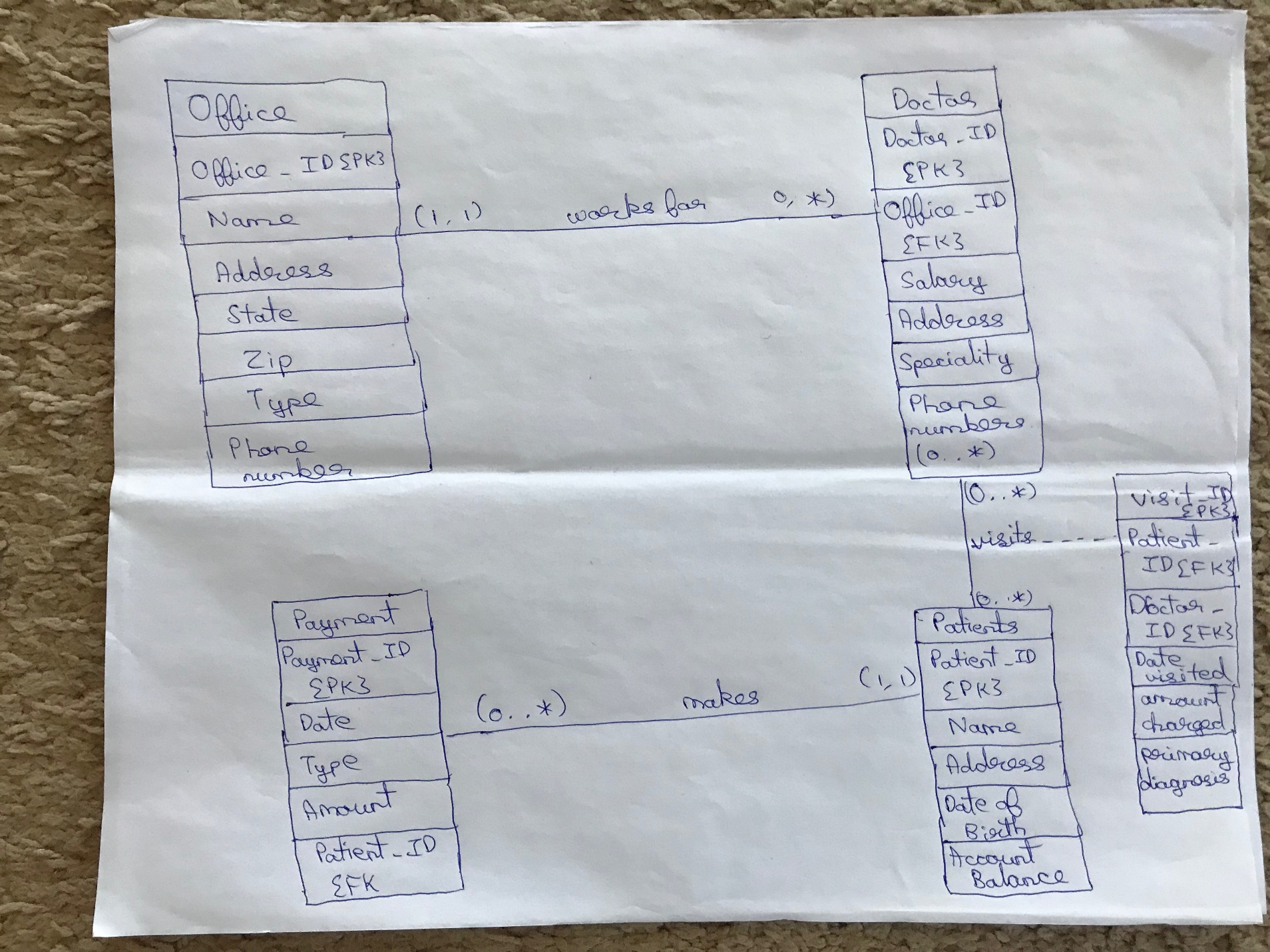
**AIT -732 Advanced Database Management Systems**

**Project Final**

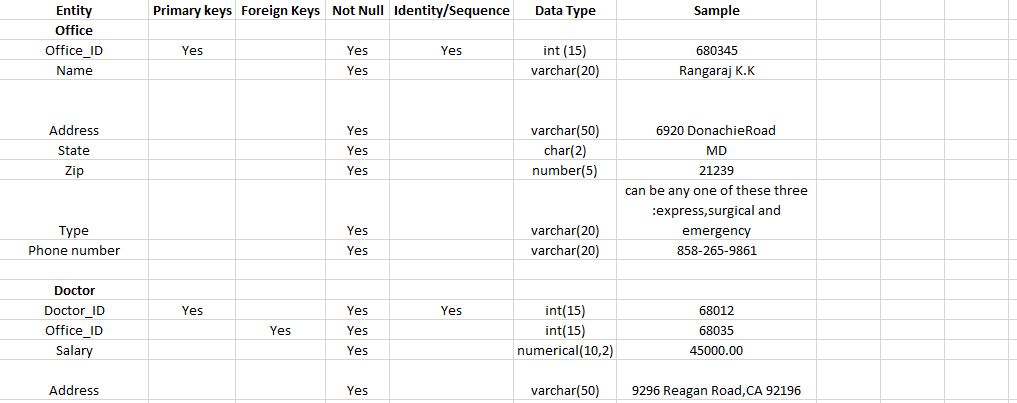
**Done By**

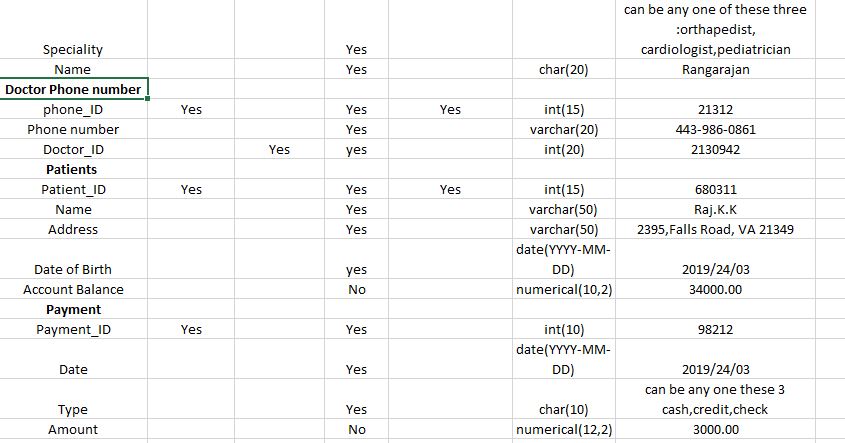
**Rangarajan Kachii Kadambi**

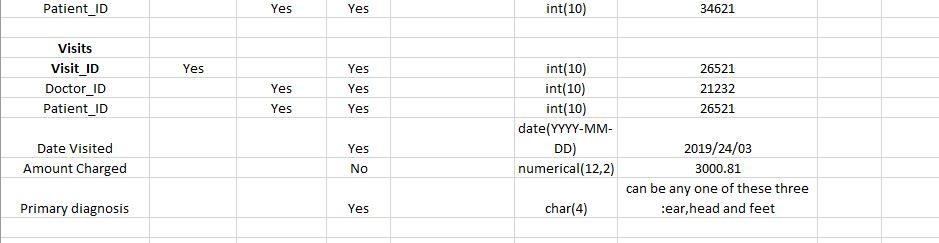
My Entity Relationship Diagram is as shown below:



My physical Diagram is as shown below in the screen shots:







For executing my procedures, I have used the Towson University Server and the name of the server is aitdb3.towson.edu. The database used is db10 and I have used Microsoft SQL Server to execute the procedures.

The procedures and their corresponding outputs are shown below in the screenshots.

Stored Procedures:

1. (Using a procedure) The system should be able to add new offices to the system making sure it is not a duplicate and has a valid type. A message should be returned with the success or failure of the action.

