Tests Design

ABB Tests

Scenarios setup:

Name	Class	Scenario
setup1	BinarySearchTree	A BinarySearchTree of integers which will have the following numbers added to it. 1, 42, -23, -25, -6, 6 and 11.
setup2	AVLTree	An AVL Tree which will have the following integers added to it. 15, 9,8,10,18,16 and 20.

Tests cases design:

Test objective: Verify the correct functionality of the insert method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result

Binary Search Tree	insert		1	Integer was added to the binary tree and is now the root of the tree.
Binary Search Tree	insert		42	Integer was added to the binary tree as the right child of the root.
Binary Search Tree	insert		-23	Integer was added to the binary tree as the left child of the root
Binary Search Tree	insert		-25	Integer was added to the binary tree as the left child of the node with a value of “-23”
Binary Search Tree	insert		-6	Integer was added to the binary tree as the right child of the node with a value of “-23”
Binary Search Tree	insert		6	Integer was added to the binary tree as the left child of the node with a value of “42”

Binary Search Tree	insert		11	Integer was added to the binary tree as the right child of the node with a value of “6”

Test objective: Verify the correct functionality of the Search method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result
Binary Search Tree	search	setup 1	1	True (Was found)
Binary Search Tree	search	setup 1	9	False (was not found)
Binary Search Tree	search	setup 1	42	True (Was found)
Binary Search Tree	search	setup 1	-100	False (Was not found)
Binary Search Tree	search	setup 1	11	True (Was found)

Binary Search Tree	search	setup 1	6	True (Was found)
Binary Search Tree	search	setup 1	7	False (Was not found)

Test objective: Verify the correct functionality of the Delete method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result
Binary Search Tree	delete	setup 1	0	False(Was not deleted because is not in the tree)
Binary Search Tree	delete	setup 1	11	True(was deleted and relations with other objects were severed)
Binary Search Tree	delete	setup 1	42	True(was deleted and relations with other objects were severed)
Binary Search Tree	delete	setup 1	-23	True(was deleted and relations with other objects were severed)

Binary Search Tree	delete	setup 1	1	True(was deleted and relations with other objects were severed)

Test objective: Verify the correct functionality of the Weight method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result
Binary Search Tree	weight	setup 1		7
Binary Search Tree	weight	setup 1	insert 50	8
Binary Search Tree	weight	setup 1	delete 11	7
Binary Search Tree	weight	setup 1	delete 50	6

Test objective: Verify the correct functionality of the Height method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result
Binary Search Tree	Height	setup 1		3
Binary Search Tree	Height	setup 1	insert 12	4
Binary Search Tree	Height	setup 1	delete 12	3
Binary Search Tree	Height	setup 1	delete 11	2

Test objective: Verify the correct functionality of the Max method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result
Binary Search Tree	Max	setup 1		11
Binary Search Tree	Max	setup 1	delete 11	42

Test objective: Verify the correct functionality of the Min method of the BinarySearchTree.

Class	Method	Scenario	Input values	Result
Binary Search Tree	Min	setup 1		-25
Binary Search Tree	Min	setup 1	delete -25	-23

Test objective: Verify the correct functionality of the Insert method of the AVL Tree.

Class	Method	Scenario	Input values	Result
AVL Tree	Insert		Insert 10 Insert 5 Insert 6 Preorder	
AVL Tree	Insert		Insert 10 Insert 11 Insert 12 Preorder	
AVL Tree	Insert		Insert 5 Insert 2	

			Insert 4 Preorder	
AVL Tree	Insert		Insert 20 Insert 27 Insert 22 Preorder	
AVL Tree	Insert		Insert 20 Insert 27 Insert 22 Insert 15 Insert 17 Insert 12 Preorder	

Test objective: Verify the correct functionality of the Delete method of the AVL Tree.

Class	Method	Scenario	Input values	Result
AVL Tree	Delete	setup 2	-50 Preorder	False(Value is not in the tree)
AVL Tree	Delete	setup 2	15 Preorder	

AVL Tree	Delete	setup 2	20 Preorder	
AVL Tree	Delete	setup 2	10 Preorder	
AVL Tree	Delete	setup 2	8 Preorder	
AVL Tree	Delete	setup 2	16 Preorder	

TODO RED-BLACK TREE TESTS