



**AHSANULLAH UNIVERSITY OF SCIENCE & TECHNOLOGY**

**Department of CSE**

## **Clinic Management System**

Section: B

Group: B-1

### **Submitted To**

Anisuzzaman Rajon

Mohammad Imrul Jubair

### **Submitted By**

Tahsin Tasnim Mim

15-02-04-090

## **Objective:**

The selected project is Clinic Management System that co-ordinates and integrates all the inherent activities involved in the management and running of a healthcare facility. It keeps track of the activities & records of its patients and doctors. The primary purpose is to digitize patient records so as to make data retrieval easy and efficient. Being in the digital form, patient's data can be conveniently shared and accessed, resulting in smoother clinical operations and collaboration. Here we can get the information of any patient who is under the supervision of which doctor, the date of admission of a patient and information of diseases, doctors, appointments of the patients.

Fragments are used to keep the information of different sites of the management system. This system consists of multiple copies of data, fragmentation information which is beneficial to keep the track of all data. It will make our lives easy and will remove unnecessary human errors from their daily activities.

## **Tables:**

Patient (p\_id, p\_name, p\_phone, gender, age, weight)

Doctor (d\_id, d\_name, department, d\_phone)

Outpatient (p\_id, d\_id, o\_date)

Labreport (Lab\_no, p\_id, p\_name, d\_id, disease, test\_category, r\_date, r\_time)

Bill (bill\_no, p\_id, room\_charge, medicine\_charge, operation\_charge, doctor\_fee, type)

Inpatient (p\_id, p\_name, room\_no, dateOfAdmission, dateOfDischarge)

Appointment (d\_id, p\_id, serial, a\_date)

Room (p\_id, room\_no, status, type)

## **Database Connection:**

For database connection, we needed two laptops. We have to insert the data into the tables in sites. Then we have to turn off the windows firewall. Then we need to find out the ip address of the site. From the host computer, we did ping the site's IP address. It was successful.

The next steps are given below:

```

SID_LIST_LISTENER =
(SID_LIST =
(SID_DESC =
(SID_NAME = PLSExtProc)
(ORACLE_HOME = C:\oraclexe\app\oracle\product\10.2.0\server)
(PROGRAM = extproc)
)
(SID_DESC =
(SID_NAME = CLRExtProc)
(ORACLE_HOME = C:\oraclexe\app\oracle\product\10.2.0\server)
(PROGRAM = extproc)
)
(SID_DESC =
(SID_NAME = XE)
(ORACLE_HOME = C:\oraclexe\app\oracle\product\10.2.0\server)
)
)

```

```

LISTENER =
(DESCRIPTION_LIST =
(DESCRIPTION =
(ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC_FOR_XE))
(ADDRESS = (PROTOCOL = TCP)(HOST = DESKTOP-IQOQ25D)(PORT = 1521))
(ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.43.114)(PORT = 1521))
)
)

```

DEFAULT\_SERVICE\_LISTENER = (XE)

After that, we wrote in cmd 'lsnrctl stop' and 'lsnrctl start' to check listener at site. Finally, we used the following command at server for database link. The command is given below:

<pre>drop database link nishat; create database link nishat connect to system identified by "12345" using '(DESCRIPTION =   (ADDRESS_LIST =     (ADDRESS = (PROTOCOL = TCP)       (HOST = 192.168.43.114)       (PORT = 1521))   ) (CONNECT_DATA =   (SID = XE) ) )';</pre>	<pre>drop database link sadia; create database link sadia connect to system identified by "12345" using '(DESCRIPTION =   (ADDRESS_LIST =     (ADDRESS = (PROTOCOL = TCP)       (HOST = 192.168.43.114)       (PORT = 1521))   ) (CONNECT_DATA =   (SID = XE) ) )';</pre>
---	---

## Features:

Our project consists of many operations. They are:

- Fragmentation
- Functions
- Procedures
- Semi join
- Algebraic Relation
- Canonical expression
- Database Profile
- Trigger

## Fragmentation:

In this project, we've done fragmentation for doctor and patient table.

For doctor table, the fragmentations are:

- doctor1 (medicine)
- doctor2 (SKIN)

For patient table, the fragmentations are:

- patient1 (age <15)
- patient2 (age >=15)

## Functions & Procedures:

### Procedures:

#### 1. PatientUnderDoctor(searchName):

It is a procedure which displays the name of the patients who have appointments under a specific doctor (*Dr. B*).

#### 2. billsWithDiscount(SearchPatientID):

This procedure calculates the total bill of a particular patient. If the total bill is less than 15000, final bill is calculated with 10% discount; if it is in between 15000 to 30000, it calculates the final bill using 20%; if it is in between 30000 to 60000, it calculates the final bill using 30%, else it calculates the final bill using 50% discount.

