DATABASE PROJECT- Part II

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DESCRIPTION

Based on what we've done in part 1, we have built our tables. The schema we had built was the our indicator. So, we started with creating a database for the hospital and creating the tables that we showed in the schema.

Note: you can check our code in microsoft sql serve file by writing HALA\HALA in the server name textbox or in the .txt file (if sql file isn't working)

```
create database Hospital;
use Hospital;

create table Employee
(
employeeID int constraint empID_pk primary key,
Name char(20),
DOB date,
salary float,
days char(10),
timing char(20),
shift char(10),
nurse_rank int default null,
job_type char(10),
check (lower(shift)='a' or lower(shift)='b' or lower(shift)='c' or shift=''), check(nurse_rank>=1 and nurse_rank <=5 or nurse_rank='')
);

create table Patient
(
patientID int constraint pID_pk primary key,
Name char(20),
DOB Date,
employeeID int ,
constraint emplID_fk foreign key(employeeID) references Employee(employeeID) on delete cascade
);

create table Payment
(
paymentNumber int constraint paymentNum_pk primary key,
paymentDate Date,
amount float,
patientID int,
constraint patientID_fk foreign key(patientID) references Patient(patientID)

);
```

```
create table Room
(
roomNumber int constraint roomNum_pk primary key,
roomType char(10),
entry_type char(20),
patientID int,
constraint pID_fk foreign key(patientID) references Patient(patientID),
check(lower(entry_type)='opd' or lower(entry_type)='emergency' or lower(entry_type)='routine checkup')
);


create table Inventory
(
medicine_record char(20),
medicine_amount int,
equipment_record char(20),
equipment_amount int,
bloodbank_record char(20),
bloodbank_amount int,
employeeID int,
constraint employeeID_fk foreign key(employeeID) references Employee(employeeID),

);
```

Let's insert some records:

```
insert into Inventory(medicine_record,medicine_amount,equipment_record,equipment_amount,bloodbank_record,bloodbank_amount,employeeID) values ('Amoclan', 26,'Surgical suture',15,'O+',60,1);
insert into Inventory(medicine_record,medicine_amount,equipment_record,equipment_amount,bloodbank_record,bloodbank_amount,employeeID) values ('Diclofen', 44,'Otoscope',7,'AB+',100,6);
insert into Inventory(medicine_record,medicine_amount,equipment_record,equipment_amount,bloodbank_record,bloodbank_amount,employeeID) values ('Forxiga', 152,'Scalpel',65,'A-',250,7);
insert into Inventory(medicine_record,medicine_amount,equipment_record,equipment_amount,bloodbank_record,bloodbank_amount,employeeID) values ('Augmentin', 78,'Feeding tube',310,'B+',300,9);
insert into Inventory(medicine_record,medicine_amount,equipment_record,equipment_amount,bloodbank_record,bloodbank_amount,employeeID) values ('panadol', 105,'Nebulizer',52,'B-',55,8);
select * from Inventory;
```

Notice that employeeID in Inventory are for the employees with <u>rank 1</u> in Employee table

Results | Messages

	medicine_record	medicine_amount	equipment_record	equipment_amount	bloodbank_record	bloodbank_amount	employeeID
1	Amoclan	26	Surgical suture	15	O+	60	1
2	Diclofen	44	Otoscope	7	AB+	100	6
3	Forxiga	152	Scalpel	65	A-	250	7
4	Augmentin	78	Feeding tube	310	B+	300	9
5	panadol	105	Nebulizer	52	B-	55	8

Query executed successfully.

Based on what you've asked for in question 5 c , we modified a record based on a condition:

```
update Inventory set equipment_record=78 where medicine_record='Amoclan';
```

Results | Messages

	medicine_record	medicine_amount	equipment_record	equipment_amount	bloodbank_record	bloodbank_amount	employeeID
1	Amoclan	26	78	15	O+	60	1
2	Diclofen	44	Otoscope	7	AB+	100	6
3	Forxiga	152	Scalpel	65	A-	250	7
4	Augmentin	78	Feeding tube	310	B+	300	9
5	panadol	105	Nebulizer	52	B-	55	8

Query executed successfully.

