

THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF ELECTRICAL AND COMPUTER
ENGINEERING
BACHELOR OF SOFTWARE ENGINEERING HONOURS
EEI4366/ EEX4366 Data Modeling and Database Systems
Mini Project

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Question 01 - Create a view to display the Patient Identification number, Patient name (combination of Initials and Surname), Location (combination of Bed_No and Room_No), Surgery name and Date the surgery was conducted on the patient)

SQL Query

The screenshot shows the MySQL Workbench interface with the 'HostpitalManagementDB' database selected. The 'Query 1' editor contains the following SQL code:

```
-- Q1-321425748
CREATE VIEW PatientSurgeryView AS
SELECT
    P.PatientID,
    CONCAT(P.Initials, ' ', P.Surname) AS PatientName,
    CONCAT(L.BedNo, ' ', L.RoomNo) AS Location,
    S.SurgeryName,
    S.Date AS SurgeryDate
FROM
    Patient AS P
JOIN
    Surgery AS S ON P.PatientID = S.PatientID
JOIN
    Location AS L ON P.PatientID = L.BedNo;
```

The 'Output' pane at the bottom shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	22:34:43	CREATE VIEW PatientSurgeryView AS SELECT P.PatientID, CONCAT(P.Initials...	0 row(s) affected	0.031 sec

The status bar at the bottom indicates 'Query Completed'.

The Result

The screenshot shows the MySQL Workbench interface with the 'HostpitalManagementDB' database selected. The 'Query 1' editor contains the following SQL code:

```
JOIN
    Surgery AS S ON P.PatientID = S.PatientID
JOIN
    Location AS L ON P.PatientID = L.BedNo;
-- Retrieves information about patients and their surgeries from the PatientSurgeryView.
SELECT * FROM PatientSurgeryView;
```

The 'Result Grid' pane shows the following columns: PatientID, PatientName, Location, SurgeryName, SurgeryDate.

The 'Output' pane at the bottom shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	22:34:43	CREATE VIEW PatientSurgeryView AS SELECT P.PatientID, CONCAT(P.Initials...	0 row(s) affected	0.031 sec
2	22:37:22	SELECT * FROM PatientSurgeryView LIMIT 0, 1000	0 row(s) returned	0.015 sec / 0.000 sec

The status bar at the bottom indicates 'Query Completed'.

Question 02 - Create a table called 'MedInfo' with the following schema and use triggers for the following. MedInfo (MedName, QuantityAvailable, ExpirationDate)

The screenshot shows the MySQL Workbench interface with the 'hospitalmanagementdb' schema selected. The 'Query 1' editor contains the following SQL code:

```
-- Q2-321425748
CREATE TABLE MedInfo (
  MedName VARCHAR(100) PRIMARY KEY,
  QuantityAvailable INT,
  ExpirationDate DATE
);
SELECT * FROM MedInfo;
```

The 'Result Grid' shows the table structure for 'MedInfo' with columns: MedName (VARCHAR(100)), QuantityAvailable (INT), and ExpirationDate (DATE). The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
3	22:47:43	CREATE TABLE MedInfo (MedName VARCHAR(100) PRIMARY KEY, Quant...	0 row(s) affected	0.047 sec
4	22:49:38	SELECT * FROM MedInfo LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec

Result

The screenshot shows the MySQL Workbench interface with the 'hospitalmanagementdb' schema selected. The 'Query 1' editor contains the following SQL code:

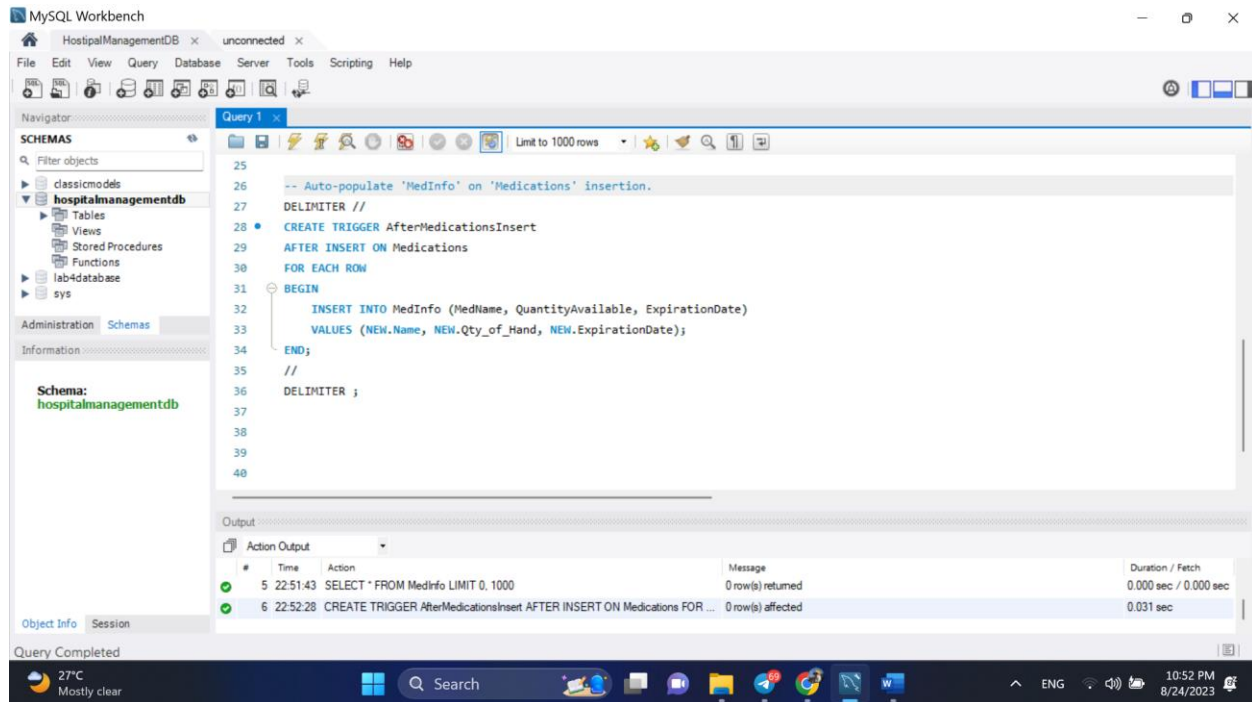
```
Location AS L ON P.PatientID = L.BedNo;
-- Retrieves information about patients and their surgeries from the PatientSurgeryView.
SELECT * FROM PatientSurgeryView;

-- Q2-321425748
CREATE TABLE MedInfo (
  MedName VARCHAR(100) PRIMARY KEY,
  QuantityAvailable INT,
  ExpirationDate DATE
);
```

