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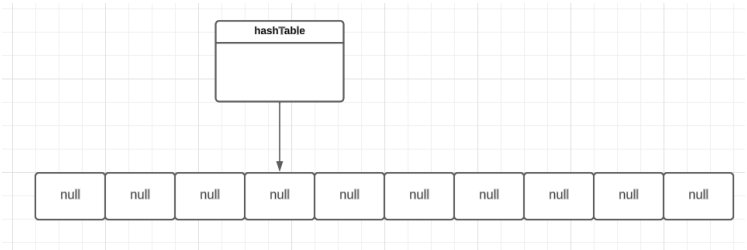
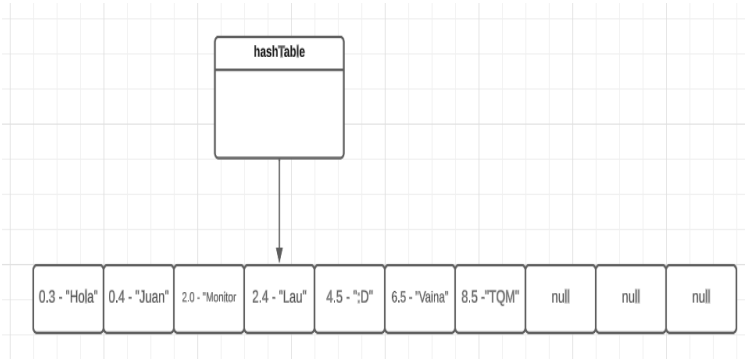
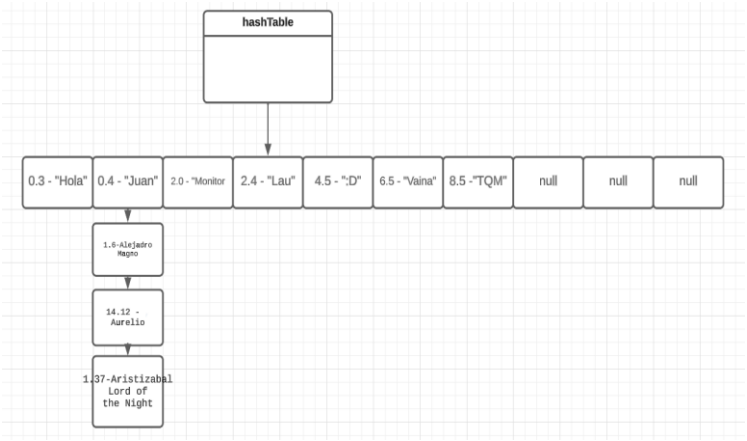
Computación Y Estructuras Discretas l

Hash Table

Name	Class	Scenery
hashTable_setup1	HashTableTest	Hash table is empty 
hashTable_setup2	HashTableTest	The hash table has added values. 

hashTable_setup3	HashTableTest	The hash table has added values and some are collided 

Test Objective: test if the hastable is capable of detecting when adding is not possible due to a repeated key				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	Add()	hashTable_setUp2	0.4, "Alejadro Magno" 0.4, "MonitorGod"	"Exception object with the same key that other"

Test Objective: test if the hastable is capable of adding an element if the list is empty				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	add	hashTable_setUp1	11.0, "Hola"	the element is added to the hash table

Test Objective: test if the hash table is capable of detecting when searching is not possible due to being empty				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	search	hashTable_setUp1	search(0,3)	Exception list is void

Test Objective: test if the hash table is adding and removing effectively				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	remove	hashTable_setUp1	0.3, 0.4, 2, 2.4, 4.5, 6.5, 8.5.	hash table should be empty

Test Objective: test if search method is working properly				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	search	hashTable_setUp2	search(8.5)	se encuentra el valor buscado con la llave 0.4, en este caso “Juan”

Test Objective: test if search method is working properly when there is a collision				
Class	**Method**	**Scenery**	**Input value**	**Return**

HashTableTest	add search	hashTable_setUp2	n = 0.39, "Marco Aurelio" a = 0.37, "Alejandro Magno"; search(0.37)	0.39, "Alejandro Magno" should be found

Test Objective: test if search throws exception when the item doesn't existe				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	search	hashTable_setUp2	search(0.26)	Exception object doesn't exist

