Distributed System Design
COMP 6231: Summer 2019

Instructor: Sukhjinder K. Narula

Assignment: 1 Distributed Event Management System (DEMS) using Java RMI

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1. Overview

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

1.1 Manager Roles

● **addEvent:**
  ○ Event manager can add event in his city using this method. When the event is created, a success message is displayed and logs are being recorded in server and userlog. If event manager tries to add the same event, then booking capacity gets updated.

● **removeEvent:**
  ○ Event manager can remove event in his city using this method. When event does not exist and if event manager tries to remove the event, no action is performed. Success and failure response will be recorded in logs.

● **listEventAvailability:**
  ○ Event manager can use this method to get all events which are created across all 3 cities. This method used UDP server communication to get response from other servers. All response messages will be recorded in logs.

1.2 Customer Roles

● **Book Event:**
  ○ Customers can book event in with respect to the event-Id that is available in his city or other cities. He can only book only 3 events outside his city. Once the event is booked a success message is displayed and logs are being recorded in server and userlog.

- **Get Booking Schedule:**
    - In this functionality customer will be able to see all his booking from all the cities.If not appropriate messages is shown .The logs are being recorded accordingly.

- **Cancel Event:**
    - In this functionality customers will be able to cancel the event .If the event is not booked by the user and wants to cancel an error message is displayed .

2. Description

This System fundamentally is intended to clarify the whole usefulness of the Java RMI (Remote Method Invocation). The following are few points that ought to be known before understanding the task
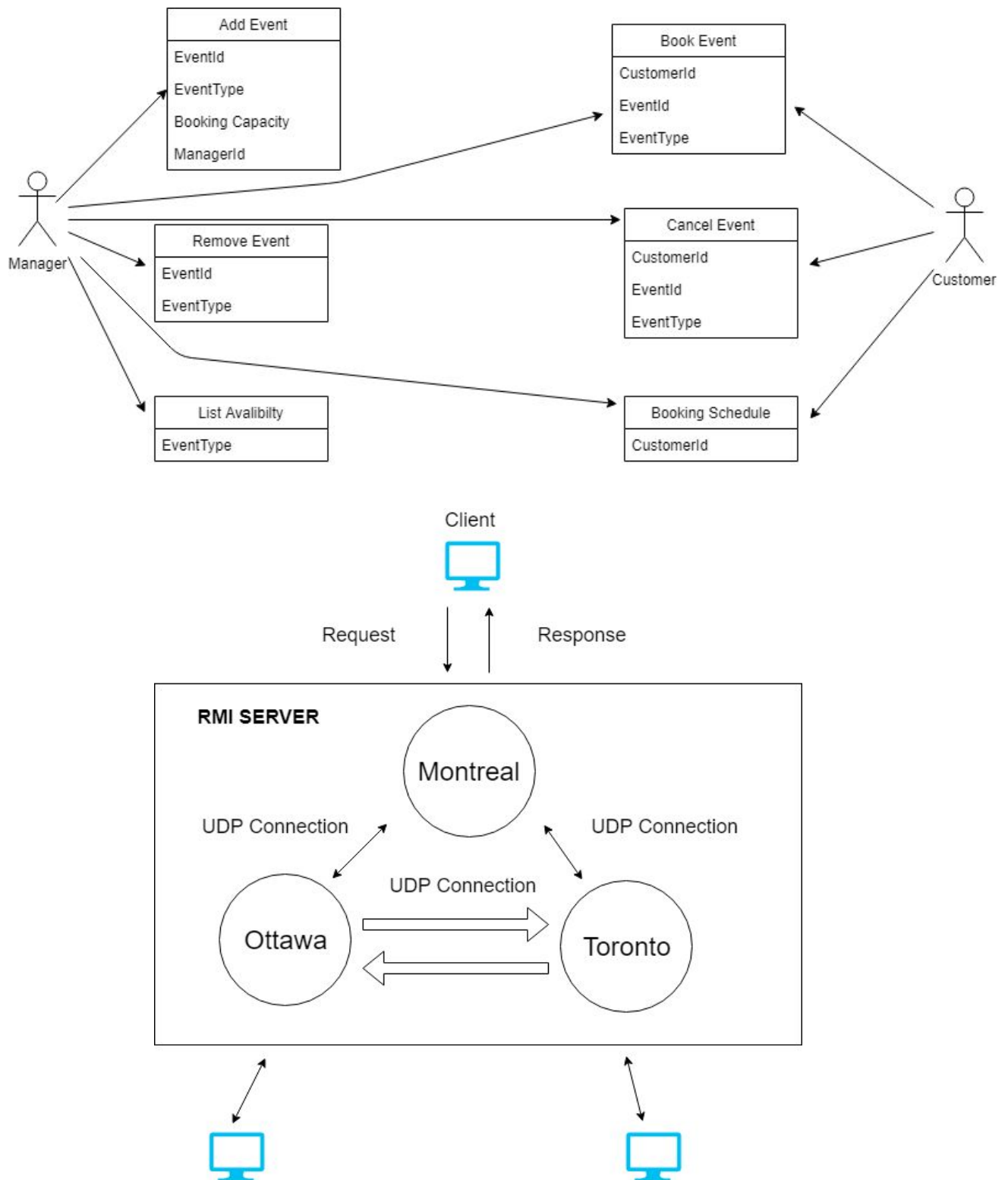
Definition - What does Java Remote Method Invocation (Java RMI) mean?