**Code to solve requirement 1:**

CREATE OR ALTER PROCEDURE usp\_insert\_office

(@in\_NAME varchar(20), @in\_ADDRESS varchar(50), @in\_STATE CHAR(2),

@in\_ZIP NUMERIC(5),@in\_TYPE VARCHAR(20),@in\_PHONE\_NO VARCHAR(20))

AS

BEGIN

/\* Checking for duplicates \*/

IF EXISTS (SELECT 1 FROM OFFICE WHERE UPPER(NAME)=UPPER(@in\_NAME))

BEGIN

SELECT('DUPLICATE RECORD')

END

/\* validation of office type from a look up table named Valid\_office\_types \*/

ELSE IF NOT EXISTS (SELECT 1 FROM VALID\_OFFICE\_TYPES WHERE UPPER(TYPE) = UPPER(@in\_TYPE))

BEGIN

SELECT ('INVALID OFFICE TYPE')

END

ELSE

BEGIN

BEGIN TRANSACTION

/\* if no duplicates insert records into table \*/

INSERT INTO OFFICE(name, ADDRESS,STATE,ZIP,TYPE,PHONE\_NO) VALUES (@in\_NAME,@in\_ADDRESS,@in\_STATE,@in\_ZIP,@in\_TYPE,@in\_PHONE\_NO)

IF(@@ERROR<>0)

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

SELECT('INSERT SUCCESSFUL');

/\* commit transaction once the insert command is executed successfully \*/

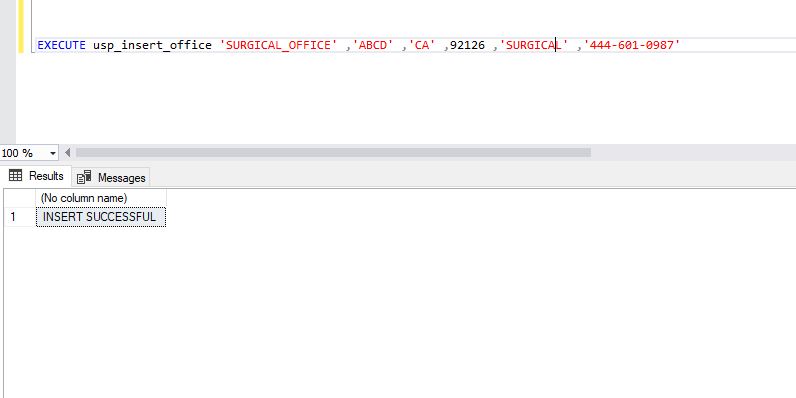
COMMIT TRANSACTION

END

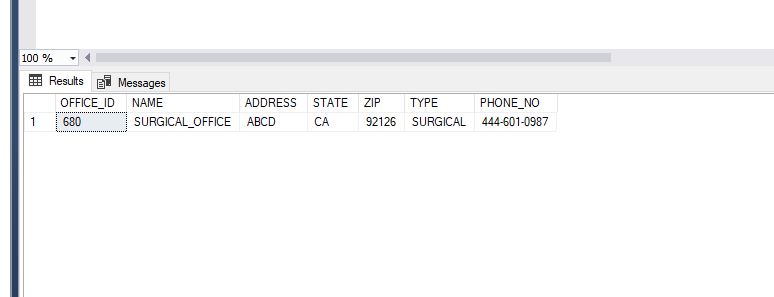
END

END

So when we execute the procedure we get a message saying insert successful.



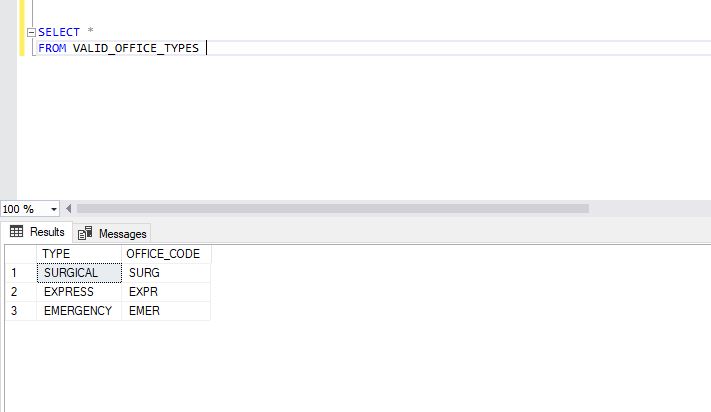
Attached below is the screenshot of the table after the procedure has been executed.



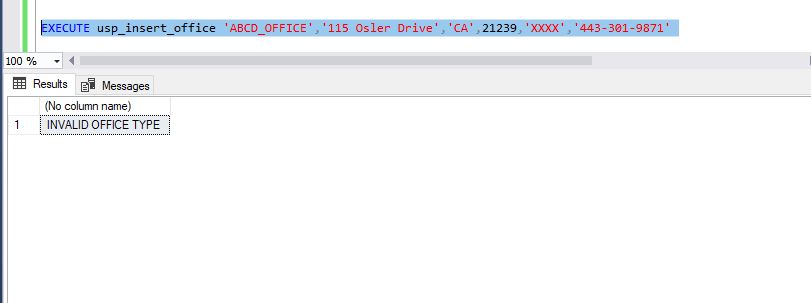
Now let’s say we add an existing office such as Surgical Office and we get the message as duplicate record and the screenshot is shown below:



To check for a valid office type I have created a reference table named valid\_office\_types which consists of valid office\_types as shown below:



Now let’s add a invalid office type such as XXXX into the procedure and we get the result as “Invalid office type” as shown in the screenshot:



2: (Using a procedure) The system should be able to add doctors (making sure of no duplicates) with a valid specialty and a valid office. A message should be returned with the success or failure of the action. Phone numbers may be added without a procedure.

**Code to solve requirement 2:**

CREATE OR ALTER PROCEDURE usp\_add\_doctor

(@in\_OFFICE\_ID INT, @in\_DOCTOR\_NAME VARCHAR(30),@in\_SALARY NUMERIC(10,2),@in\_ADDRESS varchar(50)

, @in\_SPECIALITY VARCHAR(30))

AS

BEGIN

/\* Checking for duplicates \*/

IF EXISTS (SELECT 1 FROM DOCTOR WHERE UPPER(DOCTOR\_NAME)=UPPER(@in\_DOCTOR\_NAME))

BEGIN

SELECT('DUPLICATE RECORD')

END

/\* validation of office from the office table \*/

ELSE IF NOT EXISTS (SELECT 1 FROM OFFICE WHERE OFFICE\_ID = (@in\_OFFICE\_ID))

BEGIN

SELECT ('INVALID OFFICE')

END

/\* validation of speciality from a look up table named Valid\_speciality \*/

ELSE IF NOT EXISTS (SELECT 1 FROM VALID\_SPECIALITY WHERE UPPER(SPECIALITY)=UPPER(@in\_SPECIALITY))

BEGIN

SELECT('INVALID SPECIALITY')

END

ELSE

BEGIN

BEGIN TRANSACTION

/\*insert records into table \*/

INSERT INTO DOCTOR(OFFICE\_ID,DOCTOR\_NAME,SALARY,ADDRESS,SPECIALITY) VALUES

(@in\_OFFICE\_ID,@in\_DOCTOR\_NAME,@in\_SALARY,@in\_ADDRESS,@in\_SPECIALITY)

IF(@@ERROR<>0)

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

SELECT('INSERT SUCCESSFUL');

/\* commit transaction once the insert command is executed successfully \*/

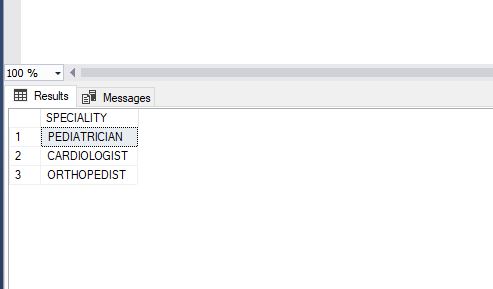
COMMIT TRANSACTION

END

END

END

For this procedure I have created one reference table to do the validation valid\_speciality and the validation of the OFFICE\_ID is done through by looking up the data in the office table that already exists and screenshots of these tables are shown below:



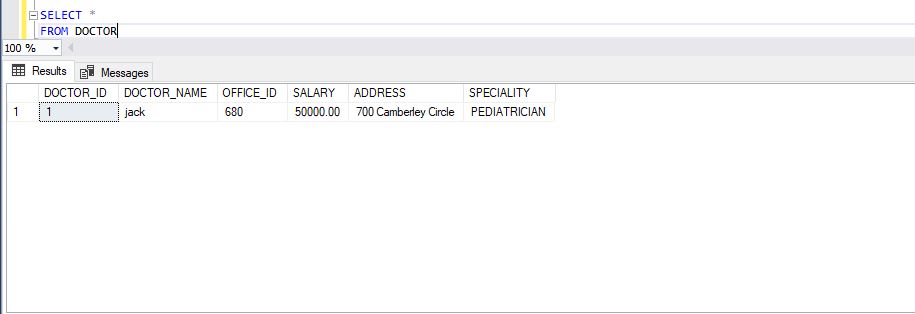
Now we insert a record with a valid office\_ID such as 680 and a valid speciality such as pediatrician

and we get the output as shown below:

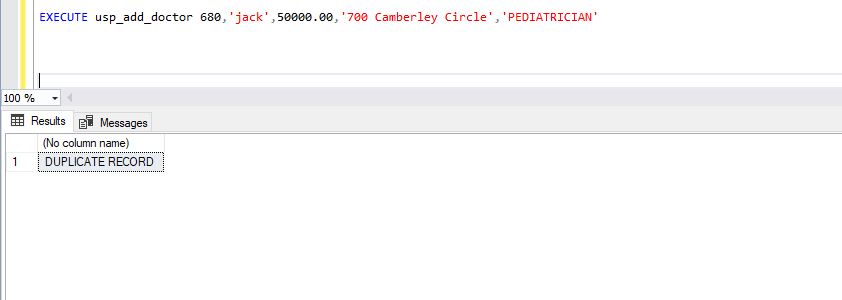
![A screenshot of a social media post

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDoRXhpZgAATU0AKgAAAAgABAE7AAIAAAAKAAAISodpAAQAAAABAAAIVJydAAEAAAAUAAAQzOocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAG1hZGhhbiBrawAABZADAAIAAAAUAAAQopAEAAIAAAAUAAAQtpKRAAIAAAADNzUAAJKSAAIAAAADNzUAAOocAAcAAAgMAAAIlgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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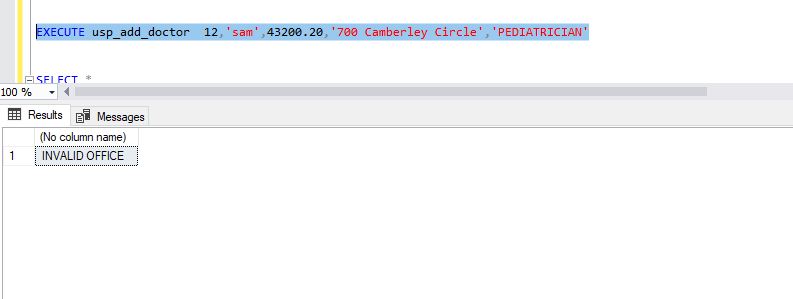
The table after the insert is successful is shown below:



Let’s try to execute the procedure with the same doctor\_name and we get the message as duplicate record as shown below:

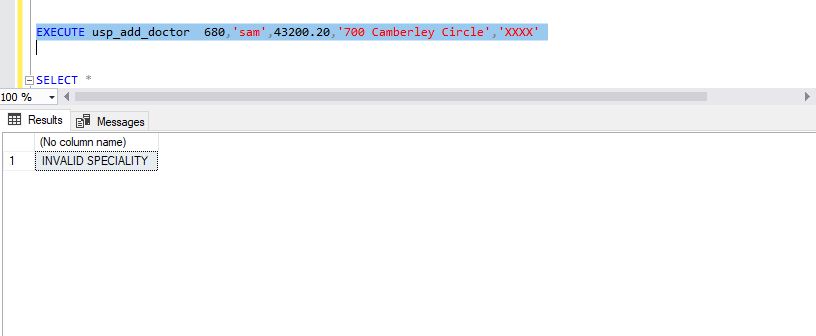


Now we insert a record with a different such as Adam and an office\_ID such as 12 and a valid speciality such as pediatrician and we get the output as shown below:



Now we insert a record with a valid office type such as surgical and a speciality such as xxxx

and we get the output as shown below:



According to my physical diagram, I have a table which says doctor phone numbers where phone\_ID is auto generated and is the primary key. The screenshot is shown below of the table



3. (Using a procedure) The system should be able to add patients (making sure of no duplicates). A message should be returned with success or failure.

**Code to solve requirement 3:**

CREATE OR ALTER PROCEDURE usp\_add\_PATIENTS

(@in\_PATIENT\_NAME VARCHAR(30),@in\_ADDRESS VARCHAR(50),@in\_DATE\_OF\_BIRTH DATE, @in\_ACCOUNT\_BALANCE NUMERIC(12,5))

AS

BEGIN

/\*Validate duplicates\*/

IF EXISTS(SELECT 1 FROM PATIENTS WHERE UPPER(PATIENT\_NAME)=UPPER(@in\_PATIENT\_NAME))

BEGIN

SELECT 'DUPLICATE RECORD'

END

ELSE

BEGIN

BEGIN TRANSACTION

/\*insert records into patient table \*/

INSERT INTO PATIENTS(PATIENT\_NAME,ADDRESS,DATE\_OF\_BIRTH,ACCOUNT\_BALANCE)

VALUES(@in\_PATIENT\_NAME,@in\_ADDRESS,@in\_DATE\_OF\_BIRTH,@in\_ACCOUNT\_BALANCE)

IF(@@ERROR<>0)

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

SELECT 'INSERT SUCCESSFUL'

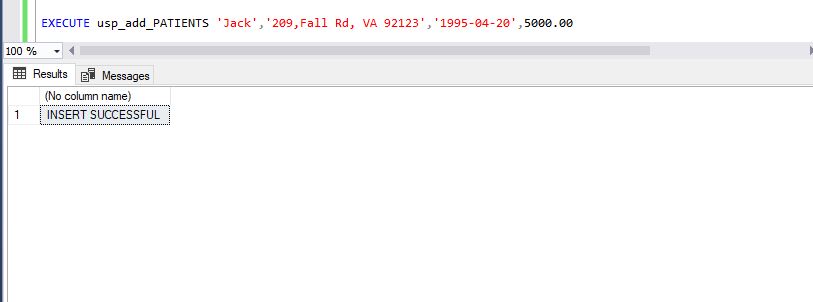
COMMIT TRANSACTION /\*commit transaction if there is no error\*/

END

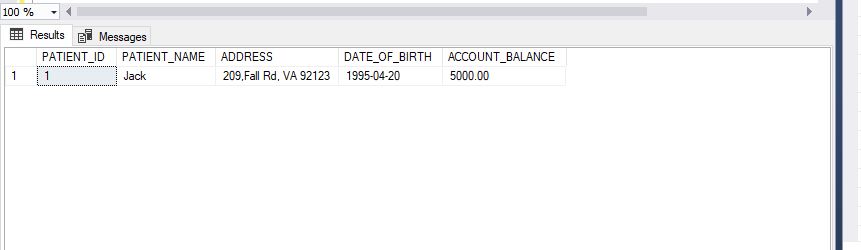
END

END

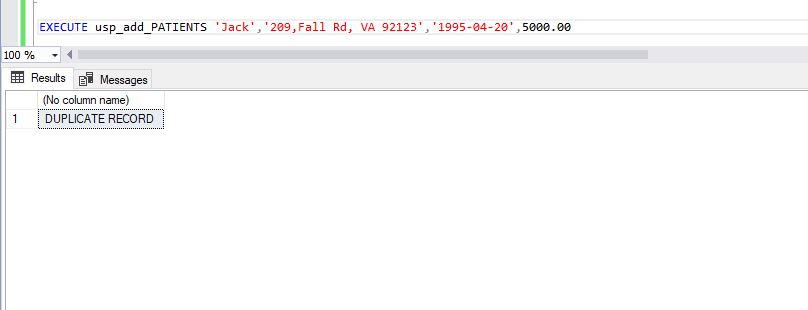
Now let us insert a record into the table by executing the procedure:



After the procedure is executed we get the following data in our patient table



Now let us insert the same record as shown in the screenshot above we get a duplicate record as shown below in the screenshot:



4. (Using a procedure and a trigger) The system should be able to insert a patient record for each visit made. Each time a patient visits, the balance should be updated (via trigger).

