

3. (15 pts.) Compare and contrast Remote Method Invocation (RMI) Registry with Java Naming Directory Interface (JNDI). Consider why they are used, what information is looked up, what parameters are passed to lookup information, and so on.

4. (10 pts.) Describe the differences between publish/subscribe and point-to-point messaging models? Comment on when one model is preferred over the other one and the different Java resources needed by each.

5. (a) (5 pts.) Your DBMS has a Personnel table that contains the data in Table 1. Mark the changes after the following code is executed. If the code would raise an error, explain the error that would be raised.

Table 1: Personnel Table

City	Number	Name	Position
Istanbul	33	Karaman	Manager
Istanbul	35	Veli	Sales Representative
Ankara	37	Soy	Sales Representative
Ankara	39	Karaman	Web Administrator

```
1 import java.sql.*;
2 public class Connector{
3
4 public static void main(String args[]) {
5
6     String url = "jdbc:mySubprotocol:myDataSource";
7     Connection con;
8     try {
9         Class.forName("myDriver.ClassName");
10    } catch(java.lang.ClassNotFoundException e) {
11        System.err.print("ClassNotFoundException: ");
12        System.err.println(e.getMessage());
13    }
14    try {
15        con = DriverManager.getConnection(url,
16                                        "myLogin",
17                                        "myPassword");
18
19        //con is a working Connection to a DBMS
20        con.setAutoCommit(false);
21        PreparedStatement updateCity = con.prepareStatement("UPDATE_Personnel" +
22        "SET City=? WHERE Name=?");
23        updateCity.setString(1, "Bursa");
24        updateCity.setString(2, "Karaman");
25        updateCity.executeUpdate();
26
27        updateCity.close();
28        con.close();
29    } catch (Exception e) {}
30 }
31 }
```

- (b) (5 pts.) You decide to use a different DBMS in your system and move all your data to the new DBMS. What do you need to modify in your Java code to access the new DBMS successfully?
- (c) (5 pts.) In a typical database access, establishing the connection to the DBMS takes much longer than executing a statement on the database. Suggest an alternative way to write your code to minimize the time spent on establishing connections.
6. (10 pts.) When a client Java application communicates to a Java server using RMI, a stub is created. Explain which part of the application creates the stub, where the stub resides, and how it is used.

7. (20 pts.) Dealfinder is a company that serves customers who are willing to buy electronic equipment. The company itself does not sell any products, but can communicate with three retail companies (Teknomart, Hızlı Sistem, and PC Silver) that do sell various equipments. The customers send queries for products to Dealfinder using their browsers. Dealfinder, then, asks the three companies if they have the requested product. If they do, then Dealfinder sends the name of the company to the customer.

Each company keeps its inventory separately. Among the three retail companies, only Teknomart is capable of showing its inventory information through a Web server. Both Hızlı Sistem and PC Silver have made the interface to their Java implementation public and thus prefer to communicate through procedure calls.

You are designing a system that will handle the above requirements. Explain the architecture you use, whether you would use a two-tier or a multi-tier application, what each tier would correspond to, which technologies you would use to implement the tiers, which communication models you would use, and any other relevant information regarding your design.