

## CMPE 232 (Relational Database)

### Group 1 Phase 2

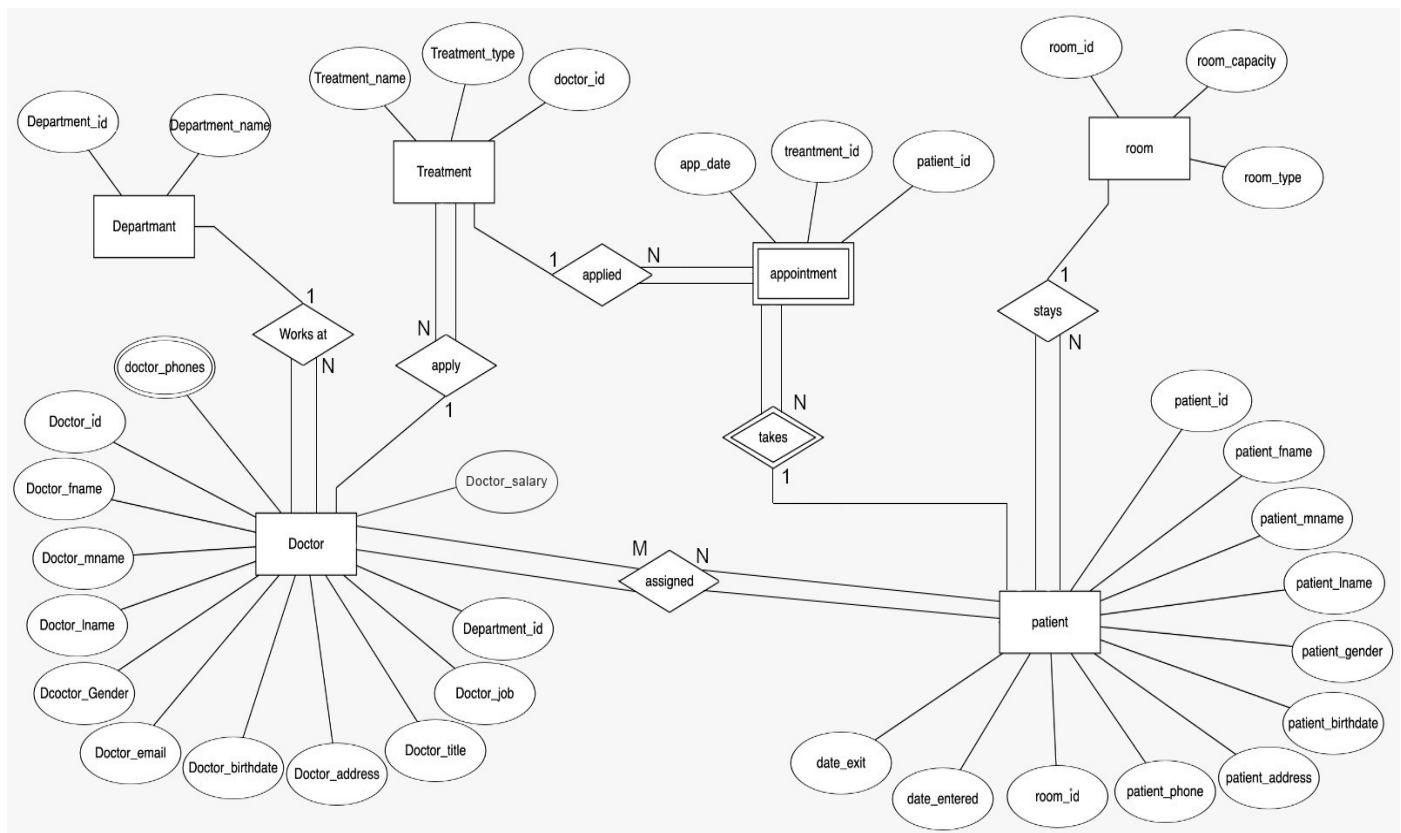
### Hospital Database System

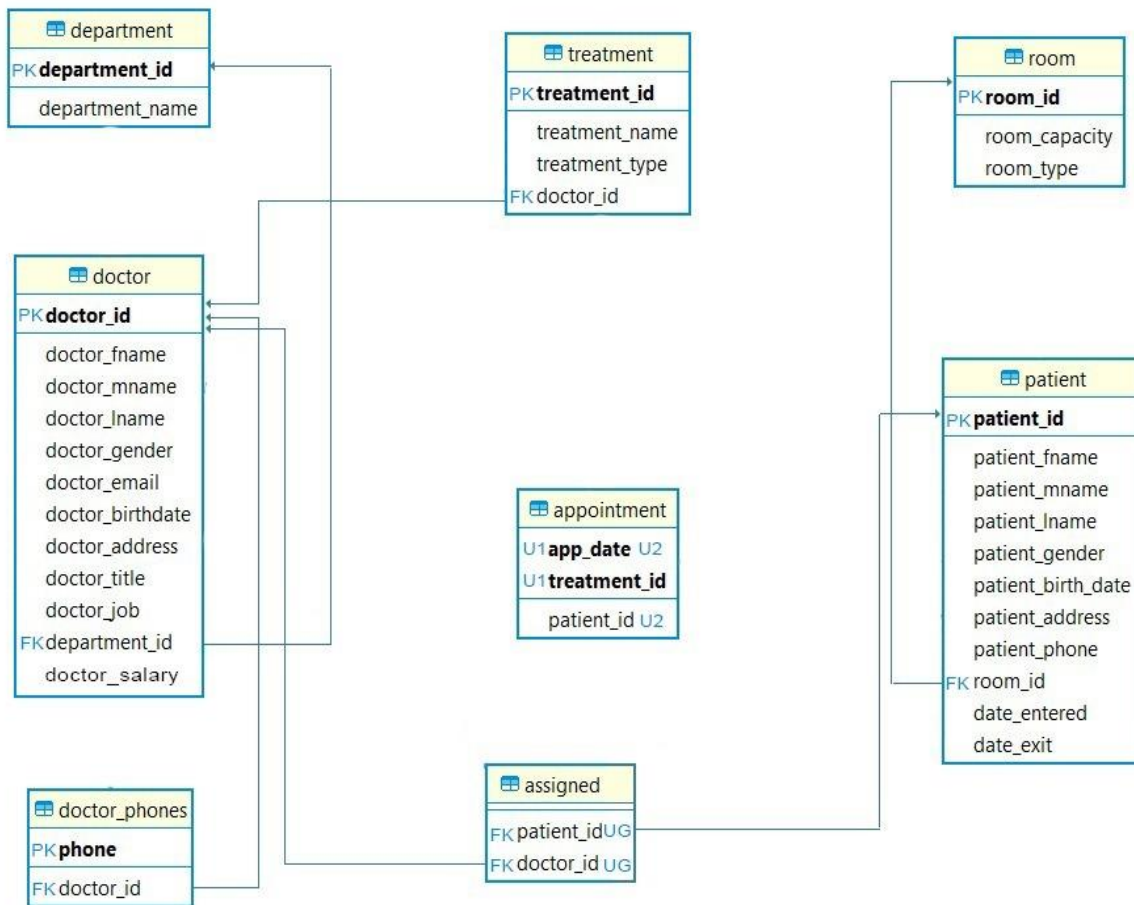
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If we first start the report with the differences with phase 1, After the feedback we received after phase 1, we changed almost the entire diagram. We remove some entities such as a bill, medicine, stock, employee, and nurse. In this part we connected to appointment and treatment with 1 to N relation. Doctor connected with N to 1 relation department, 1 to N treatment, and N to N relation patient. If we explain the entities we removed. Our general reason was that confusion in the database, it was also mentioned in the return we received. If we talk for the nurse department, different nurses would come across the patients of different departments and we couldn't prevent it. A nurse from the department of neurology could come across for the patient. The stock attribute was an unnecessary part that's why we removed the ER diagram. We put the medicine entity in the treatment table instead of opening it in an extra table. We have 8 tables which are doctor, treatment, appointment, room, phone, assigned.

The first table is the department. Department has a 2 attribute which is a department\_id and department\_name. In this part department\_id is the primary key for the department because every department has a unique id. (500,'General Surgery'), (501,'Orthopedy').