**Code to solve requirement 4:**

Procedure for insert patient record for each visit made:

CREATE OR ALTER PROCEDURE usp\_add\_visit

(@in\_DOCTOR\_ID INT,@in\_PATIENT\_ID INT ,@in\_DATE\_VISITED DATE,@in\_AMOUNT\_CHARGED NUMERIC(12,2),

@in\_PRIMARY\_DIAGNOSIS CHAR(30))

AS

BEGIN

/\*validate primary diagnosis types from a lookup table named VALID\_PRIMARY\_DIAGNOSIS \*/

IF NOT EXISTS(SELECT 1 FROM VALID\_PRIMARY\_DIAGNOSIS WHERE UPPER(PRIMARY\_DIAGNOSIS)=UPPER(@in\_PRIMARY\_DIAGNOSIS))

BEGIN

SELECT 'INVALID PARIMARY DIAGNOSIS TYPE'

END

ELSE

BEGIN

BEGIN TRANSACTION

/\* Insert values into visit table \*/

INSERT INTO VISIT(DOCTOR\_ID,PATIENT\_ID,DATE\_VISITED,AMOUNT\_CHARGED,PRIMARY\_DIAGNOSIS)

VALUES (@in\_DOCTOR\_ID,@in\_PATIENT\_ID,@in\_DATE\_VISITED,@in\_AMOUNT\_CHARGED,@in\_PRIMARY\_DIAGNOSIS)

IF(@@ERROR<>0)

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

SELECT 'INSERT SUCCESSFUL' /\* Insert the records and commit transaction\*/

COMMIT TRANSACTION

END

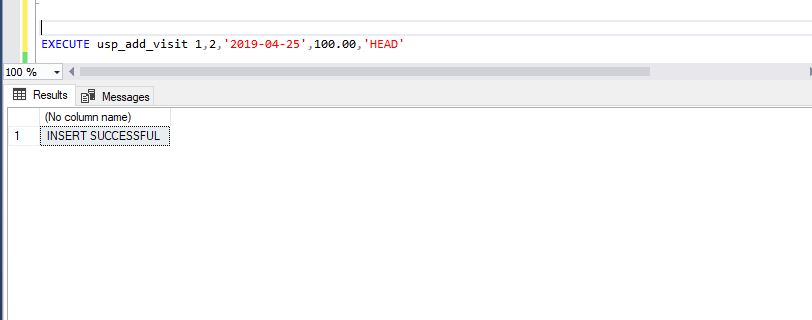
END

END

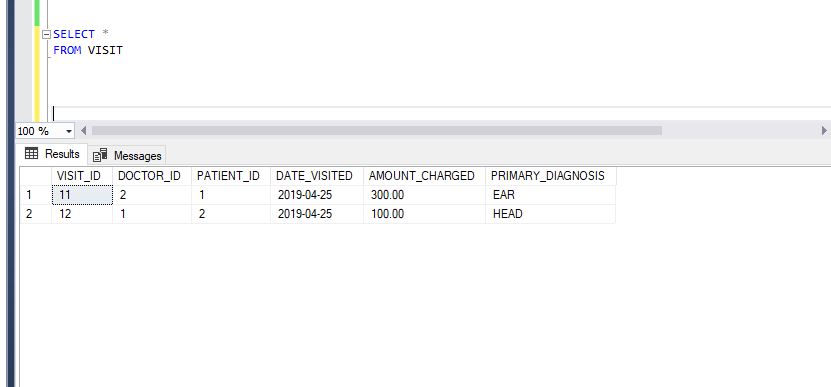
For this procedure I have created a reference table named Valid\_Primary\_diagnosis and the screen shot is shown below:



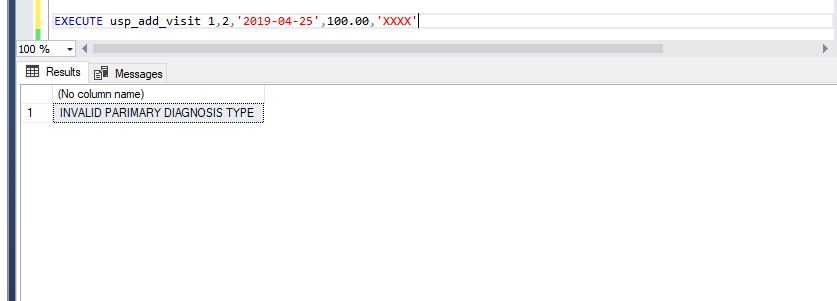
After we execute the procedure we get the record with entering a valid primary\_diagnosis type and the screenshot is shown below:



After inserting 2 records using the procedure the table looks like this as shown below in the screen shot:



Suppose we enter an invalid primary diagnosis type say ‘xxxx’ we get the output as shown in the screenshot as shown below:



Each time a patient visits, the balance should be updated (via trigger)

**Code to solve requirement 4 (Trigger):**

CREATE OR ALTER TRIGGER add\_count

ON VISIT

FOR INSERT

AS

BEGIN

--Decalaring two variables in\_PATIENT\_ID and in\_AMOUNT\_CHARGED in order to get the values from inserted row--

DECLARE @in\_PATIENT\_ID INT, @in\_AMOUNT\_CHARGED NUMERIC (12,2)

SELECT @in\_PATIENT\_ID = (SELECT PATIENT\_ID from inserted)

SELECT @in\_AMOUNT\_CHARGED = (SELECT AMOUNT\_CHARGED FROM inserted)

UPDATE PATIENTS

SET ACCOUNT\_BALANCE = ACCOUNT\_BALANCE+@in\_AMOUNT\_CHARGED --Update account\_balance of the patient--