Test Objective: test if remove method throws exception when the item doesn't exist				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	remove	hashTable_setUp2	remove(0.26)	Exception object doesn't exist

Test Objective: test if remove method works properly				
Class	**Method**	**Scenery**	**Input value**	**Return**

HashTableTest	remove	hashTable_setUp2	remove(0.3)	the element should not exist in the hash table

Test Objective: test if clone method makes identical items				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	clone()	hashTable_setUp2		the elements should be the same in both hash tables

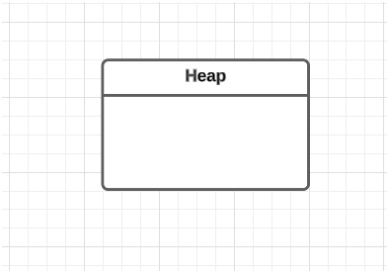
Test Objective: Check if the elements are real clones and not pointer to the original items				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	clone()	hashTable_setUp2		the elements should be the same in both hash tables and changing something in one of the elements doesn't change the clone of the other hash table

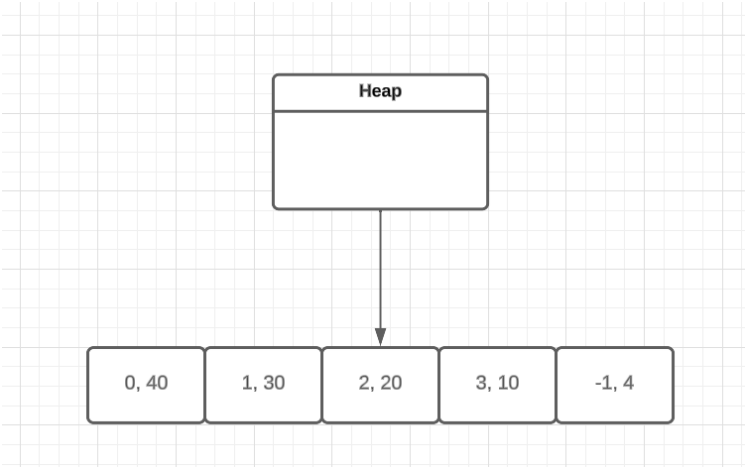
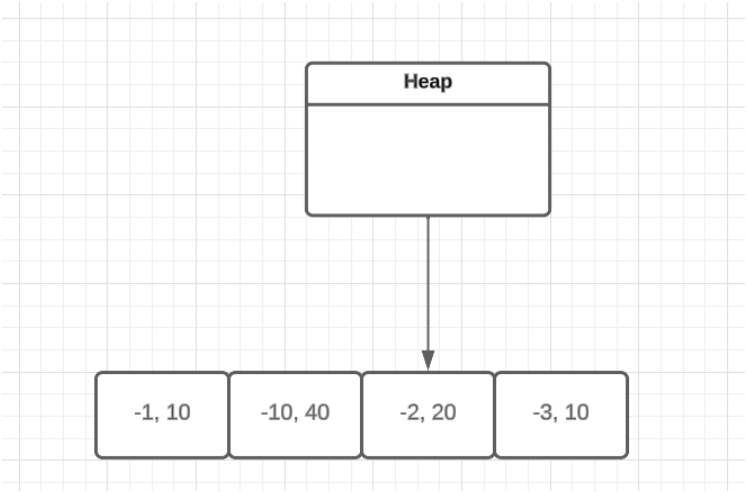
Test Objective: test the search method for an element that is collided				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	search	hashTable_setUp3	14.12	the item should be found and equal to "Aurelio"

Test Objective: test if remove works well when it is eliminating a collisioned element				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	remove	hashTable_setUp3	14.12	the element with key 14.12 should be removed

Test Objective: test if add method works well when it would make a collision				
Class	**Method**	**Scenery**	**Input value**	**Return**
HashTableTest	add	hashTable_setUp3	0.36, “Marco”	the element with key 14.12 should be removed

Heap

Name	Class	Scenery
heap_setup1	HeapTest	An empty Heap. 

heap_setup2	HeapTest	The Heap has some elements in it. 
heap_setup3	HeapTest	The heap has some negative values in it 

Test Objective: correctly inserting an element in an empty Heap				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	Insert	heap_setUp1	a = 1, 10	Using the method estactMax() we can confirm if the item is at the top of the list, meaning it was inserted.