Second table is doctor. Doctor table has 13 different attributes which are doctor\_id, doctor\_fname, doctor\_mname, doctor\_lname, doctor\_gender, doctor\_email, doctor\_birthdate, doctor\_address, doctor\_title, doctor\_job, department\_id, doctor\_salary and phone. In this table id is the one primary key. Also department\_id is the foreign key. For example : ( (1,'Burak',-', 'Kaya', 'male', 'brk.kaya@outlook.com', '05/07/1999', 'Dikmen', 'Prof', 'Surgeon', 500, 4533) (6,'Metin', 'Ali', 'Feyyaz', 'male', 'metin.feyyaz@outlook.com', '27/09/1980', 'Batıkent', 'Doc', 'Surgeon', 507, 2366).

We create another table for the doctor's phone numbers whose name is `doctor_phones` because of them to avoid confusion. This part includes 2 attributes which are `phone` and `doctor_id`. The doctor can have multiple numbers so we created an extra entity and phone number. Phone is the primary key. You can enter the same number only once. Also `doctor_id` the foreign key. For example:  
(1,'5369673117') - (1,'5424414916') (4,'5483564858')

Fourth table is `treatment`. It has four attributes which are `treatment_id`, `treatment_name`, `treatment_type`, `doctor_id`. `Treatment_id` is the primary key. For example: (105,'Gain Weight Program','Diet',7). (100,'Brain Surgery','Surgery',2)

Fifth table is `appointment` table. It has three attributes which are `app_date`, `treatment_id`, `patient_id`. In this part `app_date` and `treatment_id` are primary key. For example: ('08/02/2020',102,3) ('11/02/2020',103,4)

Room table is six table in the our ER diagram. Room has three attributes which are `room_id`, `room_capacity`, `room_type`. `Room_id` is primary key. For example: (1,2,'Double Room') (4,1,'Single Room')

Patient part is the seven part. Patient has eleven different attributes which are `patient_id`, `patient_fname`, `patient_mname`, `patient_lname`, `patient_gender`, `patient_email`, `patient_birthdate`, `patient_address`, `patient_phone`, `room_id`, `date_entered`, `date_exit`. `Patient_id` is the one primary key or this part. For example:  
: (1,'Eren',-  
, 'Gurbuz', 'male', '14/05/1994', 'yenimahalle', '5417688234', 1, '19/05/2020')  
(10, 'Alper', 'Baha', 'Ozen', 'male', '18/12/1984', 'yenimahalle', '5367542168', 6, '19/04/2020', '24/04/2020')

Assigned part is the last part in our ER diagram. It has a `patient_id` and `doctor_id` which are the foreign keys. (1,2) (8,5).

## Query Part :

1-

```
select distinct(p.patient_id ),p.patient_fname
from treatment t
inner join appointment a on t.treatment_id =a.treatment_id
inner join assigned a2 on a.patient_id = a2.patient_id
inner join doctor d on d.doctor_id =a2.doctor_id
inner join department dep on dep.department_id = d.department_id
inner join patient p on a2.patient_id = p.patient_id
where t.treatment_type ='MR' and p.date_exit is null and a.app_date ='21/03/2020';
```

-This query list the patient who stays in hospital with their departments and they has an appointment today.

2-

```
select count(*),d.doctor_fname ,d.doctor_id ,d.doctor_lname ,d.doctor_title
,d.doctor_job ,d.doctor_gender ,d.doctor_birthdate,t.treatment_name
from doctor d inner join treatment t on d.doctor_id =t.doctor_id
inner join appointment a on a.treatment_id =t.treatment_id
inner join department dep on d.department_id =dep.department_id
where t.treatment_type = 'Surgery' and dep.department_name ='General Surgery'
group by d.doctor_fname ,d.doctor_id ,d.doctor_lname ,d.doctor_title ,d.doctor_job
,d.doctor_gender ,d.doctor_birthdate ,t.treatment_name
```

-This query list the doctor information and the surgery count where doctors works at general surgery

3-

```
select department_id,avg(doctor_salary),sum(doctor_salary),min(doctor_salary)
from doctor
group by department_id
order by department_id desc
```

-This query the average, total and minimum salaries of doctor grouped by department

4-

```
select *
from patient p
where date_exit is null
```

-This query the patients who left the hospital

5-

```
select count(*), patient
from patient natural join appointment
group by patient
having count(*) >1
```

-This query the patients who has more than 1 appointment

6-

```
select doctor_fname,doctor_salary
```

```
from doctor
```

```
where doctor_salary between 8001.00 and 10000.00 union
```

```
select doctor_fname,doctor_salary from doctor where doctor_salary between  
5000.00 and 7000.00;
```