WHERE PATIENT\_ID = @in\_PATIENT\_ID

IF(@@ERROR<>0) --check for errors

BEGIN

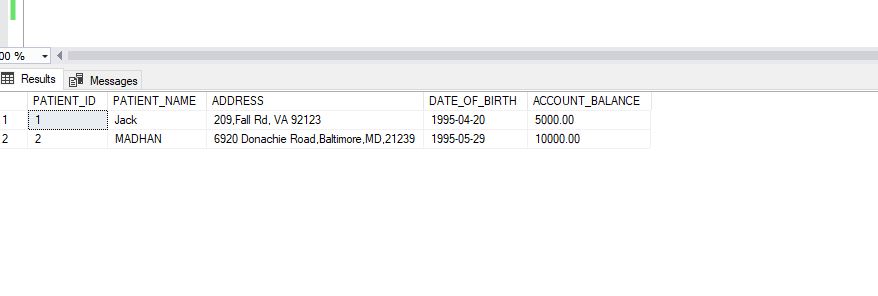
ROLLBACK TRANSACTION

RETURN

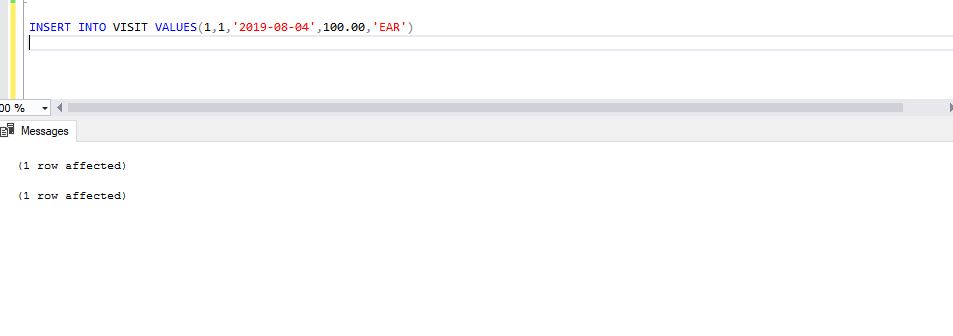
END

END

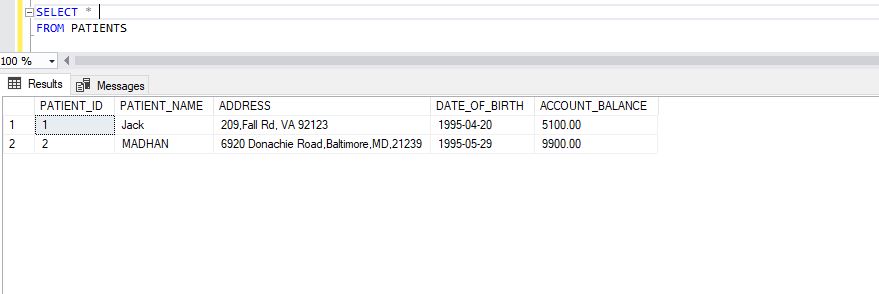
The screenshot of the patient table before the trigger execution is as shown below:



The trigger has been executed and we get the statement as shown below:



The screen shot after the trigger has been executed and the account\_balance is updated is as shown below:



5: (Using a procedure) Given a valid doctor id and a new address, the system should be able to update the doctor’s address. A message should be returned with the success or failure of the action.

**Code to solve requirement 5:**

CREATE OR ALTER PROCEDURE usp\_update\_doctor

(@in\_DOCTOR\_ID INT , @in\_new\_ADDRESS VARCHAR(50))

AS

BEGIN

/\* validating doctor\_id from the doctor table \*/

IF NOT EXISTS (SELECT 1 FROM DOCTOR WHERE DOCTOR\_ID =@in\_DOCTOR\_ID)

BEGIN

SELECT ('CANNOT UPDATE ADDRESS SINCE DOCTOR\_ID IS NOT VALID')

END

ELSE

BEGIN

BEGIN TRANSACTION

/\* update the address with the new address being passed in \*/

UPDATE DOCTOR

SET ADDRESS=@in\_new\_ADDRESS

WHERE DOCTOR\_ID=@in\_DOCTOR\_ID

IF(@@ERROR<>0)

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

SELECT 'ADDRESS UPDATED'

COMMIT TRANSACTION

END

END

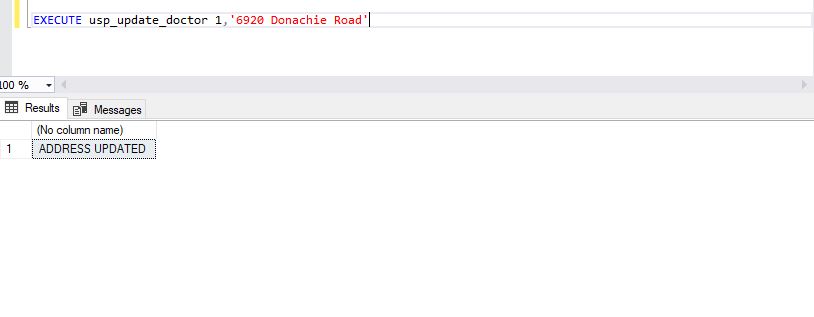
END

Before updating the address of the doctor we have the following data

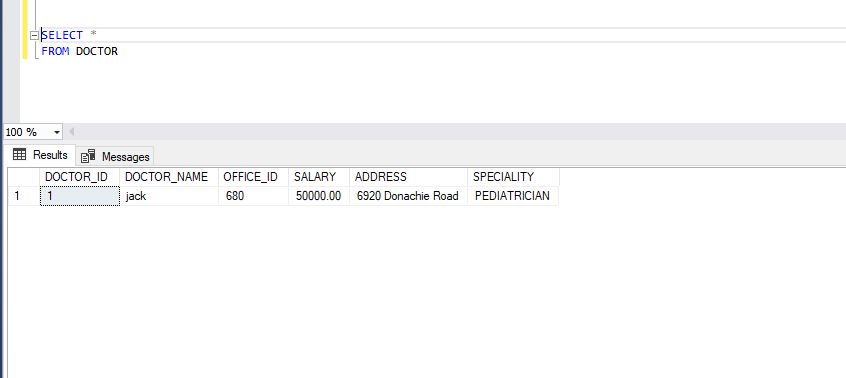
![A screenshot of a social media post

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDoRXhpZgAATU0AKgAAAAgABAE7AAIAAAAKAAAISodpAAQAAAABAAAIVJydAAEAAAAUAAAQzOocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAG1hZGhhbiBrawAABZADAAIAAAAUAAAQopAEAAIAAAAUAAAQtpKRAAIAAAADNTIAAJKSAAIAAAADNTIAAOocAAcAAAgMAAAIlgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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vBq/rXhY634o0ye6N7FaW1hPG8tnqEtqyyM8RUExOrEYVjjkcfSuow/wDeX/vn/wCvRh/7y/8AfP8A9el28v8AKwdP662/yPNm8Ha0LfTY4LVC+lJceU8sygXDJewyxFyMndIkZLNjhiSa3b+TXPEVikcnh240xYb6zmC3V1C0jhJ1eQ4jdlChVyDu3HkbRxnrMP8A3l/75/8Ar0Yf+8v/AHz/APXpp2t5O/zvcO5wUPhTW4r62183d5Jey3cslxpbG38qKKb5CA4QMSqiI8uwPl8DpUek+E9X0zUfCEkVsi20MKNqsfmLmGdLRoQ45w27cFOM/cU+pr0HD/3l/wC+f/r0Yf8AvL/3z/8AXpR91WX9WB6hJ/qn/wB006mFWYEFhg8HC/8A16fQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAU4v+Q3c/8AXvD/AOhSVcqnF/yG7n/r3h/9Ckq5QAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFOL/AJDdz/17w/8AoUlXKpxf8hu5/wCveH/0KSrlABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAU4v+Q3c/9e8P/oUlXKpxf8hu5/694f8A0KSrlABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAU4v+Q3c/wDXvD/6FJVyqcX/ACG7n/r3h/8AQpKuUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBTi/5Ddz/wBe8P8A6FJVyqcX/Ibuf+veH/0KSrlABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAU4v8AkN3P/XvD/wChSVcqnF/yG7n/AK94f/QpKuUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBTi/5Ddz/17w/+hSVcqnF/yG7n/r3h/wDQpKuUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBTi/5Ddz/ANe8P/oUlXKpxf8AIbuf+veH/wBCkq5QAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFOL/kN3P/AF7w/wDoUlXKpxf8hu5/694f/QpKuUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBTi/wCQ3c/9e8P/AKFJVyqcX/Ibuf8Ar3h/9Ckq5QAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFOL/kN3P/XvD/6FJVyiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKAP/Z)

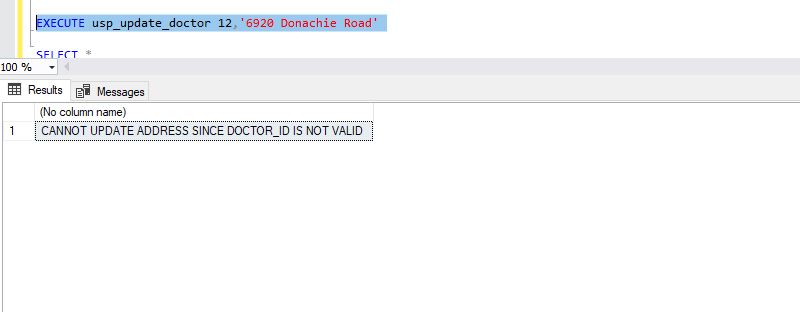
Once the procedure is executed we pass in a valid doctor\_ID and a new address and a message displays saying address updated



After the update we can see that the address has been updated as shown below:



Now let us pass an invalid doctor\_id such as 12 we get the message as shown below:



6. (Using a procedure) Given a valid doctor specialty, the system should report the name and address of all doctors of that specialty.

