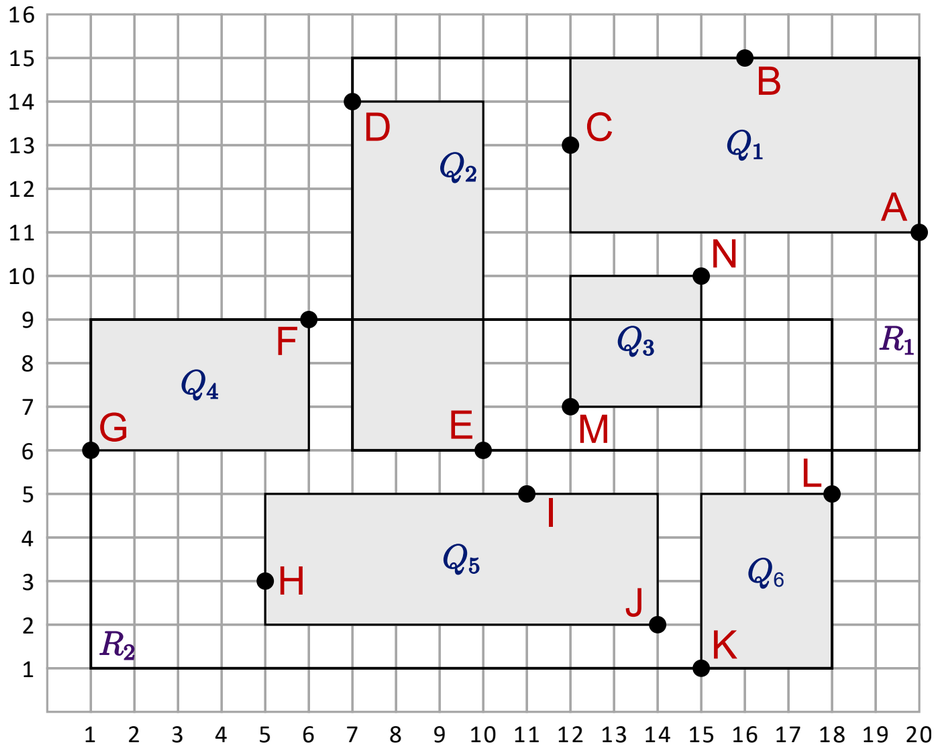


+2.5 pts

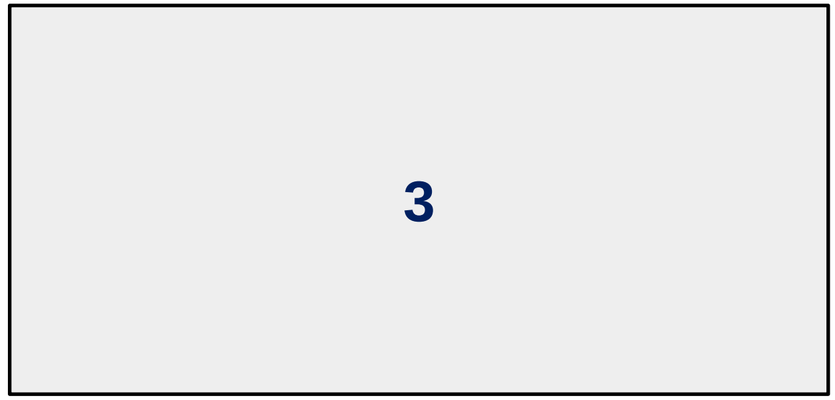
query: (8, 5)

Buscamos **3** vecinos más cercanos

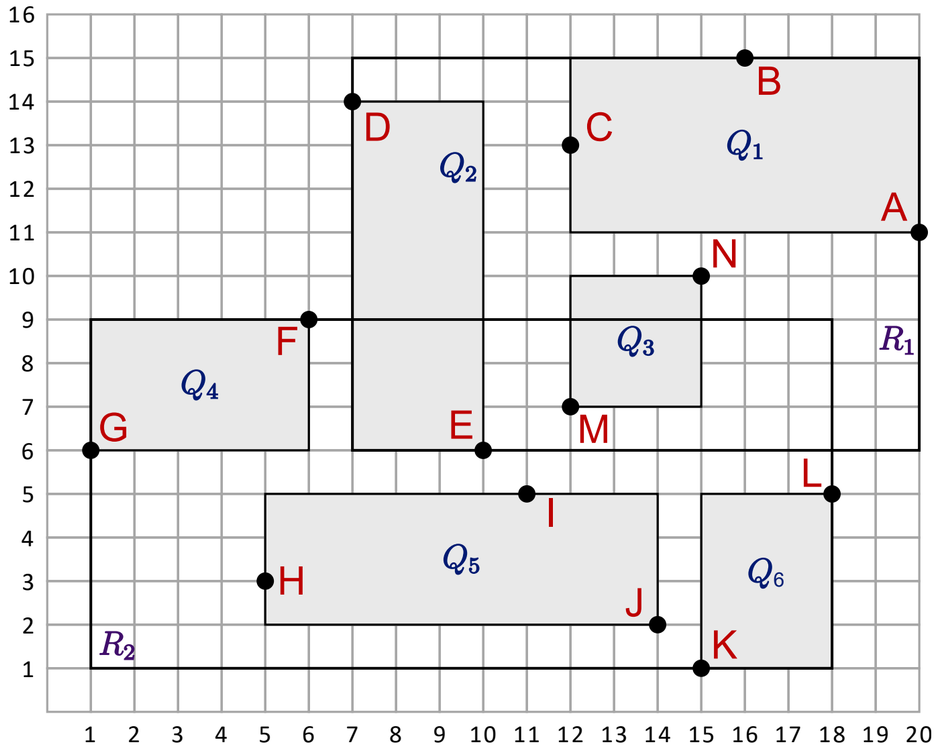
kNN: *Best First*



+2 pts



kNN: *Best First*

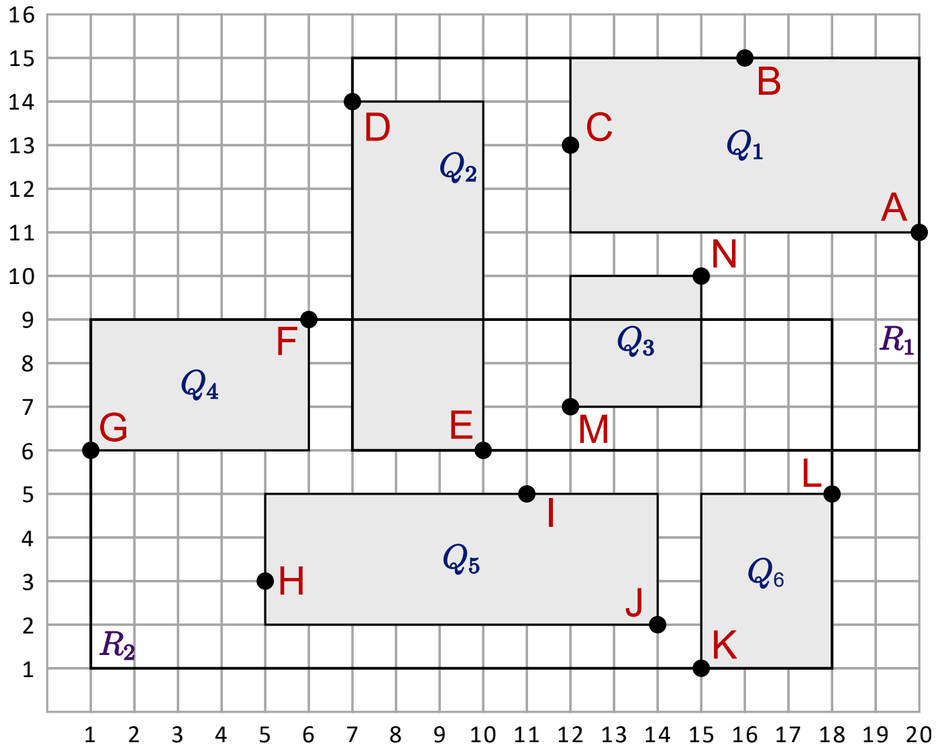


+2 pts

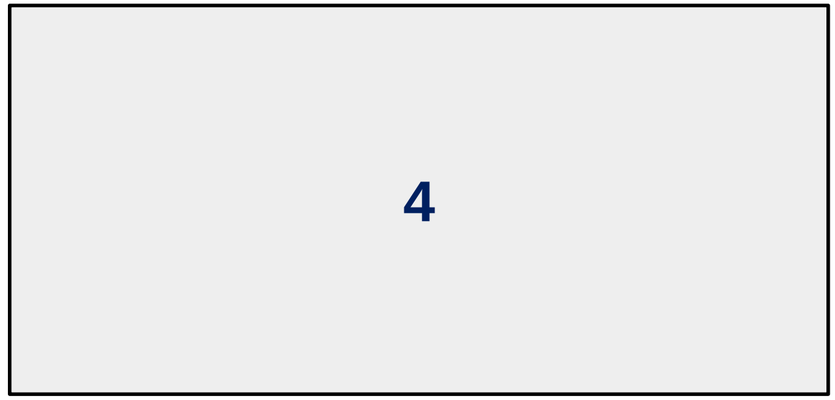
query: (12, 2)

Buscamos **3** vecinos más cercanos

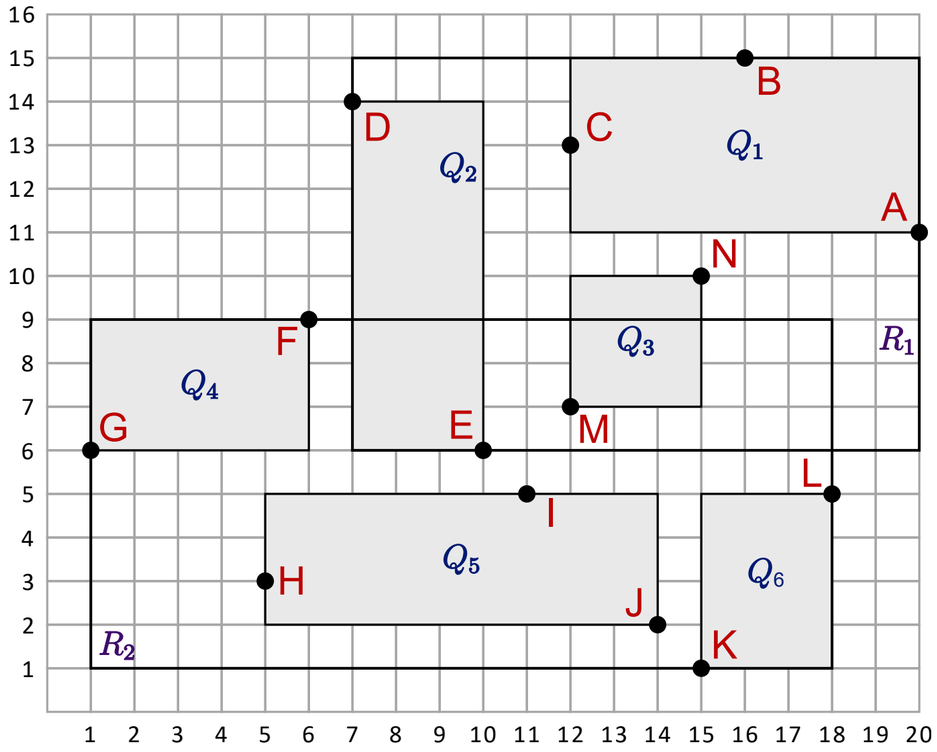
kNN: *Best First*



+1.5 pts



kNN: *Best First*

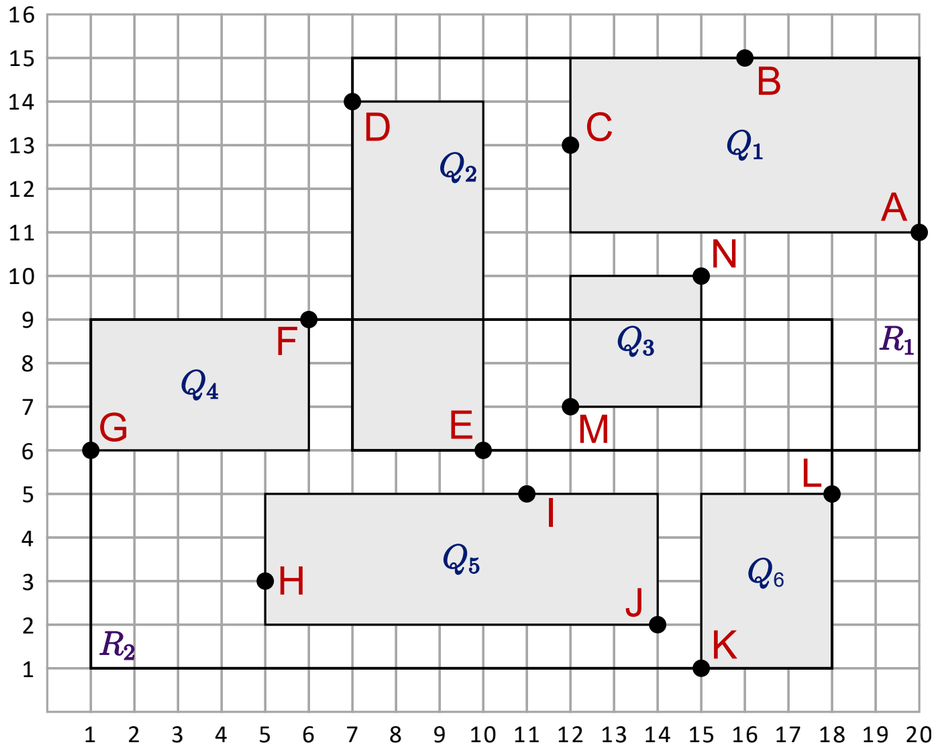


+1.5 pts

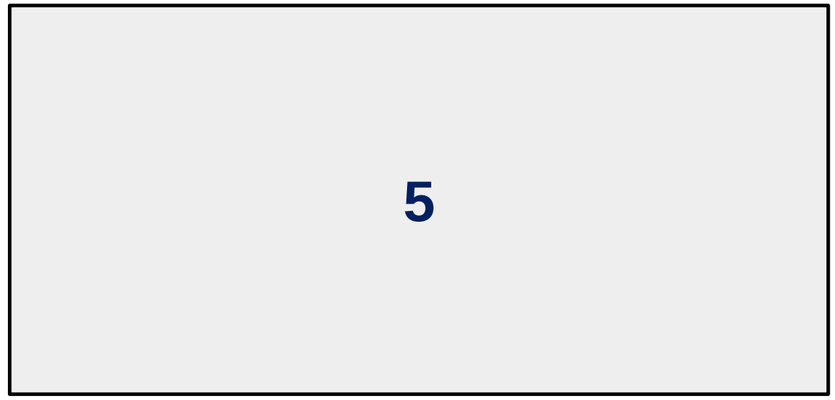
query: (6, 11)