Then, we kept inserting data to other tables:

```
insert into Room(roomNumber,roomType,entry_type,patientID) values (101,'VIP','OPD',2);
insert into Room(roomNumber,roomType,entry_type,patientID) values (102,'Recovery','Emergency',3);
insert into Room(roomNumber,roomType,entry_type,patientID) values (55,'X-Ray','Routine check-up',1);
insert into Room(roomNumber,roomType,entry_type,patientID) values (321,'Surgery','Emergency',4);
insert into Room(roomNumber,roomType,entry_type,patientID) values (78,'Emergency','Emergency',5);
select * from Room;
```

Results | Messages

	roomNumber	roomType	entry_type	patientID
1	55	X-Ray	Routine check-up	1
2	78	Emergency	Emergency	5
3	101	VIP	OPD	2
4	102	Recovery	Emergency	3
5	321	Surgery	Emergency	4

```
insert into Patient(patientID,Name,DOB,employeeID) values (1,'Ali','2012-05-02',1);
insert into Patient(patientID,Name,DOB,employeeID) values (2,'Nuha','2007-07-02',1);
insert into Patient(patientID,Name,DOB,employeeID) values (3,'Raneem','1992-09-12',1);
insert into Patient(patientID,Name,DOB,employeeID) values (4,'Sara','1995-05-22',1);
insert into Patient(patientID,Name,DOB,employeeID) values (5,'Khalid','1988-08-18',1);
insert into Patient(patientID,Name,DOB,employeeID) values (7,'Khalid','1988-08-18',5);
insert into Patient(patientID,Name,DOB,employeeID) values (8,'abdullah','1988-08-18',3);
insert into Patient(patientID,Name,DOB,employeeID) values (9,'nuha','1988-08-18',3);
select * from Patient;
```

Results | Messages

	patientID	Name	DOB	employeeID
1	1	Ali	2012-05-02	1
2	2	Nuha	2007-07-02	1
3	3	Raneem	1992-09-12	1
4	4	Sara	1995-05-22	1
5	5	Khalid	1988-08-18	1
6	7	Khalid	1988-08-18	5
7	8	abdullah	1988-08-18	3
8	9	nuha	1988-08-18	3

Query executed successfully.

```
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(1,'Ziyad','1978-05-14',598.75,'','','A',1,'Nurse');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(2,'Hala','2000-09-29',798.0,'Thu-Fri','12-5pm','','','Doctor');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(3,'Qusai','2000-03-17',972.5,'Tue-Wed','2-9am','','','Doctor');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(4,'Ahmad','1988-02-14',369,'','','B',2,'Nurse');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(5,' Noor Hedaya','2000-09-14',562.7,'fri','2-9pm','','','Doctor');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(6,'Hussam','1956-05-04',3698.5,'','','A',1,'Nurse');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(7,'Sireen','1978-06-23',539.75,'','','A',1,'Nurse');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(8,'Ahlam','1968-07-15',1592.75,'','','A',1,'Nurse');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(9,'Duaa','1958-09-14',578.75,'','','A',1,'Nurse');
insert into Employee(employeeID,Name,DOB,salary,days,timing,shift,nurse_rank,job_type) values(10,'Hazem','1999-05-24',635.85,'','','A',3,'Nurse');
select * from Employee;
```

Results | Messages

	employeeID	Name	DOB	salary	days	timing	shift	nurse_rank	job_type
1	1	Ziyad	1978-05-14	598.75			A	1	Nurse
2	2	Hala	2000-09-29	798	Thu-Fri	12-5pm		0	Doctor
3	3	Qusai	2000-03-17	972.5	Tue-Wed	2-9am		0	Doctor
4	4	Ahmad	1988-02-14	369			B	2	Nurse
5	5	Noor Hedaya	2000-09-14	562.7	fri	2-9pm		0	Doctor
6	6	Hussam	1956-05-04	3698.5			A	1	Nurse
7	7	Sireen	1978-06-23	539.75			A	1	Nurse
8	8	Ahlam	1968-07-15	1592...			A	1	Nurse
9	9	Duaa	1958-09-14	578.75			A	1	Nurse
10	10	Hazem	1999-05-24	635.85			A	3	Nurse

