DISTRIBUTED CLASS MANAGEMENT SYSTEM DESIGN DOCUMENTATION

version 1.0

COMP6231 | Team 7

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1. System Architecture

This section will illustrate the architecture of this system via UML class diagram.

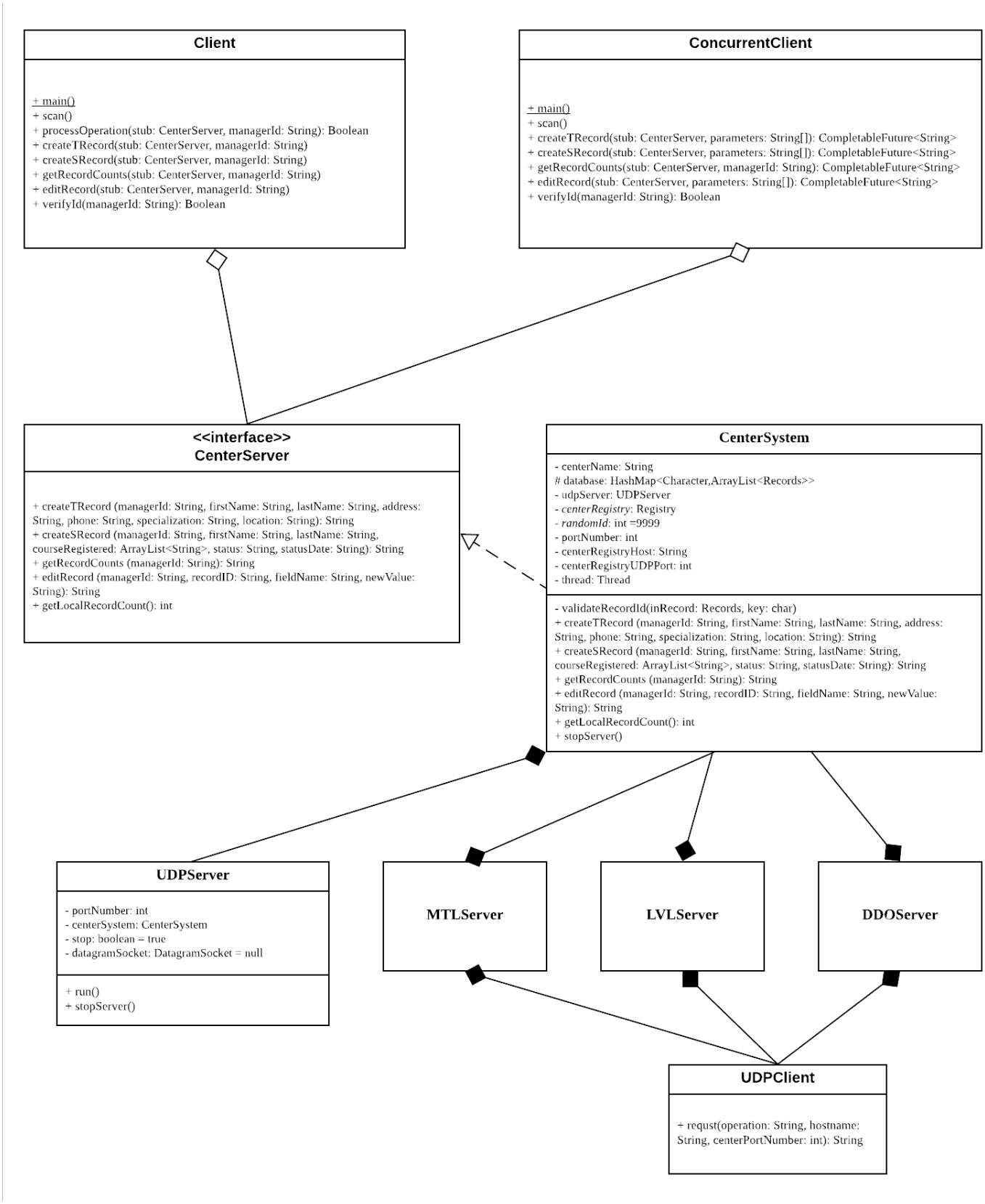

figure 1. Class diagram 1

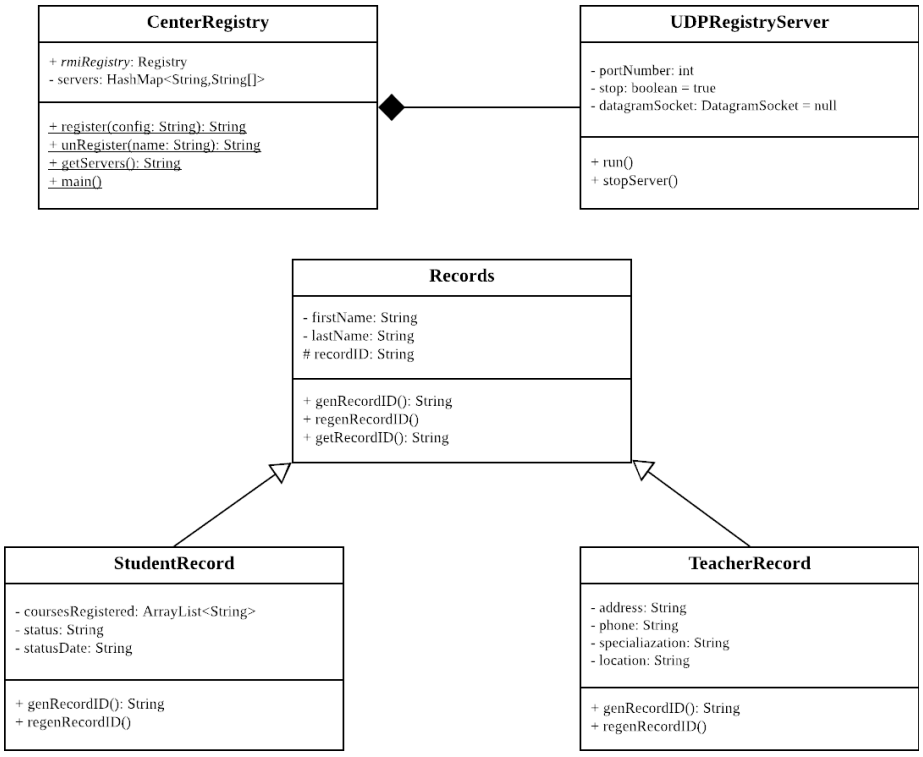

figure 2. Class diagram 2

2. Test Scenario

This section will describe some test scenarios that cover all the basic operations of this system, which include: i) creation and termination of RMI registry; ii) creation and termination of one single server; iii) creation and termination of any of two servers; iv) creation and termination of all of the three servers; v) executing client and creating teacher records; vi) executing client and creating student records; vii) executing concurrent-client and to accomplish operations based on an exist file.

DCMS Test Scenario # TS001			
Version #:	1.0	**Test Scenario ID:**	TS001
Objective:	Can successfully create a RMI Registry and close it by pressing stop.		
Assumptions/ Constraints:	-		
Test Steps:			
Step #	**Description**	**Expected Result**	**Actual Result**
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.
DCMS Test Scenario # TS002			

Version #:	1.0	Test Scenario ID:	TS002
Objective:	Can successfully start MTL server based on the created RMI registry and with LVL server started and DDO server started.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and the LVL server and the DDO server have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Execute LVLServer to start the server for LVL.	Successfully start the LVL server and print succeed log in console of LVLServer and the register information of MTL server in console of CenterRegistry.	As expected.
3	Execute MTLServer to start the server for MTL.	Successfully start the MTL server and print succeed log in console of MTLServer and the register information of MTL server in console of CenterRegistry.	As expected.
4	Execute DDOServer to start the server for DDO.	Successfully start the DDO server and print succeed log in console of DDOServer and the register information of DDO server in console of CenterRegistry.	As expected.