- This query the doctor salaries between 8001 and 10000 and union of 5000 to 7000

7-

```
select room_capacity,room_id
```

```
from room
```

```
where room_capacity < all ( select room_capacity
```

```
from room
```

```
where room_capacity = '3');
```

-This query the rooms of where the room capacities is less than 3

8-

```
select *
```

```
from doctor full outer join treatment using(doctor_id)
```

-This query list the every values of doctors information with their treatments

9-

```
select *
```

```
from patient p
```

```
where room_id =(select room_id
```

```
from room
```

```
where room_id =1)
```

This query list the patients who stays in room\_id 1

10-

```
select patient_fname
```

```
from patient
```

```
where patient_fname like 'As%';
```

-This query list the patient whose first name start with As



11-

```
select distinct(doctor_fname)
```

```
from doctor
```

```
where doctor_fname like '____';
```

-This query list the doctors whose first name has 4 letter

12-

```
select *
```

```
from patient p2
```

```
where room_id not in(select room_id
```

```
from room r2
```

```
where room_id between 7 and 9)
```

-This query list the patients who does not stay in room 7,8 or 9

13-

```
select min(doctor_salary)
```

```
from doctor
```

```
where doctor_salary >some(select (doctor_salary)
```

```
from doctor)
```

- This query the second lowest salary in between doctors

14-

```
select doctor_id,doctor_title,doctor_fname, doctor_salary
from (select doctor_id,doctor_title,doctor_fname ,doctor_salary
from doctor) as S
where doctor_salary >=9000
```

- This query list doctor id, title, first name and salary where their salary is more than 9000

15-

```
select doctor_title,doctor_id ,treatment_name
from doctor natural join treatment
```

-This query list the doctor title ,doctor id and treatment name who is able to do treatment in hospital

16-

```
from patient p inner join room r ON r.room_id = p.room_id
inner join appointment a on a.patient_id =p.patient_id
```

-This query list the patients and their room and appointment informations

## Java Code :

```
Run: JDBC x
"C:\Program Files\Java\jdk-11.0.7\bin\java.exe" "-javaagent:
1 - List Patients
2 - List the doctors
3 - List the appointments
4 - Add patients
5 - Add doctors
6 - Create appointment
7 - Update patient with id number
8 - Update doctor information
9 - Update Appointment
10 - Delete Patient from Database
11 - Delete Doctor from Database
12 - Delete Appointment from Database
-1 to Exit
Choose one of them above with the given numbers
```

We have created 12 options for user and each option does different implementation.

Choose one of them above with the given numbers

1

ID	First Name	Middle Name	Last Name	Gender	Birth Date	Address	Phone	Room ID
1	Eren	-	Gurbuz	male	14/05/1994	yenimahalle	5417688234	1
2	Selin	-	Toksuz	female	15/08/1970	cankaya	5321532495	1
3	Asli	-	Ozdemir	female	18/02/1985	balgat	5341237435	2
4	Cenk	-	Altunigne	male	15/11/1965	ayranci	5529543215	4
5	zeynep	-	Caliskan	female	02/08/1990	kazan	5424652495	4
6	Ayşe	Nur	Günyol	female	29/05/1995	cukurambar	5357552246	7
7	Omer	-	Ozbek	male	01/09/1970	yuzuncuyil	5482378426	10
8	Huseyin	-	Yasar	male	05/02/1982	batikent	5532785451	7
9	Mehmet	Fahri	Unal	male	13/06/1984	batikent	5327542165	5
10	Alper	Baha	Ozen	male	18/12/1984	yenimahalle	5367542168	6

The first option, which occurs when the user selects 1, creates a new patient for the specific location. If the user enters the right location for a specific hospital and correct department name which exists for the chosen location, then the system gives permission to the user to enter patient information. such as Patient ID, first name, second name, last name, gender, Birthdate, Address, phone, room id. If everything enters correctly, then the patient added to the database.