Query executed successfully.

```
insert into Payment(paymentNumber,paymentDate,amount,patientID) values (235,'2020-05-15',1983.0,1);
insert into Payment(paymentNumber,paymentDate,amount,patientID) values (236,'2020-05-25',1086.75,2);
insert into Payment(paymentNumber,paymentDate,amount,patientID) values (237,'2020-09-25',230.8,3);
insert into Payment(paymentNumber,paymentDate,amount,patientID) values (238,'2020-10-06',356.0,4);
insert into Payment(paymentNumber,paymentDate,amount,patientID) values (239,'2020-11-17',512.0,5);
select * from Payment;
```

Results Messages

	paymentNumber	paymentDate	amount	patientID
1	235	2020-05-15	1983	1
2	236	2020-05-25	1086.75	2
3	237	2020-09-25	230.8	3
4	238	2020-10-06	356	4
5	239	2020-11-17	512	5

Query executed successfully.

Based on what you asked for in question 5 d, we've deleted a record based on a condition:

```
delete from Payment where paymentNumber=239;
select * from Payment;
```

Results Messages

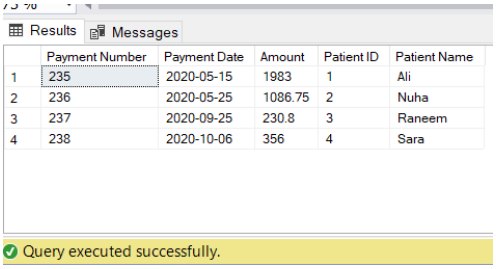
	paymentNumber	paymentDate	amount	patientID
1	235	2020-05-15	1983	1
2	236	2020-05-25	1086.75	2
3	237	2020-09-25	230.8	3
4	238	2020-10-06	356	4

Query executed successfully.

We used two tables to join two columns in the same table

```
select pay.paymentNumber as "Payment Number",pay.paymentDate as "Payment Date",pay.amount as "Amount" ,pay.patientID as "Patient ID" ,pt.Name as "Patient Name" from Payment pay ,Patient pt where pay.patientID=pt.patientID;
```

So, here is the result:



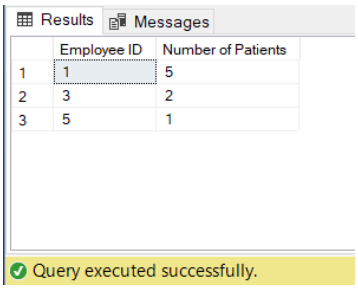
Results | Messages

	Payment Number	Payment Date	Amount	Patient ID	Patient Name
1	235	2020-05-15	1983	1	Ali
2	236	2020-05-25	1086.75	2	Nuha
3	237	2020-09-25	230.8	3	Raneem
4	238	2020-10-06	356	4	Sara

Query executed successfully.

Lastly, we used patient table and employee table to show the number of patients that a doctor monitors their health:

```
select e.employeeID as "Employee ID" ,  count(p.Name) as "Number of Patients" from Employee e, Patient p  where e.employeeID= p.employeeID group by e.employeeID;
```