Test Objective: Confirm the extractMax() method is working properly extracting some elements				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	extractMax()	heap_setUp2		Extracting three elements should return: 10, 20, 30

Test Objective: Check if changing the priority of one elements would make it to be on top of the Heap				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	increase key() extractMax()	heap_setUp2	IncreaseKey(10, 4)	changing the priority of one element would affect the extractMax()'s result.

Test Objective: Check if changing the priority of one elements would make it to be on top of the Heap				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	increase key() extractMax()	heap_setUp2	IncreaseKey(10, 4)	changing the priority of one element would affect the extractMax()'s result, in this case it should be equal to 10.

Test Objective: Check if extractMax method returns null when the Heap is empty()				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	extractMax()	heap_setUp1		null

Test Objective: Check if extractMax works even when the object is null				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	extractMax()	heap_setUp1		null

Test Objective: Check if adding and extracting an element works				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	Insert ExtractMax()	heap_setUp1	1,10 10	The same element must be found

Test Objective: Check if extractMax extract in order				
Class	**Method**	**Scenery**	**Input value**	**Return**

Heap	ExtractMax()	heap_setUp2		40 30 20

Test Objective: Inserting and extracting elements with high priority				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	insert	heap_setUp1	Integer.MaxValue, 10 Integer.Min, 20 Integer.MaxValue, 30	when extracting elements, it should be in order

Test Objective: Inserting and extracting				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	insert	heap_setUp1	5, 10	10

Test Objective: Inserting and extracting them in order

Class	Method	Scenery	Input value	Return
Heap	insert	heap_setUp1	3, 10 2, 20 1, 30 4, 40	Extracting them should return 40 10 20 30

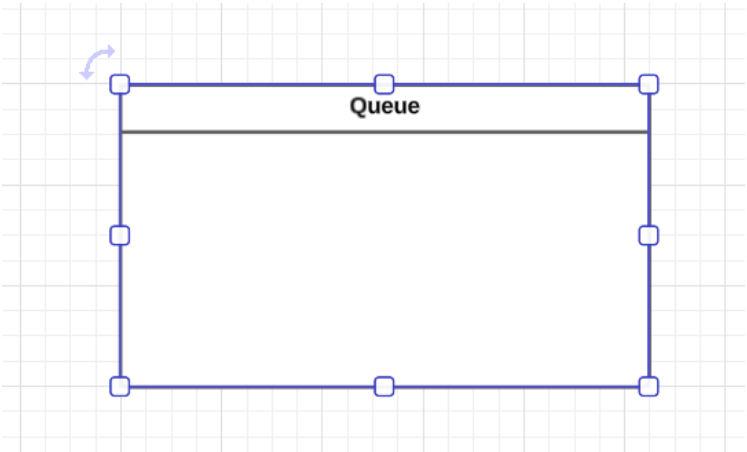
Test Objective: Inserting elements with the same priority and extracting them				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	insert	heap_setUp1	1, 10 1, 20 1, 30 1, 40 1, 50	Extracting them should give all of these elements. 10 50 40 30 20

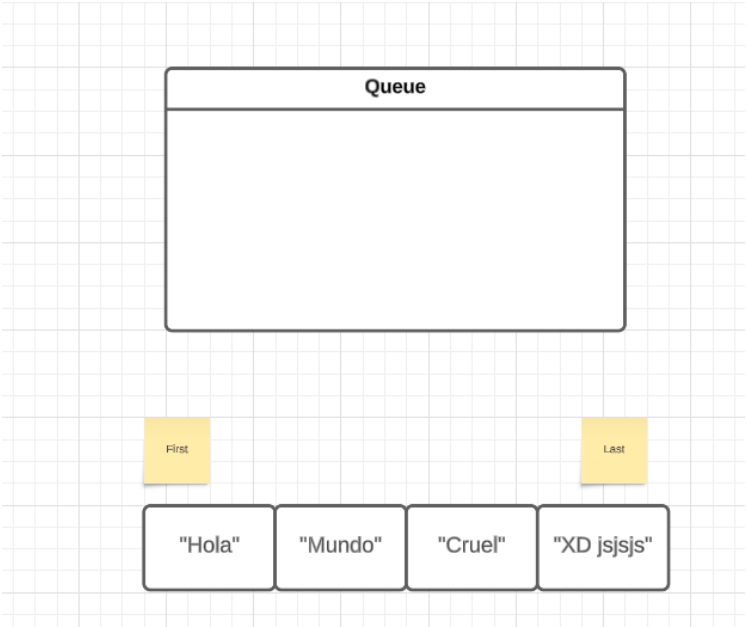
Test Objective: Test if cloning makes an identical Heap				
Class	**Method**	**Scenery**	**Input value**	**Return**

Heap	insert	heap_setUp1	1, 10 2, 20 3, 30	Each of the elements should be the same in both Heaps.

Test Objective: test if changing the priority of a task throws an exception when the task doesn't exist				
Class	**Method**	**Scenery**	**Input value**	**Return**
Heap	Heap.increaseKey()	heap_setUp2	15, 4	throws exceptionThisDataStructureIsVoid.

Queue

Name	Class	Scenery
queue_setup1	QueueTest	Queue is empty 

queue_setup 2	QueueTest	The queue has some String values 

Test Objective: Test if adding in an empty queue works				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	offer	queue_set Up1	“Hola”	The element should be added to the queue

Test Objective: Test if adding in an non empty queue works				
Class	**Method**	**Scenery**	**Input value**	**Return**

QueueTest	offer	queue_setUp2	“Hola”	The element should be added to the queue

Test Objective: Test if removing an element in an empty queue throws exception				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	poll	queue_setUp1		it should throw an exception of type : exceptionThisDataStructureIsVoid

Test Objective: Test if removing an element in an non empty queue works				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	poll	queue_setUp2		it should return “Hola”

Test Objective: Test if looking at the element in the front in an empty queue throws an exception				
Class	**Method**	**Scenery**	**Input value**	**Return**

QueueTest	front	queue_setUp1		it should throw an exception of type : exceptionThisDataStructureIsVoid

Test Objective: Test if looking at the element in the front in an non empty queue throws an exception				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	front	queue_setUp2		it should return “Hola”

Test Objective: Test if eliminating every element in the queue makes it empty				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	empty()	queue_setUp2	4*poll()	queue.isEmpty() = true

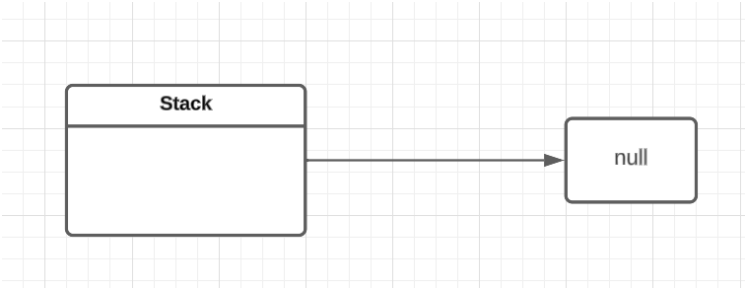
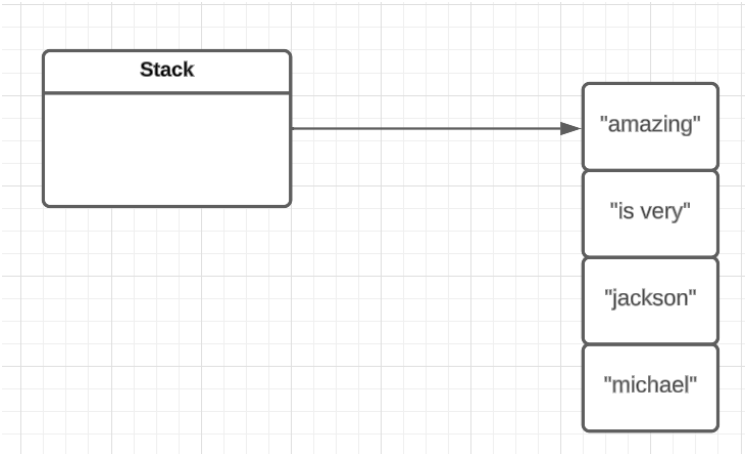
Test Objective: Test if the size() method return the quantity of elements that are in the queue				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	size()	queue_setUp2		queue.size() == 4