Choose one of them above with the given numbers  
2

ID	First Name	Middle Name	Last Name	Gender	E-Mail	Birth Date	Address	Title	Job	Salary	Department Name
9	Suleyman	-	Cakir	male	suleyman.cakir@outlook.com	21/04/1977	Sokullu	Prof	Surgeon	5800	General Surgery
4	Ipek	-	Eroglu	female	ipek.eroglu@yahoo.com	07/03/1998	Oveclar	Prof	Surgeon	10000	General Surgery
1	Burak	-	Kaya	male	brk.kaya@outlook.com	05/07/1999	Dikmen	Prof	Surgeon	5000	General Surgery
8	Sevgi	-	Ozturk	female	sevgi.ozturk@outlook.com	09/12/1967	Ayas	Dr	Orthopedist	7000	Orthopedy
10	Orge	-	Yilmaz	female	orge.yilmaz@outlook.com	04/04/1991	Ayranci	Dr	Psychologist	6900	Mental Health
3	Ali	-	Capoglu	male	ali.pdoglu@gmail.com	23/03/1996	Cevici	Dr	Cardiologist	6800	Cardiology
2	Cihan	-	Kurtoglu	male	cihan.kurtoglu@gmail.com	14/03/1996	Kurtulus	Prof	Neurologist	8800	Neurology
7	Can	-	Baran	male	can.baran@outlook.com	03/02/1978	Cubuk	Prof	Dietitian	7600	Nutrition and Diet
5	Fatma	-	Sahin	female	fatma.sahin@outlook.com	02/11/1965	Cukurambar	Dr	Dermatologist	9800	Dermatology
6	Hetin	Ali	Feyyaz	male	netin.feyyaz@outlook.com	27/09/1988	Batikent	Doc	Surgeon	7500	Plastic Surgery

When the user selects 2, creates to appropriate doctor for the patient. Then system gives permission to the seen doctor information such as doctor\_id , doctor\_fname, doctor\_mname, doctor\_lname, doctor\_gender, doctor\_email , doctor\_birthdate , doctor\_address , doctor\_title , doctor\_job , departmen id , doctor\_salary and phone.

Choose one of them above with the given numbers

3

Appointment Date	Treatment Name	Patient ID	Title	Job	Department Name
05/02/2020	Brain Surgery	1	Prof	Surgeon	General Surgery
07/02/2020	Appendicitis Surgery	2	Prof	Surgeon	General Surgery
08/02/2020	Troid Surgery	3	Prof	Surgeon	General Surgery
11/02/2020	Endoscopy	4	Dr	Orthopedist	Orthopedy
17/02/2020	Psychologic Therapy	5	Dr	Psychologist	Mental Health
19/02/2020	Gain Weight Program	6	Prof	Cardiologist	Cardiology
24/02/2020	Leg MR Vision	7	Prof	Neurologist	Neurology
28/02/2020	Stomach Cancer Surgery	8	Dr	Dietitian	Nutrition and Diet
01/03/2020	Liposuction	9	Doc	Dermatologist	Dermatology
06/03/2020	Tomography	10	Doc	Surgeon	Plastic Surgery

When the user selects 3, they see appointment. Appointment details part which are app\_date, treatment\_name,patient\_id,title,job and deparment\_name.

Choose one of them above with the given numbers

4

Enter id for patient

11

Enter the patient first name

Ali

Enter the patient middle name (If it does not exist just press enter.)

Can

Enter the patient last name

Candan

Enter patient gender

male

Enter patient date of birth

18/06/1995

Enter the patient address

Cayyolu

Enter the patient phone

5387162674

Select a room at below

Select a room at below

Room ID	Room Capacity	Room Type
1	2	Double Room
2	2	Double Room
3	1	Single Room
4	1	Single Room
5	3	Triple Room
6	3	Triple Room
7	6	Emergency Hall-1
8	6	Emergency Hall-2
9	1	Special Room
10	1	Special Room

4

Enter the record time

23/05/2020

Department ID	Department Name
500	General Surgery
501	Orthopedy
502	Mental Health
503	Cardiology
504	Neurology
505	Nutrition and Diet
506	Dermatology
507	Plastic Surgery
508	Eye Diseases
509	Otorhinolaryngology

Select a department above with ID

504

ID	Title	First Name	Middle Name	Last Name	Job
2	Prof	Cihan	-	Kutluoglu	Neurologist

Select a doctor for patient above with ID

When you select the 4 data base permit for the adding new patient. For the adding correctly patient\_id, patient\_fname, patient\_mname, patient\_lname, patient\_gender, patient\_email , patient\_birthdate , patient\_address, patient\_phone, room\_id, date\_entered\_ date\_exit.