#### 3. diseaseReportDate(searchName IN varchar2, searchDate in date):

This function shows the name and admission date of the patients in the hospital who have the given disease and whose lab report was checked on a given date.

#### 4. effect\_of\_update (doctor\_id in int, dept in varchar2):

It updates the department of the given doctor, illustrates the effect of update for fragments.

#### 5. insertvaluesinallsites(pat\_age int): It inserts values in all sites.

### Functions:

#### 1. patientTimeRoom(date1,date2,r\_no):

It takes two dates and a room no as parameter and returns the name of the patient who was admitted in that room in that date interval.

#### 2. Shift\_appointment(searchName,date1,date2,patientId,doctorId):

It takes the name of a doctor and a date of appointment and shows the name of the patient, his id, and the id of that doctor.

It also updates the appointment of that doctor and patient to a given date.

## Database Profile:

For database profile, we had to prove the following formula:

$$\text{card (T)} = \rho * (\text{card(R)} \times \text{card (S)})$$

This cardinality is proved for a particular join operation in this project.

## Triggers:

### 1. insert\_delete\_update\_for\_trigger:

This trigger is for patient table to insert, delete and update.

User input 1- patient insert

User input 2- patient delete

User input 3- patient update

### 2. insert\_delete\_update\_for\_trigger:

This trigger gives the option of manipulating patient table only between 4:00 am and 6:00 am.

### 3. Trigger\_for\_inserting:

This inserts the info of a patient in patient whose age<15, automatically inserted in patient1.

insert the info of a patient in patientwhose age >= 15, automatically inserted in patient2.

### 4. Trigger\_for\_updating:

This trigger is for updating on the patient. If new age <15, and the old age< 15, value is just updated on patient1.If new age>=15, old age <15, value is deleted from patient1 and inserted on patient2.If new age<15, old age>=15, value is deleted from patient2and inserted on patient1.If new age>= 15, and old age>=15, value is just updated on patient2.

## Screenshots:

```
SQL> @ "C:\Users\User\Desktop\clinic management final\New folder\Functions\ShiftingAppointment.sql"
Function created.

SQL> @ "C:\Users\User\Desktop\clinic management final\New folder\Functions\shiftingAppointment_main.sql"
patients NAME is: Sadia Tasnim 10-JUL-19 3 4

PL/SQL procedure successfully completed.
```

Figure-1: shiftingAppointment Function

```
SQL> @ "C:\Users\User\Desktop\clinic management final\New folder\Procedures\patientUnderDoctor.sql"
Procedure created.

PL/SQL procedure successfully completed.
```

Figure-2: patientUnderDoctor Procedure

```
SQL> @ "C:\Users\User\Desktop\clinic management final\New folder\Database profile\db_profile.sql"
Procedure created.

Patient ID: 2 and Patient Name: Zarin Tasneem and disease: fever
Patient ID: 3 and Patient Name: Tahsin Tasnim Mim and disease: tumor
Patient ID: 3 and Patient Name: Tahsin Tasnim Mim and disease: tumor
Patient ID: 3 and Patient Name: Tahsin Tasnim Mim and disease: cancer
Patient ID: 1 and Patient Name: Nishat Farzana and disease: tumor
Patient ID: 1 and Patient Name: Nishat Farzana and disease: cancer
card of result table is: 6
card of R(Inpatient) is:8
card of S(Labreport) is:6
distinct-VAL(A[R]) is:8
card (T) = row * (card(R) * card (S)) is proved.

PL/SQL procedure successfully completed.

SQL>
```

Figure-3: Database Profile

Procedure created.

LAB_NO	PATIENT ID(L)	PATIENT NAME	DOCTOR_ID(L)	DISEASE	TEST_CATEGORY
DATE(L)	TIME	PATIENT ID(O)	DOCTOR ID(O)	DATE(O)	
1	1	Nishat Farzana	1	cancer	Blood test
10-JAN-19	03:35 pm	1	2	10-JAN-19	
2	1	Nishat Farzana	2	tumor	Blood test
10-JAN-19	03:45 pm	1	2	10-JAN-19	
3	2	Zarin Tasneem	2	fever	Blood test
13-JAN-19	03:57 pm	2	2	16-JAN-19	
4	3	Tahsin Tasnim Mim	1	cancer	Blood test
18-JAN-19	04:21 pm	3	1	15-JAN-19	
5	3	Tahsin Tasnim Mim	1	tumor	Blood test
21-JAN-19	04:45 pm	3	1	15-JAN-19	
6	3	Tahsin Tasnim Mim	1	tumor	Blood tsest
21-JAN-19	04:45 pm	3	1	15-JAN-19	

LAB_NO	PATIENT ID(L)	PATIENT NAME	DOCTOR_ID(L)	DISEASE	TEST_CATEGORY
DATE(L)	TIME	PATIENT ID(O)	DOCTOR ID(O)	DATE(O)	
1	1	Nishat Farzana	1	cancer	Blood test
10-JAN-19	03:35 pm	1	2	10-JAN-19	
2	1	Nishat Farzana	2	tumor	Blood test
10-JAN-19	03:45 pm	1	2	10-JAN-19	
3	2	Zarin Tasneem	2	fever	Blood test
13-JAN-19	03:57 pm	2	2	16-JAN-19	
4	3	Tahsin Tasnim Mim	1	cancer	Blood test
18-JAN-19	04:21 pm	3	1	15-JAN-19	
5	3	Tahsin Tasnim Mim	1	tumor	Blood test
21-JAN-19	04:45 pm	3	1	15-JAN-19	
6	3	Tahsin Tasnim Mim	1	tumor	Blood tsest
21-JAN-19	04:45 pm	3	1	15-JAN-19	

PL/SQL procedure successfully completed.

Figure-5: Semi-join

```
SQL> @ "C:\Users\User\Desktop\clinic management final\New\Fragments\insertDataIn
toAllSites.sql"

PL/SQL procedure successfully completed.
```

Figure-6: insertinallsites



```

Oracle SQLPLUS
ORA-00933: SQL command not properly ended

SQL> select * from doctor1@nishat union select * from doctor2@sadia;

  D_ID D_NAME                DEPARTMENT          D_PHONE
-----
    1 Dr. A                  ENT                  123
    2 Dr. B                  medicine             456
    3 Dr. C                  SKIN                456
    4 Dr. D                  Orthopedic          123
    5 Dr. E                  Orthopedic          123
    6 Dr. F                  Orthopedic          123
    7 Dr. G                  Orthopedic          123
    8 Dr. H                  medicine             123
    9 Dr. I                  medicine             123
   10 Dr. J                  medicine             123
   11 Dr. K                  medicine             123

  D_ID D_NAME                DEPARTMENT          D_PHONE
-----
   12 Dr. K                  medicine             123
   13 Dr. K                  medicine             123
   14 Dr. K                  medicine             123
   15 Dr. G                  medicine             123
   16 Dr. G                  medicine             123

16 rows selected.

```

Figure-6: union operation of sites

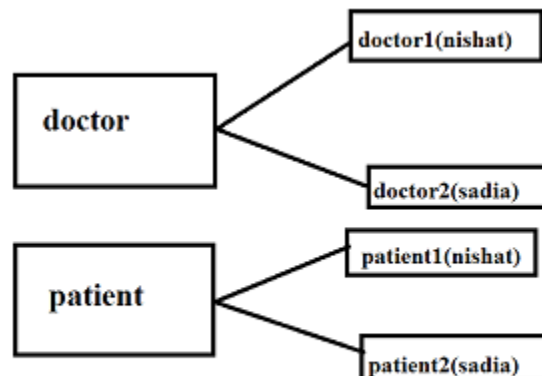


Figure: Fragmentation

Figure-7: Fragmentation

## My Contribution & Discussion:

My contributions in this project are given below:

- Procedure: insertinallasites, effect\_of\_update,patientUnderDoctor
- Trigger: insert\_delete\_update\_for\_trigger, trigger\_for\_updating

- Fragmentation: doctor1, doctor2;patient1, patient2
- Canonical Expression and operator tree
- Database profile

First of all, the procedure insertinallasites insertss data in all sites, doctor1, doctor2,patient1,patient2 fragments. These procedures insert the data of doctor based on “medicine” and “SKIN”. The “effect\_of\_update” procedure updates the department of the given doctor, illustrates the effect of update for fragments. The “patientUnderDoctor” displays the name of the patients who have appointments under a specific doctor.

For fragmentation, I have considered the doctor and patient table. Here, “doctor1” means the doctors of “medicine” department and “doctor2” means the doctors of “Skin” department. And “patient1” means the patients of “age<15” and “patient2” means the patients of “age>=15”. These fragmentation helps to distribute the data in different sites .

Finally, I have worked on “database profile” and “canonical expression and simplified operator tree.” It proves that an operator tree and that operator tree with its simplified version having canonical expression has the same result.

## **Conclusion:**

Our project consists of many information of patients and doctors. So we have to fragment these two tables mainly. We have worked on fragmentation, functions, procedures, packages, triggers, linear regression, database profile, algebraic relation, semi join. The aim of our project is to provide a paper-less clinicss as much as possible. We want to computerize all details regarding patient, doctor and hospital details. The information of the hospital should be kept up to date and should be kept in the system for historical purposes. I hope this system will be helpful to patients and doctors to get their proper information.