**Code to solve requirement 6:**

CREATE OR ALTER PROCEDURE show\_doctors

(@in\_SPECIALITY CHAR(30))

AS

BEGIN

/\*check for validation of speciality from a look up table named valid\_speciality \*/

IF NOT EXISTS (SELECT 1 FROM VALID\_SPECIALITY WHERE UPPER(SPECIALITY)= UPPER(@in\_SPECIALITY))

BEGIN

SELECT 'SPECIALITY NOT VALID'

END

ELSE

BEGIN

BEGIN TRANSACTION

/\* display address and name of the doctors if the speciality is validated \*/

SELECT DOCTOR\_NAME,ADDRESS FROM DOCTOR WHERE UPPER(SPECIALITY)= UPPER(@in\_SPECIALITY)

IF (@@ERROR<>0)

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

/\*commit transaction if there are no errors\*/

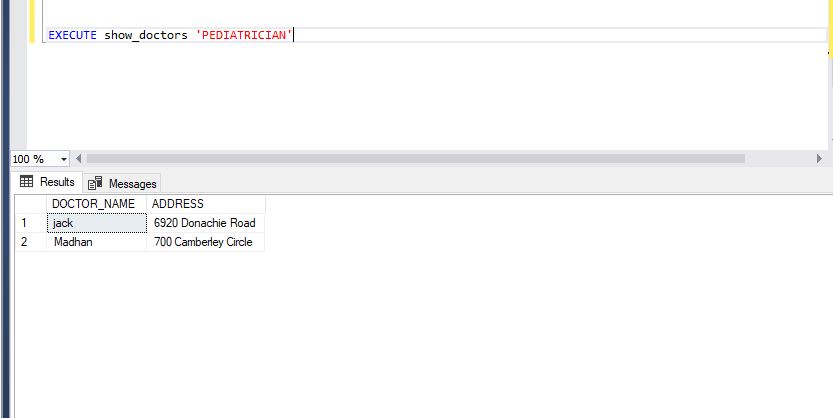
COMMIT TRANSACTION

END

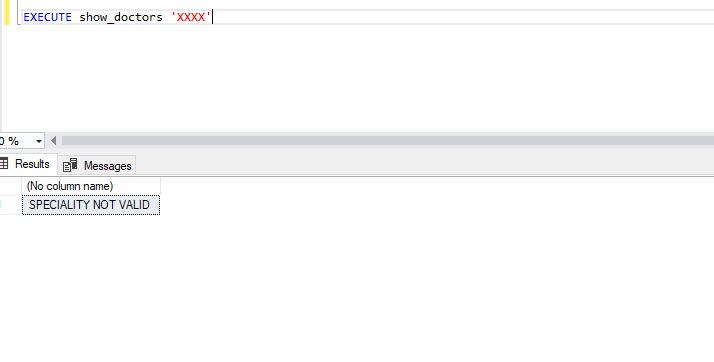
END

END

Once the procedure is executed the names and addresses of the doctors of that particular speciality are displayed



If we pass an invalid specaility say ‘XXXX’ we get the following message and does not display the address and name of the doctors of that speciality :



7. (Using a procedure) The system should be able to record patient payments

**Code to solve requirement 7:**

CREATE OR ALTER PROCEDURE usp\_record\_payment

(@in\_DATE DATE, @in\_TYPE CHAR(10), @in\_AMOUNT\_CHARGED NUMERIC(12,2), @in\_PATIENT\_ID INT )

AS

BEGIN

/\* checking for valid payment types from a reference table named valid\_payment\_types\*/

IF NOT EXISTS (SELECT 1 FROM VALID\_PAYMENT\_TYPES WHERE UPPER(PAYMENT\_TYPE) = UPPER(@in\_TYPE))

BEGIN

SELECT ('INVALID PAYMENT TYPE')

END

ELSE

BEGIN

BEGIN TRANSACTION

/\* Insert records into payment table\*/

INSERT INTO PAYMENT(DATE,TYPE,AMOUNT,PATIENT\_ID) VALUES (@in\_DATE,@in\_TYPE,

@in\_AMOUNT\_CHARGED,@in\_PATIENT\_ID)

IF(@@ERROR<>0) /\*check for errors\*/

BEGIN

ROLLBACK TRANSACTION

RETURN

END

ELSE

BEGIN

COMMIT TRANSACTION

END

END

END

For this procedure I have created a reference table called valid\_payment\_types and the screenshot is as shown below:

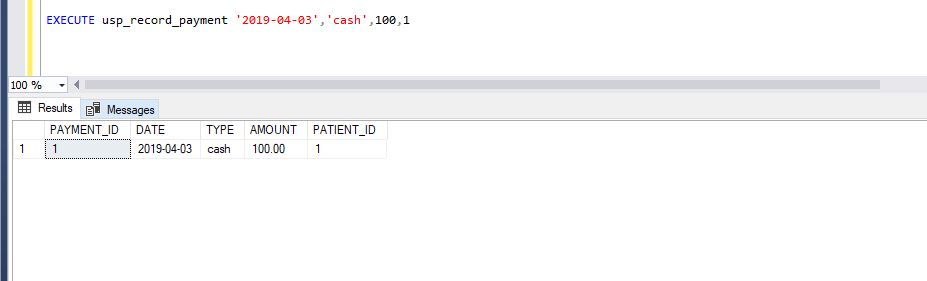


The procedure is executed, and the screenshot is shown as below:

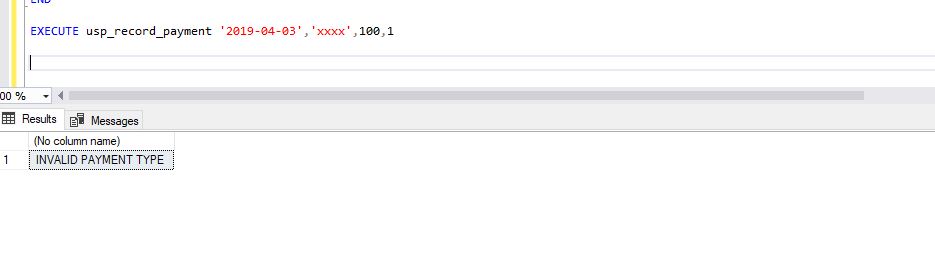
![A screenshot of a social media post

Description automatically generated](data:image/jpeg;base64,/9j/4AAQSkZJRgABAQEAYABgAAD/4RDoRXhpZgAATU0AKgAAAAgABAE7AAIAAAAKAAAISodpAAQAAAABAAAIVJydAAEAAAAUAAAQzOocAAcAAAgMAAAAPgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAG1hZGhhbiBrawAABZADAAIAAAAUAAAQopAEAAIAAAAUAAAQtpKRAAIAAAADMjAAAJKSAAIAAAADMjAAAOocAAcAAAgMAAAIlgAAAAAc6gAAAAgAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA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8v91PyNH2+X+6n5GpP7O/6a/8Ajv8A9ej+zv8Apr/47/8AXoAj+3y/3U/I0fb5f7qfkak/s7/pr/47/wDXo/s7/pr/AOO//XoAj+3y/wB1PyNH2+X+6n5GpP7O/wCmv/jv/wBej+zv+mv/AI7/APXoAj+3y/3U/I0fb5f7qfkak/s7/pr/AOO//Xo/s7/pr/47/wDXoAj+3y/3U/I0fb5f7qfkak/s7/pr/wCO/wD16P7O/wCmv/jv/wBegCP7fL/dT8jR9vl/up+RqT+zv+mv/jv/ANej+zv+mv8A47/9egCP7fL/AHU/I0fb5f7qfkak/s7/AKa/+O//AF6P7O/6a/8Ajv8A9egCP7fL/dT8jR9vl/up+RqT+zv+mv8A47/9ej+zv+mv/jv/ANegCP7fL/dT8jR9vl/up+RqT+zv+mv/AI7/APXo/s7/AKa/+O//AF6AI/t8v91PyNH2+X+6n5GpP7O/6a/+O/8A16P7O/6a/wDjv/16AI/t8v8AdT8jR9vl/up+RqT+zv8Apr/47/8AXo/s7/pr/wCO/wD16AI/t8v91PyNH2+X+6n5GpP7O/6a/wDjv/16P7O/6a/+O/8A16AI/t8v91PyNH2+X+6n5GpP7O/6a/8Ajv8A9ej+zv8Apr/47/8AXoAj+3y/3U/I0fb5f7qfkak/s7/pr/47/wDXo/s7/pr/AOO//XoAj+3y/wB1PyNH2+X+6n5GpP7O/wCmv/jv/wBej+zv+mv/AI7/APXoAj+3y/3U/I0fb5f7qfkak/s7/pr/AOO//Xo/s7/pr/47/wDXoAj+3y/3U/I0fb5f7qfkak/s7/pr/wCO/wD16P7O/wCmv/jv/wBegCP7fL/dT8jR9vl/up+RqT+zv+mv/jv/ANej+zv+mv8A47/9egCP7fL/AHU/I1Ztbhp9+8AbcYxUX9nf9Nf/AB3/AOvU1vb/AGfd827djtigZPRRRSAKKKKACqGt6g+laRNexoshiKfIxxkFgD+hq/VPVdPXVdNks5HaNJCu5lHOAwPH5U1uA7TtRttVskurN9yNwQeqnuCOxq1UVtbQ2dslvaxrHFGMKq9qloA+afADbPH+kNjO2fOPwNfUX2a4/uxf99n/AAr5c8B/8j3pX/Xb+hr6vckRsV4IBxW+J3RjR2M+4DWltJcXT28MMSl5JHlIVFHJJOOAPWs2z8RaPqN2lrp+taVdXEmdkMN6rs2Bk4A5PAJri9W8T+ItQ8GGWaGG/tbvT/O1CCDT5bbybeSHc7JcSOY3ZdwGACTzxwcc/wCGPEF7dfGWy0S6+aOxv7lBIbq6k3lIpUztlmdRn2GffrnlNj2r7Ncf3Yv++z/hR9muP7sX/fZ/wrJ8e3uqWPhR30C5+y38lzbwxS+Wr4LzKpGGBHIOOn0rmW+JIg8Svqd3erD4bXSQ/ksqKxuS0BzvbGOLhF5IUHOcYzQtf68r/wBeYf1+NjvPs1x/di/77P8AhR9muP7sX/fZ/wAK5KL4u6BcWdvLZwXV5LNLJE1vay28zoUVGblZSkhxIpCxs7HJwpIONG38f6fdXmrQW9jeMNLWUyTFoVjcxttdcmQeWcnjzfL3DJGQM0AtTc+zXH92L/vs/wCFH2a4/uxf99n/AArm9N+JmmazYxzaPp97qFw0kiG1tZbaRkEYQu5kE3lFQJE6OTlsYyCBBH8XPDD6rY2BmMct4sB/eTwK0TTKrRo0Zk8wkh1yUVlGeTwcHWwr6XOr+zXH92L/AL7P+FMdZIpFWQKNwJBVs9Me3vVDwr4ws/F0M8un2t3DFFtKyzBCsqnOCpRmAPynKNtdeNyjIrUvP+PiL/db+a0DIqKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKAPl/wAB/wDI96V/12/oa+sHGY2A6kV8n+A/+R70r/rt/Q19Y11YndGNHY8p/wCFea//AGf5X2PSftH9nfYfP+0R/wDPv5O/P2TzOnOPM9s44rtLHwLoGn622sWtpJFfSTtcyOLmQq0rBgWKFtucSOBxxuOMV0VFcpsU9U0yHVraKC5aRVjuIrgGMgHdG4dRyDxlRn2rEufh/oU6BIY5rRVEpQQSY2SSTJN5gJBO4SRqR2HTGMCunooA5XUvAkWsaWLHU9d1i5Vy/wBoaWSFhcqwUFGjMflgYUYKIpByQQWJMV78N9M1C9ubq71DUpZJF2wF5I2Np+9SX5GKFmAeNSFkLqMYAA4rr6KAOB1TwJqltH9o8OandXGqzTySXF/eXsUDlXjRGTC2siMp8pDjapBXhhWnongWPRo7PyNWv4hHFALu3t3VIbuWKNUEjfLvGQighWAIABB5rq6KFp/XYW5haB4TtvD99eXkd7eX1zdokbzXjIzhE3bFLKql8bj8zlm9WrRvP+PiL/db+a1cqOWCOYqZASVzjDEfyoH1uUqKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/wDv43+NH2KD0f8A7+N/jQBVoq19ig9H/wC/jf40fYoPR/8Av43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f8A7+N/jR9ig9H/AO/jf40AVaKtfYoPR/8Av43+NH2KD0f/AL+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVoq19ig9H/AO/jf40fYoPR/wDv43+NAFWirX2KD0f/AL+N/jR9ig9H/wC/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/wDv43+NH2KD0f8A7+N/jQBVoq19ig9H/wC/jf40fYoPR/8Av43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f8A7+N/jR9ig9H/AO/jf40AVaKtfYoPR/8Av43+NH2KD0f/AL+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVoq19ig9H/AO/jf40fYoPR/wDv43+NAFWirX2KD0f/AL+N/jR9ig9H/wC/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/wDv43+NH2KD0f8A7+N/jQBVoq19ig9H/wC/jf40fYoPR/8Av43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f8A7+N/jR9ig9H/AO/jf40AVaKtfYoPR/8Av43+NH2KD0f/AL+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVoq19ig9H/AO/jf40fYoPR/wDv43+NAFWirX2KD0f/AL+N/jR9ig9H/wC/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/+/jf40fYoPR/+/jf40AVaKtfYoPR/wDv43+NH2KD0f8A7+N/jQBVoq19ig9H/wC/jf40fYoPR/8Av43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f/v43+NH2KD0f/v43+NAFWirX2KD0f8A7+N/jR9ig9H/AO/jf40AVaKtfYoPR/8Av43+NH2KD0f/AL+N/jQBVoq19ig9H/7+N/jR9ig9H/7+N/jQBVop91BFDEGRWJJxzI3+NVdy/wBz/wAff/GgD5m8B/8AI96V/wBdv6GvrGvk7wH/AMj3pX/Xb+hr6xrqxO6MaOwUUUVymwUVC95BHew2jv8Av5kd0QKTlVwGPsBuXr6iquk65p2uC6OlzmdbWcwSt5bKN4APBYDcMEfMuQexoA0KKKKACiiigAoorMn8QWFvrUelN9rku5ApxBZTSxx7s43yIhRM4P3iKANOisyHxBYT63JpUP2uS5iyHdbKYwqQAdpm2eXnBHG7PatOgAopks0UCBp5EjUsqAuwALMQFHPckgAdyafQAUVW1HULfSdNuL+9Z1t7aMyStHE0hVR1O1QWP4CnR31vLeNaJJmdYlmKFSPkYkAg9Dyp6dOM9RQBPRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFW//AOPdf97+hrmbnUdXjuXS10Np4lOFka7RN3vjnFdNf/8AHuv+9/Q1hvf7JGXy87SRndVID508B/8AI96V/wBdv6GvrGvk3wF/yPmlf9dv/ZTX1lXRid0Y0dgooorlNjLeznXxZFfIm+B7NoHbI/dMHDLx6Nls4/uiqOg2/iGDXtUm1ew0yC0vJRKj2uoSTSKVjSMKVaFBghCc7uOmD1roqKOlv67g9Xf+uxk+KtNl1jwrqGnW9nZ3slzCY1gvnKQnPdiEfp1HynkDp1HKR+BpY/ClpZL4Z8PiWK6Et3p7Xjvb6gBGVDzSmDc77iG+dH5UHOcEeg0Ud/62Dt/W554ngHUok0+509dK0u+gFzGRGgnS0gkYMsMReMZTK7SMJhZH244rr/DWiw+HvDVhpVvDBCttCFZbdNke/qxUdgWJP41qUU76WA881/wZr998R7bxFYJpjx20kPlySTJFKsS/fTP2V5Ocv92ZFIIBXqWv6f4TktviLe65J4Y8OrHO4aPUI5c3kZCsC23yB8zZwf3nTua7SiktFYHqeeaX4Eu7aPxDHFoegaDcanFcJb6ppUxa4i8wABT+4TABG7huvbvVPw/8OdW0vQdYspY7KEXgg22kV1H9nn2PudHWGzg271+Rmw5KnkEKAfT6KForeSX3A9XfzueeSfD2K68N3ds3hDw1ZzteW91DZJcvPaP5bKSMNAoi3KGU7EIO4k5yc1vEnw91fW9H0eCO30aBLHzg2k24jSzjDsChXzbWZWZACN3lITvYjaCVPplFD1/r5f1+ALQ8x1v4d6rqOkx2zWWlarcHS47OO61W+kM2nSKCDJFIkPzk5BJAiJ2DOQcL2ltZXsmvWV3eQxwi105onMcu9XkkZCyqcA4XyhyQM7xxwa2qKd9b/wBdf8xW28v+B/kFFFFIYUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFW/8A+Pdf97+hrmJv+PiT/eP866e//wCPdf8Ae/oa5ib/AI+JP94/zqkI+fvAX/I+aV/12/8AZTX1lXyZ4C/5HzSv+u3/ALKa+s66MRujKlsFFFFcpsFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFW/8A+Pdf97+hrmJv+PiT/eP866e//wCPdf8Ae/oa5ib/AI+JP94/zqkI+ffAX/I+aT/12/8AZTX1nXyX4B/5HzSf+u3/ALKa+tK6MRujKlsFFFFcpsFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFW/8A+Pdf97+hrmJv+PiT/eP866e//wCPdf8Ae/oa5ib/AI+JP94/zqkI+fPAJ/4rzSf+u3/spr60r5K8A/8AI+6T/wBdv/ZTX1rXRiN0ZUtgooorlNgooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAq3//AB7r/vf0NcxN/wAfEn+8f5109/8A8e6/739DXMTf8fEn+8f51SEfPfgA/wDFe6T/ANdv/ZTX1rXyT4A/5H3Sf+u3/spr62roxG6MqWwUUUVymwUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAVb/8A491/3v6GuYm/4+JP94/zrp7/AP491/3v6GuYm/4+JP8AeP8AOqQj568Af8j9pP8A12/9lNfW1fJPgD/kftJ/67f+ymvraujEboypbBRRRXKbBRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBVv/wDj3X/e/oa5ib/j4k/3j/Ounv8A/j3X/e/oa5ib/j4k/wB4/wA6pCPnn4f/API/aT/12/8AZTX1vXyR8P8A/kftJ/67f+ymvret8RujKlsFFFFcxsFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFAFW/8A+Pdf97+hrmJv+PiT/eP866e//wCPdf8Ae/oa5ib/AI+JP94/zqkI+ePh/wD8j/pP/Xb/ANlNfXFfI/w//wCR/wBJ/wCu3/spr64rfEbozpbBRRRXMahRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBVv8A/j3X/e/oa5ib/j4k/wB4/wA66e//AOPdf97+hrmJv+PiT/eP86pCPnf4ff8AI/6T/wBdv/ZTX1zXyN8Pj/xcDSf+u3/spr65rfEbozpbBRRRXMahRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBVv/APj3X/e/oa5ib/j4k/3j/Ounv/8Aj3X/AHv6GuYm/wCPiT/eP86pCPnb4ff8lA0j/rt/7Ka+uq+Rfh6f+LgaR/12/wDZTX11W+I3RnS2CiiiuY1CiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigAooooAKKKKACiiigCrf/APHuv+9/Q1zc0MhmciNiCx/hPrXSX/8Ax7r/AL39DWfVID5e+Hv/ACUDSP8Art/7Ka+u6+RPh6f+LgaR/wBdj/6Ca+u63xG6MqWwUUUVzGoUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAVb//AI91/wB7+hrPrQv/APj3X/e/oaz6pAfLvw9/5KBpH/XY/wDoJr68oorfEboypbBRRRXMahRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQAUUUUAFFFFABRRRQBVv/8Aj3X/AHv6GuPv/GNjpt/LaXNvdCWI4O1UIPGQR83cEGiitIK4mf/Z)

