Integrative task 2

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1) Functional Requirements.

The program should:

- **Generate** automatically a given number of persons
- Show a progress bar in case the generation of persons takes more than 1 second
- Save the generated data to load it when the user opens the program again
- **Create** a person
- **Delete** a person
- **Search** a person by:
 - Name
 - Surname
 - Full name
 - Code
- **Show** a suggestion list when the users search by name, surname or full name

2) Design of test cases

2.1 AVL tree test.

Stage

Name	Class	Stage
setupEmpty	AVLTreeTest	An empty AVL tree
setupPopulatedTree	AVLTreeTest	An AVL tree with 7 nodes: 5, "brown"; 1,"blue"; 2,"black"; 3,"red"; 4,"beige"; 6,"pink"; 7,"white"

Goal of the test: Verify that the add method adds a node successfully into the AVL tree

Class	Method	Stage	In's	Out's
AVLTree	add	setupEmpty	3, "red"	red
AVLTree	add getLeft getRight		1, "blue" 5, "black"	getLeft == "blue" getRight == "black"
AVLTree	add		1, "white"	1
AVLTree	add getBalanceFact or		4, "beige" 6, "pink" 7, "white"	getRoot.getBalanceFactor<2 == true

Goal of the test: Verify that the delete method deletes successfully a node of the AVL tree

Class	Method	Stage	In's	Out's
AVLTree	delete search	setupPopulate dTree	id =5	search (id) == "brown" delete(id) == "brown"

AVLTree	delete search	id = 5	search(id) == null delete(id) == null
AVLTree	delete getBalanceFact or	5 7 6	root.getBalanceFactor<2

Goal of the test: Verify that if there are two nodes with same key, the delete with the parameters (id, value) deletes the node with the given value

Class	Method	Stage	In's	Out's
AVLTree	search	setupPopulat edTree	id=1	search(id) == "blue"
AVLTree	add delete		1, "purple"	<pre>delete(1, "purple") search(1).size ==1</pre>

2.2 Binary Search Tree test.

Stage

Name	Class	Stage
setupEmpty	BinarySearchTreeTest	An empty binary search tree

setupPopulatedTree	BinarySearchTreeTest	A binary search tree with 7 nodes:
		5, "brown"; 1,"blue"; 2,"black"; 3,"red"; 4,"beige"; 6,"pink"; 7,"white"

Goal of the test: Verify that the add method adds a node successfully into the AVL tree

Class	Method	Stage	In's	Out's
BinarySearch Tree	add	setupEmpty	3, "red"	red
BinarySearch Tree	add getLeft getRight		1, "blue" 5, "black"	getLeft == "blue" getRight == "black"
BinarySearch Tree	add		1, "white"	1
BinarySearch Tree	search		1	search(1).size == 2

Goal of the test: Verify that the search method finds successfully the nodes to search

Class	Method	Stage	In's	Out's
BinarySearch Tree	search	setupPopula tedTree	id =5	search(id) == "brown"
BinarySearch Tree	delete search	delete(id)	id	search(id) == null

Goal of the test: Verify that the delete method deletes successfully a node of the binary search tree

Class	Method	Stage	In's	Out's
BinarySearch Tree	delete search	setupPopulate dTree	id =5	search (id) == "brown" delete(id) == "brown"
BinarySearch Tree	delete search		id = 5	search(id) == null delete(id) == null
BinarySearch Tree	add search		id = 1 "purple"	search(id) != null

BinarySearch Tree	delete	1	delete(1) should delete the node with value "blue"
BinarySearch Tree	search size	1	search(1) == "purple" search(1).size == 1

Goal of the test: Verify that if there are two nodes with same key, the delete with the parameters (id, value) deletes the node with the given value

Class	Method	Stage	In's	Out's
BinarySearch Tree	search	setupPopulat edTree	id=1	search(id) == "blue"
BinarySearch Tree	add delete		1, "purple"	<pre>delete(1, "purple") search(1).size ==1</pre>

Goal of the test: Verify that the method count counts the number of nodes correctly

Class	Method	Stage	In's	Out's
BinarySearch Tree	count	setupEmpty		0

BinarySearch Tree	count	5, "brown"; 1,"blue"; 2,"black"; 3,"red"; 4,"beige"; 6,"pink"; 7,"white"	14	

2.3 Trie test

Stage:

Name	Class	Stage
setupEmpty	TrieTest	Empty trie
setupPopulatedTrie	TrieTest	An trie populated with 9 words: "black", "block", "blonde", "wine", "win", "war", "dislike", "disliking", "bourbon"

Test cases:

Goal of the test: Verify that the method adds words properly and with the correct multiplicities.

Class	Method	Stage	In's	Out's
Trie	add	setupEmpty	"black", "blonde", "bourbon"	trie.getNode("black") is not null trie.getNode("black") is word trie.getNode("bourbon") multiplicities are 1, 2, 3

Goal of the test: Verify that the method removes words properly and subtract to the right multiplicities.

Class	Method	Stage	In's	Out's
Trie	remove	setupPopulatedTrie	"disliking", "dislike", "bourbon"	trie.getNode("disliking") is null trie.getNode("dislike") is null size of trie.root. is 2 trie.getNode("bourbon") multiplicity is 0 after adding it 2 times and deleting it twice too.

Goal of the test: Verify that the method removes words properly and subtract to the right multiplicities.

Class	Method	Stage	In's	Out's
Trie	getNode	setupPopulatedTrie		"black", "wine", "win" is word, is true "wi", "blo" is word is false

Goal of the test: Verify that the method removes words properly and subtract to the right multiplicities.