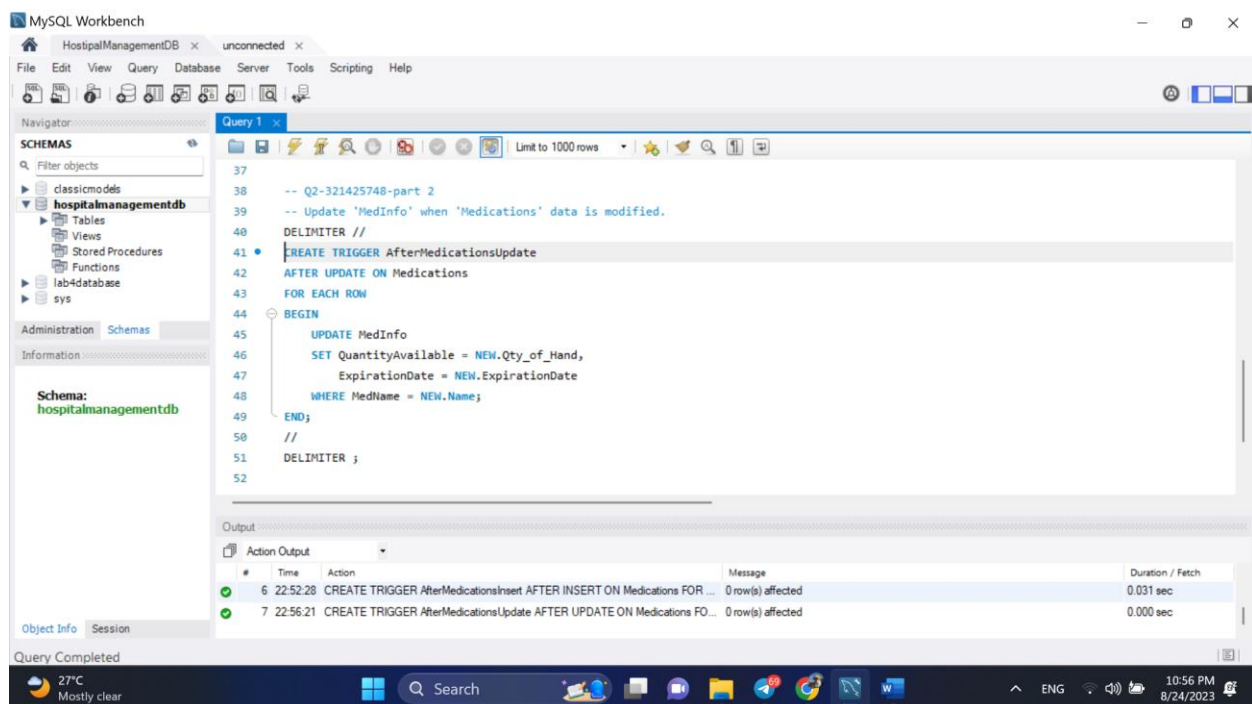
The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
2	22:37:22	SELECT * FROM PatientSurgeryView LIMIT 0, 1000	0 row(s) returned	0.015 sec / 0.000 sec
3	22:47:43	CREATE TABLE MedInfo (MedName VARCHAR(100) PRIMARY KEY, Quant...	0 row(s) affected	0.047 sec

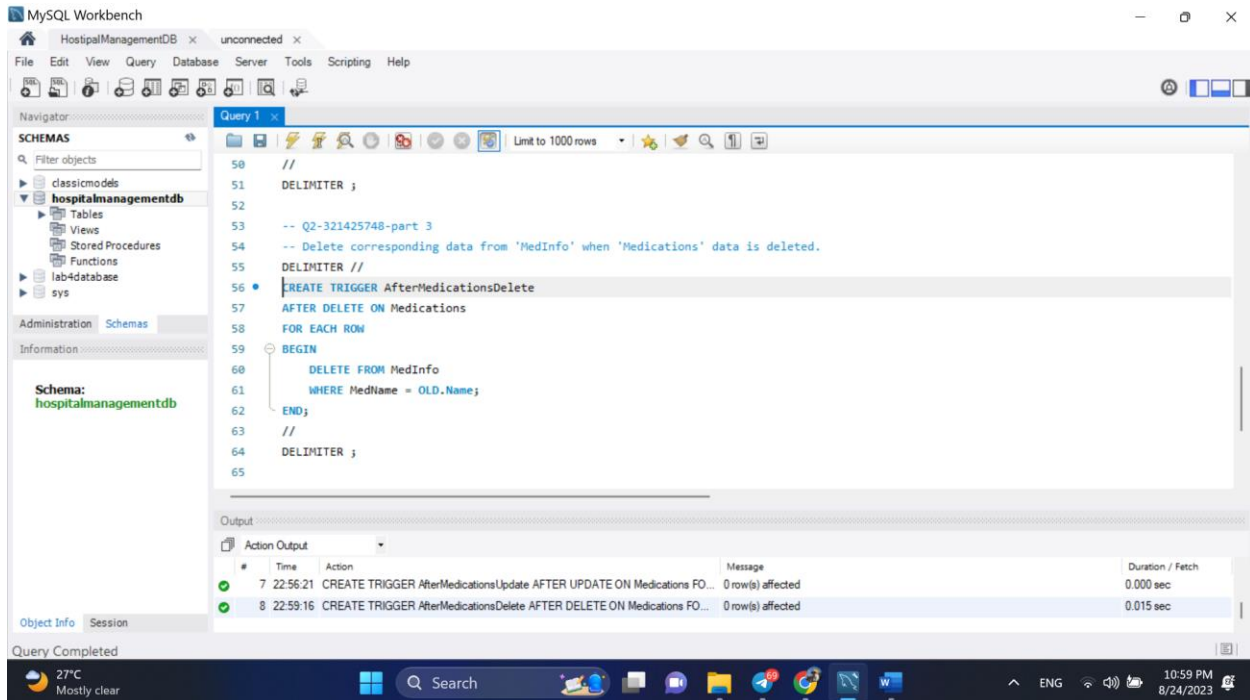
Q2 Part 1 - To load data to 'MedInfo' using 'Medication' / 'Medicine' table (use the table name you have given) after a new record is entered into that table.



