Database Management for Developing a Health Care Portal

PROJECT IMPLEMENTATION REPORT

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PROJECT SUMMARY

The project involves the development of a complex database for the Healthcare portal. There are multiple individuals involved in this system namely patients, receptionists, doctors and insurance company. This project is for any organization such as a hospital or local medical clinic who are primarily focused on treating patients with various illnesses. This system will record the patient's data, book appointments, generate medical exam reports, manage doctor's schedule, handle insurance company coverage and generate bill for the patient upon request.

When a patient wants to visit a healthcare organization, he must first place an appointment via the portal. After the patient visits the doctor, he is advised to undergo various medical examinations in order to carry out proper diagnosis of the patient's illness. Then the doctor prescribes further medication or surgery based on the severity of the illness. After this phase, the bill is generated on the portal by the receptionist. The bills that will be generated for the patient will include the medical exam fees and any additional cost incurred. This payment will be covered by the insurance company if the patient has an insurance.

There is a tremendous amount of data generated in this process. The patient needs to be assigned the doctor of the correct specialization for proper treatment. The doctor's need to approve the appointments such that there is no multiple booking at the same time slot. In the end, the bill generation also involves collecting data from various sources and merging it before presenting it to the patient for payment. As all of these processes are automated, a lot of issues for managing the system are solved and scope for human errors is reduced.

The healthcare portal ensures efficient management of all this data. Each user can access the data that is only relevant to him. The data is organized in a structured manner to ensure automation, which in turn will reduce the manual efforts put in by the people.

This report further describes the entities and the associated attributes, the entity relationship model, business rules and physical implementation which will clarify any doubts which may arise in the minds of the readers.

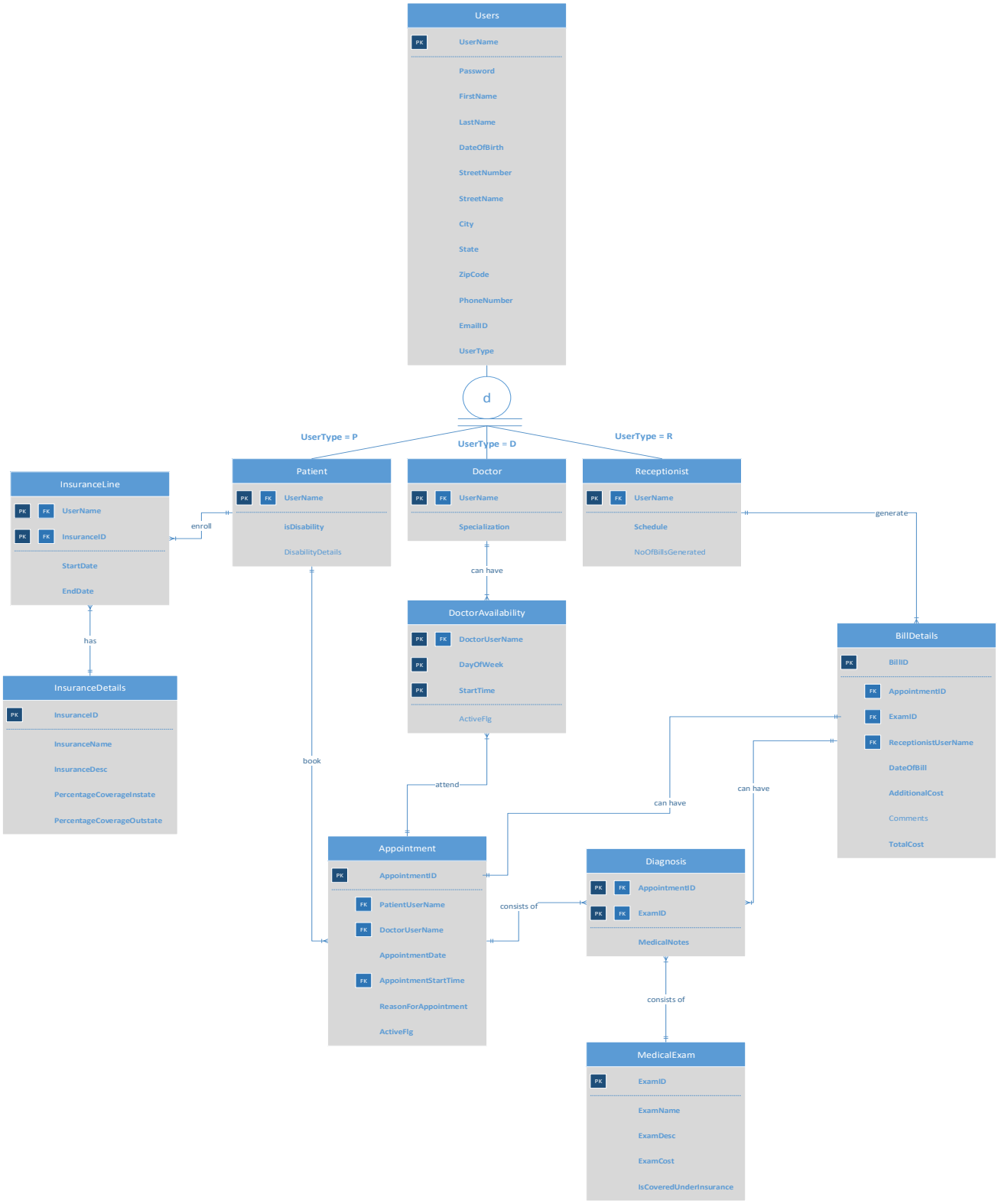
BUSINESS RULES

The following are the business rules of the system:

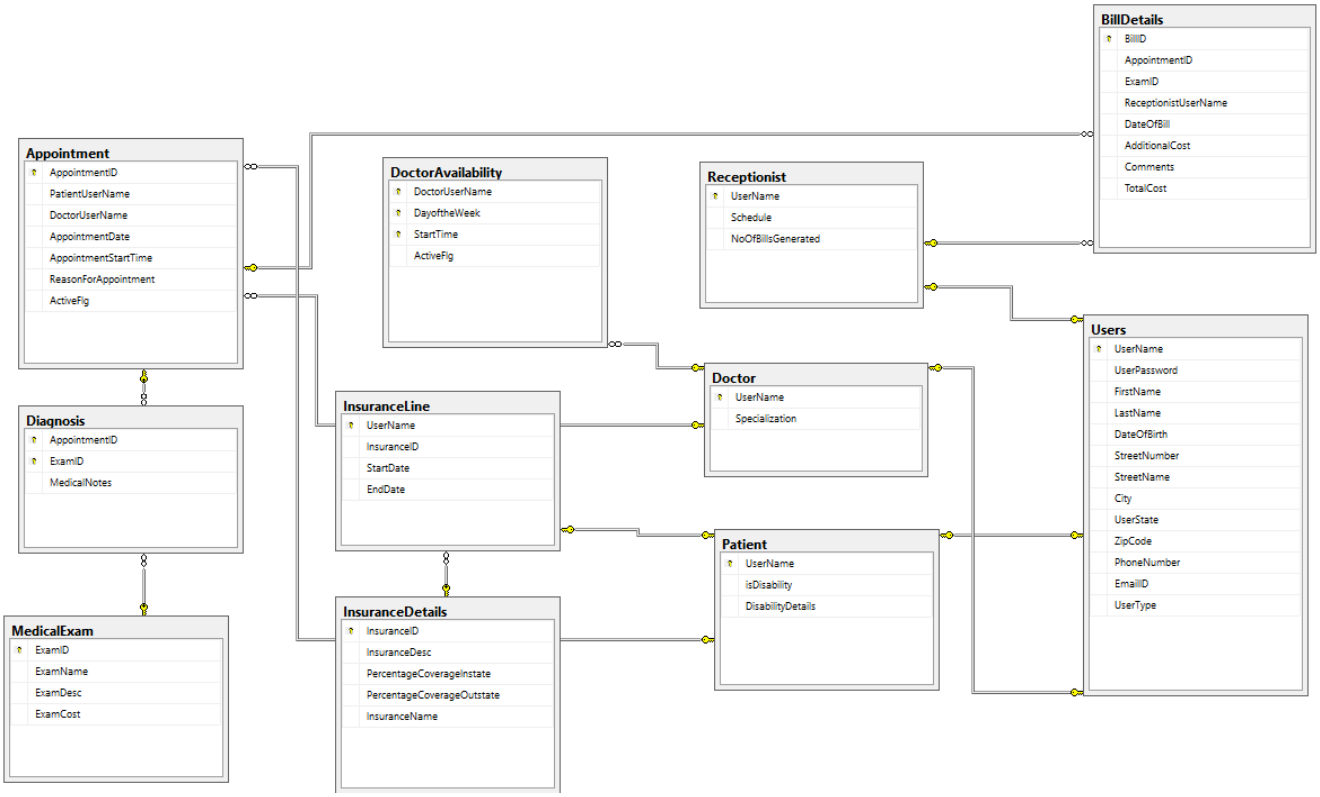
1. A patient must book an appointment before entering the healthcare center and it can only be done using the healthcare portal.
2. Doctors cannot cancel an appointment once they are assigned to it.
3. Doctors can access all the patient data whenever they need it.
4. A patient can undergo one medical exam only once in a day.
5. Patient must show up 15 minutes before the appointment.
6. A doctor can attend multiple appointments, but one appointment must be attended by only one doctor.
7. A patient can book only one doctor for one appointment.
8. A user of the healthcare portal must either be a patient, doctor or a receptionist.
9. One appointment can have only one bill.
10. One appointment can consist of more than one diagnosis, but one diagnosis is pertained to one appointment.
11. Only one type of insurance is provided to patients who opt for it.
12. One Diagnosis (entity name) can be determined by one medical exam, but one type of medical exam can make one or more Diagnosis.
13. One bill can consist of one or more Diagnosis (entity name), but one Diagnosis will be written in one bill.
14. One bill can consist of one or more medical exams and one type of medical exam can be included in many bills.
15. Insurance is provided by only one company to all the patients.

