Act 3.1 - Operaciones avanzadas en un BST

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Programación de estructuras de datos y algoritmos fundamentales

Grupo 602

Tecnológico de Monterrey Campus Guadalajara

Operaciones avanzadas en BST

Casos de prueba

Prueba 1 → Número de datos = 14

```
void insertVals(Bst &tree){
    tree.insert(15);
    tree.insert(50);
    tree.insert(10);
    tree.insert(22);
    tree.insert(35);
    tree.insert(70);
    tree.insert(4);
    tree.insert(12);
    tree.insert(18);
    tree.insert(24);
    tree.insert(31);
    tree.insert(44);
    tree.insert(66);
}
```

Resultados

```
[Running] cd "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_class\Data Structure
BST && "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_class\Data Structures\Tree
Show in preOrder
25 - 15 - 10 - 4 - 12 - 22 - 18 - 24 - 50 - 35 - 31 - 44 - 70 - 66 - 90 - `
Show inOrder
4 - 10 - 12 - 15 - 18 - 22 - 24 - 25 - 31 - 35 - 44 - 50 - 66 - 70 - 90 -
Show in postOrder
4 - 12 - 10 - 18 - 24 - 22 - 15 - 31 - 44 - 35 - 66 - 90 - 70 - 50 - 25 -
Show in order level by level
25
15 50
10 22 35 70
4 12 18 24 31 44 66 90
Element 4 is in level 4
The height of the tree is 4
The ancestors of the element 4 are : 10 - 15 - 25 -
The tree is empty

[Done] exited with code=0 in 2.092 seconds
```

Formato de las siguientes pruebas

```
08
09  void insertVals(Bst &tree){
10      for(int i=0; i < rand() % 20; i++){
11          tree.insert(rand() % 45);
12      }
13  }
```

Usando la función random para elegir valores aleatoriamente.

Prueba 2 → Número de datos = 5

```
[Running] cd "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_cl
-o BST && "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_class
Show in preOrder
25 - 17 - 19 - 18 - 40 - `
Show inOrder
17 - 18 - 19 - 25 - 40 -
Show in postOrder
18 - 19 - 17 - 40 - 25 -
Show in order level by level
25
17 40
19
18
Element 4 is in level -1
The height of the tree is 4
The ancestors of the element 5 are : Element does not exist

Delete All Test
The tree is empty
```

Prueba 3 → Número de datos en el árbol = 8

```
[Running] cd "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_cl
-o BST && "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_class
Repeated elements not allowed
Show in preOrder
25 - 16 - 0 - 5 - 20 - 29 - 27 - 40 - `
Show inOrder
0 - 5 - 16 - 20 - 25 - 27 - 29 - 40 -
Show in postOrder
5 - 0 - 20 - 16 - 27 - 40 - 29 - 25 -
Show in order level by level
25
16 29
0 20 27 40
5
Element 2 is in level -1
The height of the tree is 4
The ancestors of the element 7 are : Element does not exist

Delete All Test
The tree is empty
```

Prueba 4 → Número de datos = 11

```
[Running] cd "c:\Users\jorgl\OneDrive\Escritorio\Data_struc
-o BST && "c:\Users\jorgl\OneDrive\Escritorio\Data_structs_
Repeated elements not allowed
Show in preOrder
25 - 16 - 0 - 5 - 14 - 20 - 18 - 29 - 27 - 40 - 30 - `
Show inOrder
0 - 5 - 14 - 16 - 18 - 20 - 25 - 27 - 29 - 30 - 40 -
Show in postOrder
14 - 5 - 0 - 18 - 20 - 16 - 27 - 30 - 40 - 29 - 25 -
Show in order level by level
25
16 29
0 20 27 40
5 18 30
14
Element 3 is in level -1
The height of the tree is 5
The ancestors of the element 0 are : 16 - 25 -
Delete All Test
The tree is empty

[Done] exited with code=0 in 1.734 seconds
```

Prueba 5 → Número de datos en el árbol = 6

```
[Running] cd "c:\Users\jorgl\OneDrive\Escritorio\Data_
-o BST && "c:\Users\jorgl\OneDrive\Escritorio\Data_str
Show in preOrder
25 - 22 - 5 - 9 - 28 - 34 - `
Show inOrder
5 - 9 - 22 - 25 - 28 - 34 -
Show in postOrder
9 - 5 - 22 - 34 - 28 - 25 -
Show in order level by level
25
22 28
5 34
9
Element 5 is in level 3
The height of the tree is 4
The ancestors of the element 9 are : 5 - 22 - 25 -
Delete All Test
The tree is empty

[Done] exited with code=0 in 1.591 seconds
```