Curso de

Estructuras de Datos con JS

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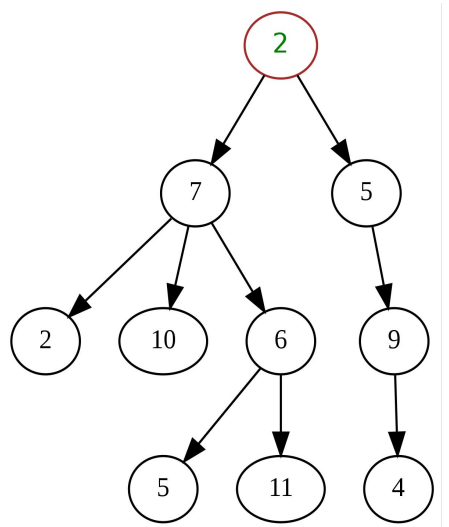
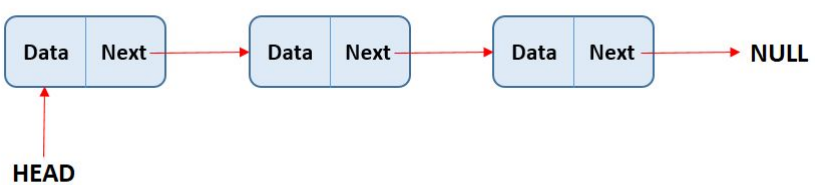
¿Qué son las estructuras de datos?

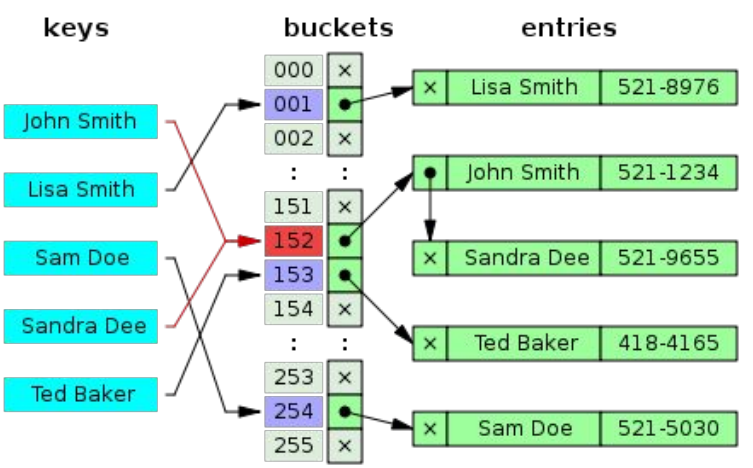
Ropa

Algunas formas de acomodar

Estructuras de datos







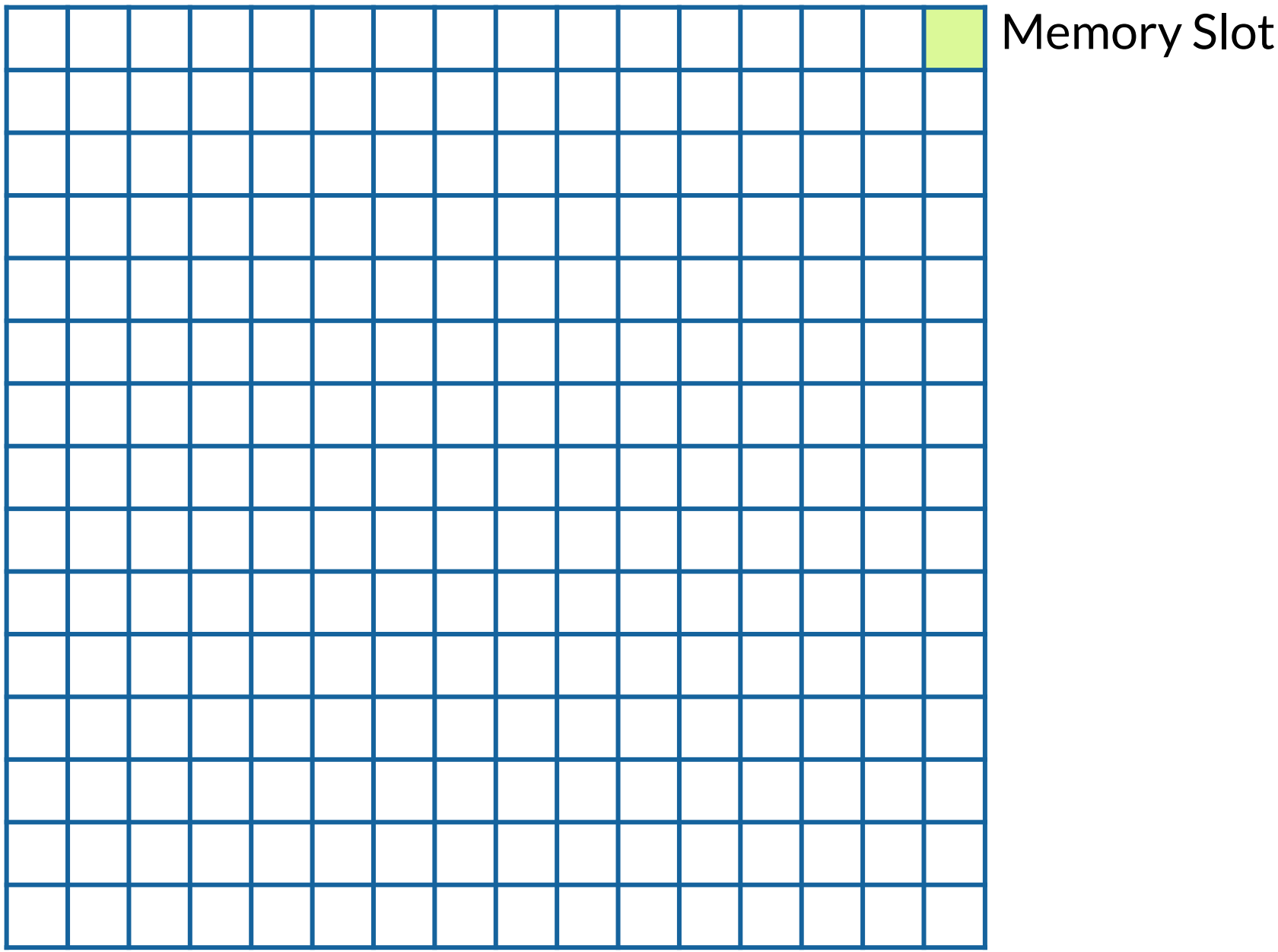
“

Las estructuras de datos son colecciones de valores, las relaciones entre ellos y las funciones u operaciones que se pueden aplicar a los datos.

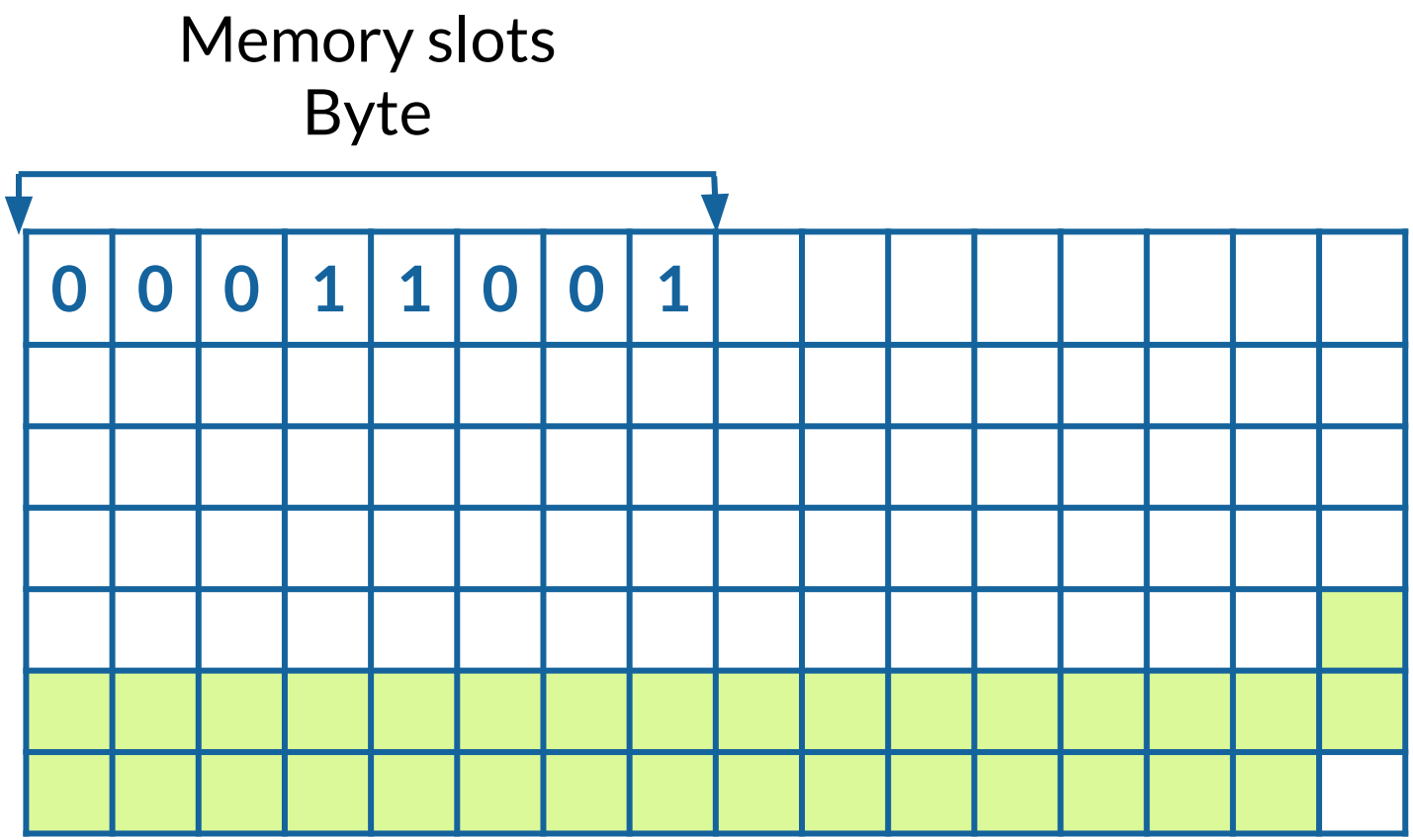
”