PHYSICAL MODEL

ENTITY RELATIONSHIP DIAGRAM USING MS VISIO



ENTITY RELATIONSHIP DIAGRAM IN MS SQL SERVER MANAGEMENT STUDIO



DATA DICTIONARY

Entities and their attributes in more detail:

Objects	Description	Data Type	Max length	PK/ FK	Required	Nullable
Users	This table stores the details of the users who are registered in the system.					
UserName	This is the primary key. This is the login username of the user.	Varchar	20	PK	Required	Not Null
UserPassword	This is the login password of the user.	Varchar	20		Required	Not Null
FirstName	First name of the user.	Varchar	20		Required	Not Null
LastName	Last name of the user.	Varchar	20		Required	Not Null
DateOfBirth	Date of birth of the user.	Date			Required	Not Null
StreetNumber	Stores the street number of the address section of the user.	Varchar	5		Required	Not Null
StreetName	Stores the street name of the address section of the user.	Varchar	30		Required	Not Null
City	Stores the city of the address section of the user.	Varchar	15		Required	Not Null
UserState	Stores the state of the address section of the user.	Varchar	2		Required	Not Null
ZipCode	Stores the zip code of the address section of the user.	Varchar	5		Required	Not Null
PhoneNumber	Stores the phone number of the user.	Varchar	10		Required	Not Null
EmailID	Stores the email ID of the user.	Varchar	30		Required	Not Null

UserType	Identifies the type of user logged in the portal.	Varchar	1		Required	Not Null
Doctor	This table stores all the information of the doctors who are registered in the system.					
Username	This is the primary key. This is the login username of the doctor.	Varchar	20	PK, FK	Required	Not Null
Specialization	Field of specialization of the doctor.	Varchar	30		Required	Not Null
Patient	This table stores all the information of the patients.					
Username	This is the primary key. This is the login username of the patient.	Varchar	20	PK, FK	Required	Not Null
isDisability	This field stores if the patient has disability or not. 1 – Yes 0 – No	Varchar	1		Required	Not Null
DisabilityDetails	Details of the disability, in case isDisability = 1.	Varchar	50		Not required	Nullable
Receptionist	This table stores all the information of the receptionist.					
Username	This is the primary key. This is the login username of the receptionist.	Varchar	20	PK, FK	Required	Not Null
Schedule	This field stores the schedule of the receptionist.	Varchar	30		Required	Not Null
NoOfBillsGenerated	This field calculates the number of bills	Int			Not required	Nullable

	each receptionist generates.					
MedicalExam	This is the master table which stores all the exams which the hospital offers.					
ExamID	This is the primary key.	Varchar	20	PK	Required	Not Null
ExamName	This field stores the name of the exam.	Varchar	30		Required	Not Null
ExamDesc	This field stores the description of the exam.	Varchar	300		Required	Not Null
ExamCost	Stores the total cost of the exam without insurance.	Int			Required	Not Null
InsuranceDetails	This is the master table which stores the coverage of insurance for exams offered.					
InsuranceID	This is the primary key.	Varchar	10	PK	Required	Not Null
InsuranceName	Name of the insurance.	Varchar	30		Required	Not Null
InsuranceDesc	Description of the insurance.	Varchar	330		Required	Not Null
PercentageCoverageInstate	This field stores the percentage of instate coverage.	Int			Required	Not Null
PercentageCoverageOutstate	This field stores the percentage of outstate coverage.	Int			Required	Not Null
InsuranceLine	This table stores the insurance which each patient has.					
UserName	Foreign key from Patient (UserName).	Varchar	20	PK, FK	Required	Not Null
InsuranceID	Foreign key from InsuranceDetails (InsuranceID).	Varchar	10		Required	Not Null

StartDate	Start date of insurance.	Date			Required	Not Null
EndDate	End date of insurance.	Date			Required	Not Null
DoctorAvailability	This table stores the availability of the doctors.					
DoctorUserName	Foreign key from DoctorDetails (Username).	Varchar	20	PK, FK	Required	Not Null
DayOfTheWeek	Day of week the doctor is available.	Varchar	10		Required	Not Null
StartTime	Start time of the appointment.	Varchar	10		Required	Not Null
ActiveFlg	If the appointment is available or not. 1 – Available 0 – Not available	Varchar	1		Required	Not Null
Appointment	This table stores the details of the appointment which the patient has booked.					
AppointmentID	This is the primary key.	Int		PK	Required	Not Null
PatientUserName	Foreign key from Patient (UserName).	Varchar	20	FK	Required	Not Null
DoctorUserName	Foreign key from Doctor (UserName).	Varchar	20	FK	Required	Not Null
AppointmentDate	Date of appointment.	Varchar	10		Required	Not Null
AppointmentStartTime	Time of appointment. Foreign key from DoctorAvailability (StartTime)	Varchar	10		Required	Not Null
ReasonForAppointment	Why was the appointment scheduled.	Varchar	150		Required	Not Null
ActiveFlg	1- Active appointment	Varchar	1		Required	Not Null

	0- Expired appointment					
Diagnosis	This table stores the details of exams conducted on the patient.					
AppointmentID	Foreign key from Appointment (AppointmentID).	Int		PK, FK	Required	Not Null
ExamID	Foreign key from MedicalExam (ExamID).	Varchar	20	PK, FK	Required	Not Null
MedicalNotes	Special notes or readings which the doctor has to take.	Varchar	Max		Not required	Nullable
BillDetails	This table stores the details of the bills.					
BillID	This is the primary key.	Int		PK	Required	Not Null
AppointmentID	Foreign key from Appointment (AppointmentID).	Int		FK	Required	Not Null
ExamID	Foreign key from Diagnosis (ExamID).	Varchar			Required	Not Null
ReceptionistUserName	Foreign key from Receptionist (UserName).	Varchar		FK	Required	Not Null
DateOfBill	Date of bill generation.	Varchar			Required	Not Null
AdditionalCost	Additional costs if any, else 0.	Int			Required	Not Null
Comments	Comments regarding the bill.	Varchar			Not Required	Nullable
TotalCost	Total costs of all exams, which the patient has to pay.	Int			Required	Not Null

DATABASE SYSTEM INFRASTRUCTURE

We have used the following tools to develop the database system infrastructure:

- Database system: SQL Server Management Studio
- Interface Design tool: MS Access

SQL SCRIPT FOR CREATING AND INSERTING TABLE DATA

CREATING TABLES IN SQL

Users Table:

```
CREATE TABLE Users (
UserName VARCHAR(20) NOT NULL,
UserPassword VARCHAR(20) NOT NULL,
FirstName VARCHAR(20) NOT NULL,
LastName VARCHAR(20) NOT NULL,
DateOfBirth DATE NOT NULL,
StreetNumber VARCHAR(5) NOT NULL,
StreetName VARCHAR(30) NOT NULL,
City VARCHAR(15) NOT NULL,
UserState VARCHAR(2) NOT NULL,
ZipCode VARCHAR(5) NOT NULL,
PhoneNumber VARCHAR (10) NOT NULL,
EmailID VARCHAR(30) NOT NULL,
UserType VARCHAR(1) NOT NULL,
CONSTRAINT PK_Users PRIMARY KEY (UserName),
CONSTRAINT CHK_Users CHECK (UserType = 'P' OR UserType = 'D' OR UserType = 'R')
--The User type can be either Patient, Doctor or Receptionist
);
```

```
CREATE TABLE Users (
UserName VARCHAR(20) NOT NULL,
UserPassword VARCHAR(20) NOT NULL,
FirstName VARCHAR(20) NOT NULL,
LastName VARCHAR(20) NOT NULL,
DateOfBirth DATE NOT NULL,
StreetNumber VARCHAR(5) NOT NULL,
StreetName VARCHAR(30) NOT NULL,
City VARCHAR(15) NOT NULL,
UserState VARCHAR(2) NOT NULL,
ZipCode VARCHAR(5) NOT NULL,
PhoneNumber VARCHAR (10) NOT NULL,
EmailID VARCHAR(30) NOT NULL,
UserType VARCHAR(1) NOT NULL,

CONSTRAINT PK_Users PRIMARY KEY (UserName),
CONSTRAINT CHK_Users CHECK (UserType = 'P' OR UserType = 'D' OR UserType = 'R')
--The User type can be either Patient, Doctor or Receptionist
);
```

100 %

Messages

```
Command(s) completed successfully.
```

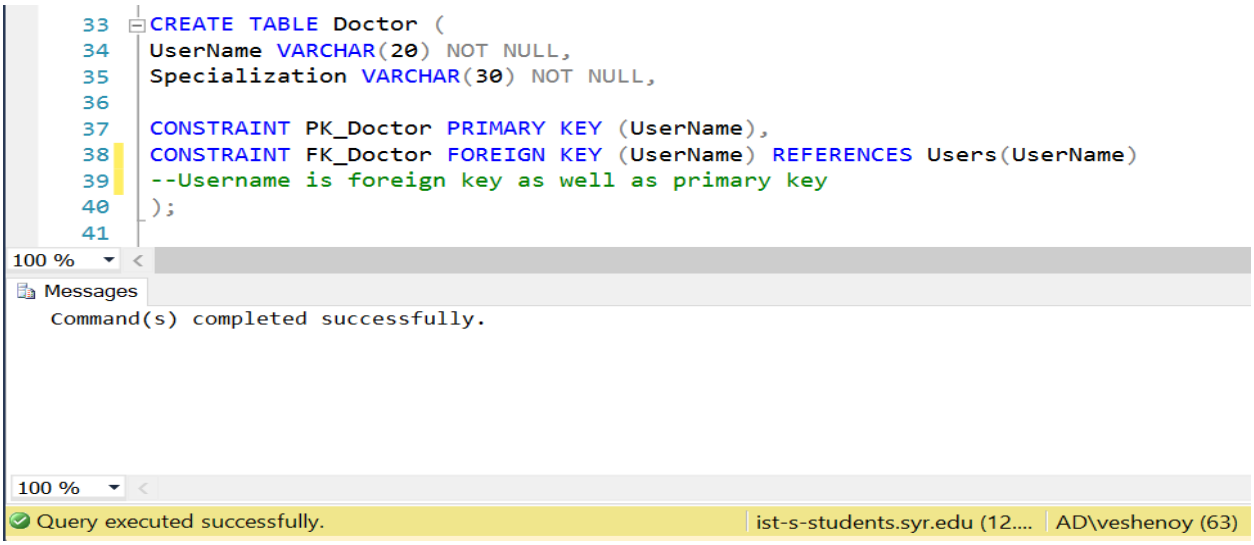
100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\veshenoy (63) | IST659_M005_veshenoy