Q2 Part 2 - To automatically update the values in 'MedInfo' table when the inserted values in 'Medication' / 'Medicine' table get updated



Q2 Part 3 - To delete the values in 'MedInfo' table when the inserted values in 'Medication' / 'Medicine' table get deleted.



The screenshot shows the MySQL Workbench interface with a query editor and an output window. The query editor contains the following SQL code:

```
50 //
51 DELIMITER ;
52
53 -- Q2-321425748-part 3
54 -- Delete corresponding data from 'MedInfo' when 'Medications' data is deleted.
55 DELIMITER //
56 CREATE TRIGGER AfterMedicationsDelete
57 AFTER DELETE ON Medications
58 FOR EACH ROW
59 BEGIN
60     DELETE FROM MedInfo
61     WHERE MedName = OLD.Name;
62 END;
63 //
64 DELIMITER ;
65
```

The output window shows the execution results of the query:

#	Time	Action	Message	Duration / Fetch
7	22:56:21	CREATE TRIGGER AfterMedicationsUpdate AFTER UPDATE ON Medications FO...	0 row(s) affected	0.000 sec
8	22:59:16	CREATE TRIGGER AfterMedicationsDelete AFTER DELETE ON Medications FO...	0 row(s) affected	0.015 sec

The status bar at the bottom indicates the query is completed, the temperature is 27°C, and the date is 8/24/2023.

Question 3 - Create a stored procedure (SP) to get the number of medications taken by a patient by providing the Patient Identification number as the input parameter and the result should be assigned to an InOut parameter. Execute the SP and when calling the SP, pass a session variable to save the output. (Provide suitable variable names)

The screenshot shows the MySQL Workbench interface with the 'hospitalmanagementdb' schema selected. The 'Query 1' editor contains the following SQL code:

```

64 DELIMITER ;
65
66 -- Q3-321425748
67 -- Create a stored procedure to get the number of medications taken by a patient.
68 -- The result will be assigned to an InOut parameter.
69 DELIMITER //
70 CREATE PROCEDURE GetMedicationCountByPatientID(
71     IN PatientID INT,
72     INOUT MedicationCount INT
73 )
74 BEGIN
75     -- Count the number of medication interactions for the specified patient.
76     SELECT COUNT(*) INTO MedicationCount
77     FROM Med_Interaction
78     WHERE PatientID = PatientID;
79 END;
80 //
81 DELIMITER ;

```

The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
8	22:59:16	CREATE TRIGGER AfterMedicationsDelete AFTER DELETE ON Medications FO...	0 row(s) affected	0.015 sec
9	23:05:19	CREATE PROCEDURE GetMedicationCountByPatientID(IN PatientID INT, L...	0 row(s) affected	0.016 sec