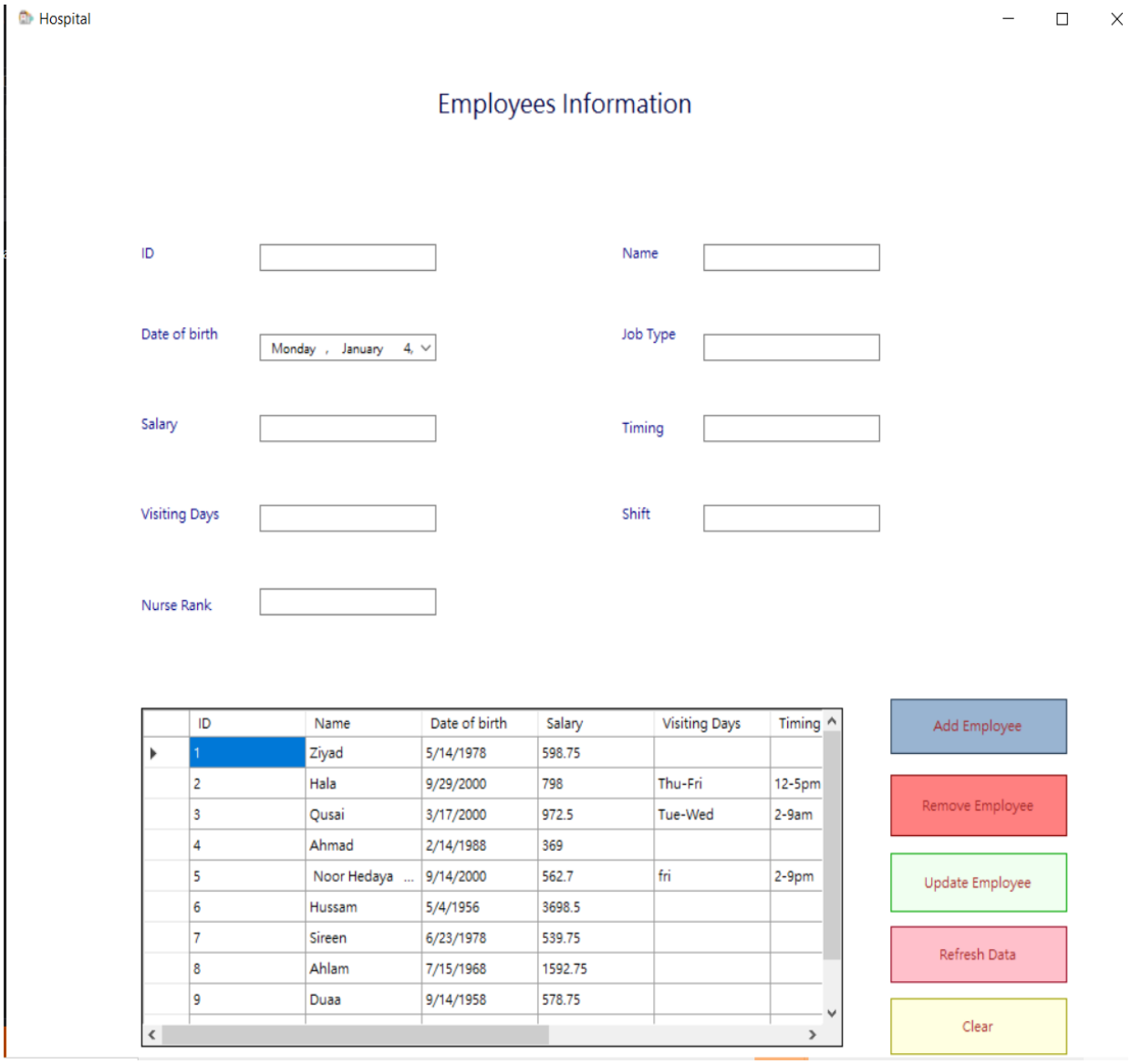
Results | Messages

	Employee ID	Number of Patients
1	1	5
2	3	2
3	5	1

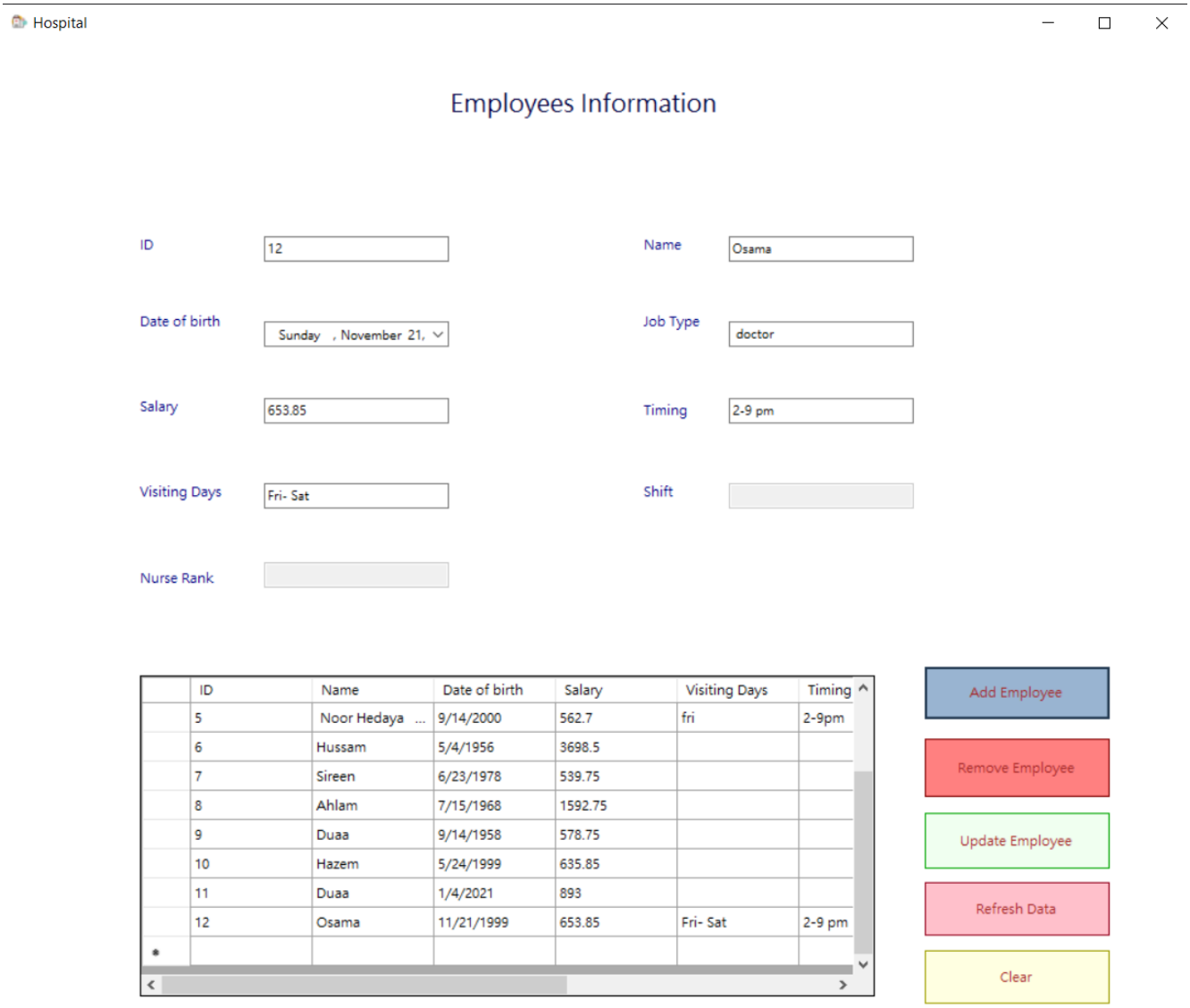
Query executed successfully.

After building this database, we started working on the GUI on C#. We focused on the main transactions such as insert, update, delete and select.

Here is how our GUI looks:

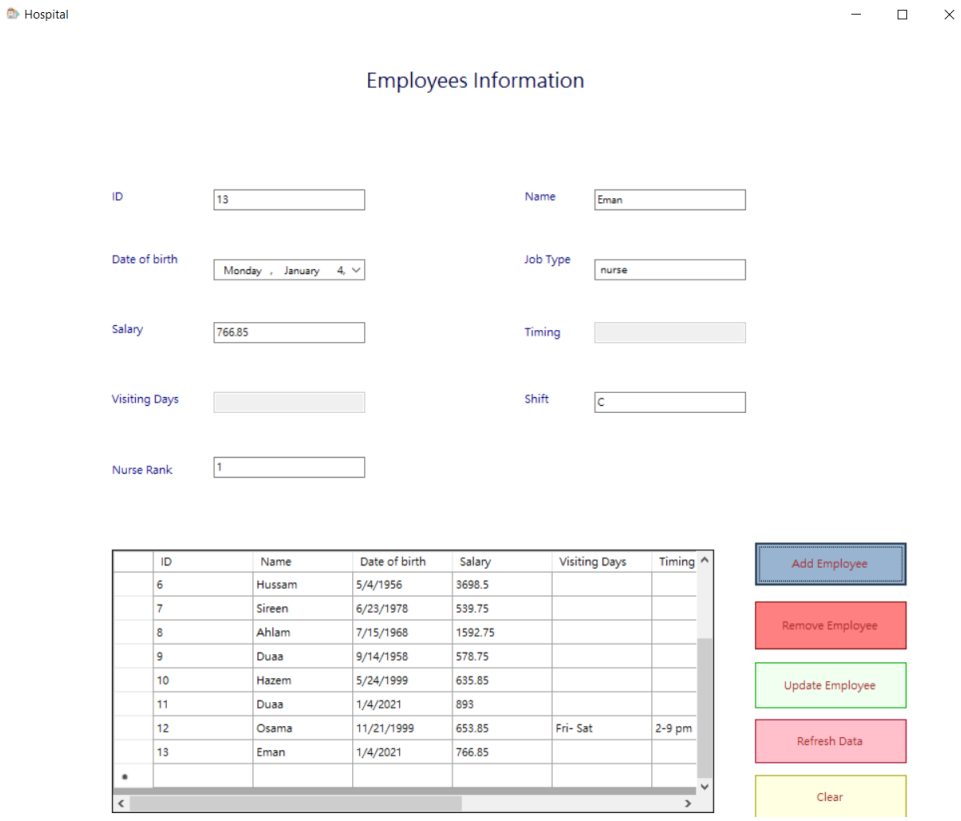


Let’s try to add a doctor using it:



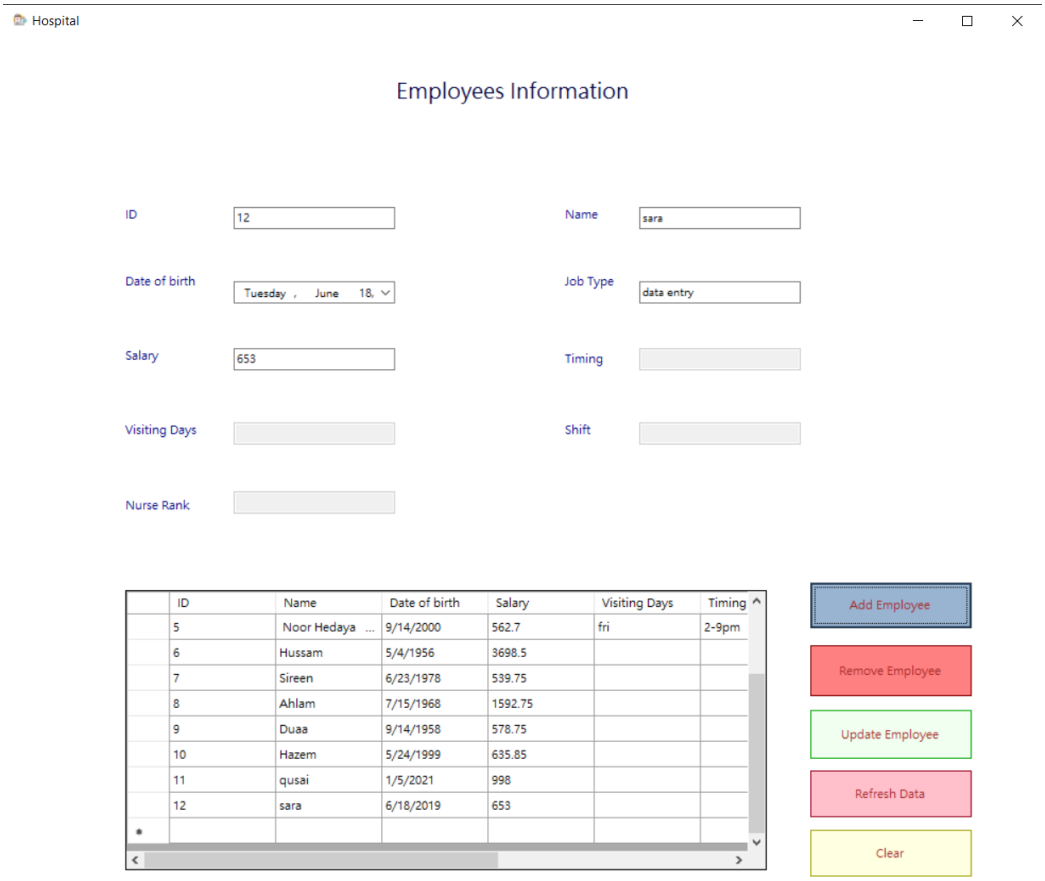
As you mentioned in the scenario, the doctor has a timing and visiting the hospital days but not a shift or a nurse rank. Then, we tried to prevent the user to fill these textboxes by making it disabled so he can type nothing.

Let’s try to add a nurse:



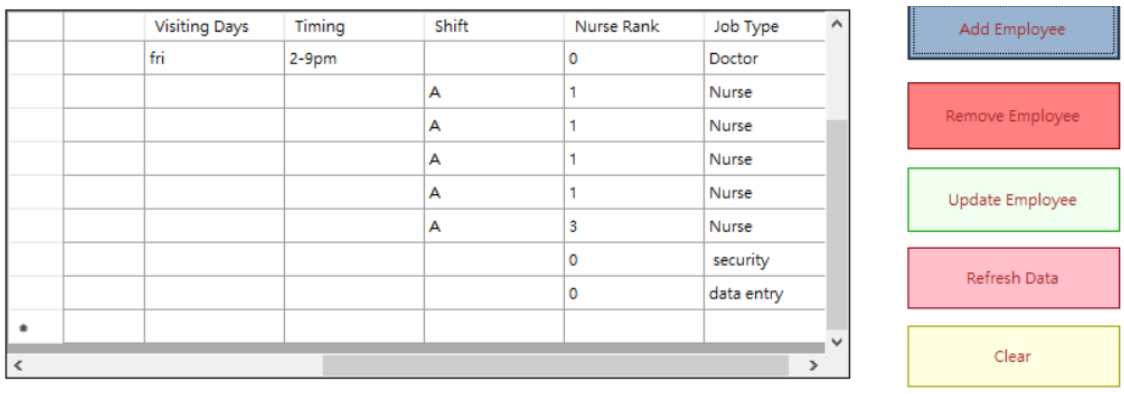
As we did when adding a doctor, we disabled the timing and visiting days textboxes when a user enters ‘nurse’ in the job type textbox. The user is not allowed to enter anything in the job type textbox except ‘doctor’ or ‘nurse’, otherwise a messageBox will pop up and the employee will not be added or updated. In addition, the user is not allowed to enter a number greater than 5 or less than 1 in the nurse rank textbox. If so, a messageBox will pop up and the employee will not be added or updated.

Let’s see what happens when we add an employee who’s not a doctor or a nurse:



ID	Name	Date of birth	Salary	Visiting Days	Timing
5	Noor Hedaya ...	9/14/2000	562.7	fri	2-9pm
6	Hussam	5/4/1956	3698.5		
7	Sireen	6/23/1978	539.75		
8	Ahlam	7/15/1968	1592.75		
9	Duaa	9/14/1958	578.75		
10	Hazem	5/24/1999	635.85		
11	qusai	1/5/2021	998		
12	sara	6/18/2019	653		

Here’s how her data shows in the database:



		Visiting Days	Timing	Shift	Nurse Rank	Job Type
		fri	2-9pm		0	Doctor
				A	1	Nurse
				A	1	Nurse
				A	1	Nurse
				A	1	Nurse
				A	3	Nurse
					0	security
					0	data entry

Sara is not neither doctor nor nurse, so she does not have visiting days, timing, shift or nurse rank. As a result, their textboxes will be disabled and they will be saved as null values in the Employee table but her ID, name, salary, DOB and job type values will be saved in the table.