Doctor Table:

```
CREATE TABLE Doctor (
UserName VARCHAR(20) NOT NULL,
Specialization VARCHAR(30) NOT NULL,

CONSTRAINT PK_Doctor PRIMARY KEY (UserName),
CONSTRAINT FK_Doctor FOREIGN KEY (UserName) REFERENCES Users(UserName)
);
```



Patient Table:

```
CREATE TABLE Patient (
UserName VARCHAR(20) NOT NULL,
isDisability VARCHAR(1) NOT NULL,
DisabilityDetails VARCHAR(50),
CONSTRAINT PK_Patient PRIMARY KEY (UserName),
CONSTRAINT FK_Patient FOREIGN KEY (UserName) REFERENCES Users(UserName),
CONSTRAINT CHK_Patient_isDisability CHECK (isDisability = '1' OR isDisability = '0')
--The CHECK constraint is enforced as the patient may or may not have a disability
);
```

```sql
CREATE TABLE Patient (
UserName VARCHAR(20) NOT NULL,
isDisability VARCHAR(1) NOT NULL,
DisabilityDetails VARCHAR(50),

CONSTRAINT PK_Patient PRIMARY KEY (UserName),
CONSTRAINT FK_Patient FOREIGN KEY (UserName) REFERENCES Users(UserName),
CONSTRAINT CHK_Patient_isDisability CHECK (isDisability = '1' OR isDisability = '0')
);
```

```
Command(s) completed successfully.
```

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sukulkar (62) | IST659_M005_sukulkar | 00:00:00 | 0 rows

Receptionist Table:

```sql
CREATE TABLE Receptionist (
UserName VARCHAR(20) NOT NULL,
Schedule VARCHAR(30) NOT NULL,
NoOfBillsGenerated INT,
CONSTRAINT PK_Receptionist PRIMARY KEY (UserName),
CONSTRAINT FK_Receptionist FOREIGN KEY (UserName) REFERENCES Users(UserName)
--UserName is the primary key as well as foreign key
);
```

```sql
CREATE TABLE Receptionist (
UserName VARCHAR(20) NOT NULL,
Schedule VARCHAR(30) NOT NULL,
NoOfBillsGenerated INT,

CONSTRAINT PK_Receptionist PRIMARY KEY (UserName),
CONSTRAINT FK_Receptionist FOREIGN KEY (UserName) REFERENCES Users(UserName)
--UserName is the primary key as well as foreign key
);
```

```
Command(s) completed successfully.
```

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\veshenoy (63)

MedicalExam Table:

```
CREATE TABLE MedicalExam (
ExamID VARCHAR(20) NOT NULL,
ExamName VARCHAR(30) NOT NULL,
ExamDesc VARCHAR(50),
ExamCost INT,
--ExamDesc and ExamCost are nullable
CONSTRAINT PK_MedicalExam PRIMARY KEY (ExamID)
);
```

```
CREATE TABLE MedicalExam (
ExamID VARCHAR(20) NOT NULL,
ExamName VARCHAR(30) NOT NULL,
ExamDesc VARCHAR(50),
ExamCost INT,
--ExamDesc and ExamCost are nullable
CONSTRAINT PK_MedicalExam PRIMARY KEY (ExamID)
);
```

100 %

Messages

```
Command(s) completed successfully.
```

100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\veshenoy (63)

InsuranceDetails Table:

```
CREATE TABLE InsuranceDetails (
InsuranceID VARCHAR(10) NOT NULL,
InsuranceName VARCHAR(30),
InsuranceDesc VARCHAR(330),
PercentageCoverageInstate INT NOT NULL,
PercentageCoverageOutstate INT NOT NULL,
--InsuranceName and InsuranceDesc are nullable
CONSTRAINT PK_InsuranceDetails PRIMARY KEY (InsuranceID)
);
```

```
CREATE TABLE InsuranceDetails (
InsuranceID VARCHAR(10) NOT NULL,
InsuranceName VARCHAR(30),
InsuranceDesc VARCHAR(330),
PercentageCoverageInstate INT NOT NULL,
PercentageCoverageOutstate INT NOT NULL,
--InsuranceName and InsuranceDesc are nullable
CONSTRAINT PK_InsuranceDetails PRIMARY KEY (InsuranceID)
);
```

100 %

Messages

```
Command(s) completed successfully.
```

100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\veshenoy (63)

InsuranceLine Table:

```
CREATE TABLE InsuranceLine (
UserName VARCHAR(20) NOT NULL,
InsuranceID VARCHAR(10) NOT NULL,
StartDate DATE NOT NULL,
EndDate DATE NOT NULL,
CONSTRAINT PK_InsuranceLine PRIMARY KEY (UserName,InsuranceID),
CONSTRAINT FK_InsuranceLine_UserName FOREIGN KEY (UserName) REFERENCES Patient(UserName),
CONSTRAINT FK_InsuranceLine_InsuranceID FOREIGN KEY (InsuranceID) REFERENCES
InsuranceDetails(InsuranceID)
--UserName and InsuranceID are foreign keys.
);
```

```
64 CREATE TABLE InsuranceLine (
65 UserName VARCHAR(20) NOT NULL,
66 InsuranceID VARCHAR(10) NOT NULL,
67 StartDate DATE NOT NULL,
68 EndDate DATE NOT NULL,
69
70 CONSTRAINT PK_InsuranceLine PRIMARY KEY (UserName,InsuranceID),
71 CONSTRAINT FK_InsuranceLine_UserName FOREIGN KEY (UserName) REFERENCES Patient(UserName),
72 CONSTRAINT FK_InsuranceLine_InsuranceID FOREIGN KEY (InsuranceID) REFERENCES InsuranceDetails(InsuranceID)
73 --UserName and InsuranceID are foreign keys.
74 );
```

100 %

Messages

```
Command(s) completed successfully.
```

100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\veshenoy (63) | IST659_M005_veshenoy

DoctorAvailability Table:

```
CREATE TABLE DoctorAvailability (
DoctorUserName VARCHAR(20) NOT NULL,
DayoftheWeek VARCHAR(10) NOT NULL,
StartTime TIME NOT NULL,
ActiveFlg VARCHAR(1) NOT NULL,
CONSTRAINT PK_DoctorAvailability PRIMARY KEY (DoctorUserName,DayoftheWeek,StartTime),
CONSTRAINT FK_DoctorAvailability_DoctorUserName FOREIGN KEY (DoctorUserName) REFERENCES
Doctor(UserName)
-- DoctorUserName, DayOfTheWeek and StartTime are the composite primary keys of this table.
);
```

```sql
CREATE TABLE DoctorAvailability (
DoctorUserName VARCHAR(20) NOT NULL,
DayoftheWeek VARCHAR(10) NOT NULL,
StartTime TIME NOT NULL,
ActiveFlg VARCHAR(1) NOT NULL,

CONSTRAINT PK_DoctorAvailability PRIMARY KEY (DoctorUserName,DayoftheWeek,StartTime),
CONSTRAINT FK_DoctorAvailability_DoctorUserName FOREIGN KEY (DoctorUserName) REFERENCES Doctor(UserName)
-- DoctorUserName, DayOfTheWeek and StartTime are the composite primary keys of this table.
);
```

100 %

Messages

```
Command(s) completed successfully.
```

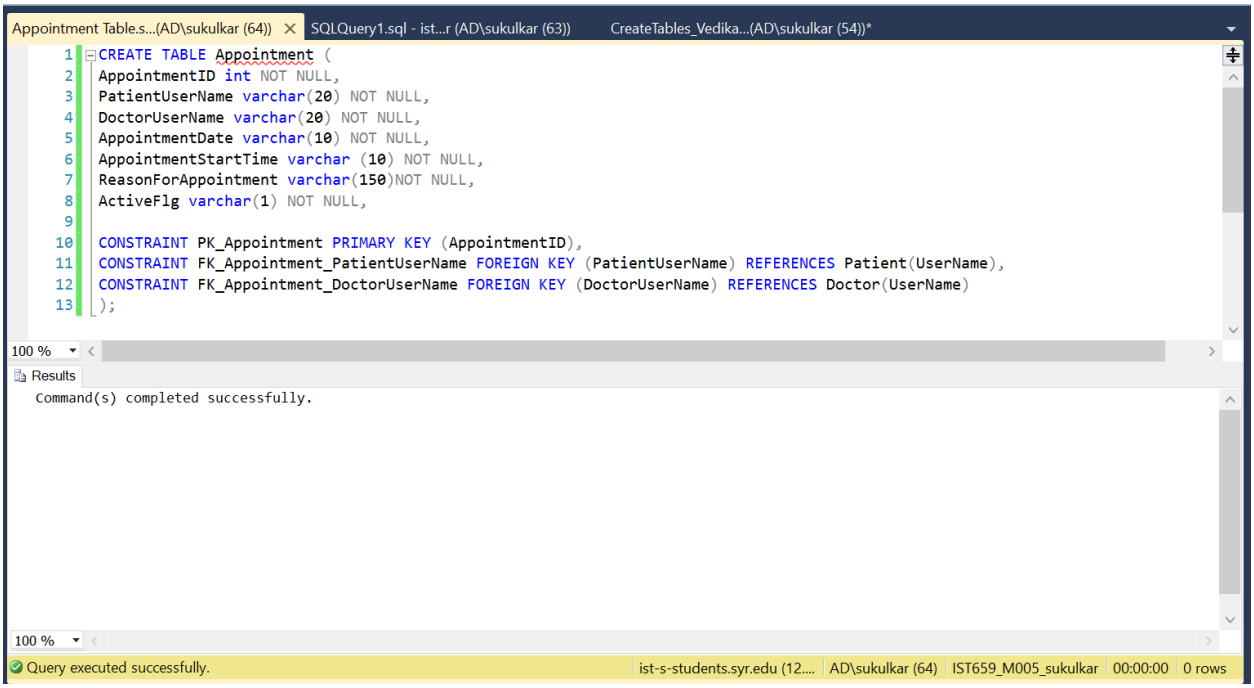
100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\veshenoy (63) | IST659_M005_veshenoy