Choose one of them above with the given numbers

5

Enter id for doctor

12

Enter the doctor first name

Eylul

Enter the doctor middle name (If it does not exist just press enter)

Nur

Enter the doctor last name

Tanriverdi

Enter doctor gender

female

Enter doctor email

eylulnur.tanriverdi@gmail.com

Enter doctor date of birth

28/11/1978

Enter the doctor address

Cukurambar

Enter the doctor phone (If Doctor has more than one phone separate them with a comma)

5473652179,5548924396

Enter the doctor title

Doc.

Enter the doctor job

Surgeon

Department ID	Department Name
500	General Surgery
501	Orthopedy
502	Mental Health
503	Cardiology
504	Neurology
505	Nutrition and Diet
506	Dermatology
507	Plastic Surgery
508	Eye Diseases
509	Otorhinolaryngology

Select a department at above with ID

503

The doctor added to system

When you select the 5 data base permit for the adding doctor. For the adding doctor with this details doctor\_id , doctor\_fname, doctor\_mname, doctor\_lname, doctor\_gender, doctor\_email , doctor\_birthdate , doctor\_address , doctor\_title , doctor\_job , departmen id, doctor\_salary, phone.

Choose one of them above with the given numbers

6

Enter a patient ID to create appointment

1

Enter a date for this appointment

29/04/2020

ID	Treatment Name	Treatment Type	Doctor ID
110	Brain Mr Vision	Examination	2
100	Brain Surgery	Surgery	2

Choose a treatment at above with ID

110

The appointment created successfully.

When you select the 6 it provides the create appointment part. For the creating appointment part you entered the details such as treatment\_id , treatment\_name, treatment\_type, doctor\_id.

```
Choose one of them above with the given numbers
7
Enter patient ID to update information
1
ID      First Name  Middle Name  Last Name  Gender  Birth Date  Address  Phone  Room ID  Date Entered  Date Exit
1       Eren          -           Gurbuz    male    14/05/1994  yenisahalle  5417688214  1       19/05/2020    null

1 - First Name
2 - Middle Name
3 - Last Name
4 - Gender
5 - Birth Date
6 - Address
7 - Phone Number
8 - Room ID
9 - Date Entered
10 - Date Exited
Choose one option above to update patient
10
Enter the Date Exit
05/05/2020
```

When you select the 7 it provides the update patient part. For the updating you have to entire the correctly information that patien\_id, , patient\_fname, patient\_mname, patient\_lname, patient\_gender, patient\_email , patient\_birthdate , patient\_address, patient\_phone, room\_id, date\_entered\_ date\_exit.



```

Choose one of them above with the given numbers
#
Enter doctor ID to change information
#
ID          First Name      Middle Name      Last Name      Gender      E-Mail          Birth Date      Address          Title          Job          Department Name      Salary
1          Burak          -              Kaya          male        brk.kaya@outlook.com      05/07/1999      Dikmen          Prof          Surgeon          500          5000
Choose one option below to update patient
1 - First Name
2 - Middle Name
3 - Last Name
4 - Gender
5 - Email
6 - Birth Date
7 - Address
8 - Title
9 - Job
10 - Department ID
11 - Salary
12 - Phones

```

When you select the 8, it provides the update doctor part. For the updating you have to entire the correctly information that doctor\_id , doctor\_fname, doctor\_mname, doctor\_lname, doctor\_gender, doctor\_email , doctor\_birthdate , doctor\_address , doctor\_title , doctor\_job , departmen id, doctor\_salary

Choose one of them above with the given numbers

9

Enter a Patient ID and Appointment Date to change

Enter Patient ID

1

Enter Appointment Date

05/02/2020

05/02/2020

100

1

1 - Change Appointment Date

2 - Change Treatment

3 - Change Doctor

|

When you select the 9, it provides the update appointment part. For the updating you have to entire the correctly information.

Choose one of them above with the given numbers

10

Enter the patient ID to delete

9

When you select the 10, it provides delete the patient from database.

Choose one of them above with the given numbers

11

Enter the Doctor ID to delete

8

Doctor deleted successfully

When you select the 11, it provides delete the doctor from database.

Choose one of them above with the given numbers

12

Enter Patient ID and Appointment Date

Enter Patient ID

1

Enter Appointment Date

05/02/2020

Appointment deleted successfully

When you select the 12, it provides delete the appointment from database.