After the insert the table looks like this as shown below in the screenshot:



Suppose we insert a invalid payment type such as ‘XXXX’ we get an invalid payment type and the screenshot is as shown below:



8. [Extra Credit]: Using a trigger, every time a payment is made, reduce that amount from the patient balance.

**Code to solve requirement 8:**

CREATE OR ALTER TRIGGER add\_count

ON VISIT

FOR INSERT

AS

BEGIN

--Decalaring two variables in\_PATIENT\_ID and in\_AMOUNT\_CHARGED in order to get the values from inserted row--

DECLARE @in\_PATIENT\_ID INT, @in\_AMOUNT\_CHARGED NUMERIC (12,2)

SELECT @in\_PATIENT\_ID = (SELECT PATIENT\_ID from inserted)

SELECT @in\_AMOUNT\_CHARGED = (SELECT AMOUNT\_CHARGED FROM inserted)

UPDATE PATIENTS

SET ACCOUNT\_BALANCE = ACCOUNT\_BALANCE+@in\_AMOUNT\_CHARGED --Update account\_balance of the patient--

WHERE PATIENT\_ID = @in\_PATIENT\_ID

IF(@@ERROR<>0) --check for errors

BEGIN

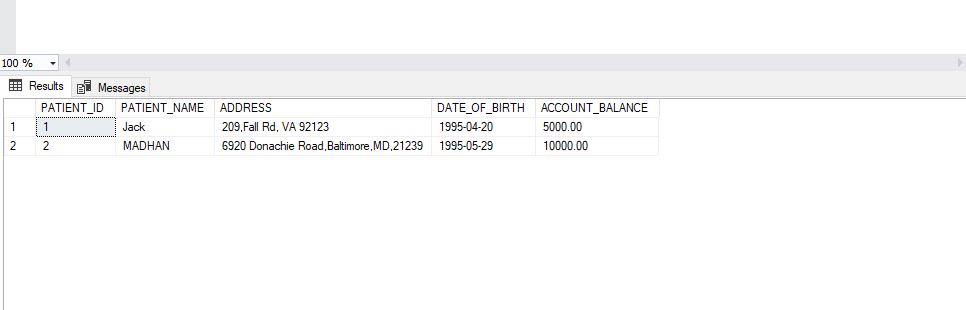
ROLLBACK TRANSACTION

RETURN

END

END

We can look at the patients table before execution of the trigger:



Once we insert values into the payment table we get the following result:



After the trigger is executed we find that the account balance has been updated once the payment has been made by a patient:

