Introduction:

In this assignment, we implemented a distributed event management system (DEMS) for a leading corporate event management company: a distributed system used by event managers who manage the information about the events and customers who can book or cancel an event across the company's different branches.

Managers are allowed to perform some functions such as: addEvent, removeEvent, listEventAvailability.

Additionally customers are allowed to perform some functions such as: bookEvent, getBookingSchedule , cancelEvent.

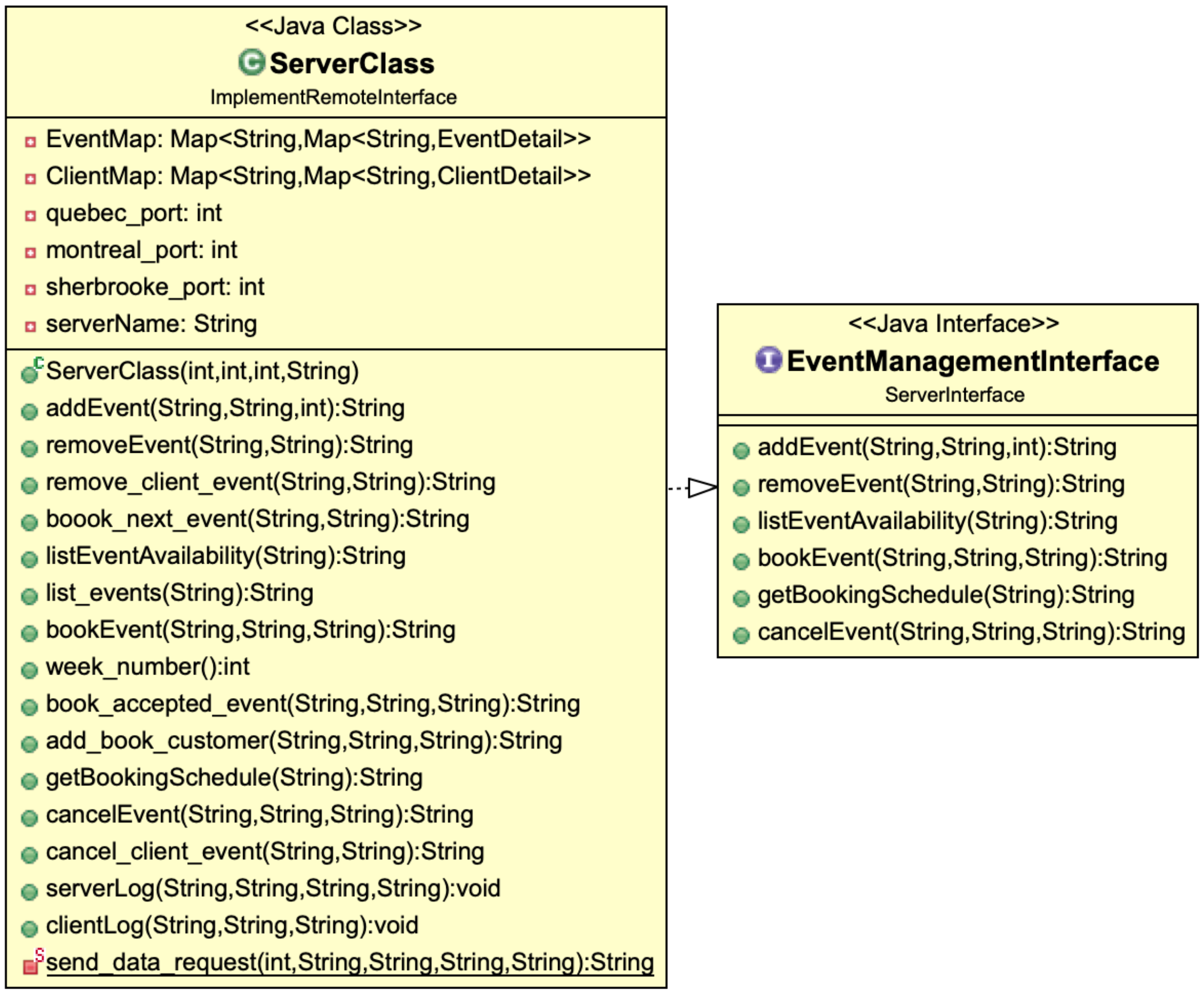
We have 3 servers, Montreal, Quebec and Sherbrook. Therefore, we have one class for implementation of servers and we instantiate each of servers, and pass the required parameters for running the servers through the constructor.