The screenshot shows the MySQL Workbench interface with the 'Query 1' editor containing the following SQL code:

```

83 -- Declare a session variable to store the output
84 SET @PatientMedicationCount = 0;
85
86 -- Call the stored procedure with a specific PatientID and the session variable as InOut parameter
87 CALL GetMedicationCountByPatientID(1006, @PatientMedicationCount);
88
89 -- Display the result stored in the session variable
90 SELECT @PatientMedicationCount AS MedicationCount;

```

The 'Result Grid' shows the output of the query:

MedicationCount
5

The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
9	23:05:19	CREATE PROCEDURE GetMedicationCountByPatientID(IN PatientID INT, L...	0 row(s) affected	0.016 sec
10	23:10:58	SET @PatientMedicationCount = 0	0 row(s) affected	0.000 sec
11	23:11:18	CALL GetMedicationCountByPatientID(1006, @PatientMedicationCount)	1 row(s) affected	0.047 sec
12	23:11:23	SELECT @PatientMedicationCount AS MedicationCount LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

Question 4 - Create a function to calculate the number of days remaining for the expiration of a medication/medicine and using a SQL function, display all the information pertaining to medicines which have less than a month (30 days) duration for the expiry

MySQL Workbench

HostipalManagementDB x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

classicmodels

hospitalmanagementdb

Tables

Views

Stored Procedures

Functions

lab4database

sys

Administration Schemas

Information

Schema: hospitalmanagementdb

Query 1 x

```

113 -- Q4-321425748
114 -- Error resolved
115 -- Create a function to calculate the number of days remaining for the expiration of a medication/medicine.
116 DELIMITER //
117 CREATE FUNCTION DaysUntilExpiration(ExpirationDate DATE)
118 RETURNS INT
119 DETERMINISTIC
120 BEGIN
121     RETURN DATEDIFF(ExpirationDate, CURDATE());
122 END;
123 //
124 DELIMITER ;
125
126

```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
13	23:33:05	CREATE FUNCTION DaysUntilExpiration(ExpirationDate DATE) RETURNS INT B...	Error Code: 1418. This function has none of DETERMINISTIC, NO SQL, or READS...	0.000 sec
14	23:34:13	SET GLOBAL log_bin_trust_function_creators = 1	0 row(s) affected	0.000 sec
15	23:34:32	SET GLOBAL log_bin_trust_function_creators = 0	0 row(s) affected	0.000 sec
16	23:34:49	CREATE FUNCTION DaysUntilExpiration(ExpirationDate DATE) RETURNS INT B...	Error Code: 1418. This function has none of DETERMINISTIC, NO SQL, or READS...	0.016 sec
17	23:35:49	CREATE FUNCTION DaysUntilExpiration(ExpirationDate DATE) RETURNS INT D...	0 row(s) affected	0.015 sec

Query Completed

27°C Mostly clear

Search

11:40 PM 8/24/2023

MySQL Workbench

HostipalManagementDB x unconnected x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

classicmodels

hospitalmanagementdb

Tables

Views

Stored Procedures

Functions

lab4database

sys

Administration Schemas

Information

Schema: hospitalmanagementdb

Query 1 x

```

126 -- Display all the information about medicines with less than 30 days remaining until expiry.
127 SELECT
128     M.*,
129     DaysUntilExpiration(M.ExpirationDate) AS RemainingDays
130 FROM
131     Medications AS M
132 WHERE
133     DaysUntilExpiration(M.ExpirationDate) <= 30;
134

```

Result Grid

Code	Name	Qty_of_Hand	Qty_Ordered	ExpirationDate	Cost	RemainingDays
------	------	-------------	-------------	----------------	------	---------------

Result 5 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
17	23:35:49	CREATE FUNCTION DaysUntilExpiration(ExpirationDate DATE) RETURNS INT D...	0 row(s) affected	0.015 sec
18	23:40:58	SELECT M.*, DaysUntilExpiration(M.ExpirationDate) AS RemainingDays FRO...	0 row(s) returned	0.016 sec / 0.000 sec

Query Completed

27°C Mostly clear

Search

11:42 PM 8/24/2023

Question 6 - Store some data regarding the Staff and Patient in two xml files and load those data to the created tables using a SQL query