Buscamos **2** vecinos más cercanos

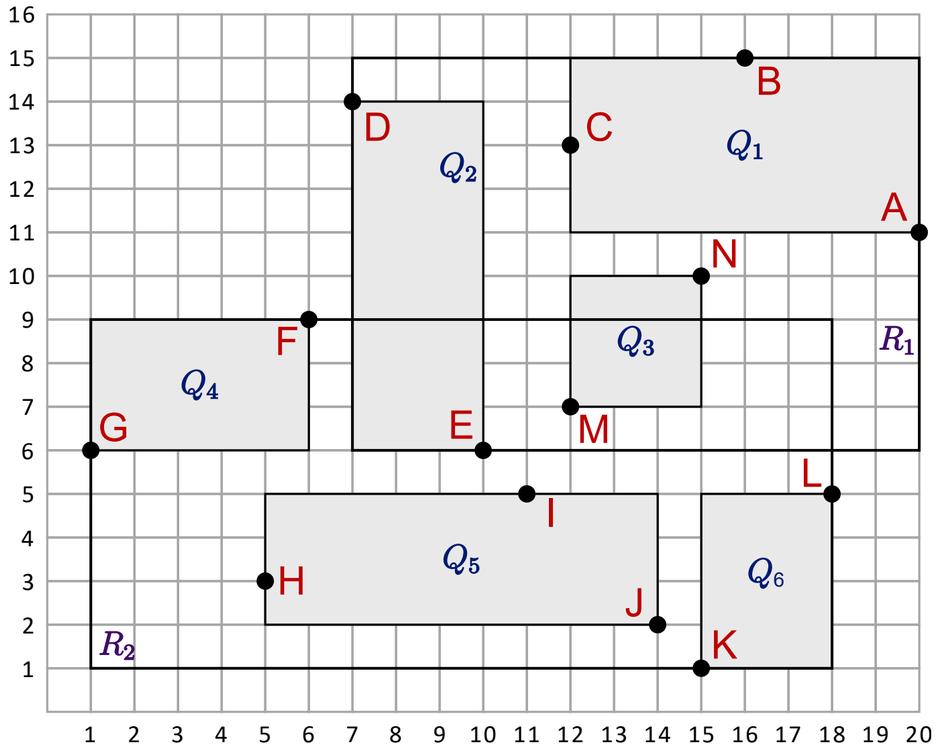
kNN: *Best First*



+1 pts



kNN: *Best First*

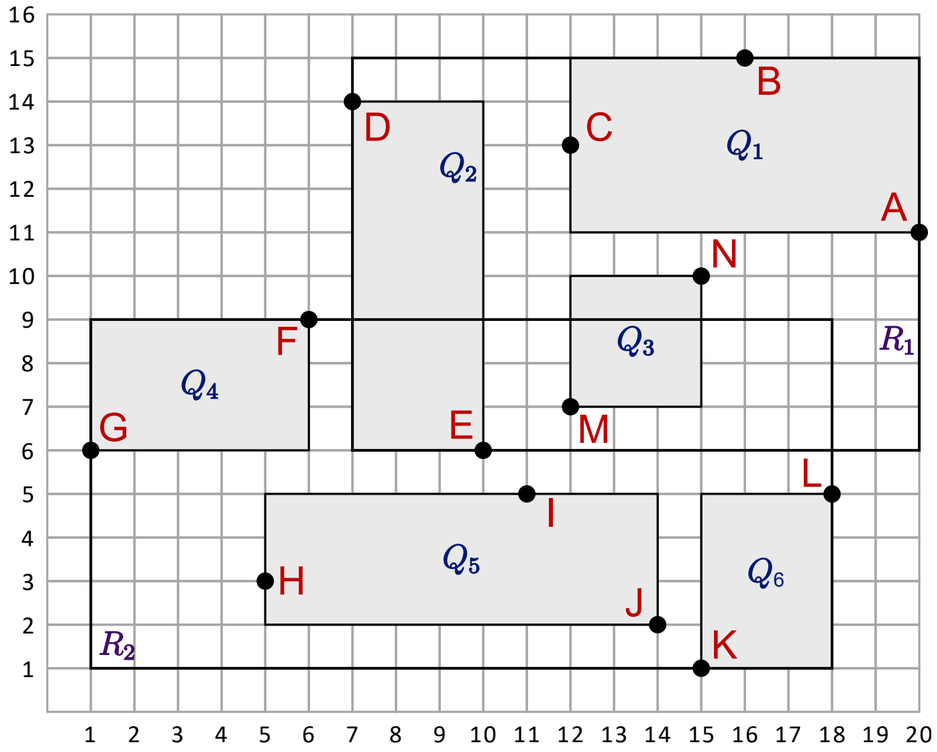


+1 pts

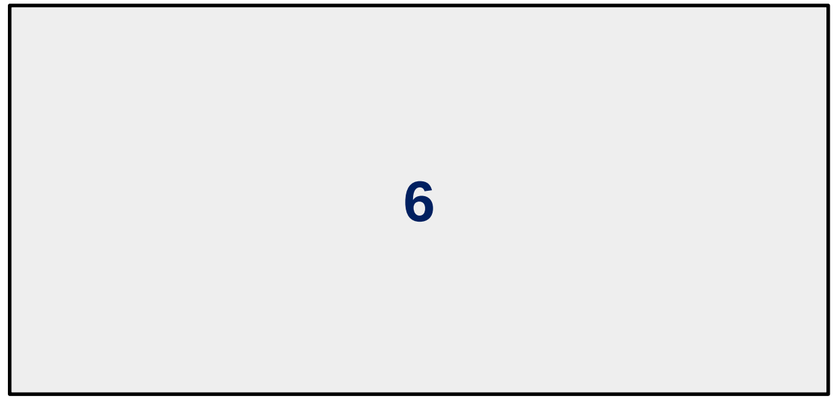
query: $(18, 8)$

Buscamos **3** vecinos más cercanos

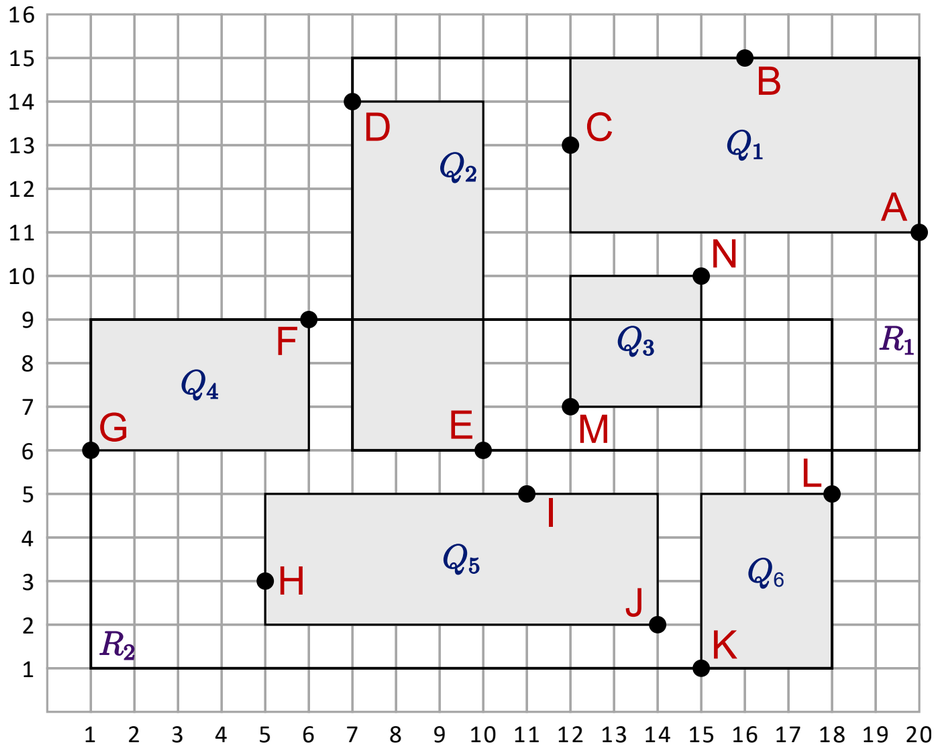
kNN: *Best First*



+0.5 pts



kNN: *Best First*



+0.5 pts

query: (11, 9)

Buscamos **4** vecinos más cercanos

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4.

Dynamic Hilbert
R-tree

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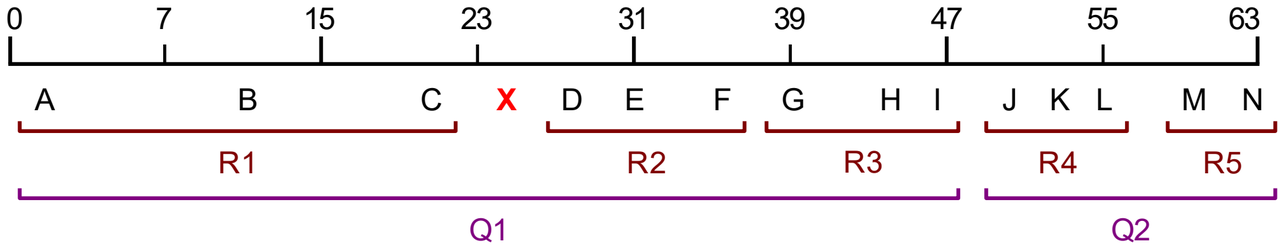
Dynamic Hilbert *R-tree*

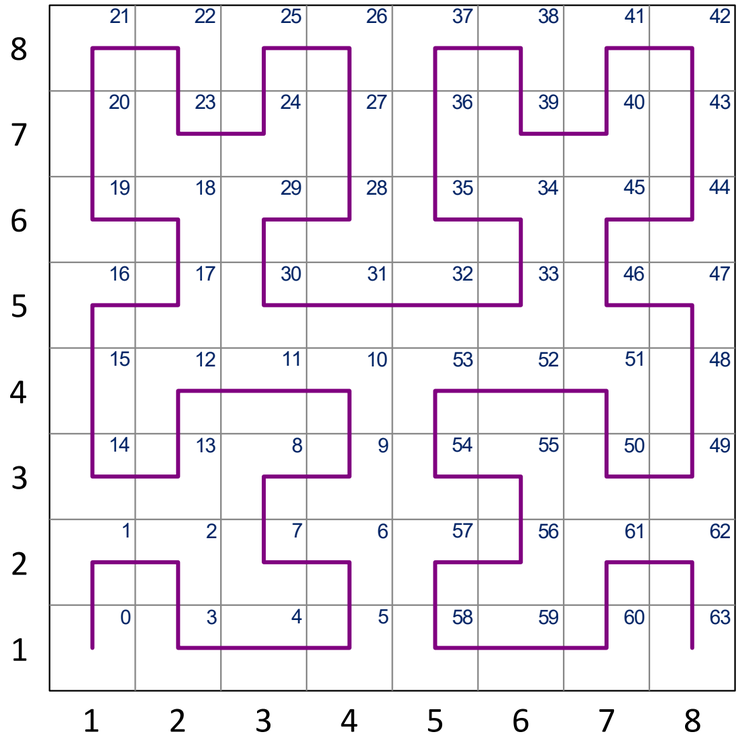
Agregamos el punto **x**, el cual tiene h-index 25.



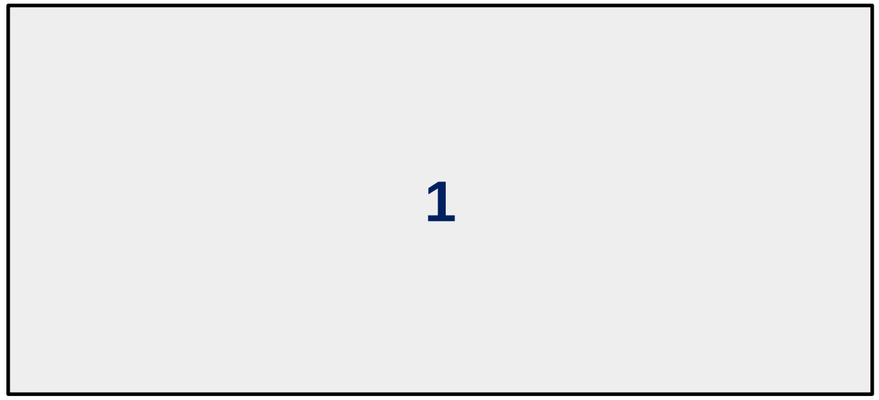
Sobrecarga Buscamos apoyo del hermano **izquierdo**.