In this assignment in order to perform some of these functions we need some inter server communication. Therefore, we implemented additional functions, which you can observe bellow.

Class Diagram

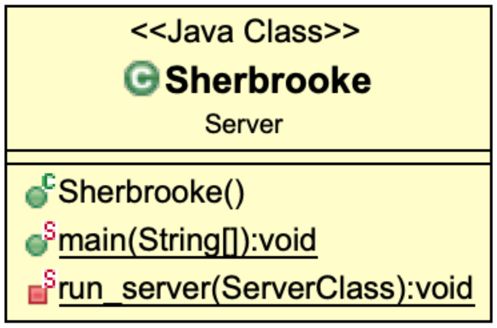
Server side:

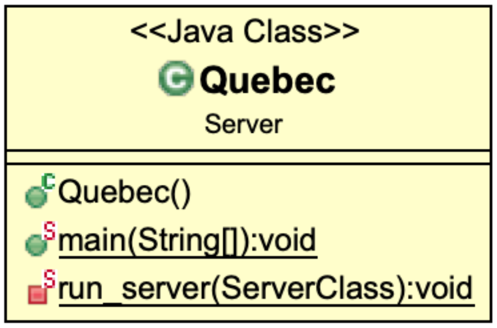
This class is implemented in order to handle the requests from others servers through UDP and requests from different users. In order to handle the requests through RMI from users, we have 6 main functions, which is implemented our EventManagmentInterface. Additionally, some other functions such as, remove_client, list_events and etc. in order to handle the requests through UDP.

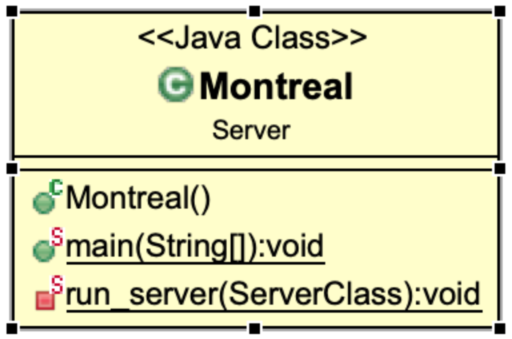


<<Java Class>>
ServerClass
ImplementRemoteInterface
EventMap: Map<String,Map<String,EventDetail>>
ClientMap: Map<String,Map<String,ClientDetail>>
quebec_port: int
montreal_port: int
sherbrooke_port: int
serverName: String
ServerClass(int,int,int,String)
addEvent(String,String,int):String
removeEvent(String,String):String
remove_client_event(String,String):String
boook_next_event(String,String):String
listEventAvailability(String):String
list_events(String):String
bookEvent(String,String,String):String
week_number():int
book_accepted_event(String,String,String):String
add_book_customer(String,String,String):String
getBookingSchedule(String):String
cancelEvent(String,String,String):String
cancel_client_event(String,String):String
serverLog(String,String,String,String):void
clientLog(String,String,String):void
send_data_request(int,String,String,String,String):String
<<Java Interface>>
EventManagementInterface
ServerInterface
addEvent(String,String,int):String
removeEvent(String,String):String
listEventAvailability(String):String
bookEvent(String,String,String):String
getBookingSchedule(String):String
cancelEvent(String,String,String):String

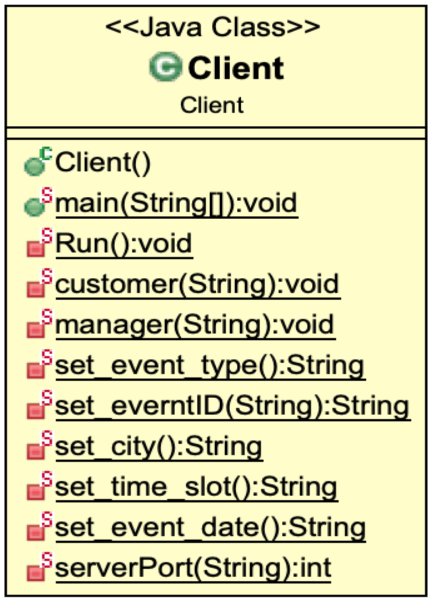
In each server we insatiate the ServerClass and will pass the proper port and name through the constructors.