Test Objective: Test if the clone() methods clones properly each of the elements of the queue				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	size()	queue_setUp2		queue.size() == newQueue.size() for every element queue.poll() == newQueue.poll() or equals if it is an object

Test Objective: Check if cloning doesn't make a reference to the previous element, but a new object that is identical. Changing an element of the first queue and the same element in the cloned queue shouldn't be identical.				
Class	**Method**	**Scenery**	**Input value**	**Return**
QueueTest	size()	queue_setUp2		The items shouldn't be identical

Stack

Name	Class	Scenery

stack_setup1	StackTest	
stack_setup2	StackTest	The stack has some String values 

Test Objective: adding in an empty stack				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	add()	stack_setUp1	“hola”	The items should be added

Test Objective: adding in an non empty stack				
Class	**Method**	**Scenery**	**Input value**	**Return**

StackTest	add()	stack_set Up2	“hola”	The items should be added

Test Objective: removing an element in an empty stack				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	pop()	stack_set Up1		throw an exceptionThisDataStructureIsVoid

Test Objective: removing an element in an non empty stack				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	pop()	stack_set Up2		must be equal to “amazing”

Test Objective: looking at the top of an empty stack				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	top()	stack_set Up1		must return null

Test Objective: looking at the top of an non empty stack				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	top()	stack_set Up2		must return “amazing”

Test Objective: removing all elements must make the stack empty				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	pop() isEmpty()	stack_set Up2	pop() * 5	"Exception the list is void"

Test Objective: test the size() method, it should return the same amount of elements added				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	size()	stack_set Up2		must return 4

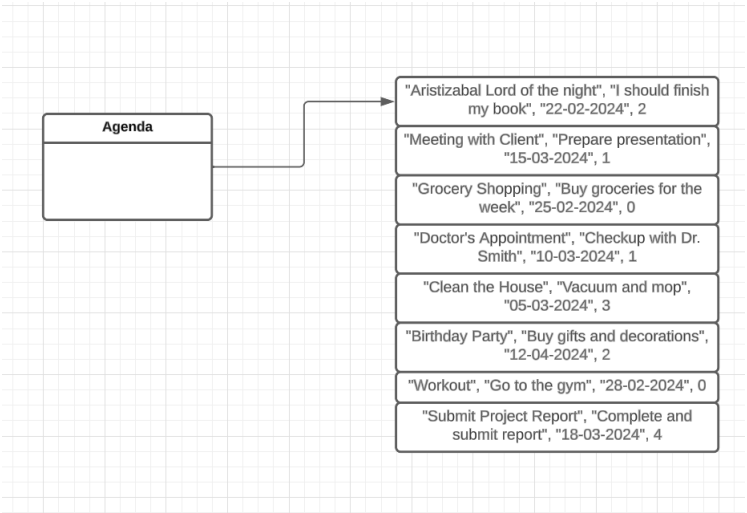
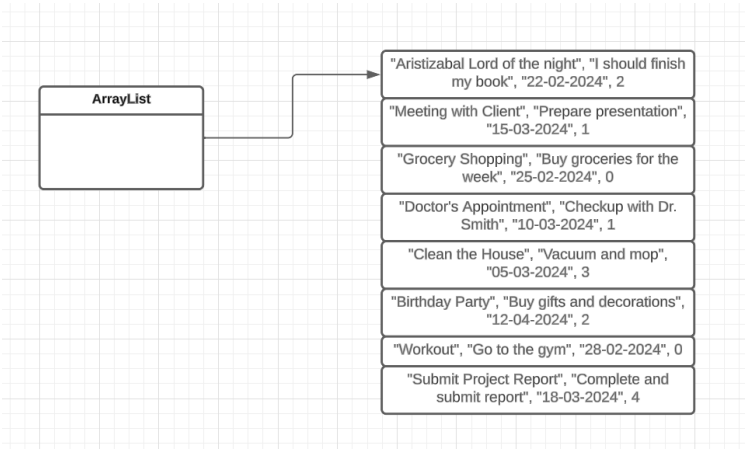
Test Objective: test the size() method, it should return the same amount of elements added				
Class	**Method**	**Scenery**	**Input value**	**Return**

StackTest	size()	stack_set Up2		must return 4

Test Objective: test clone method.				
Class	**Method**	**Scenery**	**Input value**	**Return**
StackTest	size()	stack_set Up2		the nes stack must have identical elements, but modifying one doesn't affect the other.

Agenda

Name	Class	Scenery
Agenda_setup1	AgendaTest	Empty agenda 

Agenda_setup2	AgendaTest	The agenda have some tasks 
Agenda_setup3	AgendaTest	An arrayList with identical elements as the Agenda setup_2 to compare 

Agenda_extremeSetup Extreme case	AgendaTest	An agenda with lots of tasks. Id, title, description, endline, priority 1, “Tittle ” 0, “Description “ 0, 00-00-0000, 0 2, “Tittle ” 1, “Description “ 1, 00-00-0000, 1 3, “Tittle ” 2, “Description “ 2, 00-00-0000, 2 4, “Tittle ” 3, “Description “ 3, 00-00-0000, 3 5, “Tittle ” 4, “Description “ 4, 00-00-0000, 0 … 1000, “Tittle ” 999, “Description “ 999, 00-00-0000, 0

Test Objective: adding in an empty Agenda				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	add()	Agenda_setUp1	"Aristizabal Lord of the night", "I should finish my book", "22-02-2024", 2	The item should be added

Test Objective: adding in a non empty Agenda				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	add()	Agenda_setUp2	"The questions for the monitors", "Jhoan and	The item should be added

			Richard are good guys", "22-02-2024", 4	

Test Objective: searching in an empty agenda				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	search()	Agenda_setUp1	1	exceptionThisDataStructureIsVoid

Test Objective: searching a task that doesn't exist				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	search()	Agenda_setUp2	100	exceptionTheObjectDoesntExist

Test Objective: searching a task that exist				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	search()	Agenda_setUp2	100	exceptionTheObjectDoesntExist

Test Objective: Remove a task in empty agenda

Class	Method	Scenery	Input value	Return
AgendaTest	removeTask()	Agenda_setUp1	1 2	“The data is empty in the priority task” "The data is empty in the non-priority task"

Test Objective: Remove a non priority task				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	removeTask()	Agenda_setUp2 Agenda_setup3	2	Removing a non priority task in agenda_setup2 must be identical to the element in the second position of the arraylist used in agenda_setup3

Test Objective: Removing every priority task, every time the element removed must be the one with the biggest priority.				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	removeTask()	Agenda_setUp2 Agenda_setup3		Agenda_setup3(7) == Agenda_setup2.extractMax(1); Agenda_setup3(4) == Agenda_setup2.extractMax(1); Agenda_setup3(0) == Agenda_setup2.extractMax(1); Agenda_setup3(5) == Agenda_setup2.extractMax(1);

				Agenda_setup3(1) == Agenda_setup2.extractMax(1); Agenda_setup3(3) == Agenda_setup2.extractMax(1);

Test Objective: Removing every non priority task, every time the element removed must be the oldest one.				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	removeTask()	Agenda_setUp2 Agenda_setup3	2 2 2	Agenda_setup3(6) == Agenda_setup2.extractMax(2); Agenda_setup3(2) == Agenda_setup2.extractMax(2); "The data is empty in the non-priority task"

Test Objective: Removing a task won't eliminate others				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	removeTask()	Agenda_setUp2	7	the rest of task should still exist

Test Objective: modifying in empty Agenda				
Class	**Method**	**Scenery**	**Input value**	**Return**

AgendaTest	modyfy()	Agenda_setUp2	1,"Aristizabal Lord of the night", "I should finish my book", "22-02-2024", 2	exceptionThisDataStructureIsVoid

Test Objective: modifying in normal case				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	modyfy()	Agenda_setUp2	1, "Hi, I am German", " And the video at today", "22-02-2025", 3	the task number 1, should be changed with this information, it can be confirmed by searching.

Test Objective: modifying and the item doesn't exist				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	modyfy()	Agenda_setUp2	100, "Hi, I am German", " And the video at today", "22-02-2025", 3	"The task was not modified because the task don't exist"

Test Objective: cloning and agenda makes identical items but not a reference to the same object				
Class	**Method**	**Scenery**	**Input value**	**Return**

AgendaTest	modyfy()	Agenda_setUp2		"The agenda was cloned, different objects"

Test Objective: changing a clone won't affect the original agenda.				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	modyfy()	Agenda_setUp2		the values must be different

Test Objective: test if every of the elements are added				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	search()	Agenda_extremeSetUp	0 1 2 … 999	All te values must be found

Test Objective: for every element cloned, the elements are equal but each has a different memory direction				
Class	**Method**	**Scenery**	**Input value**	**Return**

AgendaTest	clone()	Agenda_extremeSetUp		All te values must be identical but with a different memory direction

Test Objective: changing every element should make different elements				
Class	**Method**	**Scenery**	**Input value**	**Return**
AgendaTest	modify()	Agenda_extremeSetUp	0, “Hi, I am German “ 0, , " And the video at today "+i*i, "22-02-2025", 3 1, “Hi, I am German “ 0, , " And the video at today "+i*i, "22-02-2025", 3 … 999, “Hi, I am German “ 0, , " And the video at today "+i*i, "22-02-2025", 3	All te values must be modified

Task

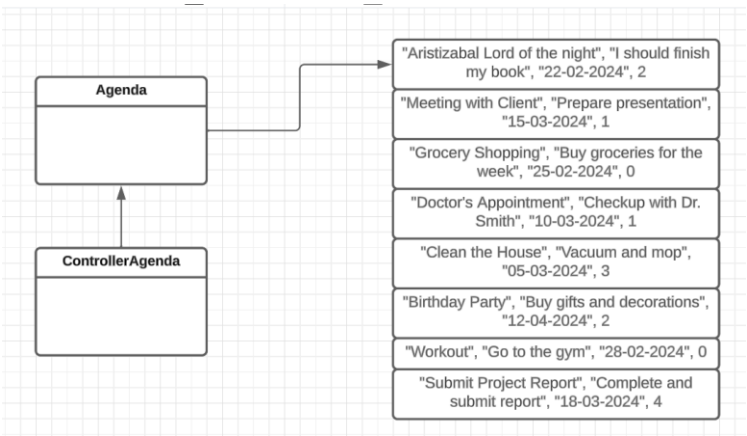
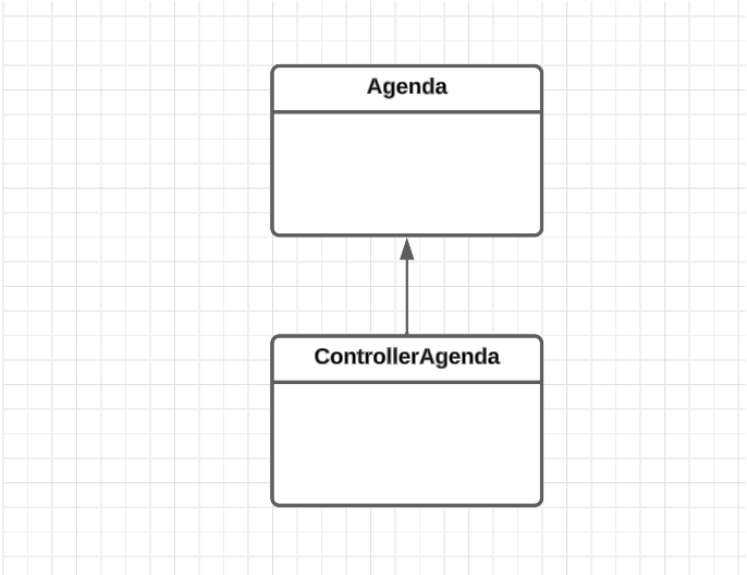
Name	Class	Scenery

task_setup1	TaskTest	A task with this information: 12345678,"Marco Aurelio ","he owes me money","22-02-2034",2

Test Objective: test if the constructor assigns the atributes properly				
Class	**Method**	**Scenery**	**Input value**	**Return**
TaskTest	Task()	Task_setup1		All the atributes must be assigned