Appointment Table:

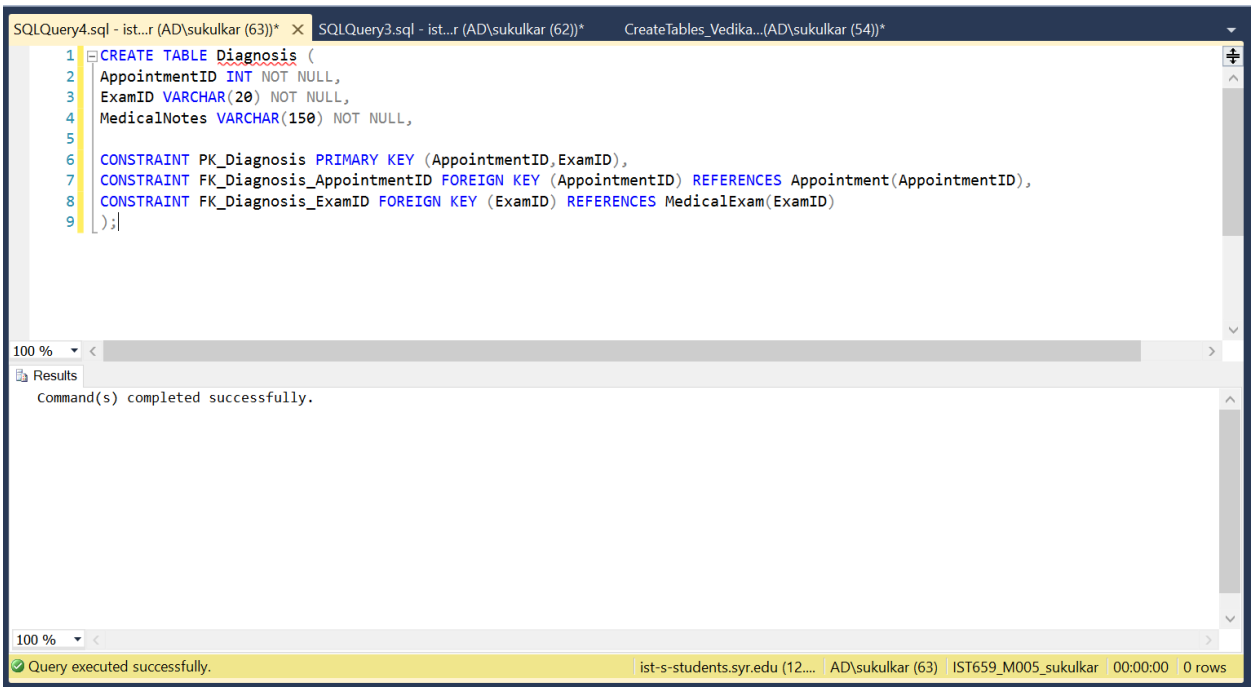
```sql
CREATE TABLE Appointment (
AppointmentID int NOT NULL,
PatientUserName varchar(20) NOT NULL,
DoctorUserName varchar(20) NOT NULL,
AppointmentDate varchar(10) NOT NULL,
AppointmentStartTime varchar (10) NOT NULL,
ReasonForAppointment varchar(150)NOT NULL,
ActiveFlg varchar(1) NOT NULL,

CONSTRAINT PK_Appointment PRIMARY KEY (AppointmentID),
CONSTRAINT FK_Appointment_PatientUserName FOREIGN KEY (PatientUserName) REFERENCES
Patient(UserName),
CONSTRAINT FK_Appointment_DoctorUserName FOREIGN KEY (DoctorUserName) REFERENCES
Doctor(UserName)
);
```



Diagnosis Table:

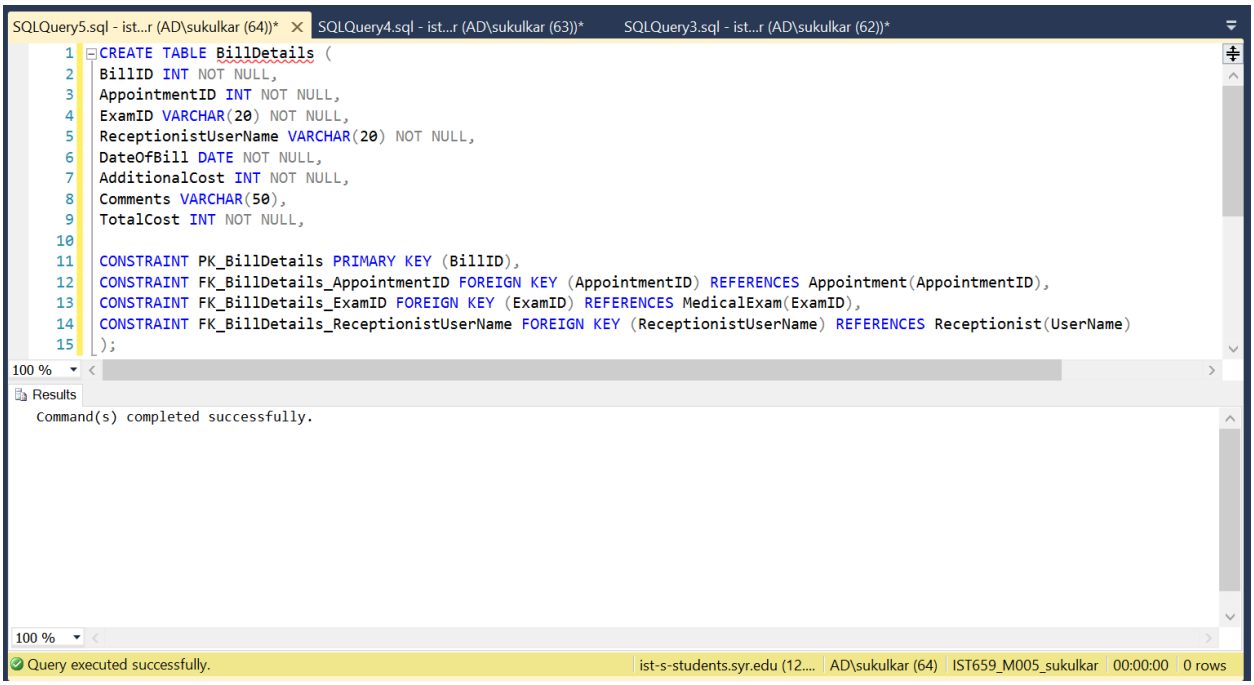
```
CREATE TABLE Diagnosis (
AppointmentID INT NOT NULL,
ExamID VARCHAR(20) NOT NULL,
MedicalNotes VARCHAR(150) NOT NULL,
CONSTRAINT PK_Diagnosis PRIMARY KEY (AppointmentID,ExamID),
CONSTRAINT FK_Diagnosis_AppointmentID FOREIGN KEY (AppointmentID) REFERENCES
Appointment(AppointmentID),
CONSTRAINT FK_Diagnosis_ExamID FOREIGN KEY (ExamID) REFERENCES MedicalExam(ExamID)
--ExamID and AppointmentID are the foreign keys.
);
```



BillDetails Table:

```
CREATE TABLE BillDetails (
BillID INT NOT NULL,
AppointmentID INT NOT NULL,
ExamID VARCHAR(20) NOT NULL,
ReceptionistUserName VARCHAR(20) NOT NULL,
DateOfBill DATE NOT NULL,
AdditionalCost INT NOT NULL,
Comments VARCHAR(50),
TotalCost INT NOT NULL,

CONSTRAINT PK_BillDetails PRIMARY KEY (BillID),
CONSTRAINT FK_BillDetails_AppointmentID FOREIGN KEY (AppointmentID) REFERENCES
Appointment(AppointmentID),
CONSTRAINT FK_BillDetails_ExamID FOREIGN KEY (ExamID) REFERENCES MedicalExam(ExamID),
CONSTRAINT FK_BillDetails_ReceptionistUserName FOREIGN KEY (ReceptionistUserName) REFERENCES
Receptionist(UserName)
);
```



INSERTING TABLES IN SQL

Users Table:

```
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneNumber,EmailID,UserType)
VALUES
('sudkul','apple@123','Sudhanshu','Kulkarni','1987-10-21','143','Avondale Place','Syracuse','NY','13210','3152647895','sudkul@gmail.com','D');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneNumber,EmailID,UserType)
VALUES
('vedshe','mango@123','Vedika','Shenoy','1991-06-06','420','Westcott Street','Syracuse','NY','13210','3125978630','vedshe@gmail.com','D');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneNumber,EmailID,UserType)
VALUES
('amitdj','pine@123','Amit','Jadhav','1978-03-28','141','Avondale Place','Syracuse','NY','13210','3126547890','amitdj@gmail.com','D');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneNumber,EmailID,UserType)
VALUES
('manded','orange@123','Manan', 'Dedhia','1965-06-30','422','Westcott Street','Syracuse','NY','13210','3251469873','manded@gmail.com','D');
INSERT INTO [dbo].[Users]
```

```
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('advkam','pear@123','Advaith','Kamath','1980-07-09','421','Westcott
Street','Syracuse','NY','13210','3698563214','advkam@gmail.com','D');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('dhrbht','potato@123','Dhruv','Bhatti','1989-03-23','141','Avondale
Place','Syracuse','NY','13210','3985463217','dhrbht@gmail.com','P');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('anayak','cabbage@123','Anmol','Nayak','1972-03-20','133','Avondale
Place','Syracuse','NY','13210','3986542217','anayak@gmail.com','P');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('mstewart','brocolli@123','Martha','Stewart','1989-04-13','101','Westcott
Street','Syracuse','NY','13210','3467542217','mstewart@gmail.com','P');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('jstevens','pepper@123','Jacob','Stevens','1990-06-25','189','James
Street','Syracuse','NY','13210','3467548643','jstevens@gmail.com','P');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('amendosa','spinach@123','Alwin','Mendosa','1970-02-15','155','Euclid
Ave','Syracuse','NY','13210','3467689743','amendosa@gmail.com','P');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('kruvor','slave@123','Kruti','Vora','1959-06-18','562','Westcott
Street','Syracuse','NY','13210','9875641236','kruvor@gmail.com','R');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('eclarke','peanut@123','Emilia','Clarke','1999-01-31','500','Euclid
Ave','Syracuse','NY','13210','9876432236','eclarke@gmail.com','R');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('rpatt','cashew@123','Robert','Pattinson','1963-03-30','800','Comstock
Ave','Syracuse','NY','13210','9876332236','rpatt@gmail.com','R');
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneN
umber,EmailID,UserType)
VALUES
('dbeck','raisin@123','David','Beckham','1977-05-24','153','Comstock
Ave','Syracuse','NY','13210','9825672236','dbeck@gmail.com','R');
```

```
INSERT INTO [dbo].[Users]
(UserName,UserPassword,FirstName,LastName,DateOfBirth,StreetNumber,StreetName,City,UserState,ZipCode,PhoneNumber,EmailID,UserType)
VALUES
('jgomes','adidas@123','James','Gomes','1999-02-14','103','Westcott Street','Syracuse','NY','13210','9899972236','jgomes@gmail.com','R');
```