Memoria y cómo se guardan los datos

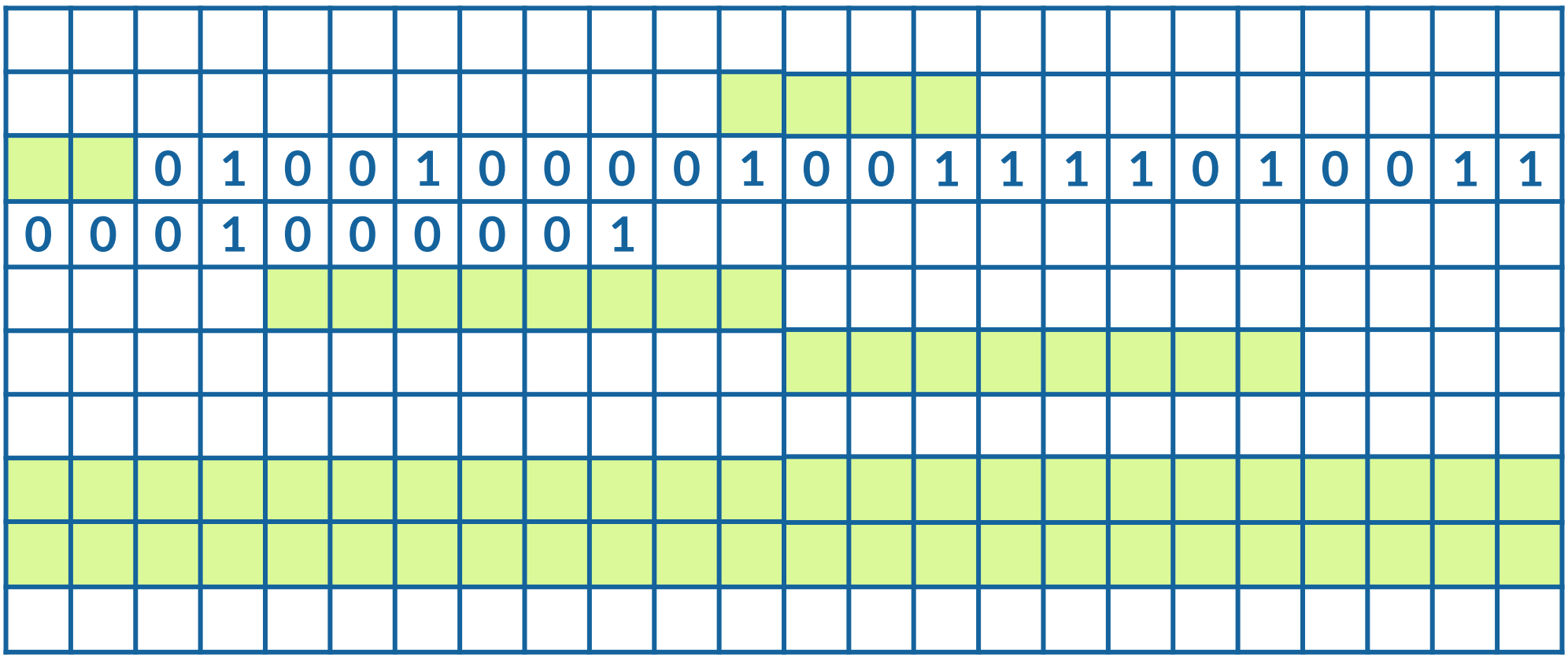
Memoria



¿Cómo se guardan los datos?



const edad = 25



const saludo = “Hola”;

Address	Data
0	00010110
1	00001110
2	00000011
3	00000000
4	01111001
5	00101110
6	11111111
7	10000100
8	00000000
9	11001010
10	00011010
11	00000001
12	11111101
13	01011101
14	00000000
15	11101110

Arrays

Array

0	Diego
1	Karen
2	Oscar
3	Paulina
4	Ulises
5	Ana

Métodos

Método	Acción
push	Agregar un elemento al final del array
pop	Borra el último elemento
unshift	Agrega un elemento al inicio del array
shift	Borra el primer elemento
splice	Agregar un elemento en una parte del array

Arrays
estáticos y dinámicos

Array estático

array nums = [4,8,5];

Address	Data
0	4
1	8
2	5

Array estático (memory)

array nums = [4,8,5];

0	1	**2**	3	4	5
6	7	8	9	**10**	11
12	13	14	15	16	17
18	19	20	21	22	23
24	25	26	27	28	29
30	31	32	33	34	35

Array dinámico

array nums = [4,8,5];

array nums = [4,8,5, , ,];

Address	Data
0	4
1	8
2	5
3	
4	
5	

Array dinámico (memory)

array nums = [4,8,5, , ,];

0	1	2	3	4	5
6	7	8	9	10	11
12	13	14	15	16	17
18	19	20	21	22	23
24	25	26	27	28	29
30	31	32	33	34	35
36	37	38	39	40	41
42	43	44	45	46	47
48	49	50	51	52	53

Code

Construyendo nuestro Array

Eliminando elementos del Array

Strings

```
const saludo = “Hola”;
```

const saludo = “Hola”;