The screenshot shows the MySQL Workbench interface with a query editor and an output window. The query editor contains the following SQL code:

```
134
135 -- Q6-321425748
136 -- Load XML data from the file 'D:/staff_data.xml' into the 'Staff' table.
137 -- Identify rows in the XML file using the '<employee>' element.
138 • LOAD XML INFILE 'D:/staff_data.xml'
139 INTO TABLE Staff
140 ROWS IDENTIFIED BY '<StaffMember>';
141
142 -- Load XML data from the file 'D:/patient_data.xml' into the 'Patient' table.
143 -- Identify rows in the XML file using the '<patient>' element.
144 • LOAD XML INFILE 'D:/patient_data.xml'
145 INTO TABLE Patient
146 ROWS IDENTIFIED BY '<Patient>';
147
148
```

The output window shows the results of the query execution:

#	Time	Action	Message	Duration / Fetch
1	23:20:32	LOAD XML INFILE 'D:/staff_data.xml' INTO TABLE Staff ROWS IDENTIFIED BY '<St...	4 row(s) affected Records: 4 Deleted: 0 Skipped: 0 Warnings: 0	0.032 sec
2	23:20:43	LOAD XML INFILE 'D:/patient_data.xml' INTO TABLE Patient ROWS IDENTIFIED B...	0 row(s) affected Records: 0 Deleted: 0 Skipped: 0 Warnings: 0	0.000 sec
3	23:21:03	LOAD XML INFILE 'D:/patient_data.xml' INTO TABLE Patient ROWS IDENTIFIED B...	6 row(s) affected Records: 6 Deleted: 0 Skipped: 0 Warnings: 0	0.000 sec

Before Adding Data to the Staff table

MySQL Workbench

HostipalManagementDB

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- classicmodels
- lab4database
- sys

Administration Schemas

Information

No object selected

Query 1

```

125 (201, 'Amal Perera', '943 Galle Road, Colombo', '011-2397678', 'M'),
126 (202, 'Samanthi Silva', '416 Mawanelle Road, Kandy', '081-6776543', 'F'),
127 (203, 'Rayan Fernando', '709 Silva Road, Negombo', '031-5312109', 'M'),
128 (204, 'Nayomi de Silva', '167 Havelock Road, Colombo', '011-8787432', 'F'),
129 (205, 'Rajiv Mendis', '521 Wattegedara Road, Maharagama', '011-6544510', 'M');
130 -- Retrieve all data from Staff table
131 SELECT * FROM Staff;
132

```

Result Grid

Emp_No	Name	Address	Contact_No	Gender
201	Amal Perera	943 Galle Road, Colombo	011-2397678	M
202	Samanthi Silva	416 Mawanelle Road, Kandy	081-6776543	F
203	Rayan Fernando	709 Silva Road, Negombo	031-5312109	M
204	Nayomi de Silva	167 Havelock Road, Colombo	011-8787432	F
205	Rajiv Mendis	521 Wattegedara Road, Maharagama	011-6544510	M

Staff 1

Output

Action Output

#	Time	Action	Message	Duration / Fetch
15	22:42:30	CREATE TABLE Nurse (EmpNo INT PRIMARY KEY, Gender CHAR(1), Na...	0 row(s) affected	0.031 sec
16	22:43:06	CREATE TABLE Salary (EmpNo INT PRIMARY KEY, Gender CHAR(1), N...	0 row(s) affected	0.031 sec
17	22:43:38	CREATE TABLE Contract (EmpNo INT PRIMARY KEY, Gender CHAR(1), ...	0 row(s) affected	0.016 sec
18	22:49:18	INSERT INTO Staff (Emp_No, Name, Address, Contact_No, Gender) VALUES (...	5 row(s) affected Records: 5 Duplicates: 0 Warnings: 0	0.016 sec

Object Info Session

27°C Haze

Search

10:56 PM 8/13/2023

After Adding New Data to the Staff table

MySQL Workbench

unconnected x HostipalManagementDB x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- nurse
- patient
- patient_allergy
- salary
- staff
- surgeon
- surgery