Class	Method	Stage	In's	Out's
Trie	getSugges tionsTest	setupPopulated Trie	{"black", "block", "blonde"} {"black", "block", "blonde", "bourbon"} {"wine"} {"war", "win", "wine"} {"dislike", "disliking"}	size(suggestions("bl")- list1) is zero size(suggestions("b")-list2) is zero size(suggestions("win")- list3) is zero size(suggestions("w")- list4) is zero size(suggestions("dis")- list5) is zero

Goal of the test: Verify that the method removes words properly and subtract to the right multiplicities.

Class	Method	Stage	In's	Out's
Trie	countSugges tionsTest	setupPopulatedT rie	prefixes: "bl", "b", "win", "w", "dis", "z" "blanco", "bronce", "winnie", "zombie"	before adding, the suggestion count for the prefixes is, in order: 3, 4, 1, 3, 2, 0 after adding: 4, 6, 2, 4, 2, 1

Goal of the test: Verify that the method removes words properly and subtract to the right multiplicities.

Class	Method	Stage	In's	Out's
Trie	countTotalS uggestionsTe st	setupPopulatedT rie	"blanco", "bronce", "winnie", "zombie"	before adding, the total suggestion count is 9 after adding, 15

2.4 Model Test

Name	Class	Stage
setupEmpty	DatabaseTest	An empty database
setupOnePerson	DatabaseTest	A database with one person: 1, "Test", "McTester", "Male", "2/02/20", 1.4, "Colombia"

Goal of the test: Test that the generate and the merge methods are working correctly

Class	Method	Stage	In's	Out's
Database	generateTempL ist	setupEmpt y	amount = 200	
Database	mergeTempList		amount	true
Database	count		amount	The counting of getting people by name, surname, code and the counting of the name and surname suggestions should equals amount

Goal of the test: Verify that the add method in database is working correctly

Class	Method	Stage	In's	Out's
Database	add	setupEmpty	person: 1, "Test", "McTester", "Male", "2/02/20", 1.4, "Colombia"	When we search the person by the name, surname and code the result should be the person added

Goal of the test: Verify that the search method and the delete method are working correctly

Class	Method	Stage	In's	Out's
Database	search	setupOnePe rson	code =1 compound ="Test McTester" inverseCompou nd= "McTester Test"	searchByCode.size==1 searchPersonByCode.na me== "Test" searchPersonByCode.su rname== "McTester"
Database	delete		p(The person created in the stage)	searchByCode.size==0 searchPersonByCode= = null

SearchController -numberFormat : NumberFormat -searchField : JFXTextField -numOfData : JFXTextField -generateButton : JFXButton -surNameField : JFXTextField AddPersonController -mergeButton : JFXButton -editNameButton : JFXButton **UI Class Diagram** -nameField : JFXTextField -progressBar : JFXProgressBar -editSurnameBut : JFXButton -surnameField : JFXTextField -percentLabel : Label ~db : Database createBut : JFXButton -db : Database +SearchController(db : Database) mascRbut : JFXRadioButton +GenerateController(db : Database) -searchControl editNameAct(event : ActionEvent) : void -Genre : ToggleGroup +generateAct(event : ActionEvent) : void ~editSurnamaAct(event : ActionEvent) : void -femRBut : JFXRadioButton +mergeAct(event : ActionEvent) : void +initialize() : void -birthDatePick : JFXDatePicker +updateCounters(num : double) : void -heightField: JFXTextField -nationField : JFXTextField -genControl db : Database +AddPersonController(db : Database) +createAct(event : ActionEvent) : void +initialize(): void PrincipalController -generateDataBut : MenuItem -addPersonBut : MenuItem <<use>>> searchBut : MenuItem -paneChange : Pane -firstPane : Pane -addControl -secondPane : Pane edit -thirdPane : Pane -db : Database -genControl : GenerateController -addControl: AddPersonController EditController ModifyController -searchControl: SearchController ~editWindow : Stage ~modifyWindow : Stage -finishBut : JFXButton +PrincipalController(db : Database) -nameField : JFXTextField -imgView : ImageView +generateDataButton(event : ActionEvent) : void notifications -surnameField : JFXTextField +addPersonAct(event : ActionEvent) : void -codeLbl : Label -modifyBut : JFXButton Notification -nameLbl : Label -searchAct(event : ActionEvent) : void -mascRbut : JFXRadioButton +whenInitializing(): void -surnameLbl : Label +SUCCESS : int = 1 <<use>>> -Genre : ToggleGroup +ERROR: int = 2-genreLbl : Label -femRBut : JFXRadioButton principalController 1 -birthLbl : Label -titleLabel : Label -birthDatePick : JFXDatePicker -heightLbl : Label -messageArea : JFXTextArea -heightField: JFXTextField -nationLbl : Label -banner : Rectangle -nationField : JFXTextField -editBut : JFXButton -icon : ImageView -cancelBut : JFXButton -delBut : JFXButton -line : Rectangle -p : Person -person : Person ~notificationStage : Stage +ModifyController(p : Person) Main ~dimension : Dimension +EditController(person : Person) -cancelAct(event : ActionEvent) : void -principalController : PrincipalController +Notification(title : String, message : String, type : int) ~delAct(event : ActionEvent) : void ~modifyAct(event : ActionEvent) : void -dataBase : Database ~editAct(event : ActionEvent) : void +show(): void +modifvWindow(): void ~finishAct(event : ActionEvent) : void +Main() +initialize(): void +editWindow(): void +main(args : String[]) : void +start(primaryStage : Stage) : void

GenerateController