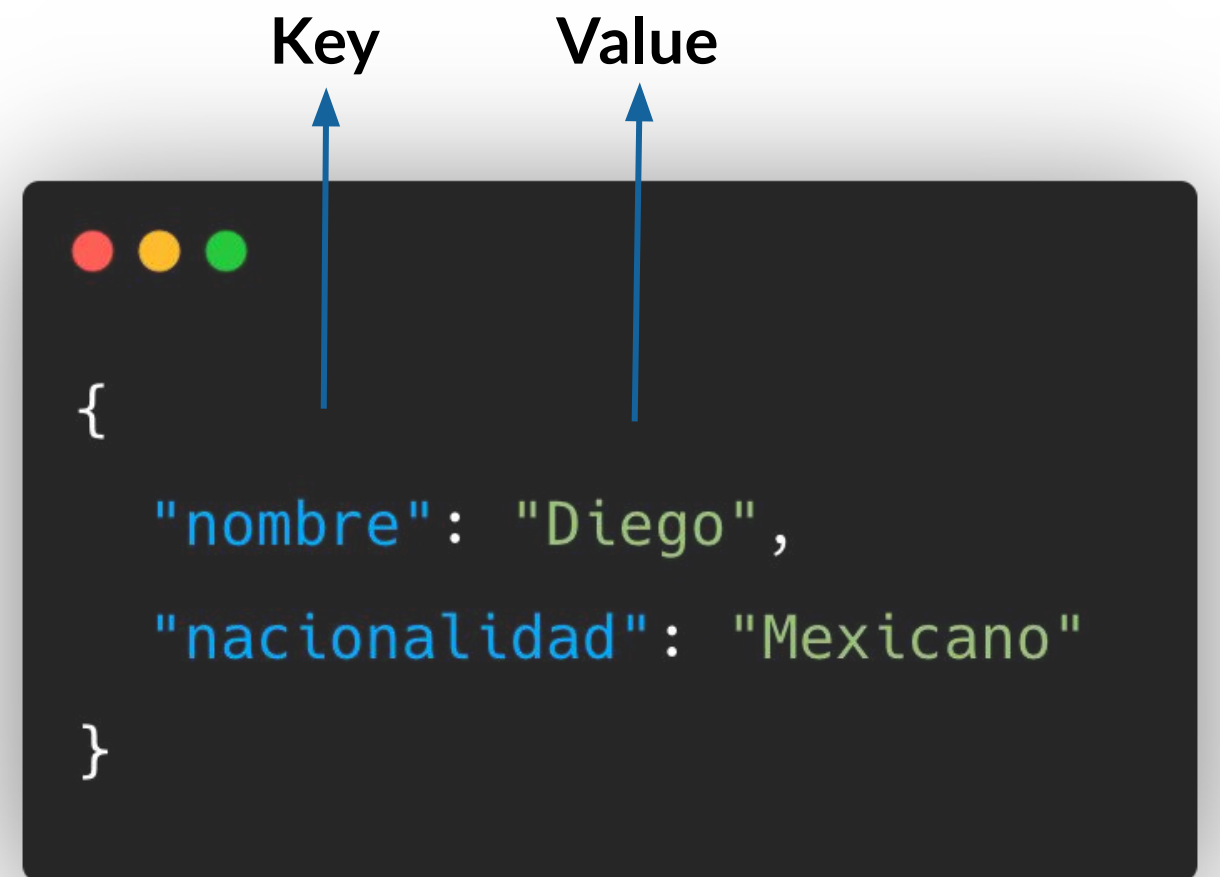
Address	Data
0	H
1	o
2	l
3	a

Hash Tables

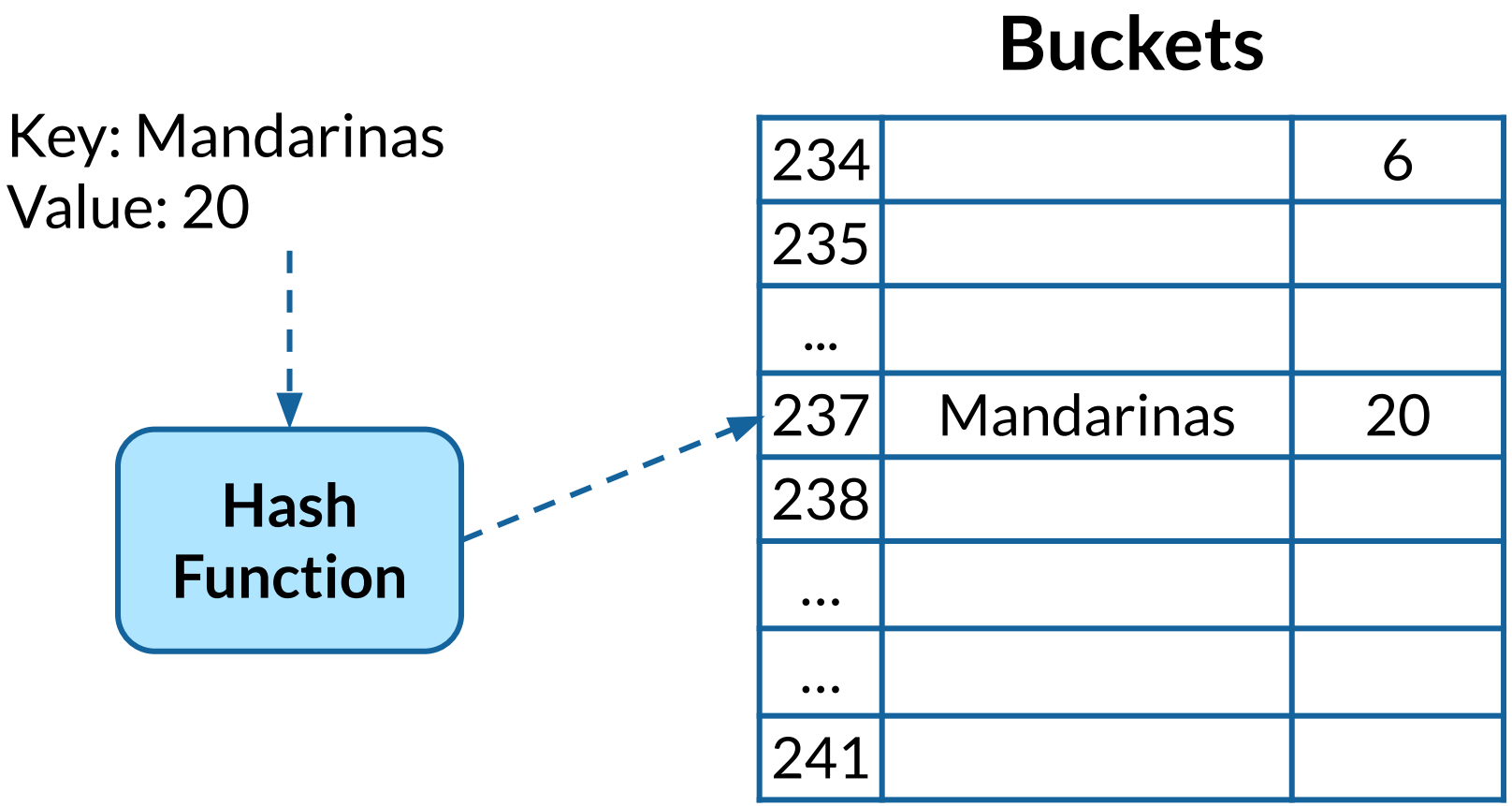
Hash Tables en otros lenguajes

JavaScript	Objetos
Python	Diccionarios
Java	Maps
Go	Maps
Ruby	Hashes

Hash Table



¿Cómo funcionan?

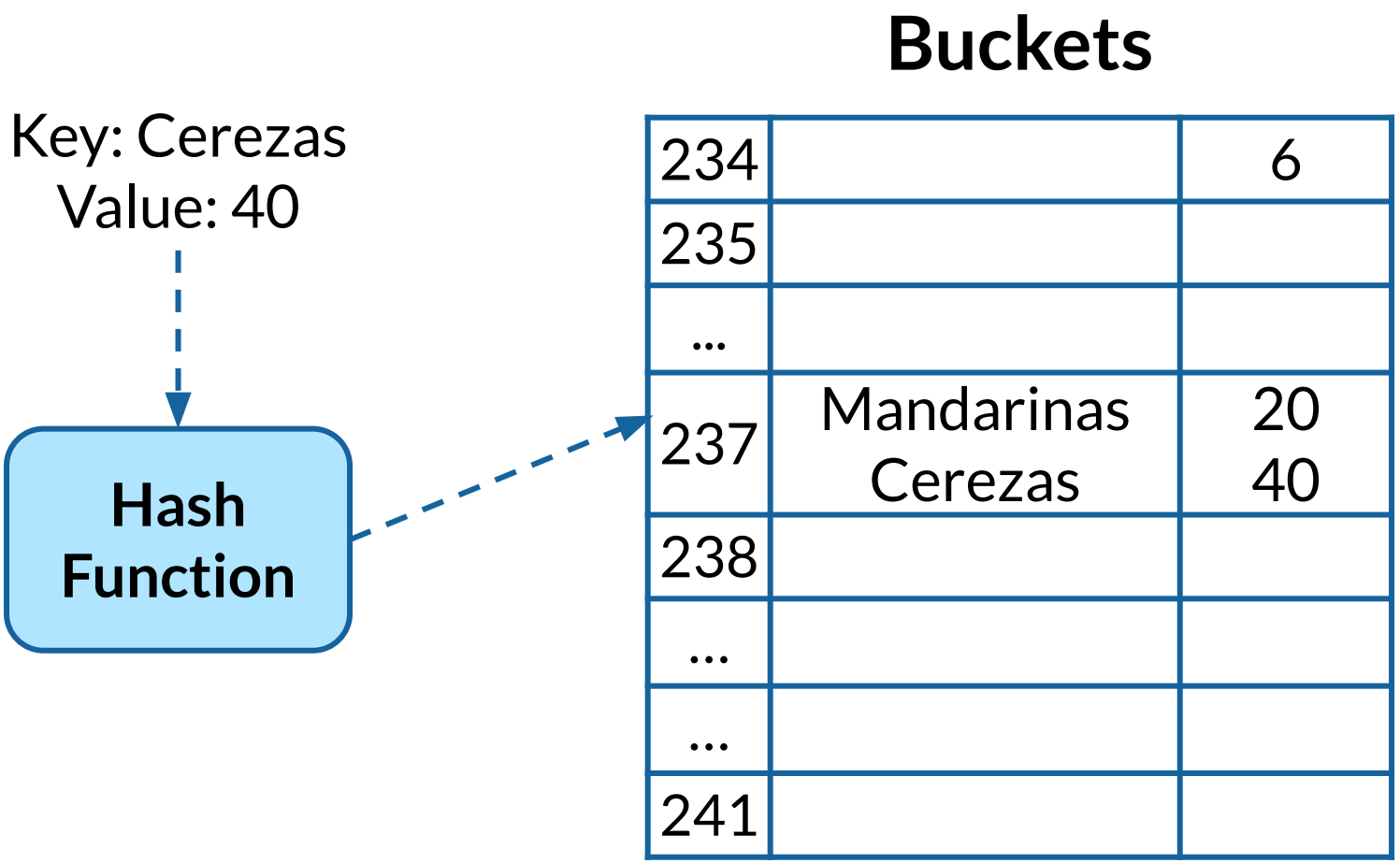


Métodos

Método	Acción
insert	Insertar un elemento en la tabla
search	Buscar un elemento por key
delete	Borrar un elemento

