**COEN 380: Advanced Database Systems**

**Project 1**

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**a. Database used**

Oracle DB11G

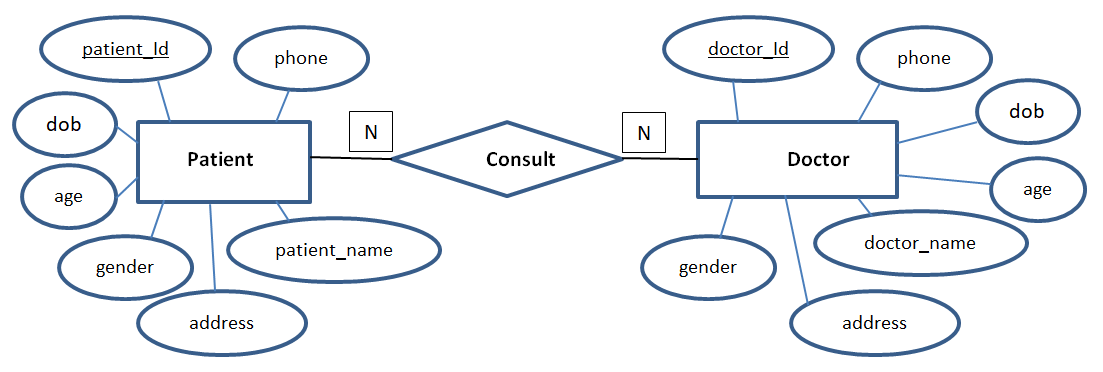
**b. JDBC driver (type-4)**

Oracle 11 Database Thin Type 4 JDBC Driver

The JAR file for the Oracle driver is ojdbc6.jar

**c. The table schema definition**

ER Diagram:



ER to relational Database:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| patient\_id | patient\_name | dob | age | gender | phone | address |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| doctor\_id | patient\_id | doctor\_name | age | gender | phone | address |
|  |  |  |  |  |  |  |

Table Schema:

Patient (patient\_id, patient\_name, age, dob, gender, phone, address)

Doctor (doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

Create tables and populate data entries:

createTable.sql

**d. List the content of the table after population; SELECT \* from Table;**

**SQL> select \* from Patient;**

PATIENT\_ID PATIENT\_NAME AGE DOB GENDER PHONE

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ADDRESS

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1000 John Doe 40 03-MAR-78 male 1234567890

santa clara

1001 Jane Mars 50 03-FEB-68 female 1234567000

san jose

1002 Amy Fowler 20 12-AUG-97 female 1234567800

santa clara

PATIENT\_ID PATIENT\_NAME AGE DOB GENDER PHONE

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ADDRESS

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1003 Brody Tom 30 07-FEB-88 male 1234568890

santa barbara

1004 Nick Kay 25 05-JUN-93 male 1234567590

san francisco

1005 Young Ma 63 25-SEP-55 male 1234562890

mountain view

PATIENT\_ID PATIENT\_NAME AGE DOB GENDER PHONE

---------- -------------------- ---------- --------- ---------- ----------

ADDRESS

--------------------

1006 Ash Winter 32 12-NOV-88 male 1239567890

palo alto

1007 Venus Clay 28 27-MAR-90 female 1294567890

santa clara

1008 Tom Yam 45 05-FEB-73 male 1234567810

san jose

PATIENT\_ID PATIENT\_NAME AGE DOB GENDER PHONE

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ADDRESS

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1009 Sansa Mars 23 30-AUG-95 female 1214567890

san mateo

10 rows selected.

**SQL> select \* from Doctor;**

DOCTOR\_ID PATIENT\_ID DOCTOR\_NAME AGE GENDER PHONE

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ADDRESS

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5000 1000 Ram Shark 45 male 9991110000

santa clara

5000 1002 Ram Shark 45 male 9991110000

santa clara

5000 1007 Ram Shark 45 male 9991110000

santa clara

DOCTOR\_ID PATIENT\_ID DOCTOR\_NAME AGE GENDER PHONE

---------- ---------- -------------------- ---------- ---------- ----------

ADDRESS

--------------------

5001 1000 Rani Snow 35 female 9991110001

santa clara

5002 1003 Cloe Rusk 40 male 9991110002

santa barbara

5003 1005 Bob Kar 56 male 9991110300

mountain view

DOCTOR\_ID PATIENT\_ID DOCTOR\_NAME AGE GENDER PHONE

---------- ---------- -------------------- ---------- ---------- ----------

ADDRESS

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5004 1006 Kale Win 43 female 9990110000

palo alto

5006 1007 Shane Yo 49 male 9991100000

santa clara

5006 1008 Sam Jone 45 male 9991110000

san jose

DOCTOR\_ID PATIENT\_ID DOCTOR\_NAME AGE GENDER PHONE

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ADDRESS

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5007 1001 Rimi Gen 30 female 9991210000

san jose

5007 1004 Nimmy Kim 55 female 9991910000

santa clara

5007 1009 Haan Kyu 47 male 9992220000

san mateo

12 rows selected.

**e. List of Queries demonstrating the different functions you tested: Aggregate, Order By, Group By, etc. and follow-up with each query with a copy of the result.**

**Query 1: All the patients with age less than 25**

Interactive Mode Output:

SQL> select patient\_name, age from Patient where age < 25;

PATIENT\_NAME AGE

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Amy Fowler 20

Sansa Mars 23

JDBC Output:

PATIENT\_NAME AGE

Amy Fowler 20

Sansa Mars 23

**Query 2: All doctors whose patients’ age is less than 25**

Interactive Mode Output:

SQL> select d.doctor\_name, p.patient\_name, p.age from Doctor d, Patient p where p.patient\_id = d.patient\_id and p.age < 25;

DOCTOR\_NAME PATIENT\_NAME AGE

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Ram Shark Amy Fowler 20

Haan Kyu Sansa Mars 23

JDBC Output:

DOCTOR\_NAME PATIENT\_NAME AGE

Ram Shark Amy Fowler 20

Haan Kyu Sansa Mars 23

**Query 3: Patient with maximum age**

Interactive Mode Output:

SQL> select p.patient\_name, age from Patient p where p.age = (select max(age) from Patient);

PATIENT\_NAME AGE

-------------------- ----------

Young Ma 63

JDBC Output:

PATIENT\_NAME AGE

Young Ma 63

**Query 4: Doctor with minimum age**

Interactive Mode Output:

SQL> select d.doctor\_name, age from Doctor d where d.age = (select min(age) from Doctor);

DOCTOR\_NAME AGE

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Rimi Gen 30

JDBC Output:

DOCTOR\_NAME AGE

Rimi Gen 30

**Query 5: List male patients ordered by address**

Interactive Mode Output:

SQL> select p.patient\_name, p.gender, p.address from Patient p where p.gender = 'male' order by address;

PATIENT\_NAME GENDER ADDRESS

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Young Ma male mountain view

Ash Winter male palo alto

Nick Kay male san francisco

Tom Yam male san jose

Brody Tom male santa barbara

John Doe male santa clara

6 rows selected.

JDBC Output:

PATIENT\_NAME GENDER ADDRESS

Young Ma male mountain view

Ash Winter male palo alto

Nick Kay male san francisco

Tom Yam male san jose

Brody Tom male santa barbara

John Doe male santa clara

**Query 6: List average age of doctors**

Interactive Mode Output:

SQL> select avg(age) as Average\_Age from Doctor;

AVERAGE\_AGE

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44.5833333

JDBC Output:

AVERAGE\_AGE

4.45833333333333333333333333333333333333E01

**Query 7: List of doctors who consult patient with id = 1000**

Interactive Mode Output:

SQL> select d.doctor\_id, d.doctor\_name, d.patient\_id from Doctor d where d.patient\_id = 1000;

DOCTOR\_ID DOCTOR\_NAME PATIENT\_ID

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5000 Ram Shark 1000

5001 Rani Snow 1000

JDBC Output:

DOCTOR\_ID DOCTOR\_NAME PATIENT\_ID

5000 Ram Shark 1000

5001 Rani Snow 1000

**Query 8: List phone number of patients with id < 1005**

Interactive Mode Output:

SQL> select p.patient\_id, p.patient\_name, p.phone from Patient p where p.patient\_id < 1005;

PATIENT\_ID PATIENT\_NAME PHONE

---------- -------------------- ----------

1000 John Doe 1234567890

1001 Jane Mars 1234567000

1002 Amy Fowler 1234567800

1003 Brody Tom 1234568890

1004 Nick Kay 1234567590

JDBC Output:

PATIENT\_ID PATIENT\_NAME PHONE

1000 John Doe 1234567890

1001 Jane Mars 1234567000

1002 Amy Fowler 1234567800

1003 Brody Tom 1234568890

1004 Nick Kay 1234567590

**Query 9: List doctors whose patients’ age is greater than 50**

Interactive Mode Output:

SQL> select d.doctor\_name, p.patient\_name, p.age as patient\_age from Doctor d, Patient p where d.patient\_id = p.patient\_id and p.age > 50;

DOCTOR\_NAME PATIENT\_NAME PATIENT\_AGE

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Bob Kar Young Ma 63

JDBC Output:

DOCTOR\_NAME PATIENT\_NAME PATIENT\_AGE

Bob Kar Young Ma 63

**Query 10: List number of patients per doctor**

Interactive Mode Output:

SQL> select d.doctor\_name, count(\*) as patient\_count from Patient p inner join Doctor d on d.patient\_id = p.patient\_id group by d.doctor\_name order by d.doctor\_name;

DOCTOR\_NAME PATIENT\_COUNT

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Bob Kar 1

Cloe Rusk 1

Haan Kyu 1

Kale Win 1

Nimmy Kim 1

Ram Shark 3

Rani Snow 1

Rimi Gen 1

Sam Jone 1

Shane Yo 1

10 rows selected.

JDBC Output:

DOCTOR\_NAME PATIENT\_COUNT

Bob Kar 1

Cloe Rusk 1

Haan Kyu 1

Kale Win 1

Nimmy Kim 1

Ram Shark 3

Rani Snow 1

Rimi Gen 1

Sam Jone 1

Shane Yo 1

**Scripts Used:**

**createTable.sql**

create table Patient(patient\_id int primary key, patient\_name varchar2(20), age int,

dob date, gender varchar2(10), phone number(10), address varchar2(20));

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1000,'John Doe',40,to\_date('3/3/1978','mm/dd/yyyy'),'male',1234567890,'santa clara');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1001,'Jane Mars',50,to\_date('2/3/1968','mm/dd/yyyy'),'female',1234567000,'san jose');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1002,'Amy Fowler',20,to\_date('8/12/1997','mm/dd/yyyy'),'female',1234567800,'santa clara');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1003,'Brody Tom',30,to\_date('2/7/1988','mm/dd/yyyy'),'male',1234568890,'santa barbara');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1004,'Nick Kay',25,to\_date('6/5/1993','mm/dd/yyyy'),'male',1234567590,'san francisco');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1005,'Young Ma',63,to\_date('9/25/1955','mm/dd/yyyy'),'male',1234562890,'mountain view');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1006,'Ash Winter',32,to\_date('11/12/1988','mm/dd/yyyy'),'male',1239567890,'palo alto');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1007,'Venus Clay',28,to\_date('3/27/1990','mm/dd/yyyy'),'female',1294567890,'santa clara');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1008,'Tom Yam',45,to\_date('2/5/1973','mm/dd/yyyy'),'male',1234567810,'san jose');

insert into Patient(patient\_id, patient\_name, age, dob, gender, phone, address)

values(1009,'Sansa Mars',23,to\_date('8/30/1995','mm/dd/yyyy'),'female',1214567890,'san mateo');

create table Doctor(doctor\_id int, patient\_id int, doctor\_name varchar2(20), age int, gender varchar2(10),

phone number(10), address varchar2(20), foreign key(patient\_id) references Patient(patient\_id),

primary key(doctor\_id,patient\_id));

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5000, 1000, 'Ram Shark', 45, 'male', 9991110000, 'santa clara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5000, 1002, 'Ram Shark', 45, 'male', 9991110000, 'santa clara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5000, 1007, 'Ram Shark', 45, 'male', 9991110000, 'santa clara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5001, 1000, 'Rani Snow', 35, 'female', 9991110001, 'santa clara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5002, 1003, 'Cloe Rusk', 40, 'male', 9991110002, 'santa barbara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5003, 1005, 'Bob Kar', 56, 'male', 9991110300, 'mountain view');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5004, 1006, 'Kale Win', 43, 'female', 9990110000, 'palo alto');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5006, 1007, 'Shane Yo', 49, 'male', 9991100000, 'santa clara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5006, 1008, 'Sam Jone', 45, 'male', 9991110000, 'san jose');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5007, 1001, 'Rimi Gen', 30, 'female', 9991210000, 'san jose');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5007, 1004, 'Nimmy Kim', 55, 'female', 9991910000, 'santa clara');

insert into Doctor(doctor\_id, patient\_id, doctor\_name, age, gender, phone, address)

values(5007, 1009, 'Haan Kyu', 47, 'male', 9992220000, 'san mateo');

**dropTable.sql**

DROP TABLE Doctor;

DROP TABLE Patient;