

DISTRIBUTED CLASS MANAGEMENT SYSTEM DESIGN DOCUMENTATION

version 1.0

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1. System Architecture

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

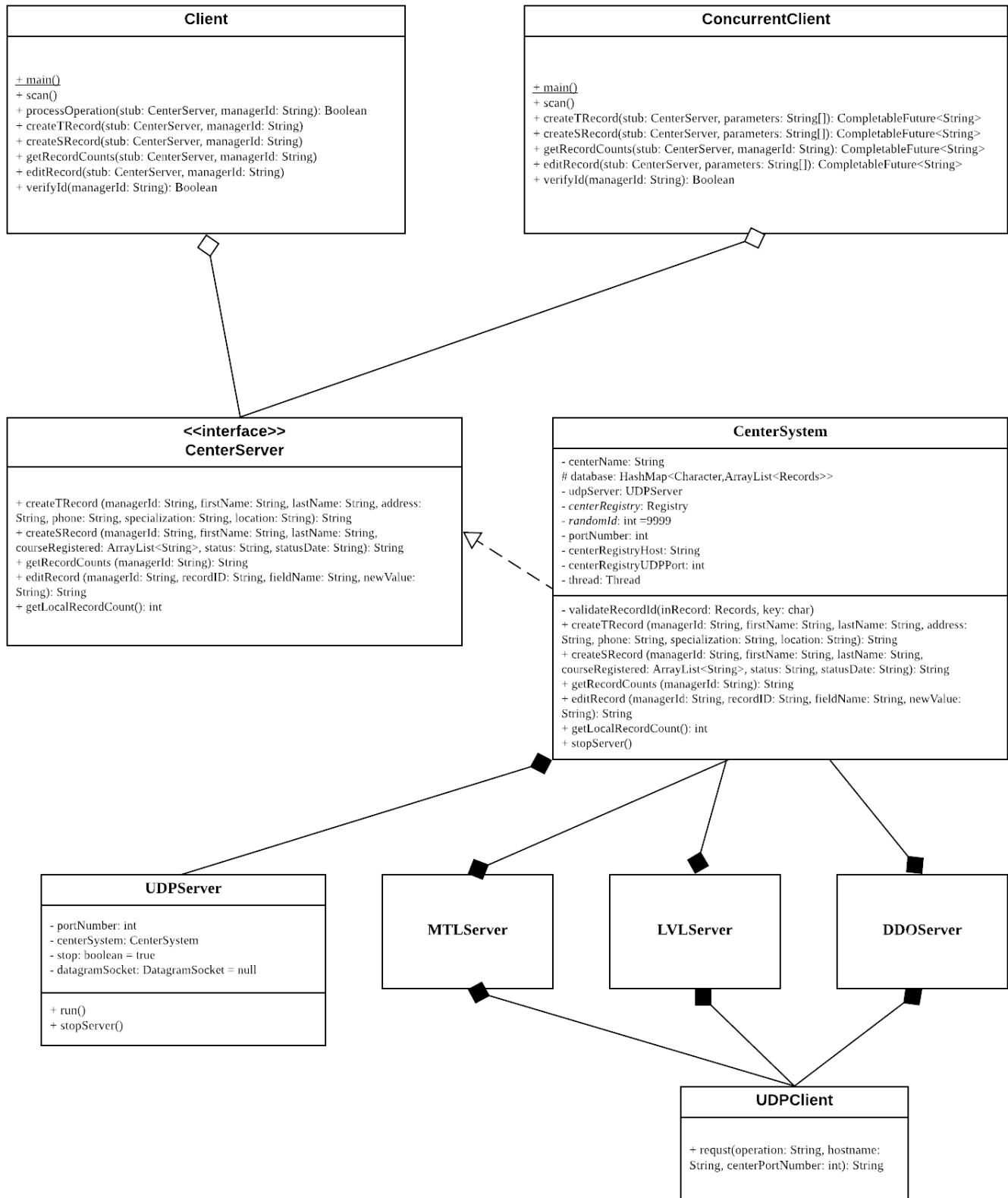


figure 1. Class diagram 1

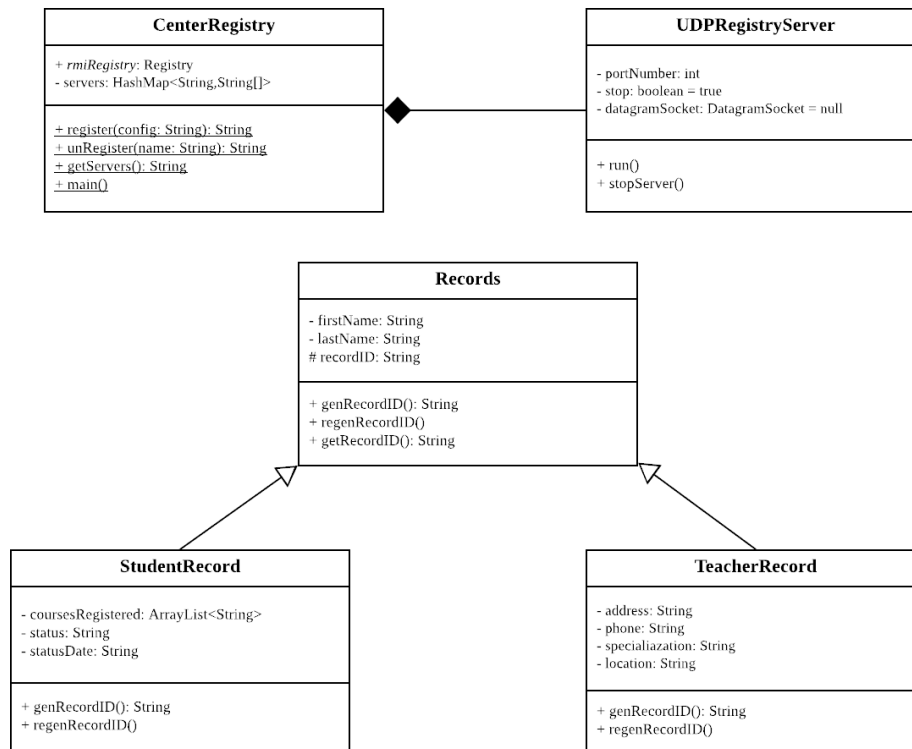


figure 2. Class diagram 2

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.		
Assumptions/ Constraints:	The RMI registry has been created 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 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.
3	Stop MTL server.	Stop MTL server and print related information logs in console.	As expected.
4	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:	Can successfully start LVL server based on the created RMI registry.		
Assumptions/ Constraints:	The RMI registry has been created 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 LVL server in console of CenterRegistry.	As expected.
3	Stop LVL server.	Stop LVL server and print related information logs in console.	As expected.
4	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:	Can successfully start LVL server based on the created RMI registry and with MTL server started.		

Assumptions/ Constraints:	The RMI registry has been created successfully, and the MTL server has 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 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.
3	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 LVL server in console of CenterRegistry.	As expected.
4	Stop servers.	Stop MTL server and LVL server with printing related information logs in console.	As expected.
5	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:	Can successfully start DDO server based on the created RMI registry and with LVL server started.		
Assumptions/ Constraints:	The RMI registry has been created successfully, and the LVL server has 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 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.
3	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.
4	Stop servers.	Stop DDO server and LVL server with printing related information logs in console.	As expected.
5	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:	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 # TS007			
Version #:	1.0	Test Scenario ID:	TS007
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 # TS008

Version #:	1.0	Test Scenario ID:	TS008
Objective:	Create a teacher 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 "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 "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.
9	Enter "5" to exit client.	Stop client.	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 # TS009

Version #:	1.0	Test Scenario ID:	TS009
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 "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.

9	Enter “5” to exit client.	Stop client.	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 # TS010			
Version #:	1.0	Test Scenario ID:	TS010
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.