Colisión de Hash Table

Colisión de Hash Table



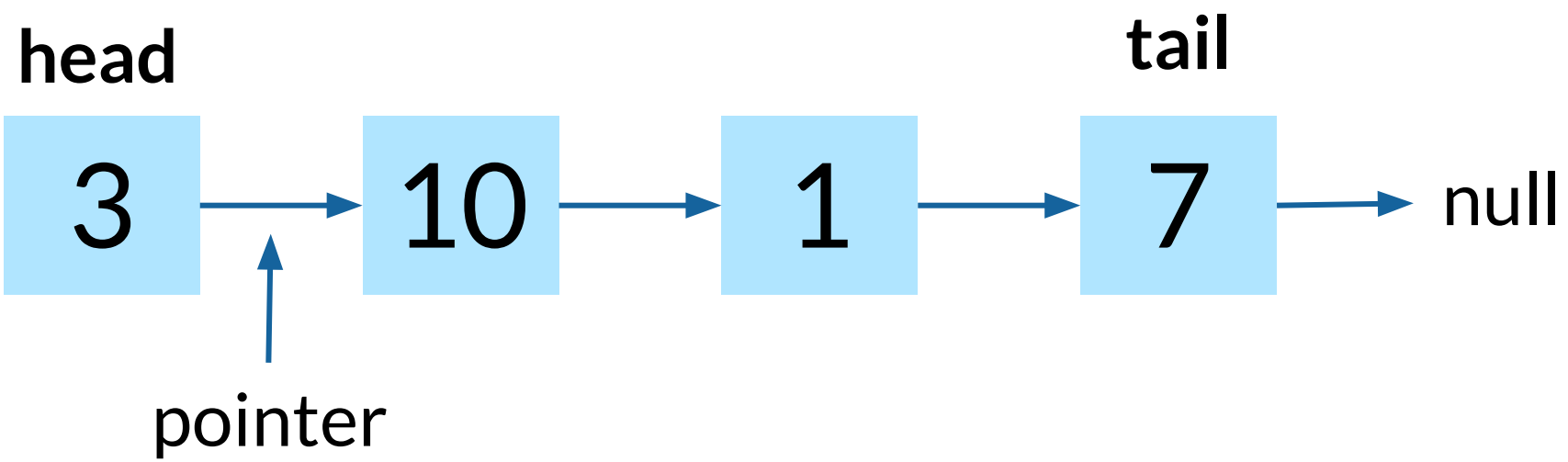
Code

Construyendo una Hash Table

Implementando el método get

Linked List

Linked List

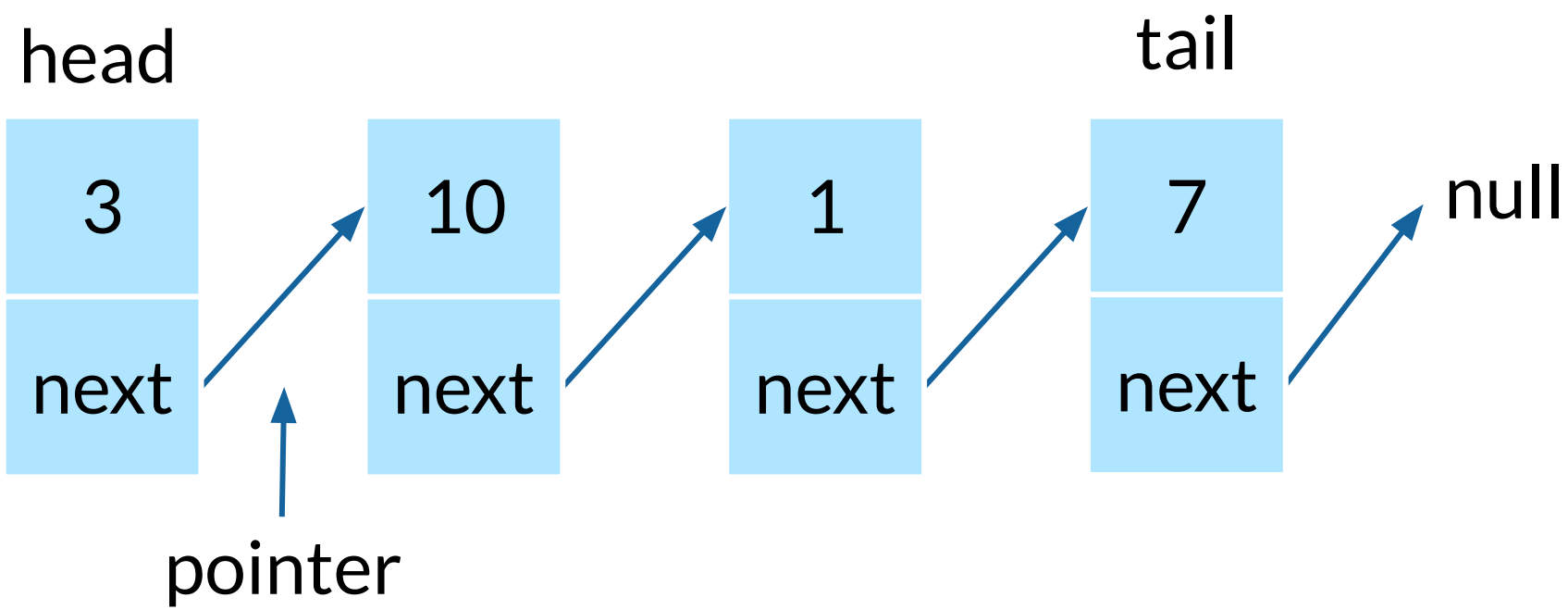


Métodos

Método	Acción
prepend	Agregar un Nodo al inicio
append	Agregar un Nodo al final
Lookup / search	Buscar un Nodo
insert	Insertar un Nodo en la lista
delete	Borrar un Nodo