Results | Messages

	UserName	UserPassword	FirstName	LastName	DateOfBirth	StreetNumber	StreetName	City	UserState	ZipCode	PhoneNumber	EmailID	UserType
1	advkam	pear@123	Advaith	Kamath	1980-07-09	421	Westcott Street	Syracuse	NY	13210	3698563214	advkam@gmail.com	D
2	amendosa	spinach@123	Alwin	Mendosa	1970-02-15	155	Euclid Ave	Syracuse	NY	13210	3467689743	amendosa@gmail.com	P
3	amitdj	pine@123	Amit	Jadhav	1978-03-28	141	Avondale Place	Syracuse	NY	13210	3126547890	amitdj@gmail.com	D
4	anayak	cabbage@123	Anmol	Nayak	1972-03-20	133	Avondale Place	Syracuse	NY	13210	3986542217	anayak@gmail.com	P
5	dbeck	raisin@123	David	Beckham	1977-05-24	153	Comstock Ave	Syracuse	NY	13210	9825672236	dbeck@gmail.com	R
6	dhrbht	potato@123	Dhruv	Bhatti	1989-03-23	141	Avondale Place	Syracuse	NY	13210	3985463217	dhrbht@gmail.com	P
7	eclarke	peanut@123	Emilia	Clarke	1999-01-31	500	Euclid Ave	Syracuse	NY	13210	9876432236	eclarke@gmail.com	R
8	jgomes	adidas@123	James	Gomes	1999-02-14	103	Westcott Street	Syracuse	NY	13210	9899972236	jgomes@gmail.com	R
9	jstevens	pepper@123	Jacob	Stevens	1990-06-25	189	James Street	Syracuse	NY	13210	3467548643	jstevens@gmail.com	P
10	kruvor	slave@123	Kruti	Vora	1959-06-18	562	Westcott Street	Syracuse	NY	13210	9875641236	kruvor@gmail.com	R
11	manded	orange@123	Manan	Dedhia	1965-06-30	422	Westcott Street	Syracuse	NY	13210	3251469873	manded@gmail.com	D
12	mstewart	brocolli@123	Martha	Stewart	1989-04-13	101	Westcott Street	Syracuse	NY	13210	3467542217	mstewart@gmail.com	P
13	rpatt	cashew@123	Robert	Pattinson	1963-03-30	800	Comstock Ave	Syracuse	NY	13210	9876332236	rpatt@gmail.com	R
14	sudkul	apple@123	Sudhan...	Kulkarni	1987-10-21	143	Avondale Place	Syracuse	NY	13210	3152647895	sudkul@gmail.com	D
15	vedshe	mango@123	Vedika	Shenoy	1991-06-06	420	Westcott Street	Syracuse	NY	13210	3125978630	vedshe@gmail.com	D

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sukulkar (54) | IST659_M005_sukulkar | 00:00:00 | 15 rows

Doctor Table:

```
INSERT INTO [dbo].[Doctor] (UserName,Specialization)
VALUES ('sudkul','Cardiologist');
INSERT INTO [dbo].[Doctor] (UserName,Specialization)
VALUES ('vedshe','Psychiatrist');
INSERT INTO [dbo].[Doctor] (UserName,Specialization)
VALUES ('amitdj','Opthamologist');
INSERT INTO [dbo].[Doctor] (UserName,Specialization)
VALUES ('manded','Nephrologist');
INSERT INTO [dbo].[Doctor] (UserName,Specialization)
VALUES ('advkam','Oncologist');
```

Results | Messages

	UserName	Specialization
1	advkam	Oncologist
2	amitdj	Ophthalmologist
3	manded	Nephrologist
4	sudkul	Cardiologist
5	vedshe	Psychiatrist

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sukulkar (54)

Patient Table:

```
INSERT INTO [dbo].[Patient] (UserName, isDisability)
VALUES ('dhrbht','0');
INSERT INTO [dbo].[Patient] (UserName, isDisability)
```

```
VALUES ('anayak','0');
INSERT INTO [dbo].[Patient] (UserName, isDisability, DisabilityDetails)
VALUES ('mstewart','1','blind');
INSERT INTO [dbo].[Patient] (UserName, isDisability, DisabilityDetails)
VALUES ('jstevens','1','deaf');
INSERT INTO [dbo].[Patient] (UserName, isDisability)
VALUES ('amendosa','0');
```

Results | Messages

	UserName	isDisability	DisabilityDetails
1	amendosa	0	NULL
2	anayak	0	NULL
3	dhrbht	0	NULL
4	jstevens	1	deaf
5	mstewart	1	blind

Query executed successfully. ist-s-students.syr.edu (12.... AD\sukulkar (54)

Receptionist Table:

```
INSERT INTO [dbo].[Receptionist] (UserName,Schedule,NoOfBillsGenerated)
VALUES ('kruvor','8am-4pm','');
INSERT INTO [dbo].[Receptionist] (UserName,Schedule,NoOfBillsGenerated)
VALUES ('eclarke','8am-4pm','');
INSERT INTO [dbo].[Receptionist] (UserName,Schedule,NoOfBillsGenerated)
VALUES ('rpatt','4pm-11pm','');
INSERT INTO [dbo].[Receptionist] (UserName,Schedule,NoOfBillsGenerated)
VALUES ('dbeck','4pm-11pm','');
INSERT INTO [dbo].[Receptionist] (UserName,Schedule,NoOfBillsGenerated)
VALUES ('jgomes','4pm-11am','');
```

Results | Messages

	UserName	Schedule	NoOfBillsGenerated
1	dbeck	4pm-11pm	0
2	eclarke	8am-4pm	0
3	jgomes	4pm-11am	0
4	kruvor	8am-4pm	0
5	rpatt	4pm-11pm	0

Query executed successfully. ist-s-students.syr.edu (12.... AD\sukulkar (51)

MedicalExam Table:

```
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
```

```
('101','Blood Exam','A blood test is a laboratory analysis performed on a blood sample that is usually extracted from a vein in the arm using a hypodermic needle, or via fingerprick.','50')
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('102','X-Ray','X-ray is a quick and simple imaging test that can spot problems in your bones, teeth, chest and more.','80')
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('103','CT Scan','A computerized tomography (CT) scan combines a series of X-ray images taken from different angles around your body and uses computer processing to create cross-sectional images (slices) of the bones, blood vessels and soft tissues inside your body.',200)
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('104','MRI Scan','Magnetic resonance imaging is a medical imaging technique used in radiology to form pictures of the anatomy and the physiological processes of the body in both health and disease.',350)
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('105','Urine Exam','The tests detect and/or measure several substances in the urine, such as byproducts of normal and abnormal metabolism, cells, cellular fragments, and bacteria',100)
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('106','Eye Exam','An eye examination is a series of tests performed by an ophthalmologist, optometrist, or orthoptist, optician, assessing vision and ability to focus on and discern objects, as well as other tests and examinations pertaining to the eyes.',100)
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('107', 'Contact Lens Exam','Your eye doctor will perform special tests during a contact lens exam to evaluate your vision with contacts.',150)
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('108','EMG','inserting fine needle electrodes in muscles and observing the recorded motor unit potentials when the muscles are activated to help distinguish whether weakness is due to muscle or nerve dysfunction',250)
INSERT INTO [dbo].[MedicalExam] (ExamID,ExamName,ExamDesc,ExamCost)
VALUES
('109','NCS','use of electrodes to record motor and sensory responses that are propagated by electrical stimuli. This test can help distinguish location of a nervous system lesion',350)
```

Results | Messages

	ExamID	ExamName	ExamDesc	ExamCost
1	101	Blood Exam	A blood test is a laboratory analysis performed on a ...	50
2	102	X-Ray	X-ray is a quick and simple imaging test that can spo...	80
3	103	CT Scan	A computerized tomography (CT) scan combines a s...	200
4	104	MRI Scan	Magnetic resonance imaging is a medical imaging te...	350
5	105	Urine Exam	The tests detect and/or measure several substances...	100
6	106	Eye Exam	An eye examination is a series of tests performed by...	100
7	107	Contact Lens Exam	Your eye doctor will perform special tests during a c...	150
8	108	EMG	inserting fine needle electrodes in muscles and obse...	250
9	109	NCS	use of electrodes to record motor and sensory respo...	350

Query executed successfully. ist-s-students.syr.edu (12.... AD\sukulkar (60)

InsuranceDetails Table:

```
INSERT INTO [dbo].[InsuranceDetails]
(InsuranceID,InsuranceDesc,PercentageCoverageInstate,PercentageCoverageOutstate,InsuranceName)
VALUES
```

```
('10001',
'Medicare Advantage and Drug plans bundle the benefits of a Medicare Advantage plan with Prescription Drug coverage.
Your plan would include medical and prescription drug coverage.',80,60,'Medicare Plan');
```

```
INSERT INTO [dbo].[InsuranceDetails]
(InsuranceID,InsuranceDesc,PercentageCoverageInstate,PercentageCoverageOutstate,InsuranceName)
VALUES
('10001',
'Medicare Advantage and Drug plans bundle the benefits of a Medicare Advantage plan with Prescription Drug coverage.
 Your plan would include medical and prescription drug coverage.'
,80,60,'Medicare Plan');
```