Repartimos todos los datos entre **todos** los hermanos

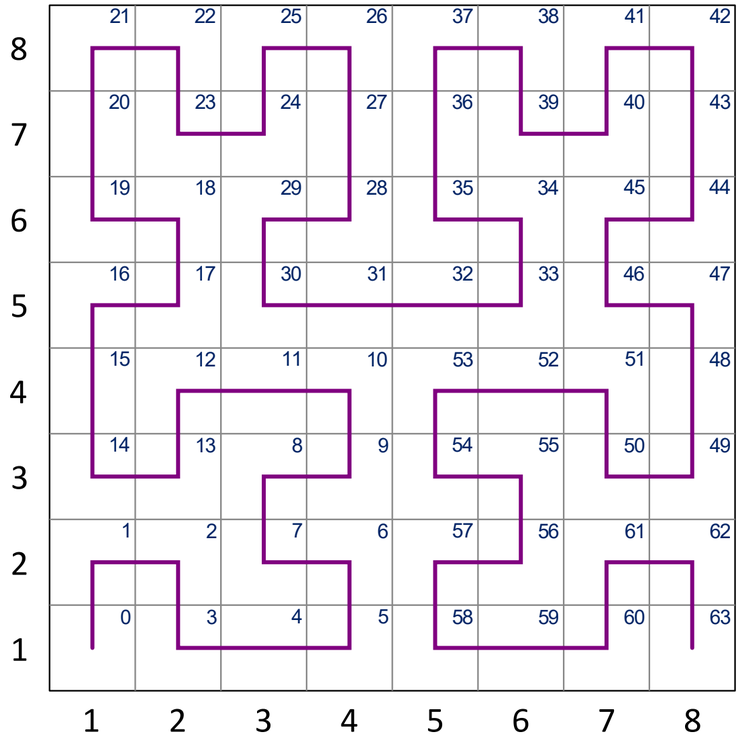
Dynamic Hilbert *R-tree*



+2 pts



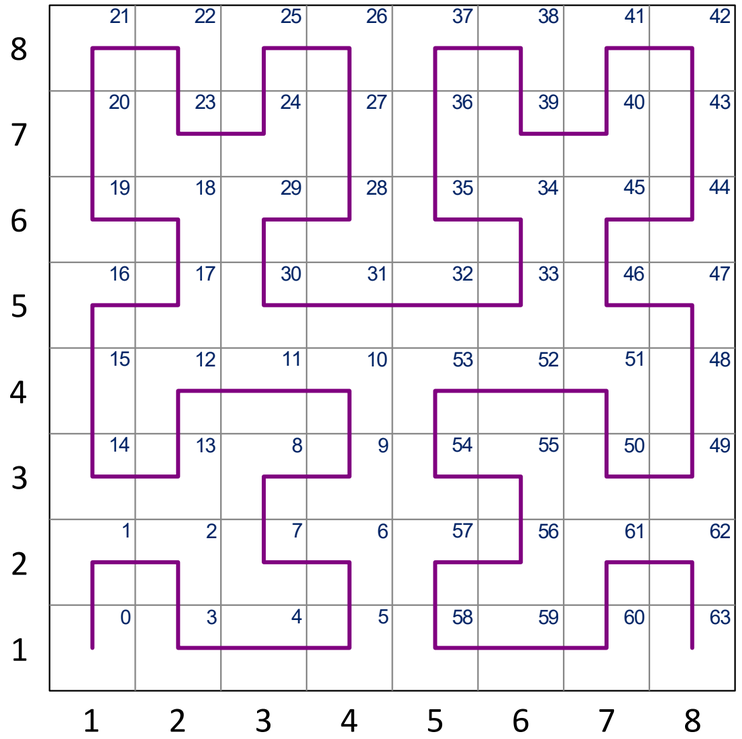
Dynamic Hilbert *R-tree*



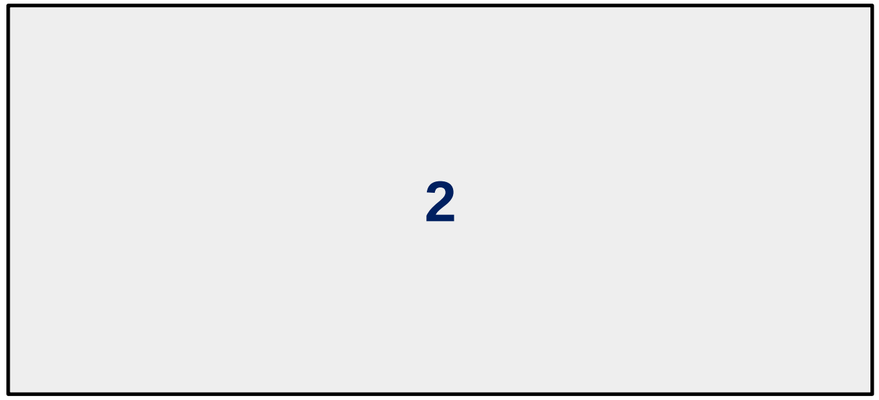
+2 pts

A: (4, 4); B: (2, 4); C: (8, 4);
D: (5, 8); E: (3, 1); F: (1, 1);
G: (5, 1); H: (1, 4); I: (7, 3);
J: (7, 2); K: (4, 1); L: (4, 7).

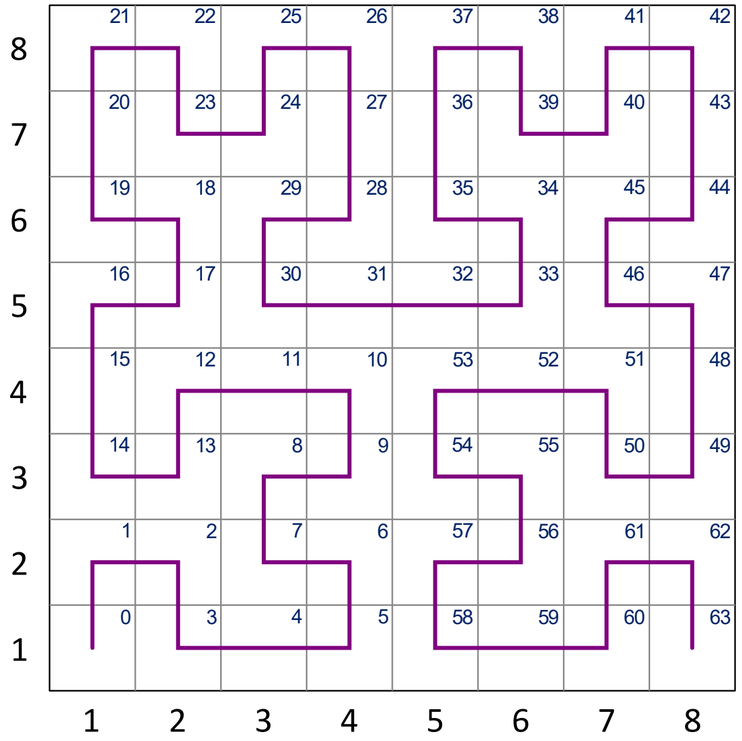
Dynamic Hilbert *R-tree*



+1.5 pts



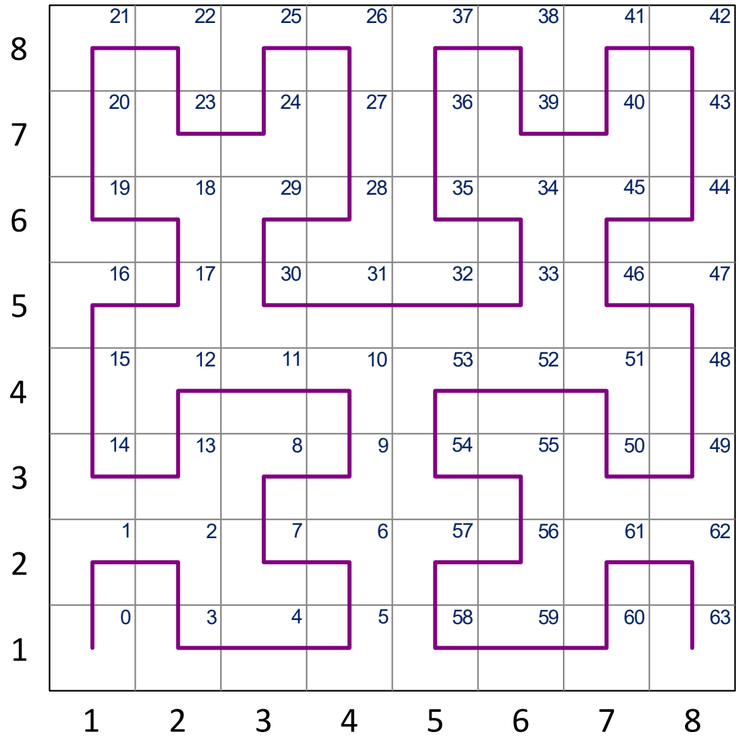
Dynamic Hilbert *R-tree*



+1.5 pts

A: (2, 7); B: (1, 5); C: (8, 1);
D: (6, 1); E: (3, 7); F: (6, 7);
G: (4, 5); H: (2, 6); I: (4, 8);
J: (2, 2); K: (7, 5); L: (2, 5).

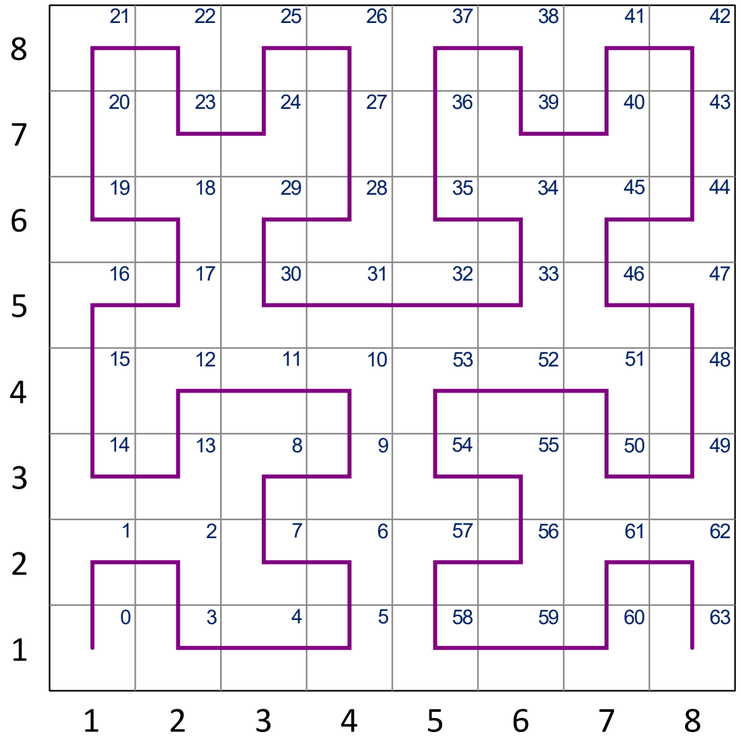
Dynamic Hilbert *R-tree*



+1 pts

3

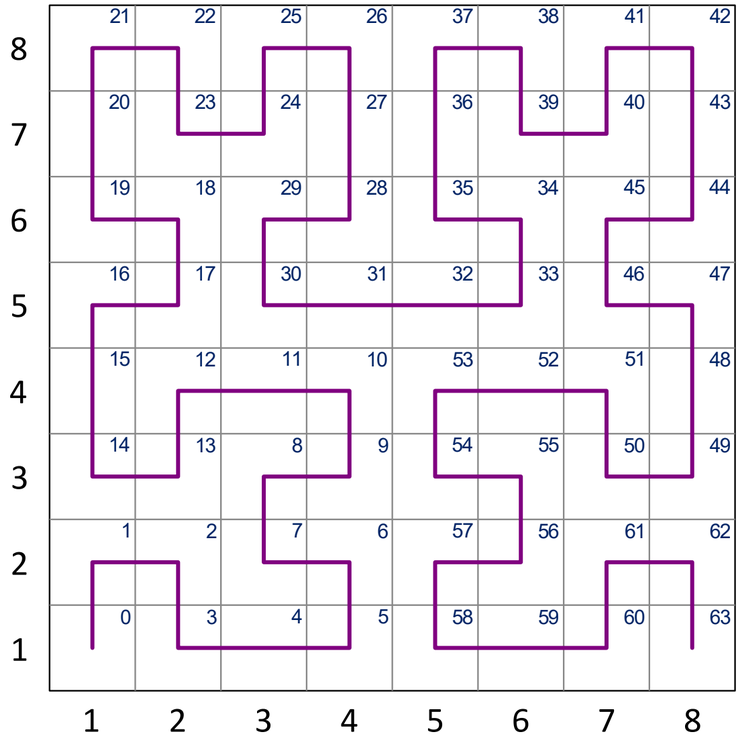
Dynamic Hilbert *R-tree*



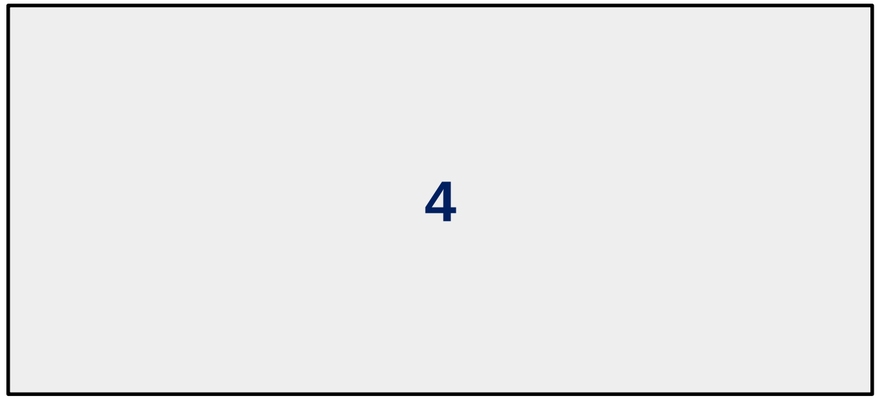
+1 pts

A: (6, 2); B: (7, 1); C: (1, 5);
D: (3, 7); E: (4, 2); F: (1, 4);
G: (2, 3); H: (4, 5); I: (2, 6);
J: (2, 2); K: (2, 5); L: (2, 8).

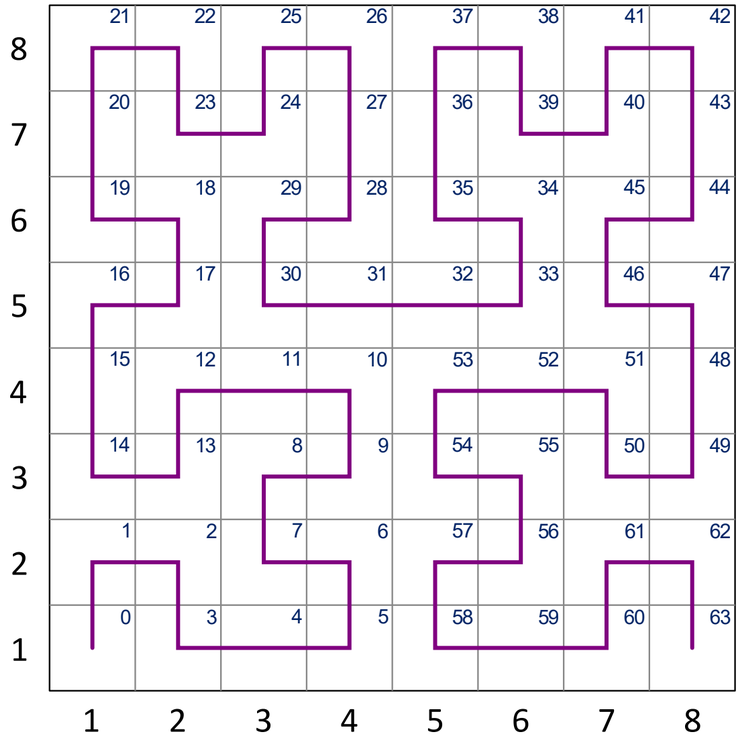
Dynamic Hilbert *R-tree*



+0.5 pts



Dynamic Hilbert *R-tree*



+0.5 pts

A: (6, 2); B: (7, 1); C: (6, 5);
D: (4, 3); E: (5, 8); F: (6, 1);
G: (1, 1); H: (2, 7); I: (6, 3);
J: (8, 5); K: (3, 5); L: (5, 2).

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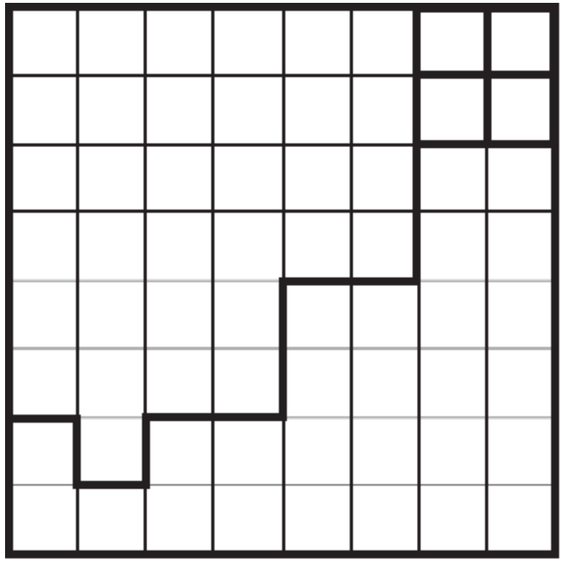
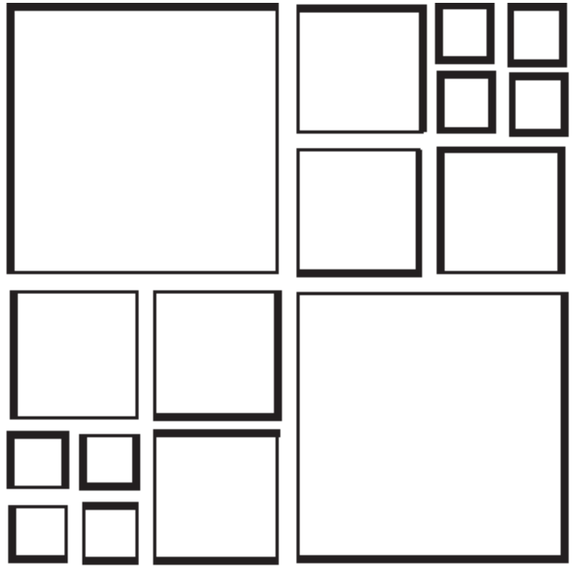
5.

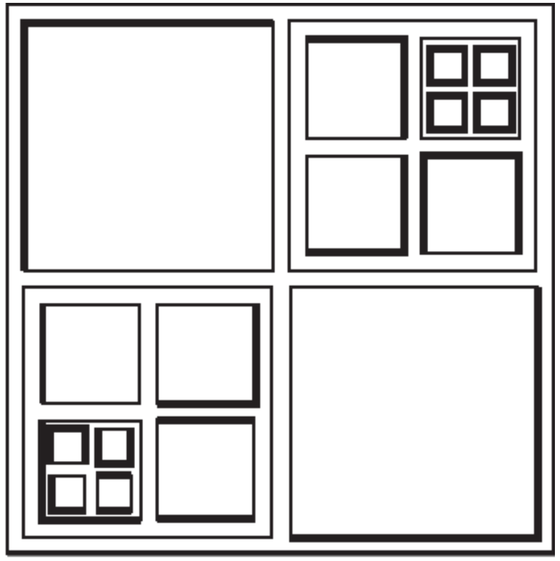
Line *Quadtree*

TRANSFORMATEC

Line *Quadtree*





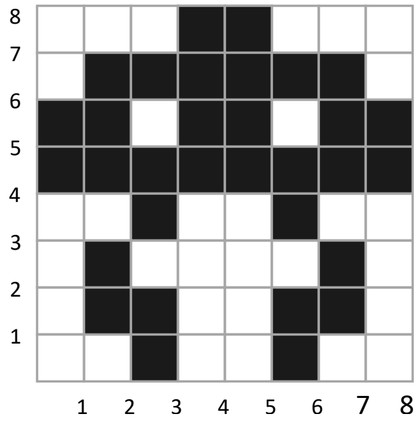


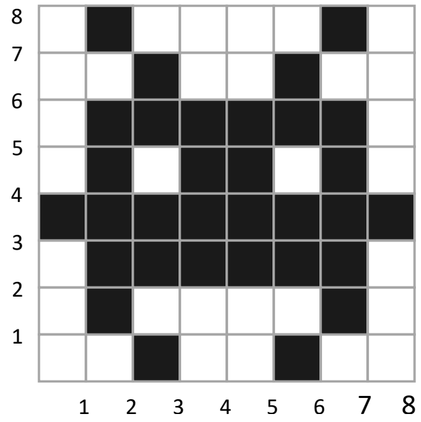
Hanan Samet and Robert E. Webber (1984) "On encoding boundaries with quadtrees".
IEEE transactions on pattern analysis and machine intelligence, (3), 365-369.

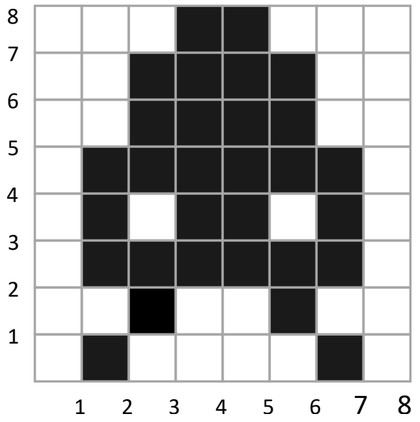
Line *Quadtree*

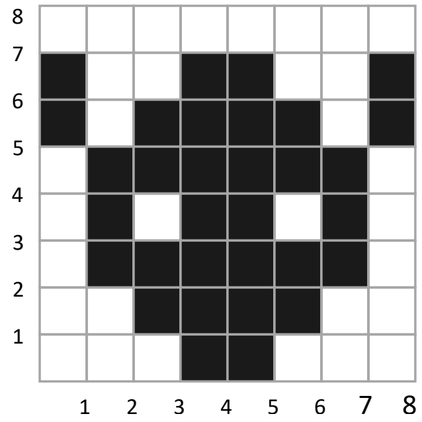
1	2	3	4

Line *Quadtree*

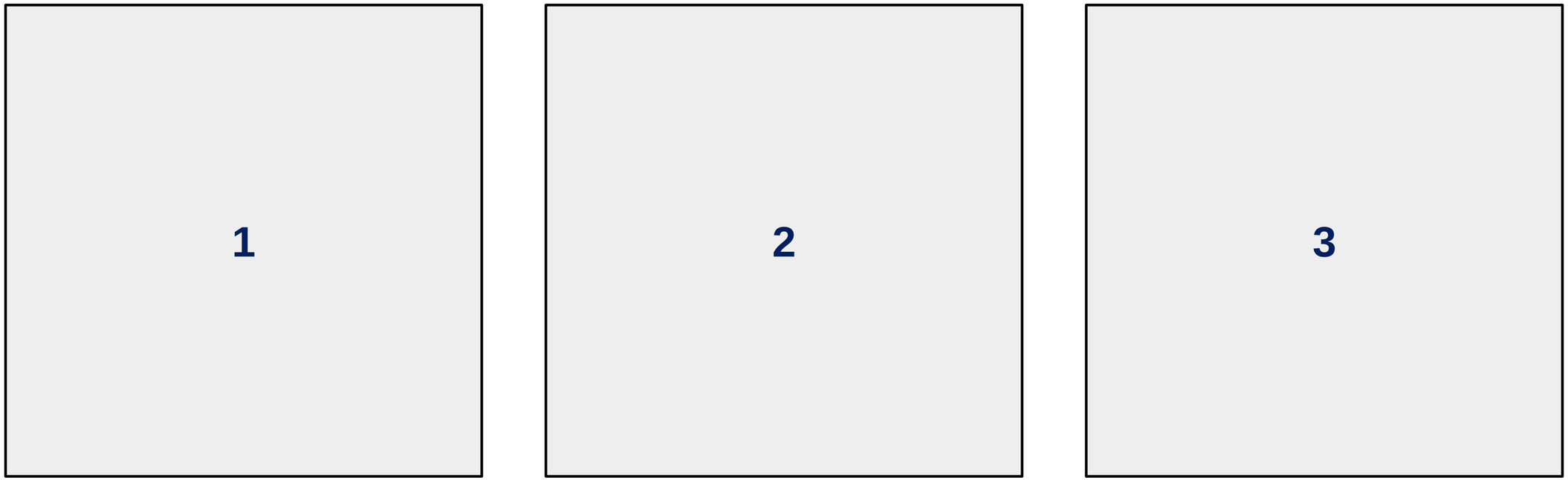




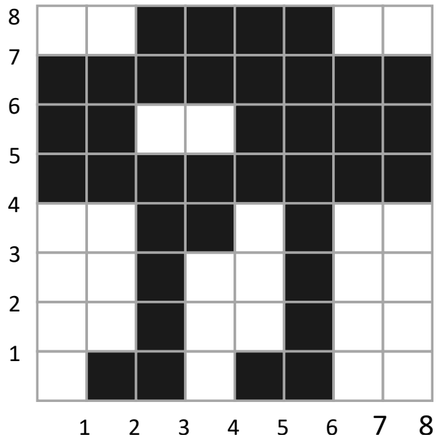


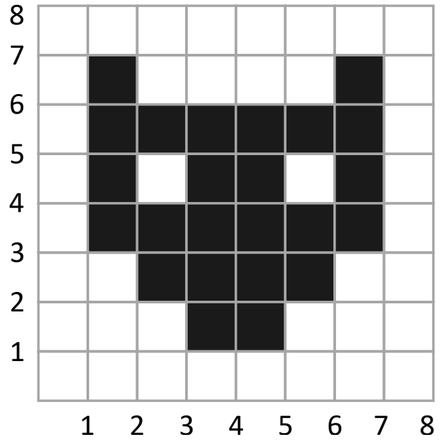


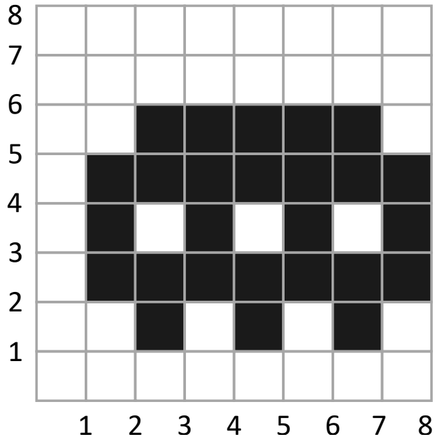
Line *Quadtree*



Line *Quadtree*







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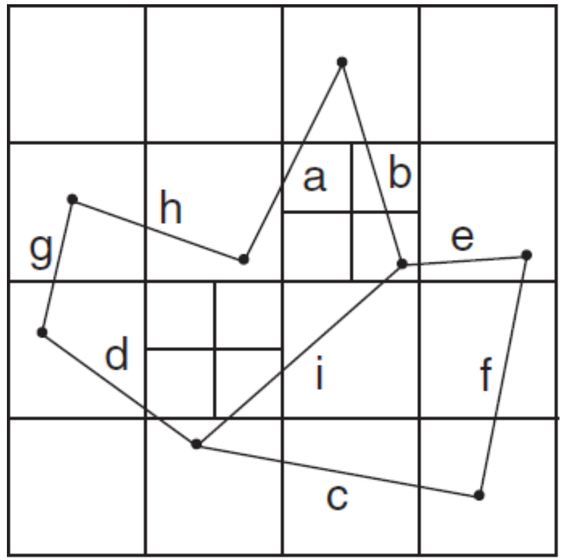
6.