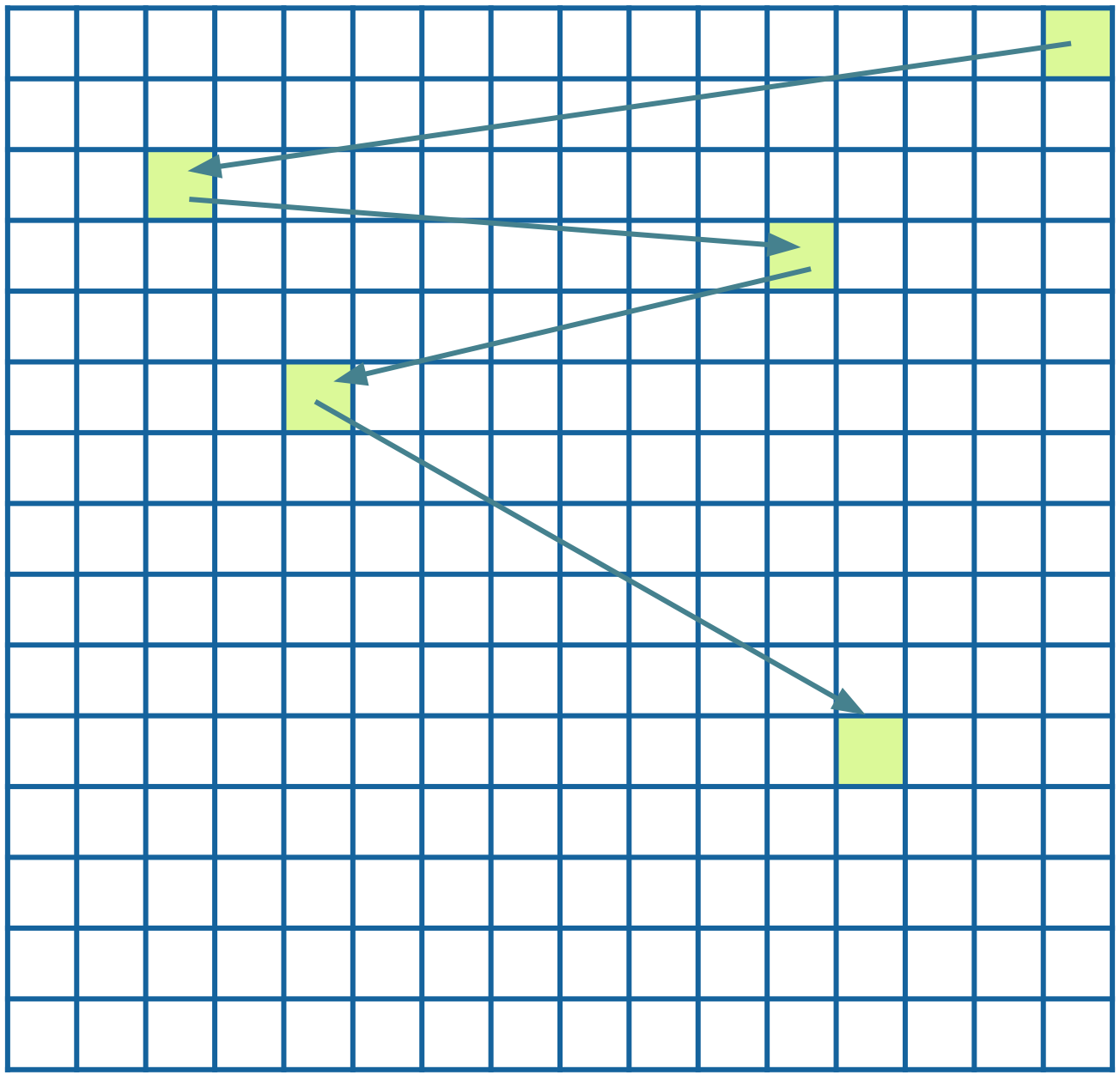
Singly Linked List

Singly Linked List



Construyendo un Singly Linked List

Cómo se guardan las LinkedList



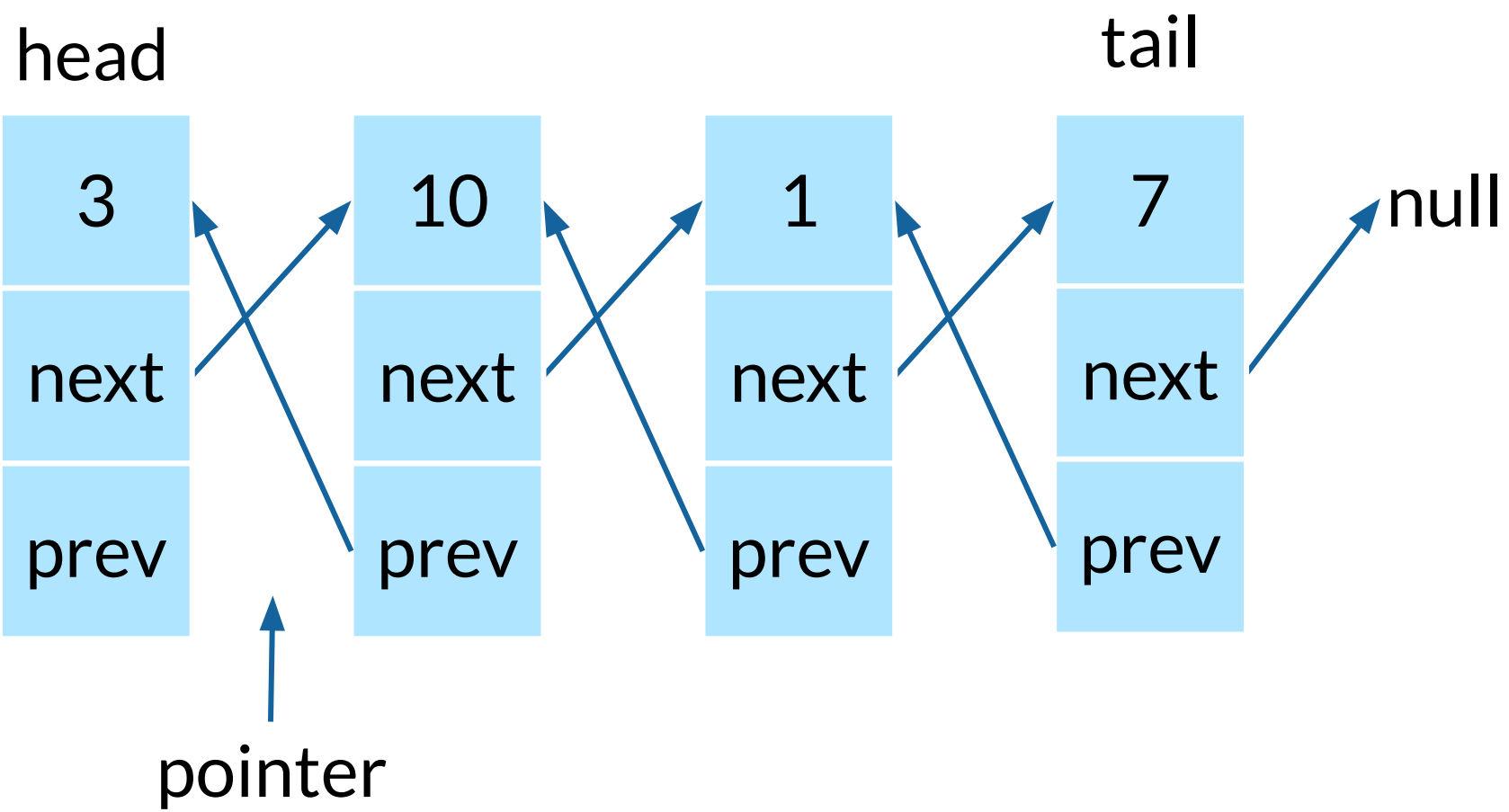
Code

Agregar nodos a la lista

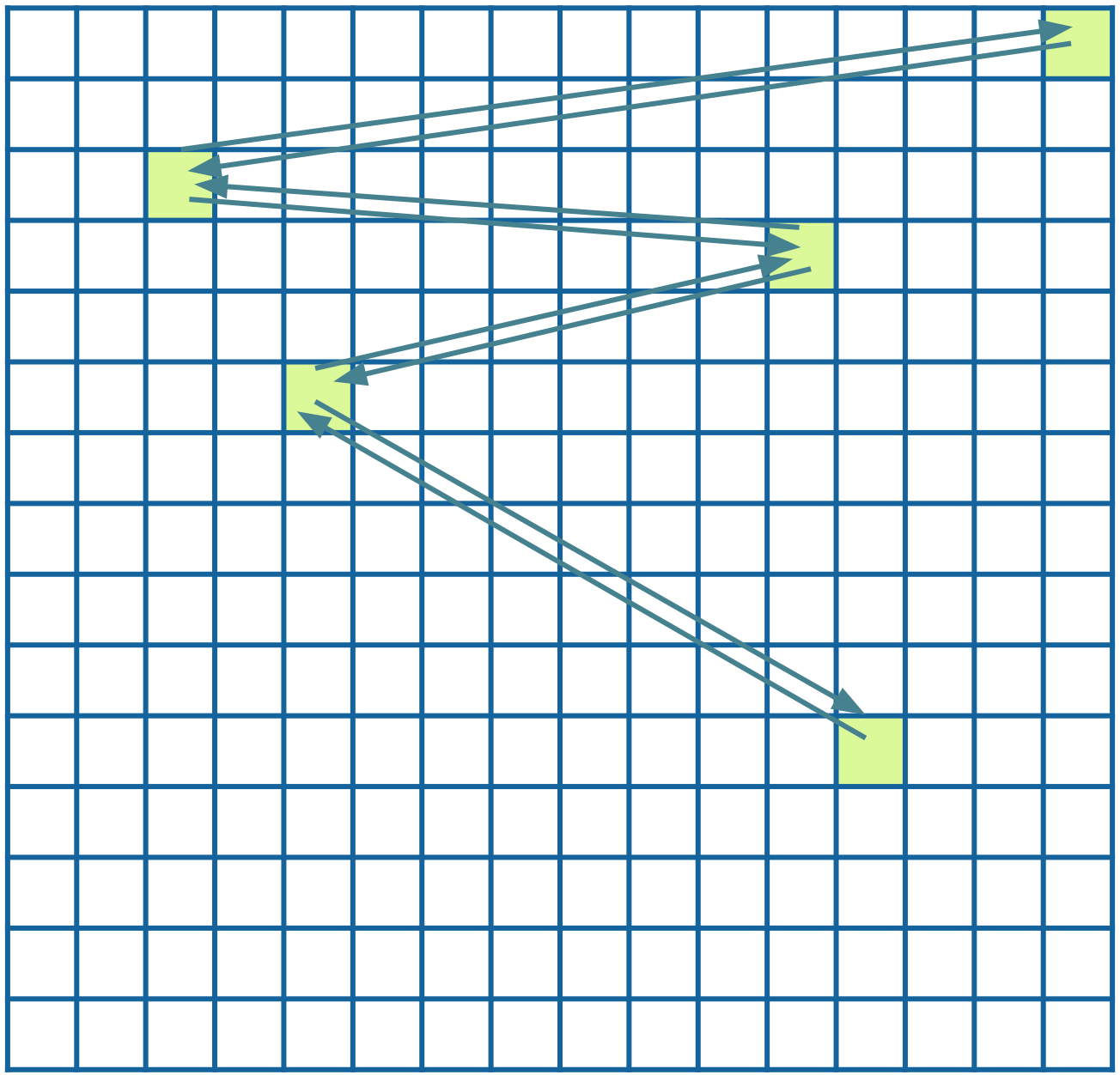
Agregar nodos intermedios

Doubly Linked List

Doubly Linked List



Cómo se guardan las LinkedList



Code

Stacks

Ejemplo de un stack
(LIFO - Last In, First Out)

Métodos

Método	Acción
pop	Remover el último elemento
push	Agregar un elemento al final
peek	Tomar al último elemento de la línea

Code

Construyendo un Stack

Queues

Ejemplo de queues
(FIFO - First In, First Out)

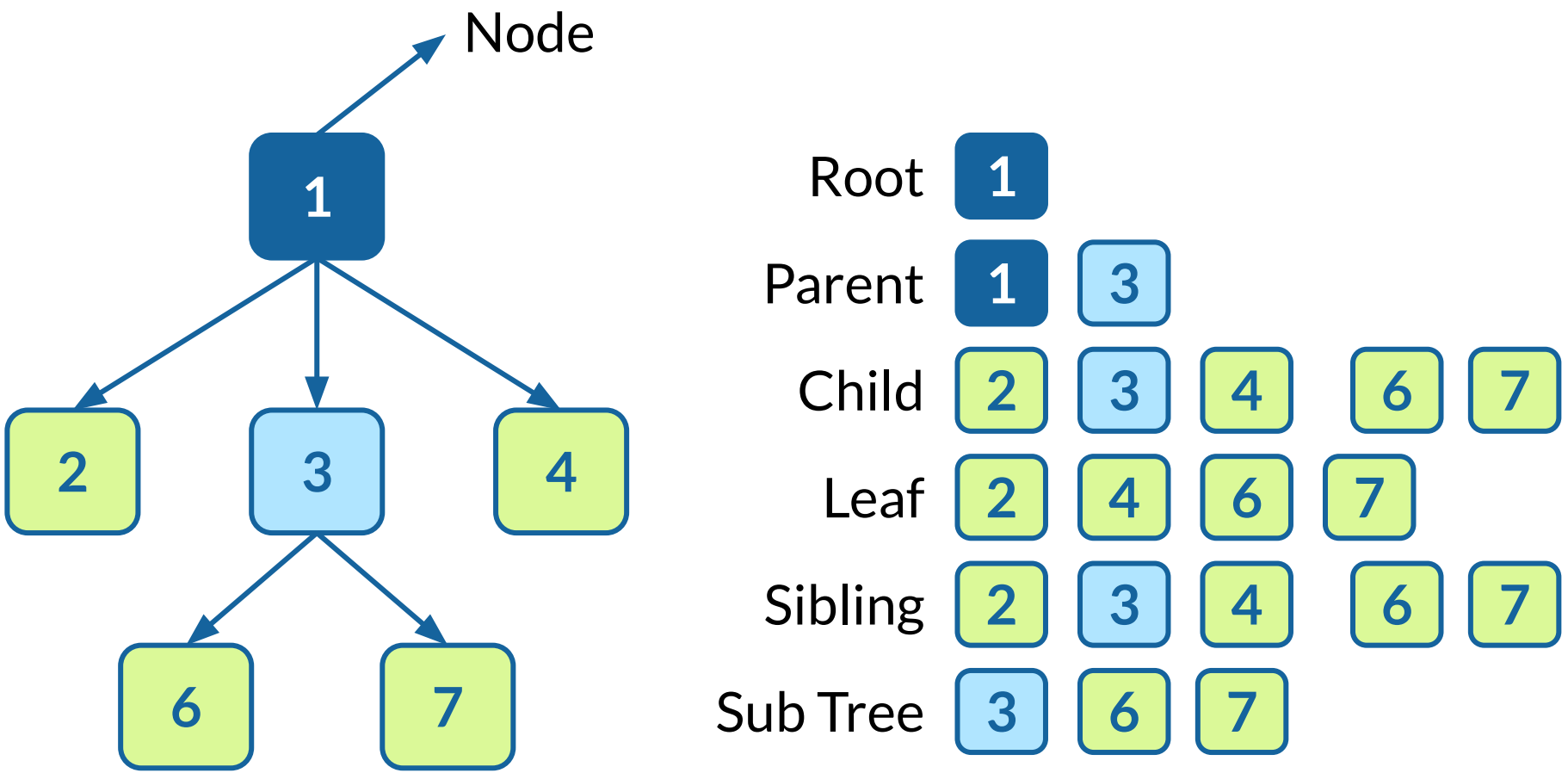
Métodos

Método	Acción
enqueue	Agregar un elemento al final de la línea
dequeue	Remover al primer elemento de la línea
peek	Tomar el primer elemento de la línea

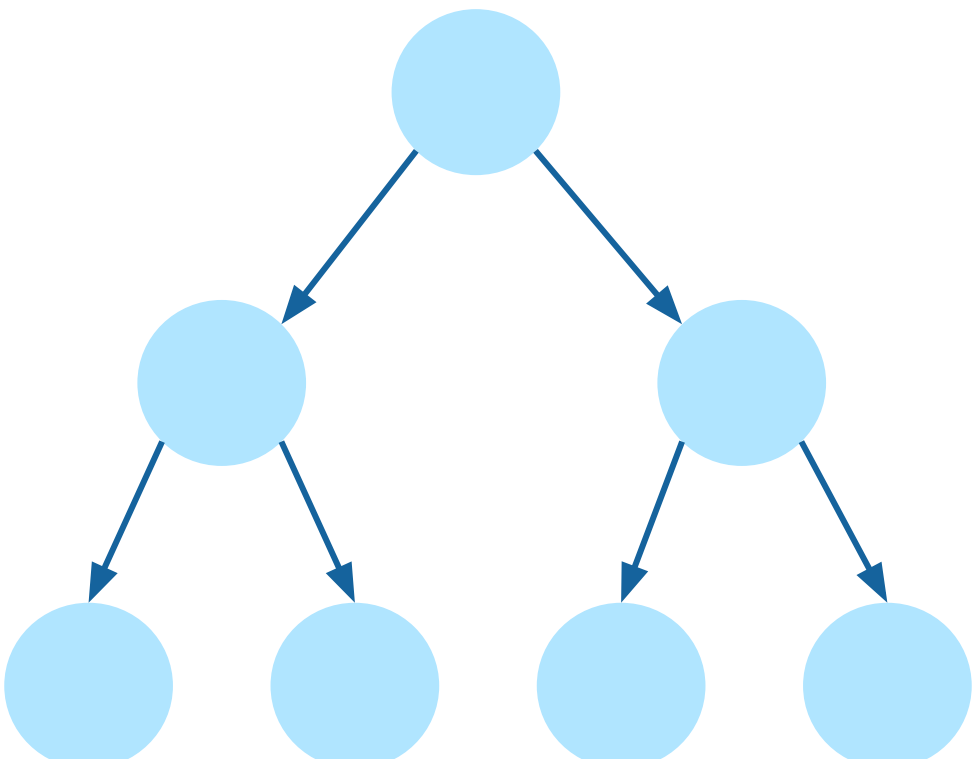
Code

Construyendo un Queue

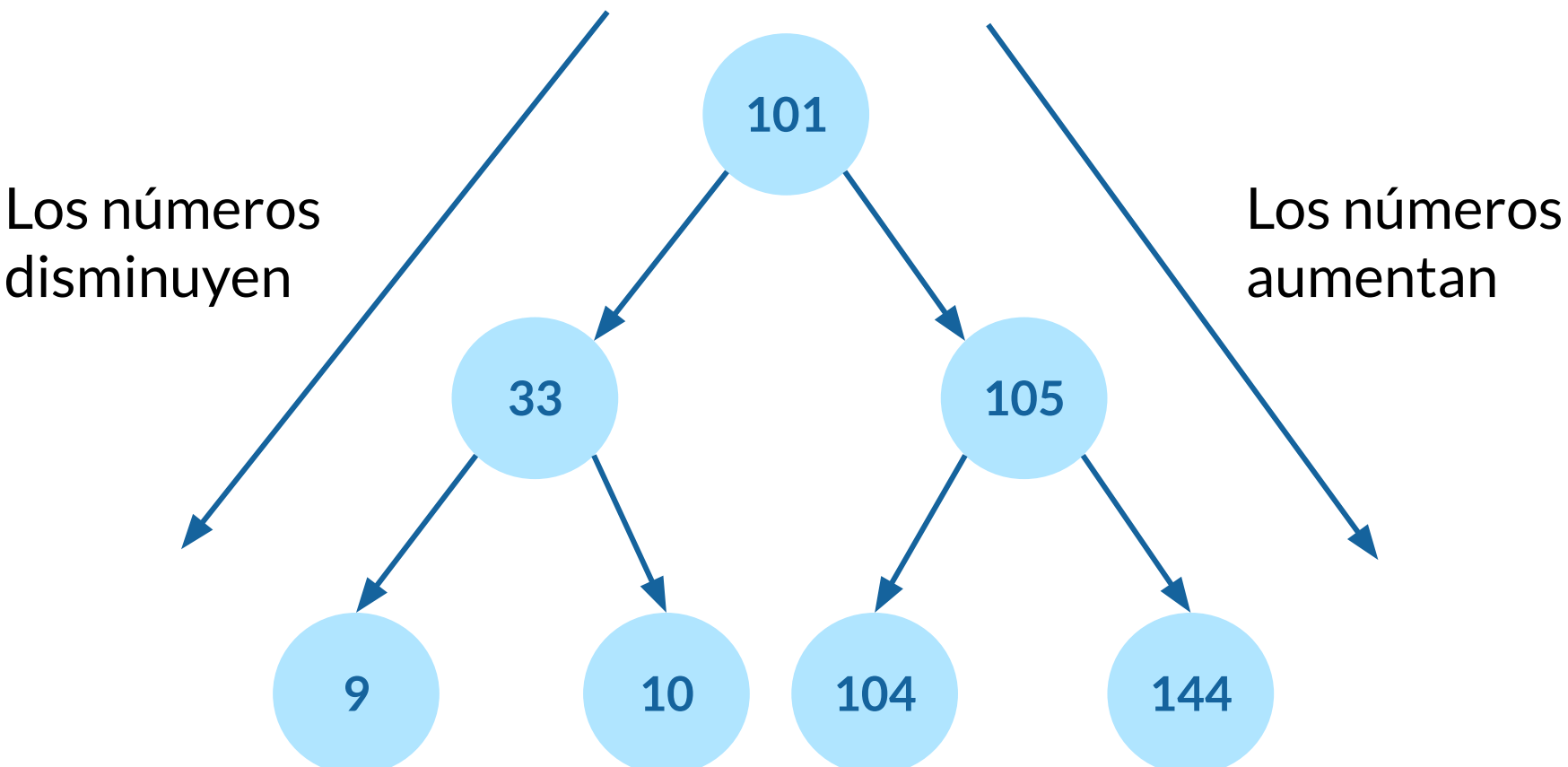
Trees


Node
1
2
3
4
6
7
Root 1
Parent 1 3
Child 2 3 4 6 7
Leaf 2 4 6 7
Sibling 2 3 4 6 7
Sub Tree 3 6 7

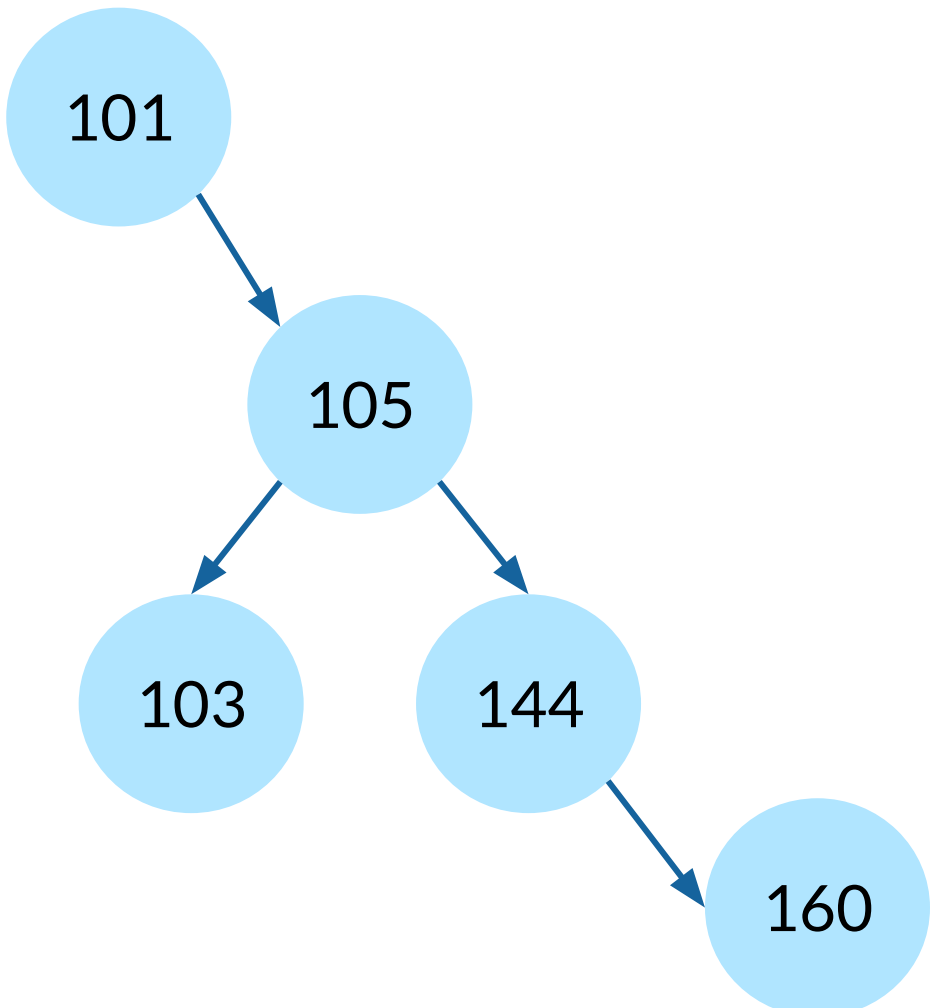
Binary trees
(perfect binary tree)



Binary search trees
(balance tree)



Binary search trees
(unbalanced tree)



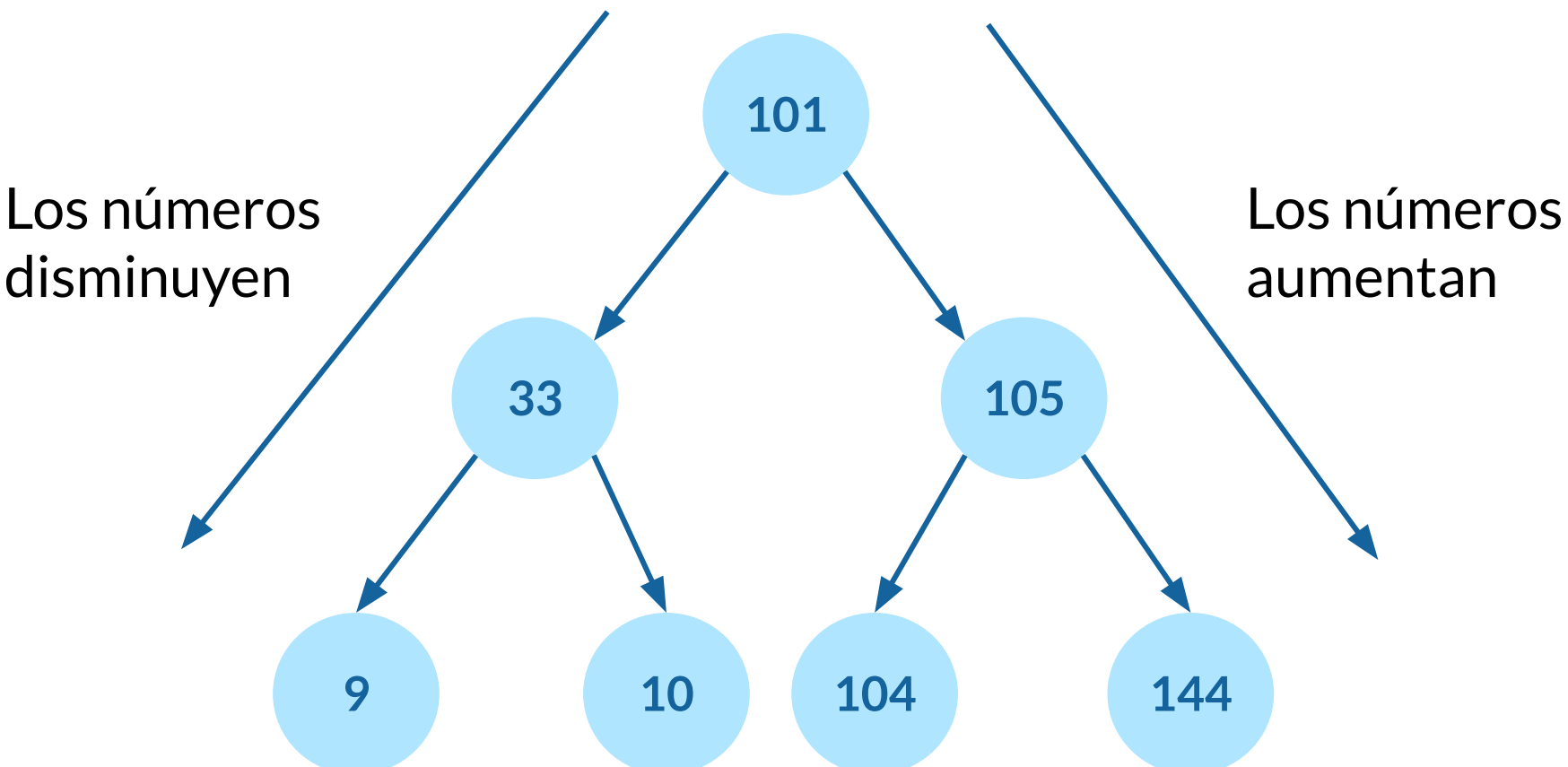
Métodos

Métodos	Acciones
search	Buscar por un nodo
insert	Insertar un nodo
delete	Borrar un nodo

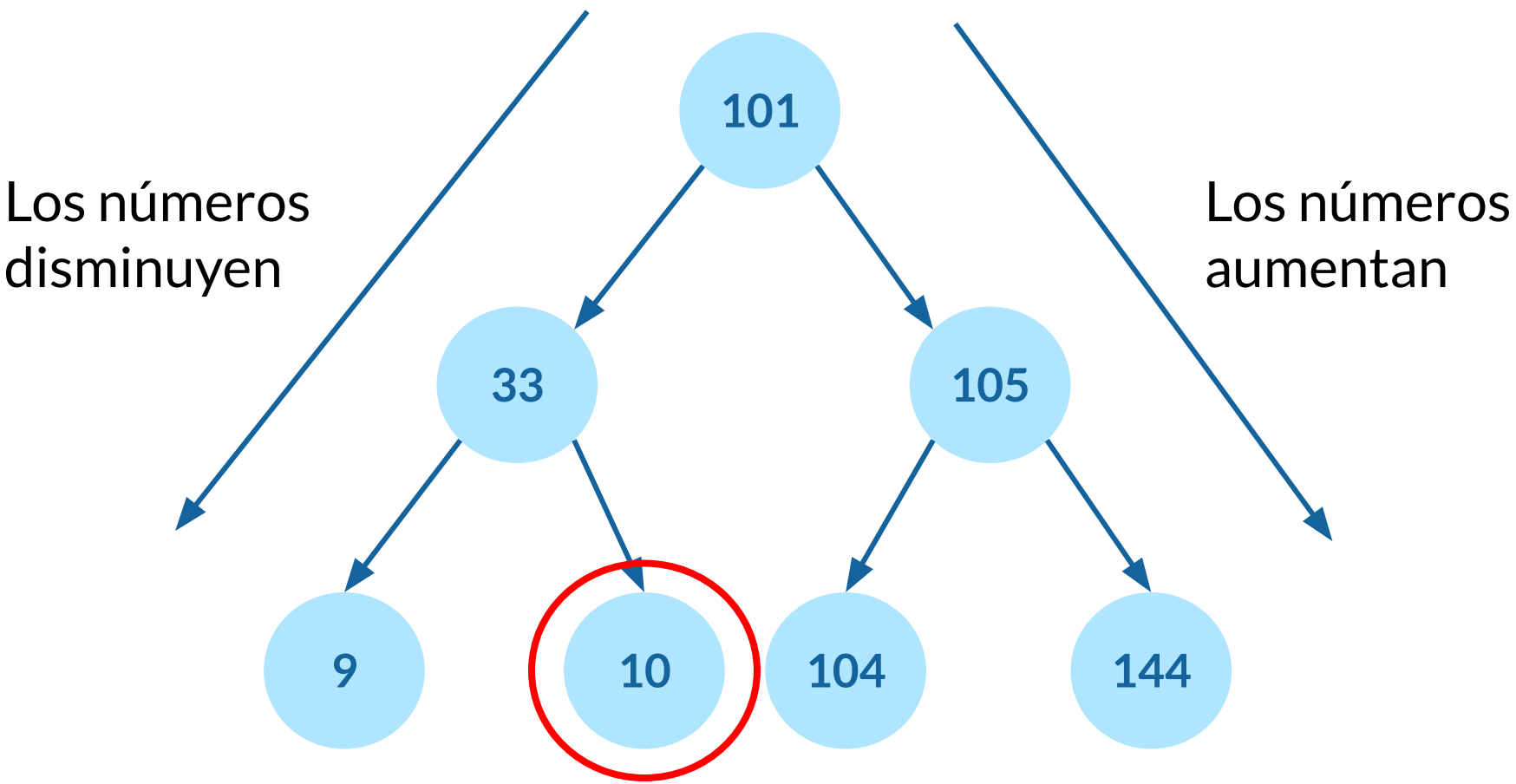
Code

Construyendo un Tree

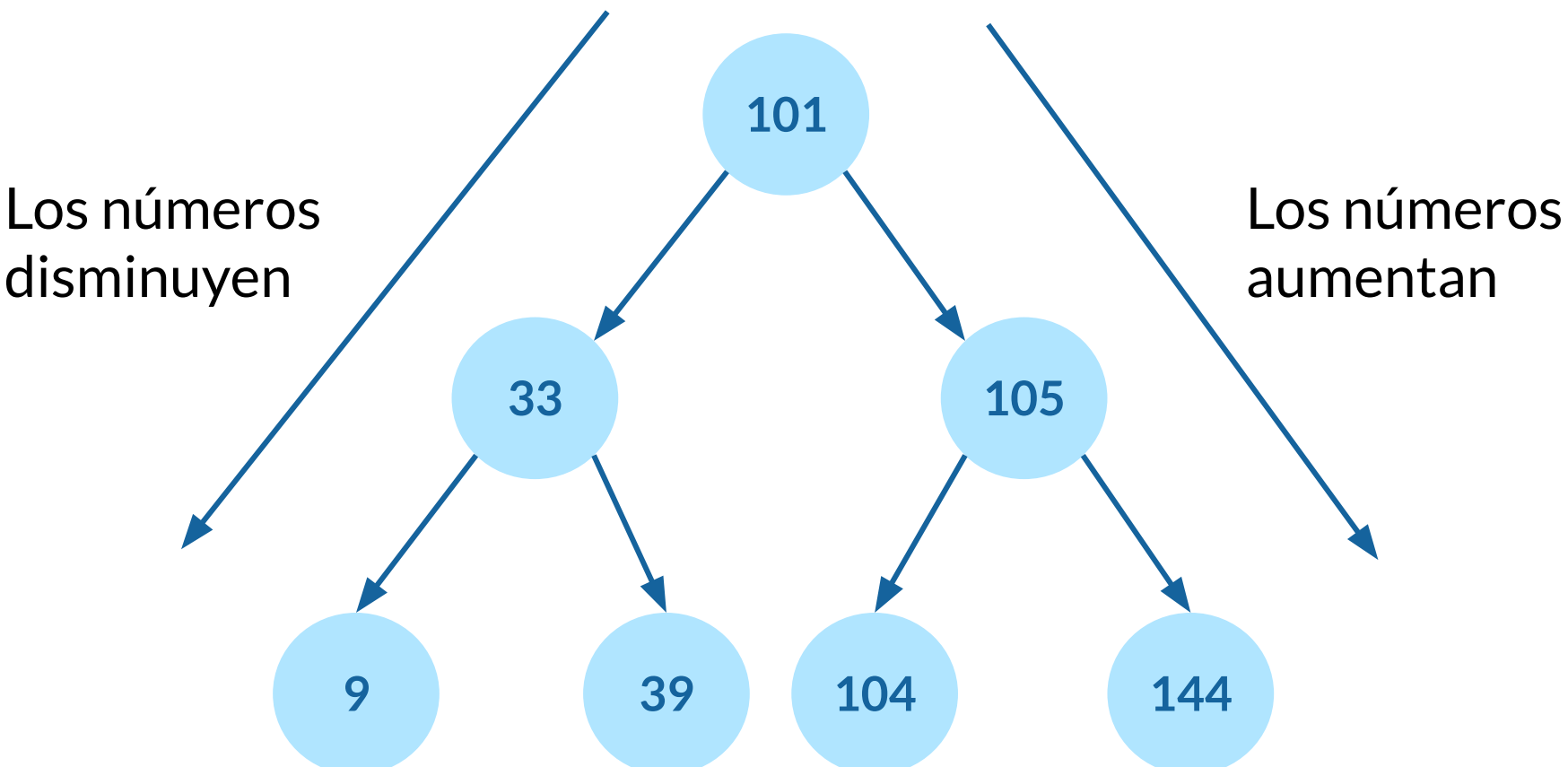
Binary search trees
(balance tree)



Binary search trees
(balance tree)

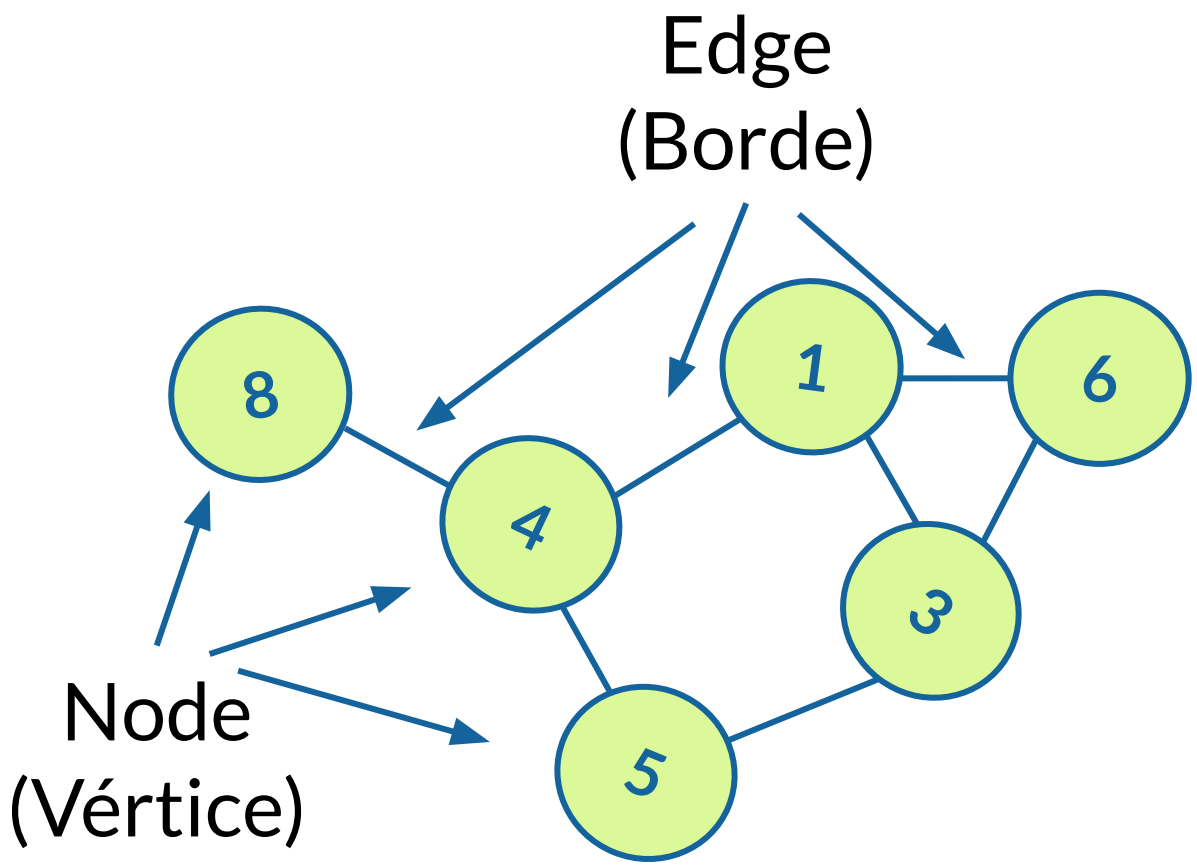


Binary search trees
(balance tree)