ControllerAgendaTest

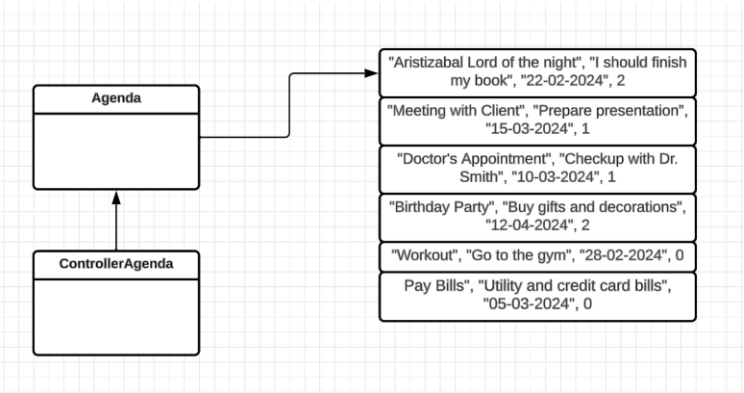
Name	Class	Scenery
ControllerAgenda_setup2	ControllerAgenda	This tasks are added: Id, title, description, endLine, priority 1, "Aristizabal Lord of the night", "I should finish my book", "22-02-2024", 2 2, "Meeting with Client", "Prepare presentation", "15-03-2024", 1 3, "Grocery Shopping", "Buy groceries for the week", "25-02-2024", 0 4, "Doctor's Appointment", "Checkup with Dr. Smith", "10-03-2024", 1

		5, "Clean the House", "Vacuum and mop", "05-03-2024", 3 
ControllerAgenda_setup1	ControllerAgenda	An empty controller 

ControllerAgenda_setup3	ControllerAgenda	Is the ControllerAgenda_setup2 but with some modifications.
		
		We have a new variable “agenda” in which we will save the differents versions of the agenda and an arrayList called “changes” in which we will save the text that is printed when doing an action. Then we do these changes:
		
		control.removeTask(1);
		
		changes.add("The task Submit Project Report was removed");
		
		agenda.add(control.getAgenda().clone());
		
		control.removeTask(2);
		
		changes.add("The task Grocery Shopping was removed");

```
agenda.add(control.getAgenda().clone());

control.addTask("Plan Vacation", "Research and book flights", "30-04-2024", 4);

changes.add("Add new task: Plan Vacation");

agenda.add(control.getAgenda().clone());

control.addTask("Pay Bills", "Utility and credit card bills", "05-03-2024", 0);

changes.add("Add new task: Pay Bills");

agenda.add(control.getAgenda().clone());

control.modifyTask(3, "Call Mom", "Check-in with Mom", "01-03-2024", 0);

changes.add("modify task by title: Call Mom");

agenda.add(control.getAgenda().clone());

control.removeTask(1);

changes.add("The task Plan Vacation was removed");

agenda.add(control.getAgenda().clone());

control.removeTask(2);

changes.add("The task Workout was removed");

agenda.add(control.getAgenda().clone());
```

Ending like this:



Test Objective: undoing an action when no action has been made

Class	Method	Scenery	Input value	Return
ControllerAgenda	undo ()	Controller Agenda_setup1		“There is no more versions to undo"

Test Objective: undoing in an agenda should make a different agenda for every undo() call				
Class	**Method**	**Scenery**	**Input value**	**Return**
ControllerAgenda	undo ()	Controller Agenda_setup2		Each time the agendas must be different

Test Objective: every element after undoing an action must be the same				
Class	**Method**	**Scenery**	**Input value**	**Return**
ControllerAgenda	undo ()	Controller Agenda_setup2		Each time the elements must be the same, unless the action affected the task

Test Objective: undoing in an agenda should make a different agenda for every undo() call				
Class	**Method**	**Scenery**	**Input value**	**Return**
ControllerAgenda	undo ()	Controller Agenda_setup2		"The Agenda versions should be different by its changes: "

Test Objective: getting every element of the AgendaController should be equal to evey element added, it can be confirmed by using an array of the previous elements				
Class	**Method**	**Scenery**	**Input value**	**Return**
ControllerAgenda	toString ()	Controller Agenda_setup2		Each element should be the same

Test Objective: assert that undoing an action return the system to the exact previous version				
Class	**Method**	**Scenery**	**Input value**	**Return**
ControllerAgenda	toString ()	Controller Agenda_setup3		Every version should be the same when undoing an action, and also the messages that are printed when doing an action