100 %

Results | Messages

	Insurance...	InsuranceDesc	PercentageCoverageInst...	PercentageCoverageOuts...	InsuranceNa...
1	10001	Medicare Advantage and Drug plans bundle the ben...	80	60	Medicare Plan

Query executed successfully. ist-s-students.syr.edu (12.... AD\sukulkar (60)

InsuranceLine Table:

```
INSERT INTO [dbo].[InsuranceLine] (UserName,InsuranceID,StartDate,EndDate)
VALUES ('amendosa','10001',GETDATE(),(SELECT DATEADD(MONTH, 8, GETDATE())))
INSERT INTO [dbo].[InsuranceLine] (UserName,InsuranceID,StartDate,EndDate)
VALUES ('anayak','10001',GETDATE(),(SELECT DATEADD(month, 11, GETDATE())))
INSERT INTO [dbo].[InsuranceLine] (UserName,InsuranceID,StartDate,EndDate)
VALUES ('dhrbht','10001',GETDATE(),(SELECT DATEADD(MONTH, 6, GETDATE())))
INSERT INTO [dbo].[InsuranceLine] (UserName,InsuranceID,StartDate,EndDate)
VALUES ('jstevens','10001',GETDATE(),(SELECT DATEADD(YEAR, 2, GETDATE())))
```

Results | Messages

	UserName	Insuranc...	StartDate	EndDate
1	amendosa	10001	2019-04-21	2019-12-21
2	anayak	10001	2019-04-21	2020-03-21
3	dhrbht	10001	2019-04-21	2019-10-21
4	jstevens	10001	2019-04-21	2021-04-21

Query executed successfully. ist-s-students.syr.edu (12.... AD\sukulkar (79)

DoctorAvailability Table:

In order to add doctor availability, we have added While loop for each doctor and each day of the week.

```
DECLARE @i int = 12
WHILE @i < 17
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('advkam','Thursday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
```

```
END

DECLARE @i int = 11
WHILE @i < 15
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('advkam','Monday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END

DECLARE @i int = 9
WHILE @i < 15
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('advkam','Wednesday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END
```

```
DECLARE @i int = 14
WHILE @i < 19
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('amitdj','Tuesday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END

DECLARE @i int = 14
WHILE @i < 19
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('amitdj','Wednesday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END

DECLARE @i int = 14
WHILE @i < 19
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('amitdj','Thursday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END


DECLARE @i int = 14
```

```
WHILE @i < 19
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('amitdj','Friday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END
```

```
DECLARE @i int = 14
WHILE @i < 19
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('manded','Friday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END

DECLARE @i int = 11
WHILE @i < 17
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('manded','Monday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END

DECLARE @i int = 10
WHILE @i < 16
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('manded','Wedmesday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END

DECLARE @i int = 14
WHILE @i < 19
BEGIN
	INSERT INTO [dbo].[DoctorAvailability]
	(DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
	VALUES
	('manded','Tuesday',CONVERT(varchar,@i)+':00',1)

	SET @i = @i + 1
END
```

```
DECLARE @i int = 9
WHILE @i < 15
BEGIN
```

```
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('sudkul','Monday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END

DECLARE @i int = 9
WHILE @i < 15
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('sudkul','Tuesday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END

DECLARE @i int = 12
WHILE @i < 18
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('sudkul','Wednesday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END

DECLARE @i int = 12
WHILE @i < 18
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('sudkul','Thursday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END

DECLARE @i int = 14
WHILE @i < 21
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('sudkul','Friday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END
```

```
DECLARE @i int = 9
WHILE @i < 14
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('vedshe','Monday',CONVERT(varchar,@i)+':00',1)
```

```
        SET @i = @i + 1
END

DECLARE @i int = 9
WHILE @i < 14
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('vedshe','Tuesday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END

DECLARE @i int = 14
WHILE @i < 19
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('vedshe','Thursday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END

DECLARE @i int = 14
WHILE @i < 19
BEGIN
        INSERT INTO [dbo].[DoctorAvailability]
        (DoctorUserName,DayoftheWeek,StartTime,ActiveFlg)
        VALUES
        ('vedshe','Friday',CONVERT(varchar,@i)+':00',1)

        SET @i = @i + 1
END
```

Results | Messages

	DoctorUserNa...	DayoftheW...	StartTi...	ActiveFlg
1	advkam	Monday	11:00	1
2	advkam	Monday	12:00	1
3	advkam	Monday	13:00	1
4	advkam	Monday	14:00	1
5	advkam	Monday	15:00	1
6	advkam	Thursday	12:00	1
7	advkam	Thursday	13:00	1
8	advkam	Thursday	14:00	1
9	advkam	Thursday	15:00	1
10	advkam	Thursday	16:00	1
11	advkam	Wednesday	10:00	1
12	advkam	Wednesday	11:00	1
13	advkam	Wednesday	12:00	1
14	advkam	Wednesday	13:00	1
15	advkam	Wednesday	9:00	1
16	amitdj	Friday	14:00	1
17	amitdj	Friday	15:00	1
18	amitdj	Friday	16:00	1
19	amitdj	Friday	17:00	1
20	amitdj	Friday	18:00	1

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sukulkar (54)

Appointment Table:

```
INSERT INTO [dbo].[Appointment]
(AppointmentID,PatientUserName,DoctorUserName,AppointmentDate,AppointmentStartTime,ReasonForAppointment,A
ctiveFlg)
VALUES ('1','dhrbht','sudkul','Monday','12:00','Fever','1');
INSERT INTO [dbo].[Appointment]
(AppointmentID,PatientUserName,DoctorUserName,AppointmentDate,AppointmentStartTime,ReasonForAppointment,A
ctiveFlg)
VALUES ('2','anayak','sudkul','Monday','11:00','Heart Attack','1');
INSERT INTO [dbo].[Appointment]
(AppointmentID,PatientUserName,DoctorUserName,AppointmentDate,AppointmentStartTime,ReasonForAppointment,A
ctiveFlg)
VALUES ('3','amendosa','vedshe','Monday','9:00','Trauma','1');
INSERT INTO [dbo].[Appointment]
(AppointmentID,PatientUserName,DoctorUserName,AppointmentDate,AppointmentStartTime,ReasonForAppointment,A
ctiveFlg)
VALUES ('4','anayak','sudkul','Thursday','14:00','Stress','1');
INSERT INTO [dbo].[Appointment]
(AppointmentID,PatientUserName,DoctorUserName,AppointmentDate,AppointmentStartTime,ReasonForAppointment,A
ctiveFlg)
VALUES ('5','dhrbht','sudkul','Monday','10:00','Chest pain','1');
```

Results | Messages

	AppointmentID	PatientUserName	DoctorUserName	AppointmentDate	AppointmentStartTime	ReasonForAppointment	ActiveFlg
1	1	dhrbht	sudkul	Monday	12:00	Fever	1
2	2	anayak	sudkul	Monday	11:00	Heart Attack	1
3	3	amendosa	vedshe	Monday	9:00	Trauma	1
4	4	anayak	sudkul	Thursday	14:00	Stress	1
5	5	dhrbht	sudkul	Monday	10:00	Chest pain	1

Query executed successfully. ist-s-students.syr.edu (12.... AD\sukulkar (51)

Diagnosis Table:

```
INSERT INTO [dbo].[Diagnosis] (AppointmentID, ExamID, MedicalNotes)
VALUES ('1','101','Normal');
INSERT INTO [dbo].[Diagnosis] (AppointmentID, ExamID, MedicalNotes)
VALUES ('2','102','Normal');
INSERT INTO [dbo].[Diagnosis] (AppointmentID, ExamID, MedicalNotes)
VALUES ('3','103','Normal');
INSERT INTO [dbo].[Diagnosis] (AppointmentID, ExamID, MedicalNotes)
VALUES ('4','104','Normal');
INSERT INTO [dbo].[Diagnosis] (AppointmentID, ExamID, MedicalNotes)
VALUES ('5','105','Normal');
```

Results | Messages

	AppointmentID	ExamID	MedicalNotes
1	1	101	Normal
2	2	102	Normal
3	3	103	Normal
4	4	104	Normal
5	5	105	Normal

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sukulkar (70)

BillDetails Table:

```
INSERT INTO BillDetails
(BillID, AppointmentID,ExamID,ReceptionistUserName, DateOfBill, AdditionalCost, Comments ,TotalCost)
VALUES ('1','1','101','kruvor','Apr 24 2019','20','None','50');

INSERT INTO BillDetails
(BillID, AppointmentID,ExamID,ReceptionistUserName, DateOfBill, AdditionalCost, Comments ,TotalCost)
VALUES ('2','2','102','kruvor','Apr 24 2019','10','None','100');

INSERT INTO BillDetails
(BillID, AppointmentID,ExamID,ReceptionistUserName, DateOfBill, AdditionalCost, Comments ,TotalCost)
VALUES ('3','3','103','kruvor','Apr 24 2019','20','None','50');

INSERT INTO BillDetails
(BillID, AppointmentID,ExamID,ReceptionistUserName, DateOfBill, AdditionalCost, Comments ,TotalCost)
VALUES ('4','4','104','kruvor','Apr 24 2019','10','None','100');

INSERT INTO BillDetails
(BillID, AppointmentID,ExamID,ReceptionistUserName, DateOfBill, AdditionalCost, Comments ,TotalCost)
VALUES ('5','5','105','kruvor','Apr 24 2019','20','None','50');
```

Results | Messages

	BillID	AppointmentID	ExamID	ReceptionistUserName	DateOfBill	AdditionalCost	Comments	TotalCost
1	1	1	101	kruvor	Apr 24 2019	20	None	50
2	2	2	102	kruvor	Apr 24 2019	10	None	100
3	3	3	103	kruvor	Apr 24 2019	20	None	50
4	4	4	104	kruvor	Apr 24 2019	10	None	100
5	5	5	105	kruvor	Apr 24 2019	20	None	50

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sukulkar (68)