Administration Schemas

Information

Schema: hospitalmanagementdb

Query 1

```

1 SELECT * FROM hospitalmanagementdb.staff;

```

Result Grid

Emp_No	Name	Address	Contact_No	Gender
201	Amal Perera	943 Galle Road, Colombo	011-2397678	M
202	Samanthi Silva	416 Mawanelle Road, Kandy	081-6776543	F
203	Rayan Fernando	709 Silva Road, Negombo	031-5312109	M
204	Nayomi de Silva	167 Havelock Road, Colombo	011-8787432	F
205	Rajiv Mendis	521 Wattegedara Road, Maharagama	011-6544510	M
206	Malshani Jayawardena	10A Galle A5 Road, Colombo	011-0987654	F
207	Chanuka Rathnayake	4B6 Hatton BD Road, Kandy	011-2936789	M
208	Warana Perera	09H DC Road, Negombo	034-2929292	M
209	Yasara Fernando	787A Havelock AD Road, Colombo	011-3333337	F

staff 1

Output

Action Output

#	Time	Action	Message	Duration / Fetch
3	23:21:03	LOAD XML INFILE 'D:/patient_data.xml' INTO TABLE Patient ROWS IDENTIFIED...	6 row(s) affected Records: 6 Deleted: 0 Skipped: 0 Warnings: 0	0.000 sec

Query Completed

Object Info Session

25°C Haze

Search

11:23 PM 9/3/2023

Before Adding New Data to the Patient table

The screenshot shows the MySQL Workbench interface with the 'HostpitalManagementDB' database selected. The 'SCHEMAS' panel on the left shows 'classicmodels', 'lab4database', and 'sys'. The 'Query 1' editor contains a SQL query to retrieve all data from the 'Patient' table. The 'Result Grid' displays the current data in the 'Patient' table, which includes columns: PatientID, Initials, Surname, Address, BloodType, ContactNO, and Age. The data is as follows:

PatientID	Initials	Surname	Address	BloodType	ContactNO	Age
1006	R. P.	Kumarasinghe	123 Kotte Road, Colombo	A+	077-1111111	42
1007	S. D.	Fernando	456 Dehiwala Road, Colombo	B-	077-2222222	28
1008	M. A.	Perera	789 Gampaha Road, Gampaha	O-	077-3333333	55
1009	A. M.	Gunawardena	567 Nugegoda Road, Nugegoda	AB+	077-4444444	19
1010	N. R.	Silva	901 Panadura Road, Panadura	A-	077-5555555	65

The 'Action Output' panel shows the execution of the query, indicating that 5 rows were returned. The system tray at the bottom shows the date and time as 11:12 PM on 8/13/2023.

After Adding New Data to the Patient Table

The screenshot shows the MySQL Workbench interface with the 'HostpitalManagementDB' database selected. The 'SCHEMAS' panel on the left shows 'nurse', 'patient', 'patient_allergy', 'salary', 'staff', 'surgeon', and 'surgery'. The 'Query 1' editor contains a SQL query to retrieve all data from the 'hospitalmanagementdb.patient' table. The 'Result Grid' displays the updated data in the 'Patient' table, which includes columns: PatientID, Initials, Surname, Address, BloodType, ContactNO, and Age. The data is as follows:

PatientID	Initials	Surname	Address	BloodType	ContactNO	Age
1002	K. D.	Fernando	456 Dehiwala Road, Colombo	B-	077-2222222	42
1006	R. P.	Kumarasinghe	123 Kotte Road, Colombo	A+	077-1111111	42
1007	S. D.	Fernando	456 Dehiwala Road, Colombo	B-	077-2222222	28
1008	M. A.	Perera	789 Gampaha Road, Gampaha	O-	077-3333333	55
1009	A. M.	Gunawardena	567 Nugegoda Road, Nugegoda	AB+	077-4444444	19
1010	N. R.	Silva	901 Panadura Road, Panadura	A-	077-5555555	65
1011	A. P.	Peris	780 Gampaha ARDP Road, Gampaha	B-	077-1234567	29
1012	K. A.	Fernandp	52367 Nugegoda AWR Road, Nugegoda	A+	077-2345444	40
1013	M. R.	Silva	123 Colombo XYZ Street, Colombo	O-	077-5556789	35
1014	S. N.	Kumar	456 Kandy ABC Road, Kandy	AB+	077-7890123	22