PM_1 *Quadtree*

TRANSFORMATEC

PM_1 *Quadtree*



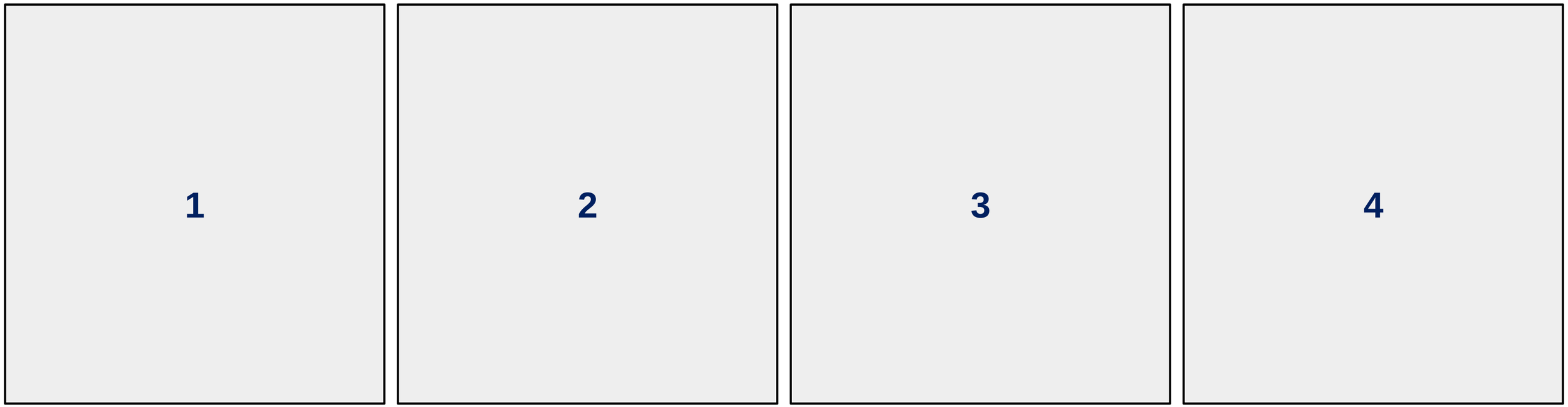
PM_1 Quadtree

Regla de partición

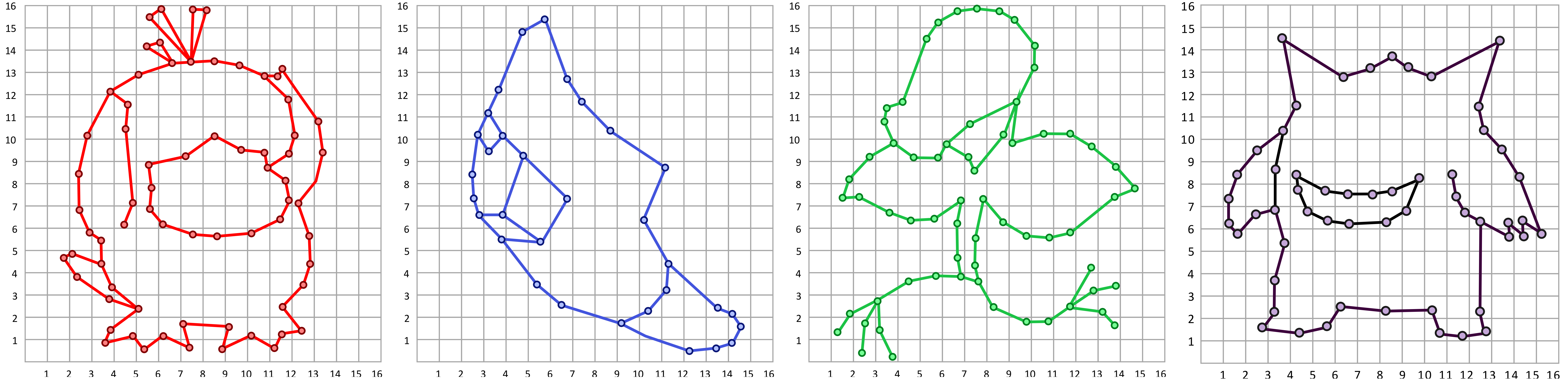
La partición se produce siempre que un bloque contenga más de un segmento de línea, a menos que los segmentos de línea incidan todos en el mismo vértice, que también se encuentra en el mismo bloque.

Hanan Samet and Robert E. Webber (1985) "Storing a collection of polygons using quadtrees". ACM Transactions on Graphics (TOG), 4(3), 182-222.

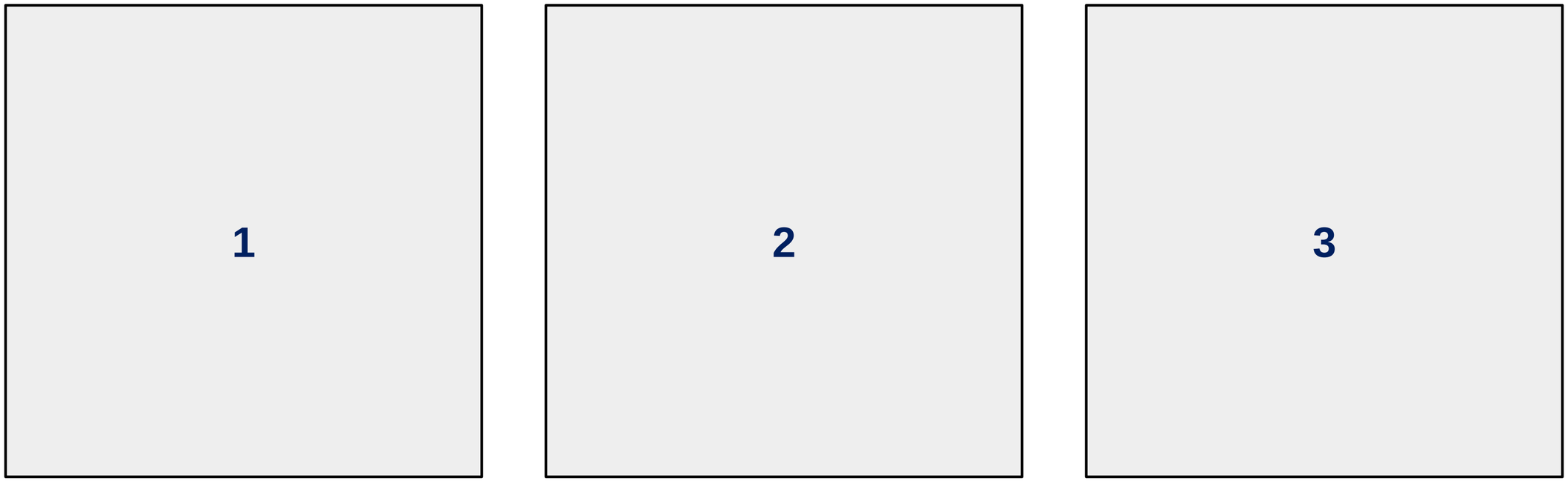
PM_1 *Quadtree*



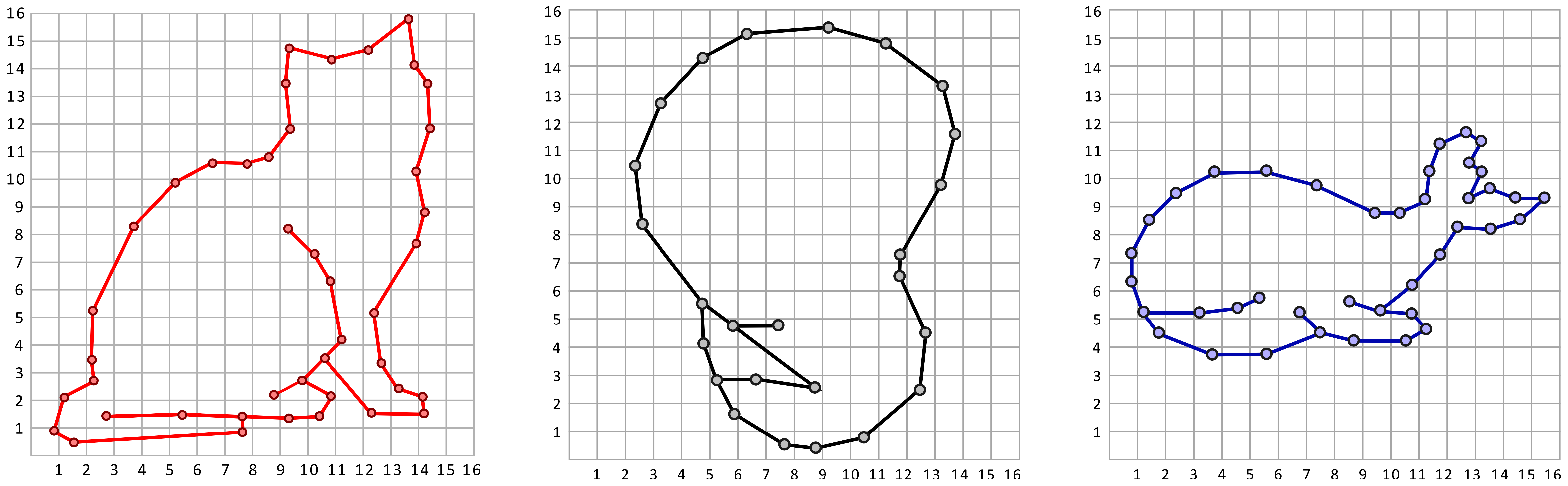
PM_1 *Quadtree*



PM_1 *Quadtree*



PM$_1$ *Quadtree*



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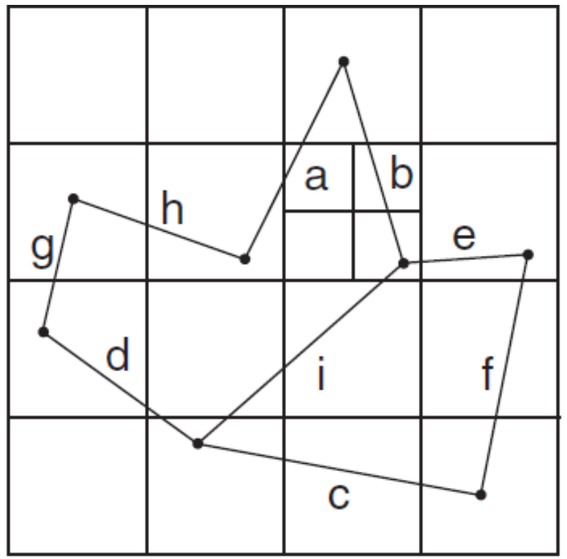
7.

PM_2 *Quadtree*

TRANSFORMATEC

PM_2 *Quadtree*



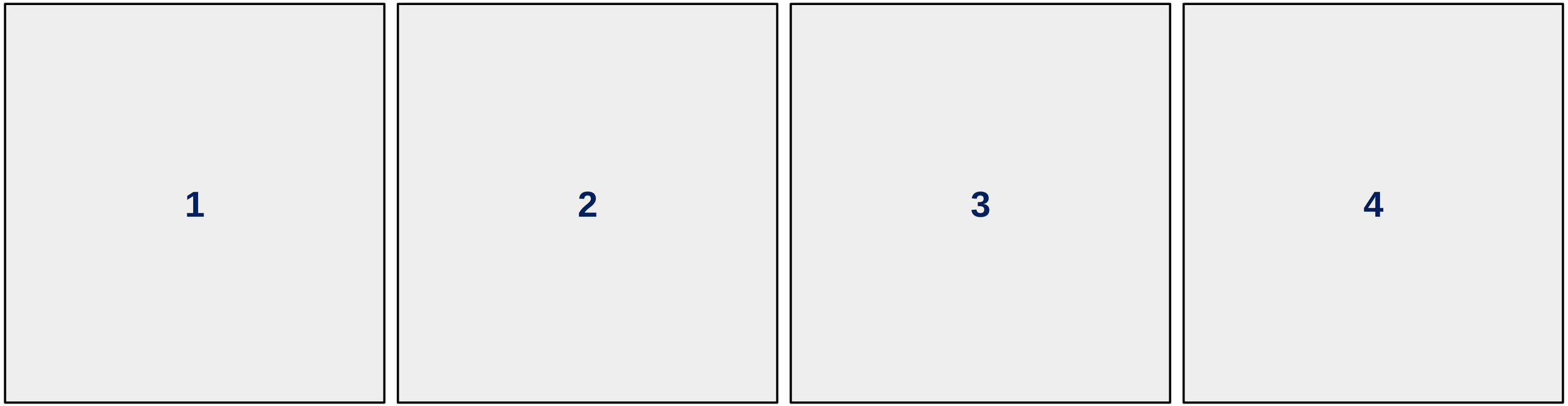
PM_2 Quadtree

Regla de partición

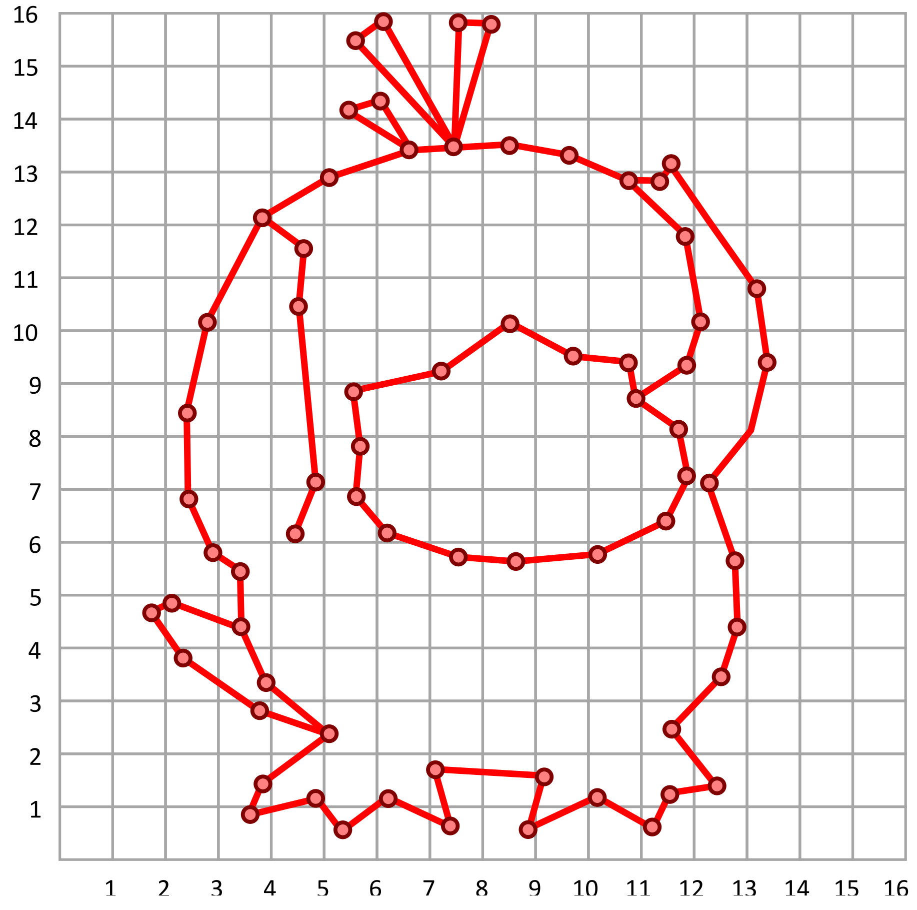
La partición se produce siempre que un bloque contenga más de un segmento de línea, a menos que los segmentos de línea incidan todos en el mismo vértice, independientemente de su ubicación.

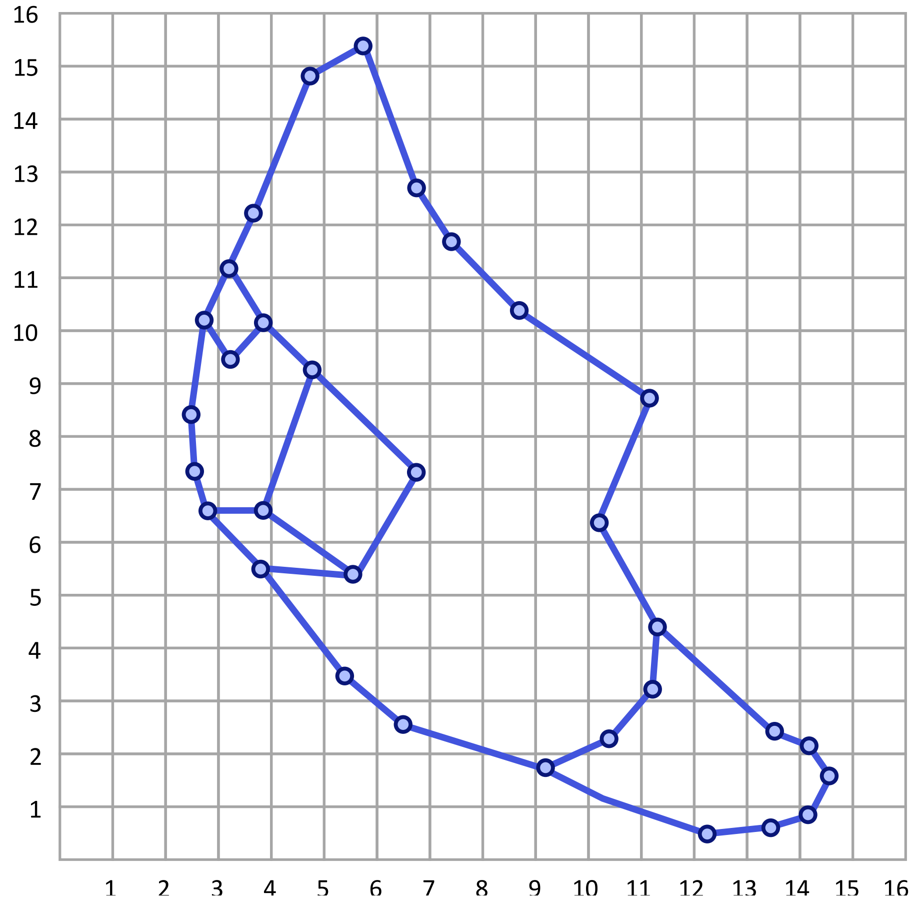
Hanan Samet and Robert E. Webber (1985) "Storing a collection of polygons using quadtrees". ACM Transactions on Graphics (TOG), 4(3), 182-222.

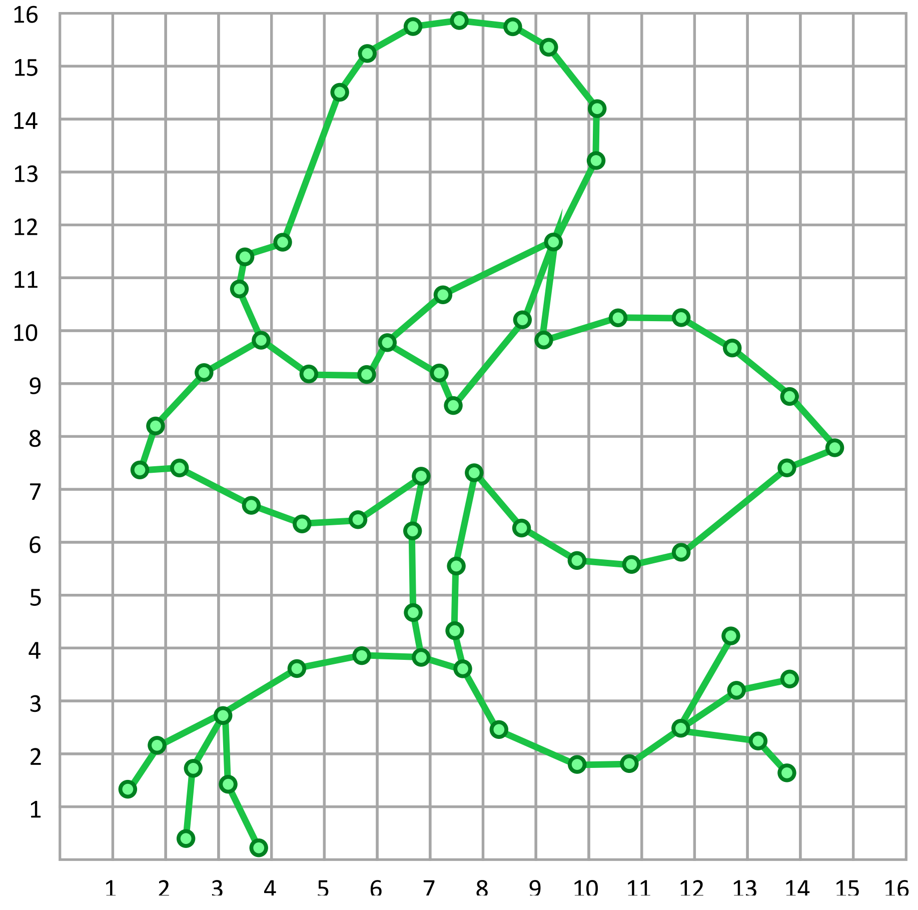
PM_2 *Quadtree*

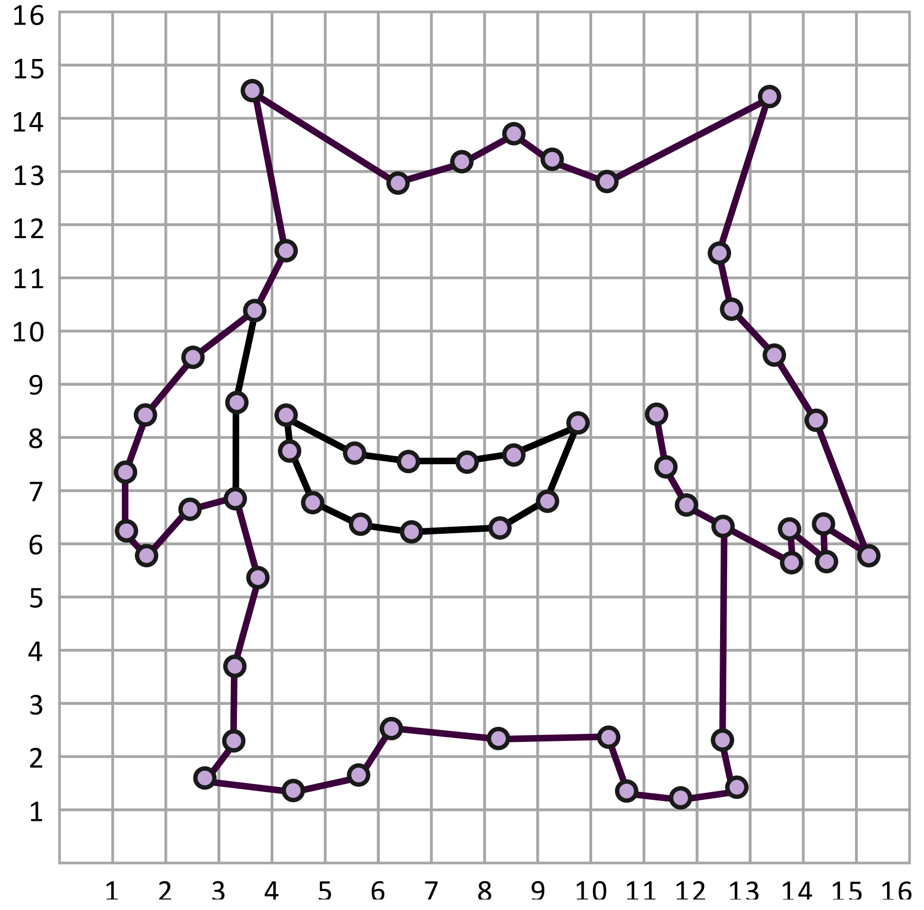


PM$_2$ *Quadtree*

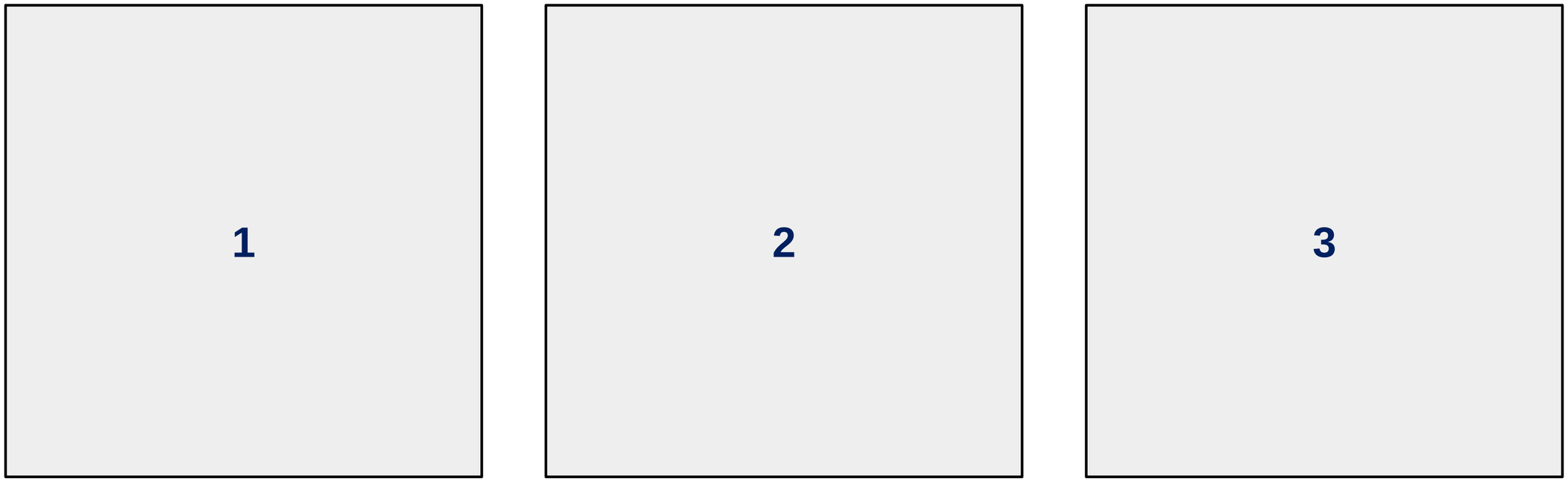




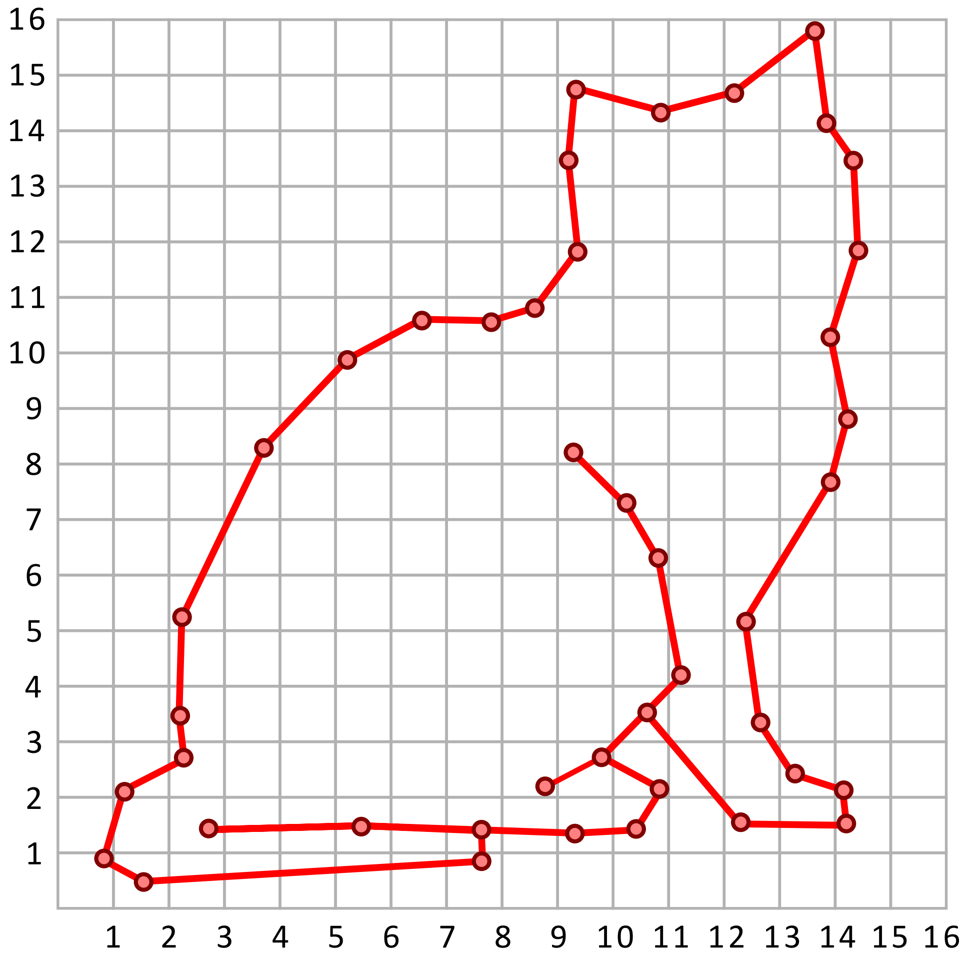


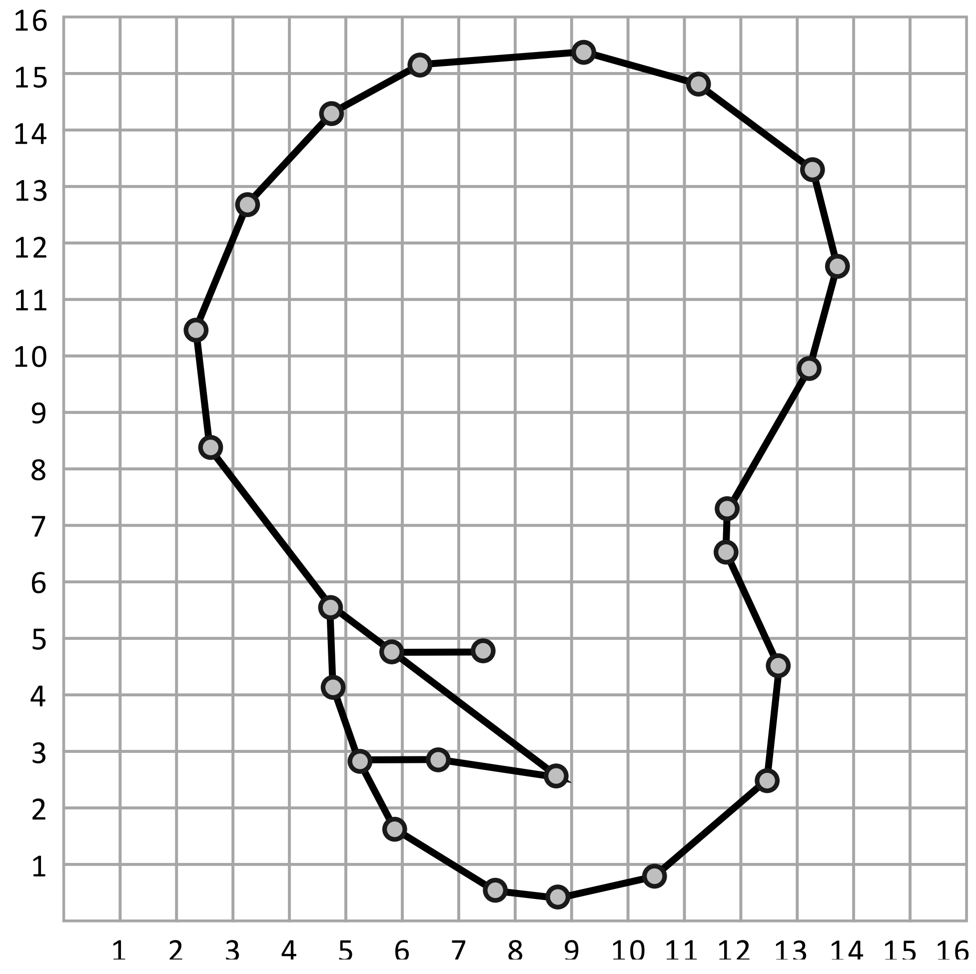


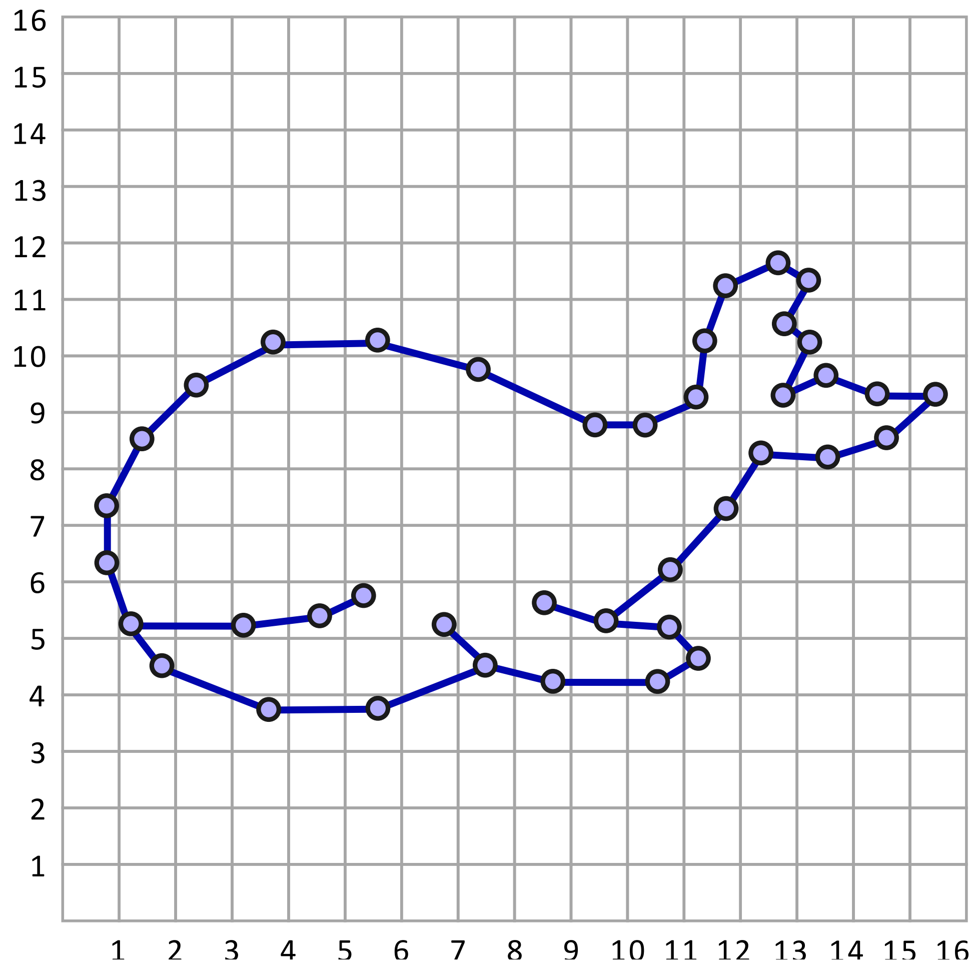
PM_2 *Quadtree*



PM$_2$ *Quadtree*







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8.

PM_3 *Quadtree*

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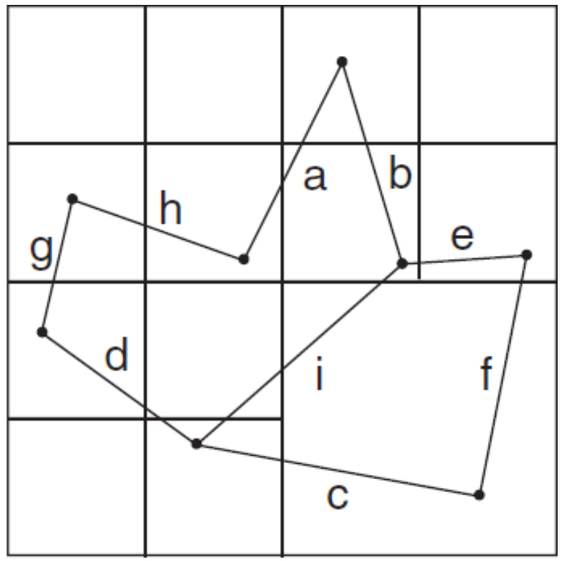
PM_3 *Quadtree*



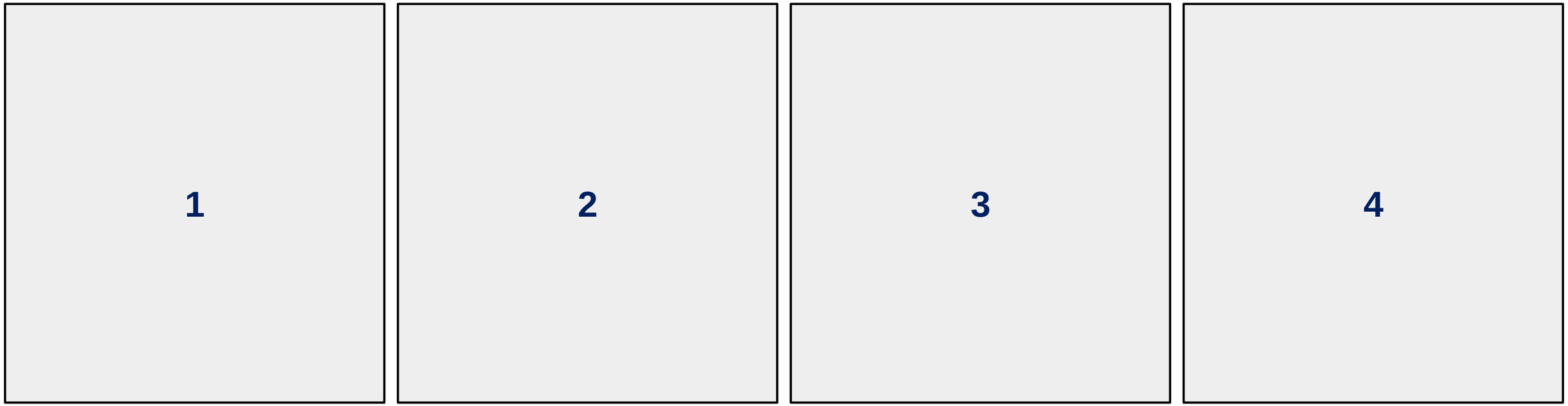
PM_3 Quadtree

Regla de partición

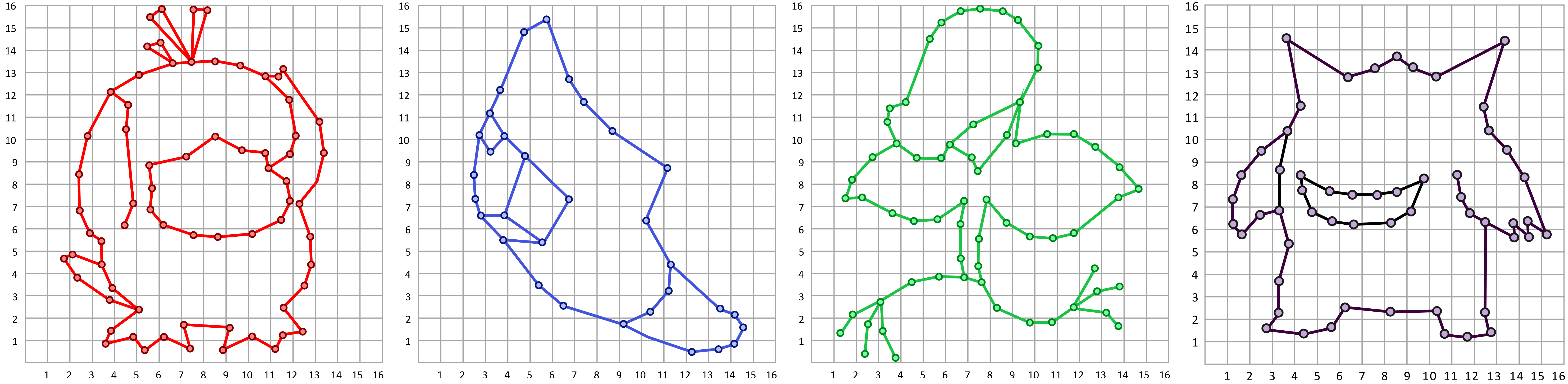
La partición se produce cuando un bloque contiene más de un vértice.

Hanan Samet and Robert E. Webber (1985) "Storing a collection of polygons using quadtrees". ACM Transactions on Graphics (TOG), 4(3), 182-222.

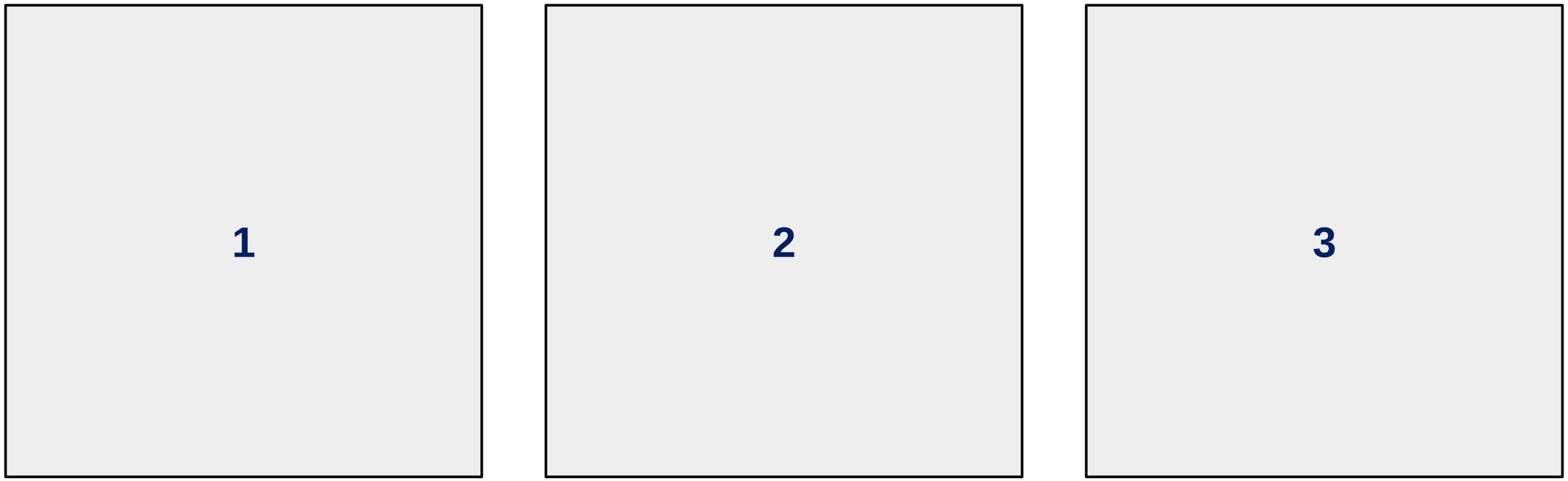
PM_3 *Quadtree*



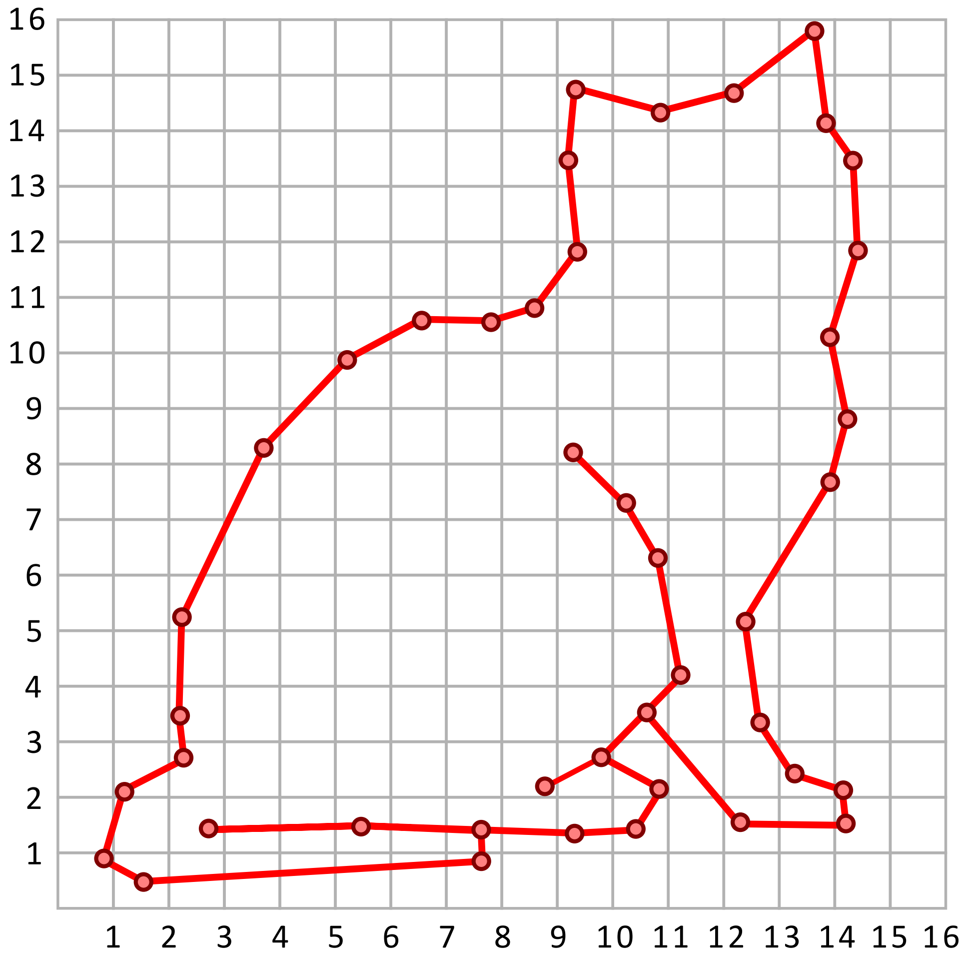
PM₃ *Quadtree*

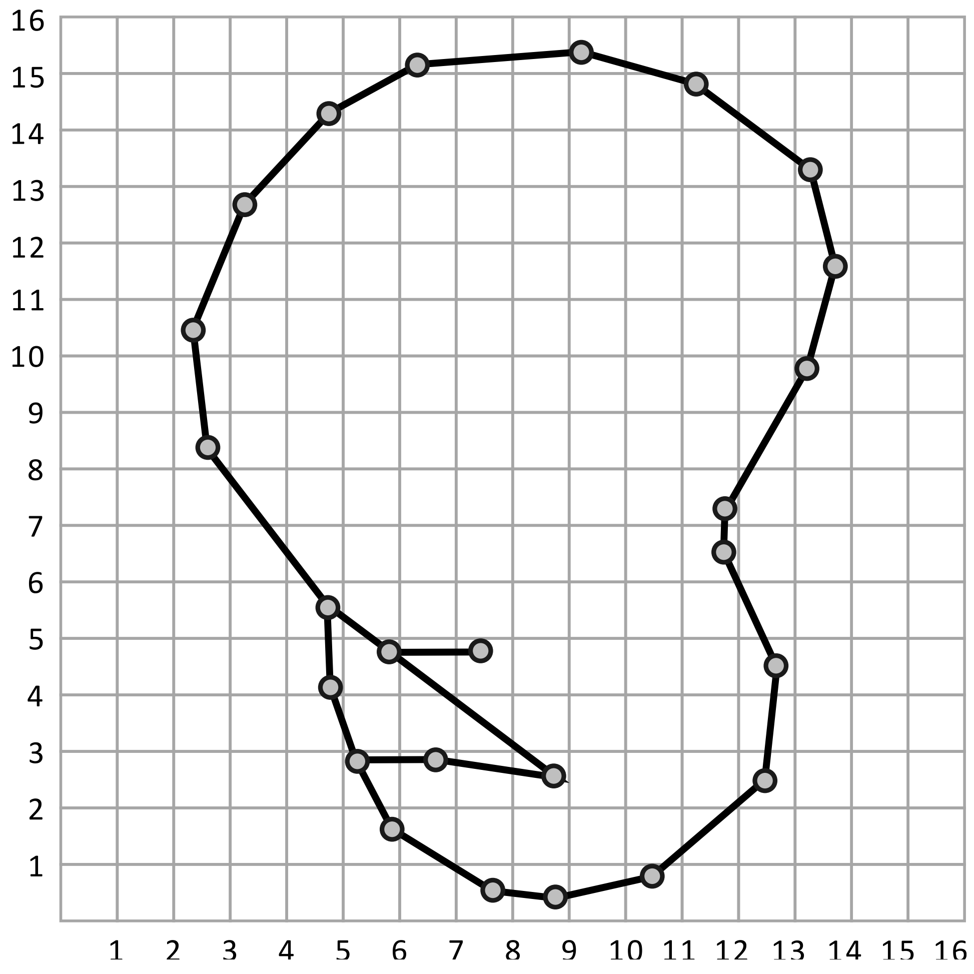


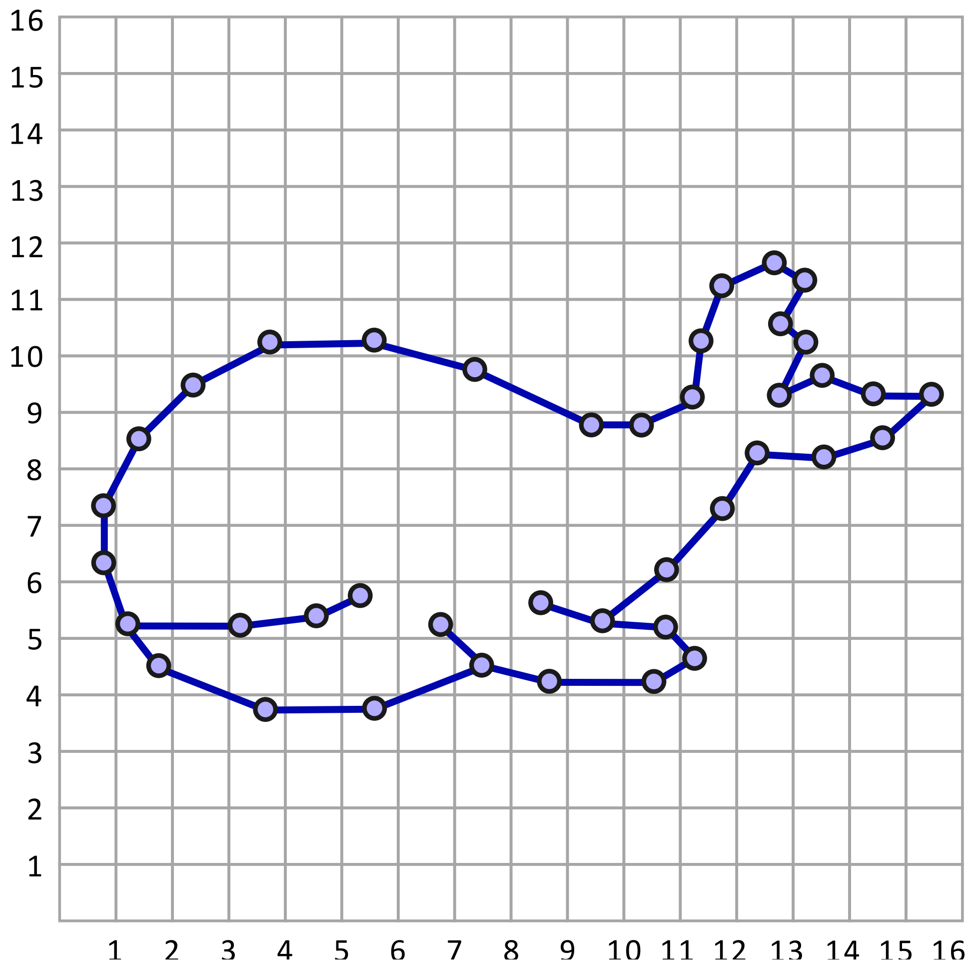
PM_3 *Quadtree*



PM$_3$ *Quadtree*







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GRACIAS

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