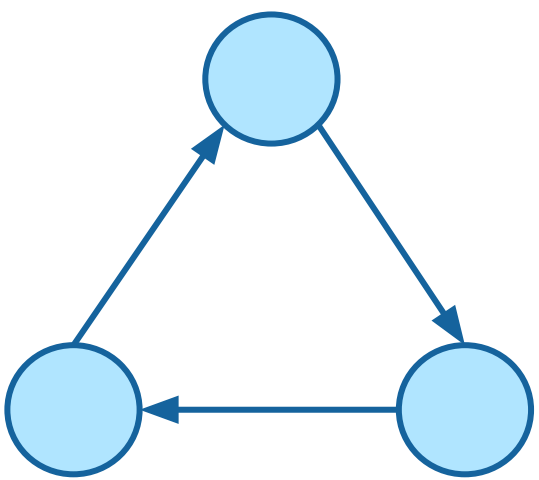
Graphs

Graphs

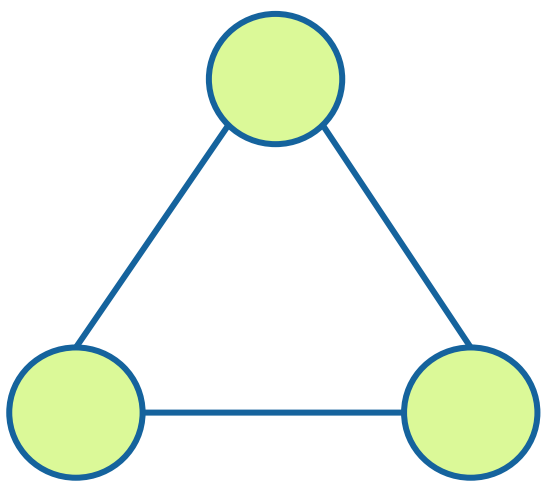


Grafos dirigidos y no dirigidos

Dirigidos

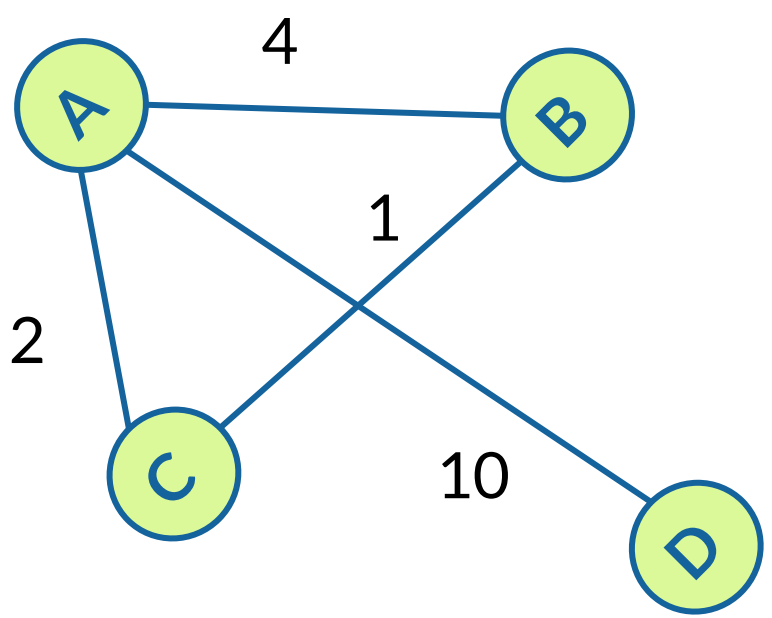


No Dirigidos

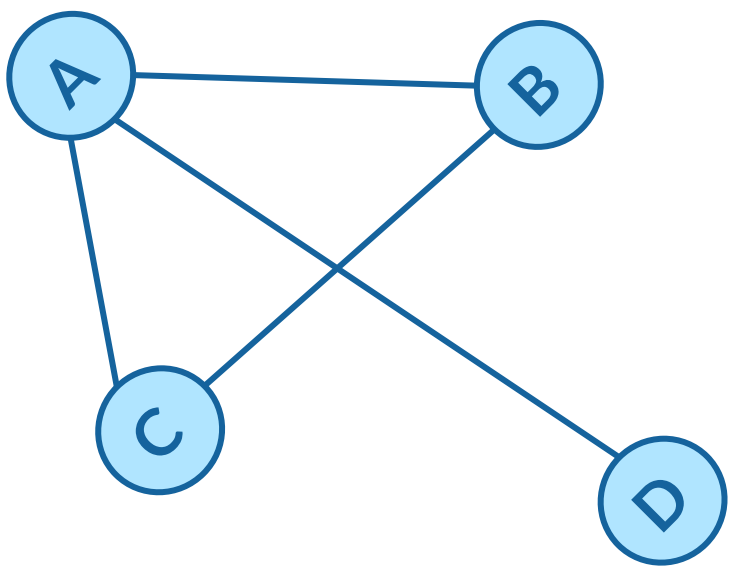


Grafos ponderados y no ponderados

Ponderados

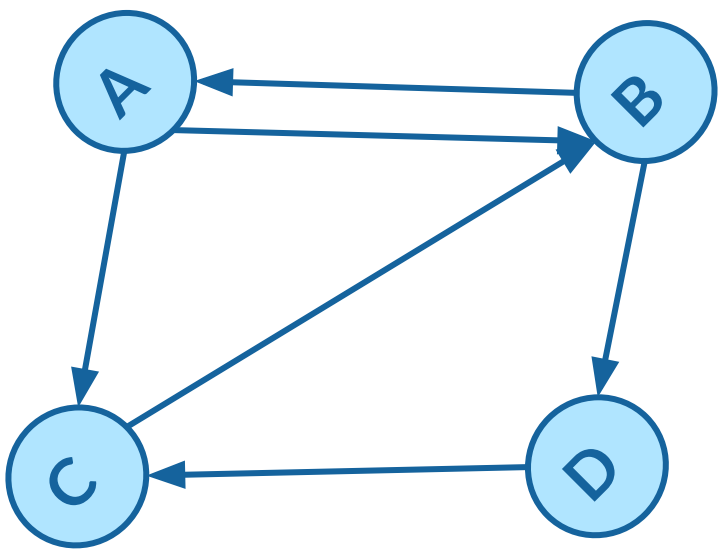


No Ponderados

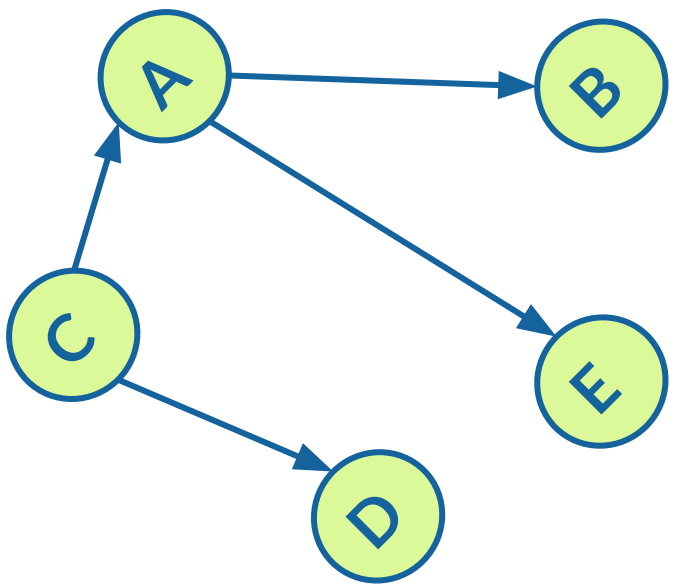


Grafos cíclicos y acíclicos

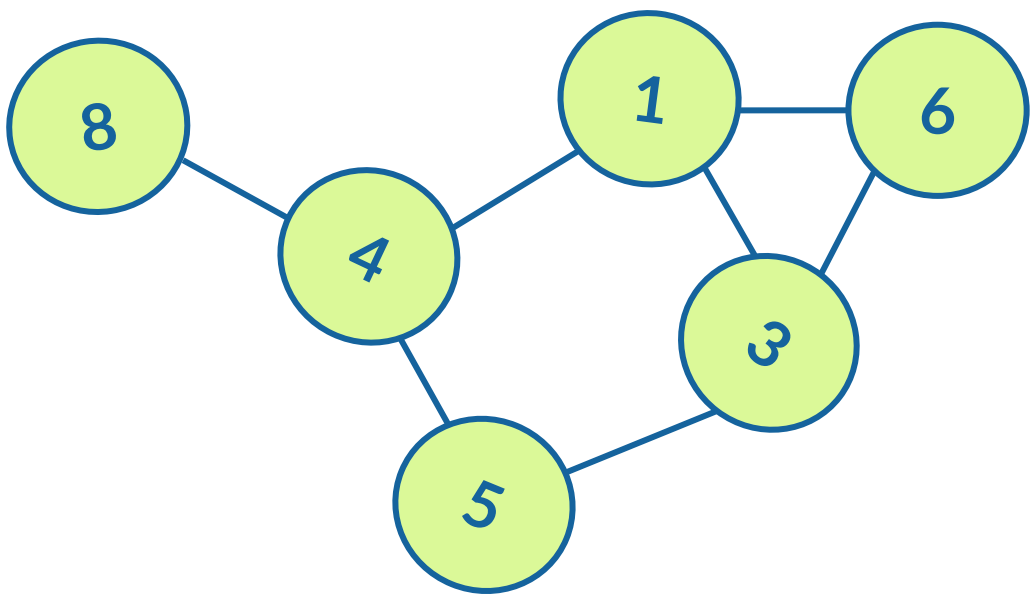
Cíclico



Acíclico



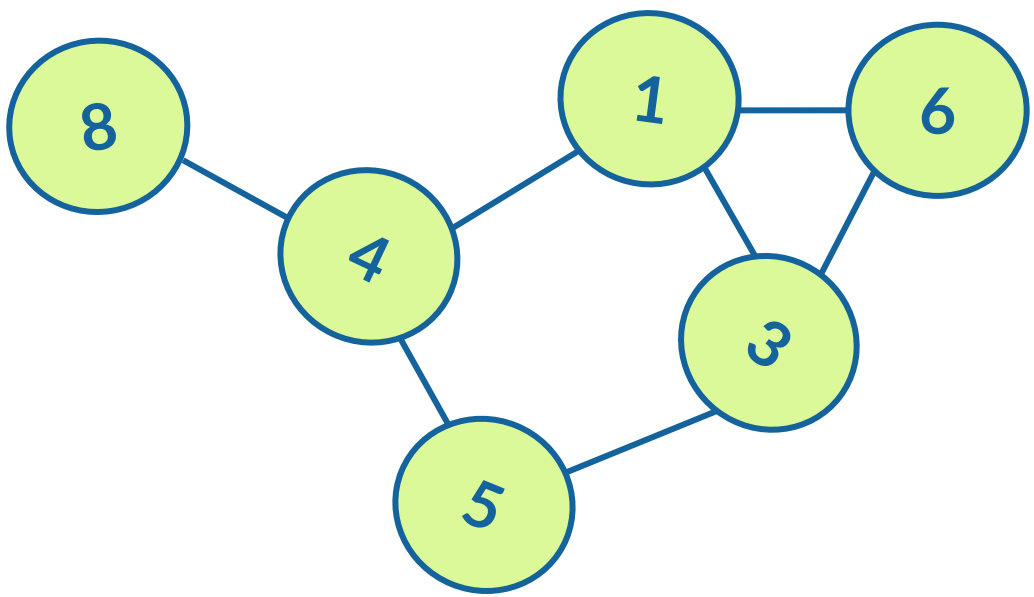
Ejercicio



Representar grafos en código

Construyendo un grafo

Ejercicio



Code

@degranda10 @degranda