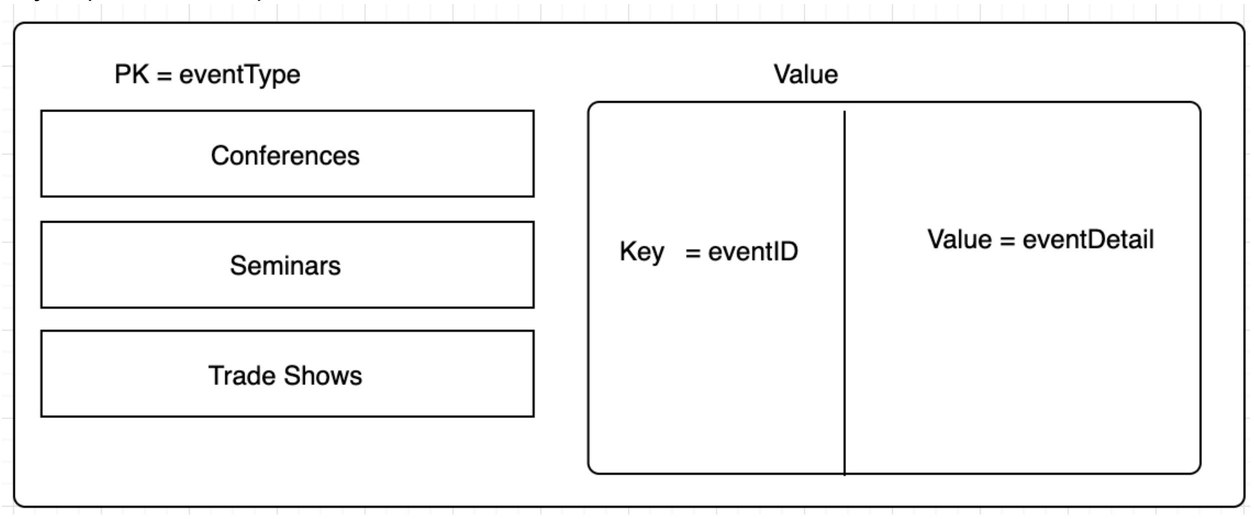




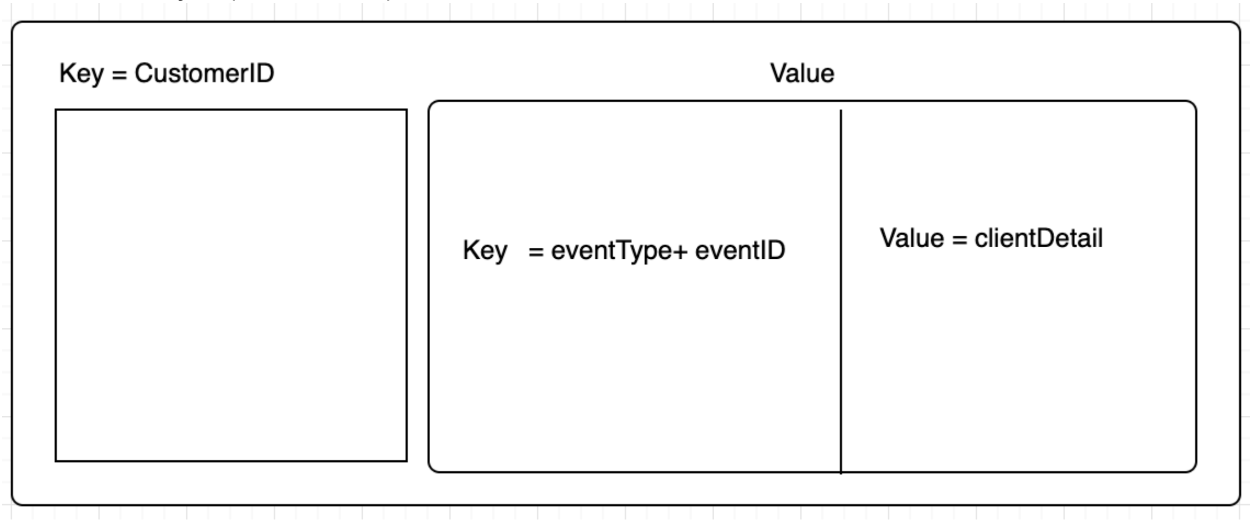
Client side:
This class is implemented in order to handle the interface, where user can log in with their own ID(ManagerID, CustomerID) and perform their actions on events.