Java Remote Method Invocation (Java RMI) is a mechanism that allows one Java Virtual Machine (JVM) running object to invoke methods or functions on an object running in another JVM. It encourages the remote calling of Java object methods and sharing of resources and services.

Basics of an RMI Application

- In an RMI application, we write two programs, a server program (resides on the server) and a client program (resides on the client).

- Inside the server program, a remote object is created and reference of that object is made available for the client (using the registry).

- The client program requests the remote objects on the server and tries to invoke its methods

3.Architecture

4. Test Cases

No.	Test Description	Expected output	Actual output
1	Customer Provides user Id if it is not correct Ex:TORC1234WW	Invalid user	Invalid user
2	Once Customer logs in successfully. Customer can perform book an event providing CustomerId, eventId,EventType and if the event is available it is booked Ex:MONC1234 TORM123456 c	You successfully booked the event	You successfully booked the event
3	When Customer performs wrong eventId Ex:MONM123444444	It shows Invalid Message	It shows Invalid Message
4	Customer can cancel event that he has booked by providing eventType and eventId Ex:TORM123456 c	Event has been cancelled	Event has been cancelled
5	If customer Provide wrong event Id to cancel.	No such event	No such event.
6	Customer can see his bookings by eventType Ex: c for conferences	Events List	Events List
7	If No events booked by the customer and he wants to see his booking	No events Booked by Customer	No events Booked by Customer
8	Customer can book events from other cities as well .But with a restriction of maximum 3.	Event Booked Successfully	Event Booked Successfully
9	If booked More than 3	Maximum amount	Maximum amount

		reached	Reached
10	If customer is booking an event with 0 capacity	No Event Found	No Event Found
11	Customer can cancel only those events which are booked by him	Event Cancelled	Event Cancelled
12	Customer cannot cancel other events which he has not booked	Logged in server logs Invalid Event	Invalid Event
13	Add a new event from any server with all correct parameters. Username: TORM1234 TORA200519 c 3	Event should be created and log messages should get updated	Same as Expected
14	Add a new event of different city. Username: TORM1234 MONA200519 c 3	Event should not be created, and log messages should show the reason	Same as Expected
15	Add same event with a different booking capacity Username: TORM1234 TORA200519 c 4	Event should be created with new booking capacity.	Same as Expected
16	Add a new event with invalid event type. Username: TORM1234 TORA200519 x 4	Event should not be created, and log messages should show the reason	Same as Expected
17	Add a new event with invalid event id. Username: TORM1234 TORA20899 c 4	Event should not be created, and log messages should show the reason	Same as Expected
18	Remove event which was added previously Username: TORM1234 TORA200519 c 4	Event should be removed from database	Same as Expected
19	Remove event which was not added previously	Logs should record the reason why	Same as Expected

	Username: TORM1234 TORA210519 c 4	event is not removed.	
20	Remove event with invalid event type Username: TORM1234 TORA210519 x	Event should not be created, and log messages should show the reason	Same as expected
22	Remove event with invalid event id Username: TORM1234 TORA2519 c	Event should not be created, and log messages should show the reason	Same as expected
23	List events after creating more then events Username: TORM1234 c	It should show all events from 3 servers	Same as expected
24	List events when there are no events created for an event type Username: TORM1234 x	It should display no events.	Same as expected
25	List events with invalid event id Username: TORM1234 x	Event should not be displayed, and log messages should show the reason	Same as expected
26	List events when booking is exhausted	It should show event with 0 as booking capacity	Same as expected