The 'Action Output' panel shows the execution of the query, indicating that 9 rows were returned. The system tray at the bottom shows the date and time as 11:25 PM on 9/3/2023.

Staff xml

```
<?xml version="1.0" encoding="UTF-8"?>
<StaffData>
  <StaffMember>
    <Emp_No>206</Emp_No>
    <Name>Malshani Jayawardena</Name>
    <Address>10A Galle A5 Road, Colombo</Address>
    <Contact_No>011-0987654</Contact_No>
    <Gender>F</Gender>
  </StaffMember>
  <StaffMember>
    <Emp_No>207</Emp_No>
    <Name> Chanuka Ratnayake</Name>
    <Address>4B6 Hatton BD Road, Kandy</Address>
    <Contact_No>011-2936789</Contact_No>
    <Gender>M</Gender>
  </StaffMember>
  <StaffMember>
    <Emp_No>208</Emp_No>
    <Name> Warana Perera</Name>
    <Address>09H DC Road, Negombo</Address>
    <Contact_No>034-2929292</Contact_No>
    <Gender>M</Gender>
  </StaffMember>
  <StaffMember>
    <Emp_No>209</Emp_No>
    <Name> Yasara Fernando</Name>
    <Address>787A Havelock AD Road, Colombo</Address>
    <Contact_No>011-3333337</Contact_No>
    <Gender>F</Gender>
  </StaffMember>
</StaffData>
```

Patient xml

```
<PatientData>
  <Patient>
    <PatientID>1001</PatientID>
    <Initials>M. S.</Initials>
    <Surname>Silva</Surname>
    <Address>123 Kotte Road, Colombo</Address>
    <BloodType>A+</BloodType>
    <ContactNO>077-1111111</ContactNO>
    <Age>35</Age>
  </Patient>
  <Patient>
    <PatientID>1002</PatientID>
    <Initials>K. D.</Initials>
    <Surname>Fernando</Surname>
    <Address>456 Dehiwala Road, Colombo</Address>
    <BloodType>B-</BloodType>
    <ContactNO>077-2222222</ContactNO>
    <Age>42</Age>
  </Patient>
  <Patient>
    <PatientID>1011</PatientID>
    <Initials>A. P.</Initials>
    <Surname>Peris</Surname>
    <Address>780 Gampaha ARDP Road, Gampaha</Address>
    <BloodType>B-</BloodType>
    <ContactNO>077-1234567</ContactNO>
    <Age>29</Age>
  </Patient>
  <Patient>
    <PatientID>1012</PatientID>
    <Initials>K. A.</Initials>
    <Surname>Fernandp</Surname>
    <Address>52367 Nugegoda AWR Road, Nugegoda</Address>
    <BloodType>A+</BloodType>
    <ContactNO>077-2345444</ContactNO>
    <Age>40</Age>
  </Patient>
  <Patient>
    <PatientID>1013</PatientID>
    <Initials>M. R.</Initials>
    <Surname>Silva</Surname>
    <Address>123 Colombo XYZ Street, Colombo</Address>
    <BloodType>O-</BloodType>
```

```
<ContactNO>077-5556789</ContactNO>
  <Age>35</Age>
</Patient>
<Patient>
  <PatientID>1014</PatientID>
  <Initials>S. N.</Initials>
  <Surname>Kumar</Surname>
  <Address>456 Kandy ABC Road, Kandy</Address>
  <BloodType>AB+</BloodType>
  <ContactNO>077-7890123</ContactNO>
  <Age>22</Age>
</Patient>
</PatientData>
```