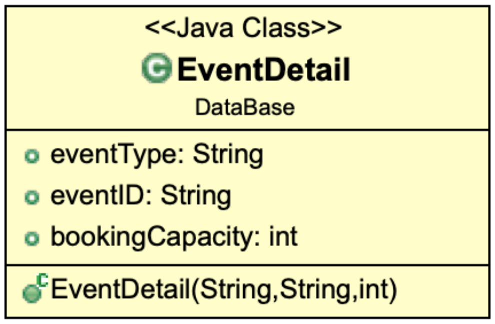
Database:
Our database for server is a Hashmap, where the key is evetType and value of Hashmap is another Hashmap, where eventID is the key and the value of Sub-Hashmap is an object(eventDetails).

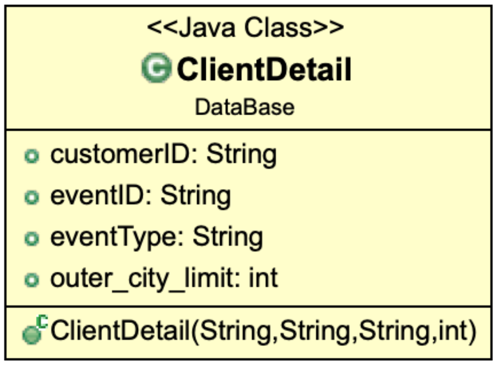


We implemented another hashMap in order to store the events related to the customer, where customerID is the key of the main HashMap and the value of main HashMap is consists of another sub-Hashmap, where the key is an combination of eventType and eventID and the value is an object(clientDetail).

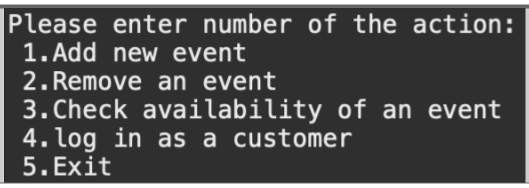
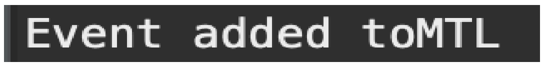


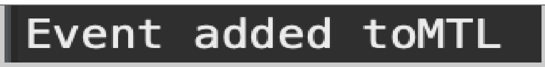
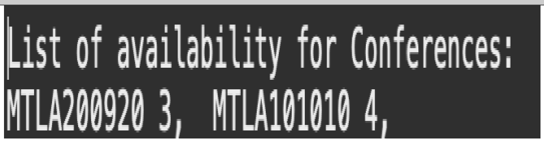
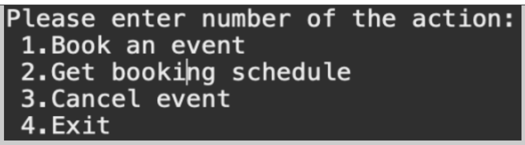
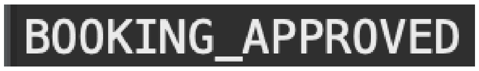
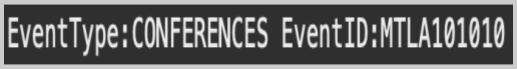
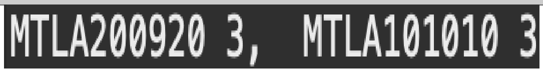
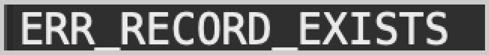
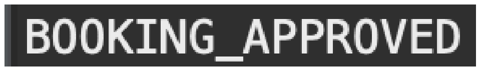
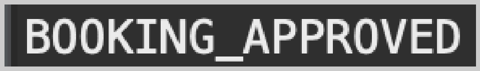
The diagram bellow indicates our object classes, which we used in our HashMaps above.
In EventDetail we have additional attribute, bookingCapacity, which indicats the capacity of each events.
In the ClientDetail we have additional attribute, outer_city_limit, in order to memorize hour many order customer had outside of his own city.

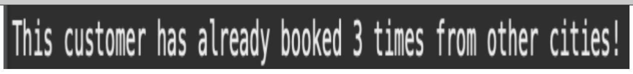
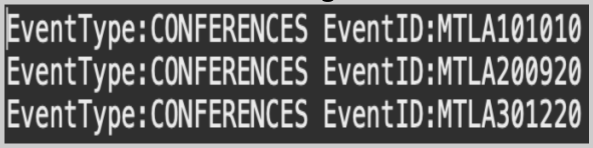
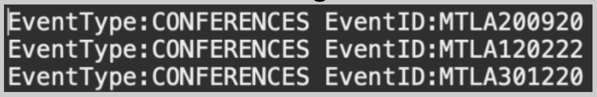
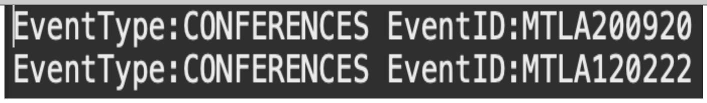
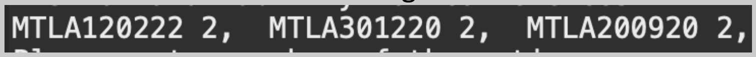
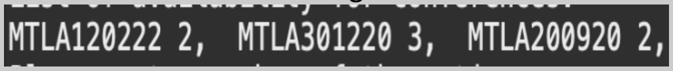
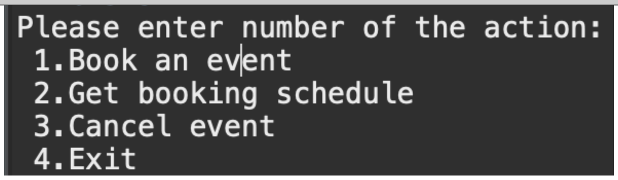
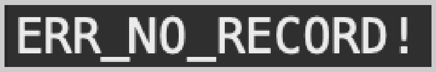




Test Scenario:

Test No	**Test Scenario**	**Test Case**	**Output**
1	Login as an employee	MTLM1111 entered as an ID for employee	 `Please enter number of the action:` `1.Add new event` `2.Remove an event` `3.Check availability of an event` `4.log in as a customer` `5.Exit`
2	Add new event	Adding an event with capacity 4: MTLA101010	 `Event added toMTL`

3	Add second event	Adding another event with capacity 3: MTLA101010	 Event added toMTL
4	List of availability	Check the all available event for particular eventType, in this case Conference	 List of availability for Conferences: MTLA200920 3, MTLA101010 4,
5	Login as a customer	QUEC2345 entered as an ID for customer	 Please enter number of the action: 1.Book an event 2.Get booking schedule 3.Cancel event 4.Exit
6	Book an event	Try to book the event from other server: MTLA101010	 BOOKING_APPROVED
7	Get booking schedule	Check which event customer has booked	 EventType:CONFERENCES EventID:MTLA101010
8	Event capacity	Check if the capacity of event after booking became less	 MTLA200920 3, MTLA101010 3
9	Book an event	Try to book the same event from other server: MTLA101010	 ERR_RECORD_EXISTS
10	Book an event	Try to book another event from other server: MTLA200920	 BOOKING_APPROVED
11	Book an event	Try to book another event from	 BOOKING_APPROVED

		other server: MTLA301220	
12	Book an event	Try to book an event from other server for more than 3 times: MTLA301220	 This customer has already booked 3 times from other cities!
13	Remove event	Remove event MTLA101010 and check if it will book the next available event	Before removing the event:  EventType:CONFERENCES EventID:MTLA101010 EventType:CONFERENCES EventID:MTLA200920 EventType:CONFERENCES EventID:MTLA301220 After removing the event:  EventType:CONFERENCES EventID:MTLA200920 EventType:CONFERENCES EventID:MTLA120222 EventType:CONFERENCES EventID:MTLA301220
14	Cancel event	Cancel an event MTLA301220	 EventType:CONFERENCES EventID:MTLA200920 EventType:CONFERENCES EventID:MTLA120222
15	Get booking schedule	Check the booking capacity for the event after canceling MTLA301220	Before canceling the event:  MTLA120222 2, MTLA301220 2, MTLA200920 2, After canceling the event:  MTLA120222 2, MTLA301220 3, MTLA200920 2,
16	Manager login on behalf of customer	Manager login on be half of customer MTLC2345	 Please enter number of the action: 1.Book an event 2.Get booking schedule 3.Cancel event 4.Exit
17	Book an non-existing event	MTLC2345 tries to book and event MTLE101010, Which is not exists	 ERR_NO_RECORD!