

PROJECT - 1 :DCRS: Using Java RMI and UDP/IP

DATA STRUCTURE USED :

1. Nested HashMap<> is used to store the values for each servers:
“static HashMap<String, HashMap<String , Integer>> **comp_sem_details**= new HashMap<String, HashMap<String , Integer>>();”
2. Student list is maintained on “**ImplementInterface.java**” as a nested Hashmap :
static HashMap<String,HashMap<String,ArrayList<String>>> **stu** = new HashMap<>();
3. Another variable “static HashMap<String,Integer> **userData**=new HashMap<>();” is used to keep track of the student, so that they cannot enroll in more than 2 courses from department other than theirs.
4. Each server has its own student list which can altered by their own object.
5. Each server has some pre-data for the courses available in each term in nested HashMap format.

INTERFACE:

/******Method for Advisor******/

- public String[] addCourse(String courseId,String sem,int size)
- public String[] removeCourse(String courseId, String sem) throws Exception;
- public String listCourseAvailability(int first_dep_port,int second_dep_port,String sem,String userID)

/******Method for student ******/

- public String[] enrollCourse(String stuID,String courseId,int coursePort,String sem)
- public String getClassSchedule(String stuID) throws Exception;
- public String[] dropCourse(String stuID,String courseId,String sem)
- public String dropCourseFromStu(String stuID, String courseID,String sem)

Test Case Scenarios Tested:

TC 1 : Invalid UserID check (first 4 letter shud be "COMP,SOEN or INSE" and 5th shud be A/S
TC 2 : Invalid operation(other than 1,2,3)

Add course :

TC 3 : Advisor can add course in their own department(COMPA1111 can add comp courses only)
TC 4 : Added course size should be greater than 0(of size >0)
TC 5 : Add course in valid semester(for "Fall,Winter or summer")

TC 6 : If course already there in the sem, then thru error

TC 7 : Log file for each advisor

Remove Course :

TC 8 : Advisor can remove course from own department

TC 9 : Remove course from valid semester

TC 10 : If course not there, through error

TC 11 : If stu enrolled then delete course from the student list

List course :

TC 12 : Check if user wants data of valid semester

TC 13 : List course of particular semester from all department

TC 14 : return result for particular sem from all the servers using the user server(COMPA1111 gets COMP FALL details from COMP server ,and FALL details from other two servers ,COMP server uses UDP/IP conversation)

Enroll course :

TC 15 : if course available in department in particular term

TC 16 : Student from one dep enrol in other dep through own department server

TC 17 : Can enroll in atmost 3 courses in a given term

TC 18 : Can enroll in atmost 2 courses from other department for entire year

TC 19 : If the course has seat =0 in own department,Give appropriate msg

TC 20 : If the course has seat =0 in other department(through UDP/IP),Give appropriate msg

TC 21 : if stu already enrolled in the course,Give appropriate msg

TC 22 : if available ,then user should be able to enroll and size of course reduces by one and student list updated by the course

TC 23 : Valid department

TC 24 : Valid term

TC 25 : Valid course

TC 26 : Log file for each student

Drop course :

TC 27 : Valid department

TC 28 : Valid term

TC 29 : If student never enrolled in any course , throw error

TC 30 : If student wants to remove the course which he is not enrolled , throw error

TC 31 : if removed course which he is enrolled, then increases the size of course in particular sem and drop course from student list

Class schedule :

TC 32 : If student never enrolled in any course , throw error