5	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
6	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.

DCMS Test Scenario # TS003

Version #:	1.0	Test Scenario ID:	TS003
Objective:	Create a teacher record and view the count of records.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and servers have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Start one or some server(s).	Successfully start one or some server(s) for further operations.	As expected.
3	Execute Client.	Successfully start client for further operations.	As expected.

4	Enter a valid manager ID.	The operation menu will be printed in console.	As expected.
5	Enter “1” to create a teacher record.	Start to create a teacher record. Obey the prompt in console to finish the relevant fields. When finish creations of all the fields, there will be a prompt for the information of this record.	As expected.
6	Enter former manager ID for the operation after creating teacher records.	The operation menu will be printed in console.	As expected.
7	Enter “3” to view the record count.	It will prompt the record counts of each server.	As expected.
8	Enter “5” to exit client.	Stop client.	As expected.
9	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
10	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.

DCMS Test Scenario # TS004

Version #:	1.0	**Test Scenario ID:**	TS004
Objective:	Edit a teacher record for valid fields.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and servers have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Start one or some server(s).	Successfully start one or some server(s) for further operations.	As expected.
3	Execute Client.	Successfully start client for further operations.	As expected.
4	Create a teacher record step by step.	Successfully create a teacher record and there will be a prompt for the information of this record.	As expected.
5	Enter former manager ID for the operation after creating teacher records.	The operation menu will be printed in console.	As expected.

6	Enter “4” to edit the record.	It will prompt a portal to enter the record id and user can choose which field to be edit.	As expected.
7	Enter “phone” to edit information of phone number (valid for teacher record).	It will prompt entrance of new value input. After entering a new value, it will print “Record updated” which indicates success.	As expected.
8	Repeat operation 5 and 6.	It will prompt a portal to enter the record id and user can choose which field to be edit.	As expected.
9	Enter “status” to edit information of status (invalid for teacher record).	It will prompt entrance of new value input. After entering a new value, it will print “fieldName doesn't match record type” which indicates failure.	As expected.
10	Repeat operation 5 and enter “5” to exit client.	Stop client.	As expected.
11	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
12	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.

DCMS Test Scenario # TS005

Version #:	1.0	**Test Scenario ID:**	TS005
Objective:	Create a student record and accomplish the valid operations for the record type.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and servers have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Start one or some server(s).	Successfully start one or some server(s) for further operations.	As expected.
3	Execute Client.	Successfully start client for further operations.	As expected.
4	Enter a valid manager ID.	The operation menu will be printed in console.	As expected.
5	Enter “2” to create a student record.	Start to create a student record. Obey the prompt in console to finish the relevant fields. When finish creations of all the fields, there will be a prompt for the information of this record.	As expected.

6	Enter former manager ID for the operation after creating student records.	The operation menu will be printed in console.	As expected.
7	Enter “3” to view the record count.	It will prompt the record counts of each server.	As expected.
8	Enter “5” to exit client.	Stop client.	As expected.
9	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
10	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.

DCMS Test Scenario # TS006

Version #:	1.0	**Test Scenario ID:**	TS006
Objective:	Edit a student record.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and servers have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Start one or some server(s).	Successfully start one or some server(s) for further operations.	As expected.
3	Execute Client.	Successfully start client for further operations.	As expected.
4	Enter a manger ID without prefix of any server.	It will prompt a message of “ManagerId error. Please input again” which detects no server is matched.	As expected.
5	Create a student record step by step.	Successfully create a teacher record and there will be a prompt for the information of this record.	As expected.
6	Enter former manager ID for the operation after creating student records.	The operation menu will be printed in console.	As expected.
7	Enter “4” to edit the record.	It will prompt a portal to enter the record id and user can choose which field to be edit.	As expected.

8	Enter anything but not the correct record ID.	It will still prompt entrance of new value input. But after finishing typing, it will print “no such record Id for this manager” which indicates failure.	As expected.
9	Repeat operation 6 and enter “5” to exit client.	Stop client.	As expected.
10	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
11	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.

DCMS Test Scenario # TS007

Version #:	1.0	**Test Scenario ID:**	TS007
Objective:	Edit a record.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and servers have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Start one or some server(s).	Successfully start one or some server(s) for further operations.	As expected.
3	Execute Client.	Successfully start client for further operations.	As expected.
4	Create a student record step by step.	Successfully create a teacher record and there will be a prompt for the information of this record.	As expected.
5	Enter a new manager ID for the operation.	The operation menu will be printed in console.	As expected.
6	Enter “4” to edit the record.	It will prompt a portal to enter the record id and user can choose which field to be edit.	As expected.
7	Enter the record ID of the created student record (Not in the new manager ID).	When user finishes entering the new value, it returns the portal of entering another manger ID.	As expected. It should prompt information of specific failure.
8	Repeat operation 6 and enter “5” to exit client.	Stop client.	As expected.

9	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
10	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.

DCMS Test Scenario # TS008

Version #:	1.0	**Test Scenario ID:**	TS008
Objective:	Create a group of records and accomplish the operation based on an exist file.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and servers have started successfully.		

Test Steps:

Step #	Description	Expected Result	Actual Result
1	Execute CenterRegistry to create a RMI registry for the servers.	Successfully create a RMI registry and print related information logs in console.	As expected.
2	Start one or some server(s).	Successfully start one or some server(s) for further operations.	As expected.
3	Execute ConcurrentClient.	Successfully start client, and accomplish operations including creating correct records and other valid operations based on the file read by the ConcurrentClient.	As expected.
5	Stop servers.	Stop DDO server, MTL server and LVL server with printing related information logs in console.	As expected.
6	Stop CenterRegistry to close the services.	Stop the created RMI registry and print related information logs in console.	As expected.