TRIGGERS

1. After Insert Trigger for Patient appointment upon Bill Generation:

```
CREATE TRIGGER [dbo].[AppointmentFlag] ON [dbo].[BillDetails]
AFTER INSERT
AS
BEGIN
UPDATE Appointment
SET    ActiveFlg = '0'
FROM   Appointment A
INNER JOIN BillDetails B
on a.AppointmentID=b.AppointmentID
where b.BillID = (select max(billid) from BillDetails)
END
```

```
8  CREATE TRIGGER [dbo].[AppointmentFlag] ON [dbo].[BillDetails]
9  AFTER INSERT
10 AS
11 BEGIN
12 UPDATE Appointment
13 SET    ActiveFlg = '0'
14 FROM   Appointment A
15 INNER JOIN BillDetails B
16 on a.AppointmentID=b.AppointmentID
17 where b.BillID = (select max(billid) from BillDetails)
18 END
19
```

100 %

Messages

```
Command(s) completed successfully.
```

100 %

2. After Insert Trigger for Doctor Availability upon Bill Generation:

```
CREATE TRIGGER [dbo].[DoctorAppointmentFlag] ON [dbo].[BillDetails]
AFTER INSERT
AS
BEGIN
UPDATE DoctorAvailability
SET    ActiveFlg = '1'
FROM   DoctorAvailability D
INNER JOIN Appointment A
on A.DoctorUserName= D.DoctorUserName
INNER JOIN BillDetails B
on B.AppointmentID = A.AppointmentID
where b.BillID = (select max(BillID) from BillDetails)
and D.StartTime = A.AppointmentStartTime
and B.AppointmentID = A.AppointmentID
and A.AppointmentDate = d.DayoftheWeek
END
```

```sql
CREATE TRIGGER [dbo].[DoctorAppointmentFlag] ON [dbo].[BillDetails]
AFTER INSERT
AS
BEGIN
UPDATE DoctorAvailability
SET     ActiveFlg = '1'
FROM    DoctorAvailability D
INNER JOIN Appointment A
on A.DoctorUserName= D.DoctorUserName
INNER JOIN BillDetails B
on B.AppointmentID = A.AppointmentID
where b.BillID = (select max(BillID) from BillDetails)
and D.StartTime = A.AppointmentStartTime
and B.AppointmentID = A.AppointmentID
and A.AppointmentDate = d.DayoftheWeek
END
```

100 %

Messages

```
Command(s) completed successfully.
```

3. After Insert Trigger for Doctor Availability upon Appointment:

```sql
CREATE TRIGGER [dbo].[InitialOnAppointmentFlag] ON [dbo].[Appointment]
AFTER INSERT
AS
BEGIN
UPDATE DoctorAvailability
SET    ActiveFlg = '0'
FROM   DoctorAvailability D
INNER JOIN Appointment A
on A.DoctorUserName= D.DoctorUserName
where A.AppointmentID = (select max(AppointmentID) from Appointment)
AND A.DoctorUserName = D.DoctorUserName
AND A.AppointmentStartTime = D.StartTime
and A.AppointmentDate = D.DayoftheWeek
END
```

```sql
CREATE TRIGGER [dbo].[InitialOnAppointmentFlag] ON [dbo].[Appointment]
AFTER INSERT
AS
BEGIN
UPDATE DoctorAvailability
SET     ActiveFlg = '0'
FROM    DoctorAvailability D
INNER JOIN Appointment A
on A.DoctorUserName= D.DoctorUserName
where A.AppointmentID = (select max(AppointmentID) from Appointment)
AND A.DoctorUserName = D.DoctorUserName
AND A.AppointmentStartTime = D.StartTime
and A.AppointmentDate = D.DayoftheWeek
END
```

100 %

Messages

```
Command(s) completed successfully.
```

MAJOR DATA QUESTIONS ANSWERED USING SQL

1. How many medical examinations are being conducted at the healthcare organization?

DATBASE:

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP 1000 [AppointmentID]
        ,[ExamID]
        ,[MedicalNotes]
  FROM [IST659_M005_veshenoy].[dbo].[Diagnosis]
```

100 %

Results | Messages

	AppointmentID	ExamID	MedicalNotes
1	1	101	Blood test successful
2	2	101	Patient is healthy
3	3	102	Minor fracture at knee joint
4	4	105	Bacteria found in urine
5	5	106	Test successful

QUERY:

```
SELECT COUNT(AppointmentID) as NumberOfMedicalExams
FROM Diagnosis;
```

```
SELECT COUNT(AppointmentID) as NumberOfMedicalExams
FROM Diagnosis;
```

100 %

Results | Messages

	NumberOfMedicalExams
1	5

2. Which type of medical examination is being carried out most frequently?

DATABASE:

```
SELECT TOP 1000 [AppointmentID]
        ,[ExamID]
        ,[MedicalNotes]
  FROM [dbo].[Diagnosis]
```

100 %

Results | Messages

	AppointmentID	ExamID	MedicalNotes
1	1	101	Blood test successful
2	2	101	Patient is healthy
3	3	102	Minor fracture at knee joint
4	4	105	Bacteria found in urine
5	5	106	Test successful

QUERY:

```
SELECT M.ExamID, M.ExamName
FROM MedicalExam M
INNER JOIN
Diagnosis D
ON M.ExamID = D.ExamID
GROUP BY M.ExamID, M.ExamName
HAVING COUNT(D.ExamID)=
(SELECT MAX(X.CountOfExam)
FROM
(SELECT COUNT(ExamID) as CountOfExam
FROM Diagnosis
GROUP BY ExamID) X);
```

```
SELECT M.ExamID, M.ExamName
FROM MedicalExam M
INNER JOIN
Diagnosis D
ON M.ExamID = D.ExamID
GROUP BY M.ExamID, M.ExamName
HAVING COUNT(D.ExamID)=
(SELECT MAX(X.CountOfExam)
 FROM
 (SELECT COUNT(ExamID) as CountOfExam
 FROM Diagnosis
 GROUP BY ExamID) X);
```

100 %

Results | Messages

	ExamID	ExamName
1	101	Blood Exam

3. How much is the income of the healthcare organization?

DATABASE:

```
SELECT TOP 1000 [BillID]
      ,[AppointmentID]
      ,[ExamID]
      ,[ReceptionistUserName]
      ,[DateOfBill]
      ,[AdditionalCost]
      ,[Comments]
      ,[TotalCost]
  FROM [dbo].[BillDetails]
```

100 %

Results | Messages

	BillID	AppointmentID	ExamID	ReceptionistUserName	DateOfBill	AdditionalCost	Comments	TotalCost
1	1	1	101	dbeck	2019-04-22	0	Test Successful	50
2	2	2	102	eclarke	2019-04-22	0	Take another appointment	80
3	3	3	103	jgomes	2019-04-22	0	Test Successful	200
4	4	4	104	kruvor	2019-04-23	0	6 weeks Therapy suggested	350
5	5	5	105	rpatt	2019-04-23	0	Test successful	100

QUERY:

```
SELECT SUM(TotalCost) as TotalIncome
FROM BillDetails;
```

```
SELECT SUM(TotalCost) AS TotalIncome
FROM BillDetails;
```

100 %

Results | Messages

	TotalIncome
1	780

4. What is the maximum number of patients that can be admitted in the healthcare organization?

DATABASE:

```
SELECT TOP 1000 [DoctorUserName]
        ,[DayoftheWeek]
        ,[StartTime]
        ,[ActiveFlg]
FROM [dbo].[DoctorAvailability]
```

100 %

Results | Messages

	DoctorUserName	DayoftheWeek	StartTime	ActiveFlg
96	vedshe	Monday	12:00	1
97	vedshe	Monday	13:00	1
98	vedshe	Monday	9:00	1
99	vedshe	Thursday	14:00	1
100	vedshe	Thursday	15:00	1
101	vedshe	Thursday	16:00	1
102	vedshe	Thursday	17:00	1
103	vedshe	Thursday	18:00	1
104	vedshe	Tuesday	10:00	1
105	vedshe	Tuesday	11:00	1
106	vedshe	Tuesday	12:00	1
107	vedshe	Tuesday	13:00	1
108	vedshe	Tuesday	9:00	1

QUERY:

```
SELECT COUNT(DoctorUserName) as MaxNumberOfPatientsPerWeek
FROM DoctorAvailability;
```

```
SELECT COUNT(DoctorUserName) as MaxNumberOfPatientsPerWeek
FROM DoctorAvailability;
```

100 %

Results | Messages

	MaxNumberOfPatientsPerWeek
1	108

5. How many bills are being generated by a patient?

DATABASE:

i. Appointment Table

```sql
SELECT TOP 1000 [AppointmentID]
      ,[PatientUserName]
      ,[DoctorUserName]
      ,[AppointmentDate]
      ,[AppointmentStartTime]
      ,[ReasonForAppointment]
      ,[ActiveFlg]
  FROM [dbo].[Appointment]
```

100 %

Results | Messages

	AppointmentID	PatientUserName	DoctorUserName	AppointmentDate	AppointmentStartTime	ReasonForAppointment	ActiveFlg
1	1	dhrbht	sudkul	2019-04-23	12:00:00.0000000	Fever	1
2	2	anayak	sudkul	2019-04-23	13:00:00.0000000	Heart Attack	1
3	3	amendosa	vedshe	2019-04-26	15:00:00.0000000	Trauma	1
4	4	anayak	vedshe	2019-04-26	16:00:00.0000000	Stress	1
5	5	dhrbht	sudkul	2019-04-24	15:00:00.0000000	Chest pain	1

Bill Details Table:

```sql
SELECT TOP 1000 [BillID]
      ,[AppointmentID]
      ,[ExamID]
      ,[ReceptionistUserName]
      ,[DateOfBill]
      ,[AdditionalCost]
      ,[Comments]
      ,[TotalCost]
  FROM [dbo].[BillDetails]
```

100 %

Results | Messages

	BillID	AppointmentID	ExamID	ReceptionistUserName	DateOfBill	AdditionalCost	Comments	TotalCost
1	1	1	101	dbeck	2019-04-22	0	Test Successful	50
2	2	2	102	eclarke	2019-04-22	0	Take another appointment	80
3	3	3	103	jgomes	2019-04-22	0	Test Successful	200
4	4	4	104	kruvor	2019-04-23	0	6 weeks Therapy suggested	350
5	5	5	105	rpatt	2019-04-23	0	Test successful	100

QUERY:

```sql
SELECT A.PatientUserName, COUNT(BillID) AS NoOfBills
FROM BillDetails BD
INNER JOIN
Appointment A
ON A.AppointmentID = BD.AppointmentID
GROUP BY A.PatientUserName;
```

```sql
SELECT A.PatientUserName, COUNT(BillID) AS NoOfBills
FROM BillDetails BD
INNER JOIN
Appointment A
ON A.AppointmentID = BD.AppointmentID
GROUP BY A.PatientUserName;
```

100 %

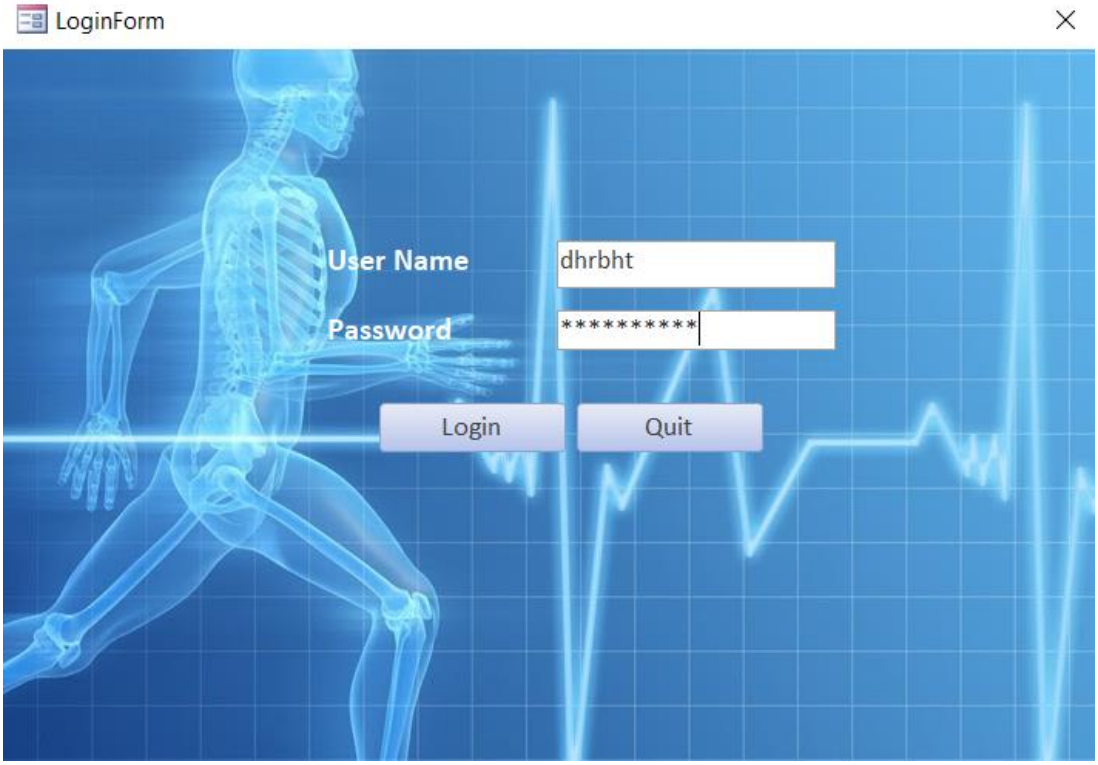
Results | Messages

	PatientUserName	NoOfBills
1	amendosa	1
2	anayak	2
3	dhrbht	2

INTERFACE IMPLEMENTATION USING FORMS

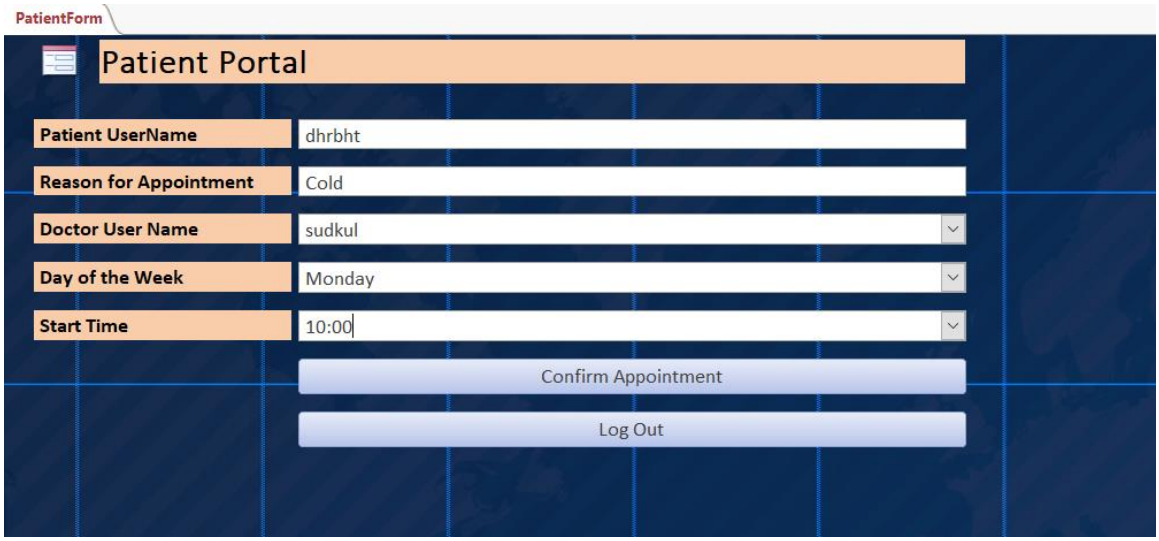
LOGIN FORM

The login form enables the patient, doctor and the receptionist to log into the portal.



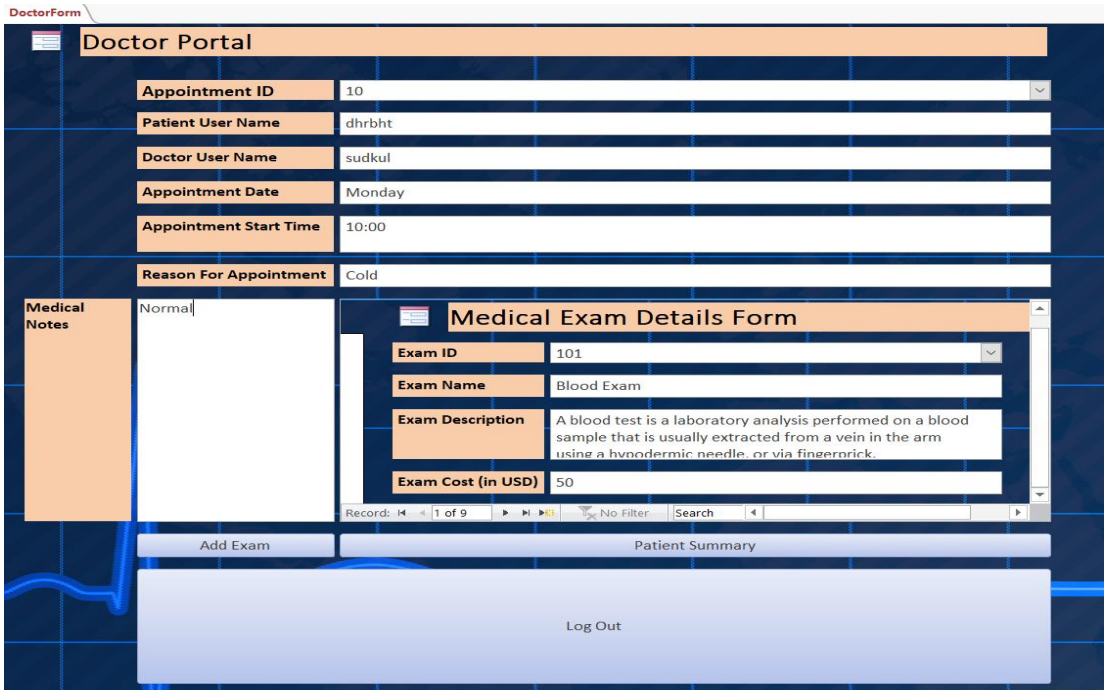
PATIENT FORM

The patient can book an appointment using this form. After confirming the appointment day and time, he can log out of the system.



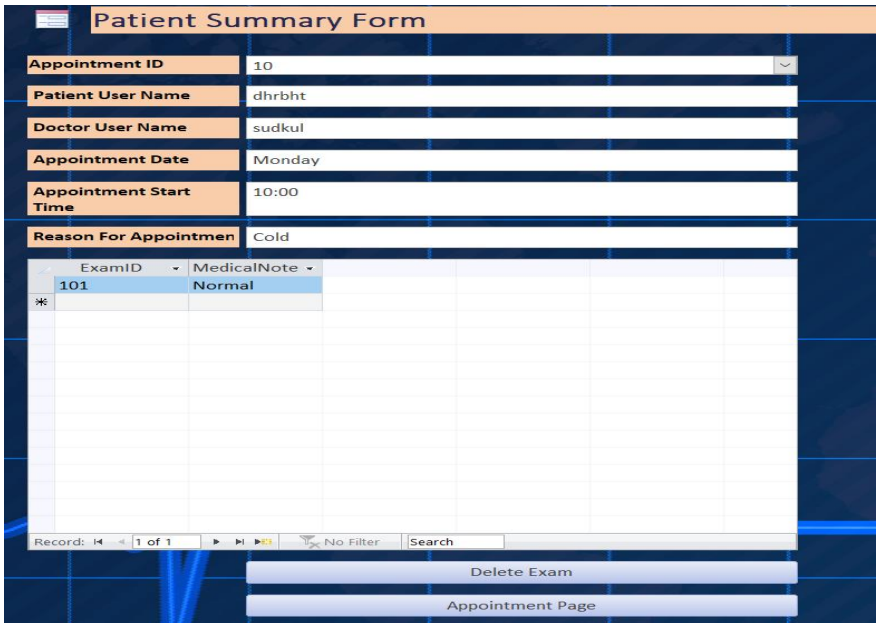
DOCTOR FORM

This form allows the doctor to view his appointments and add medical exam details after diagnosing the patient. Also, there is a button which navigates the doctor to the patient summary form. Finally, the doctor can log out of the system.



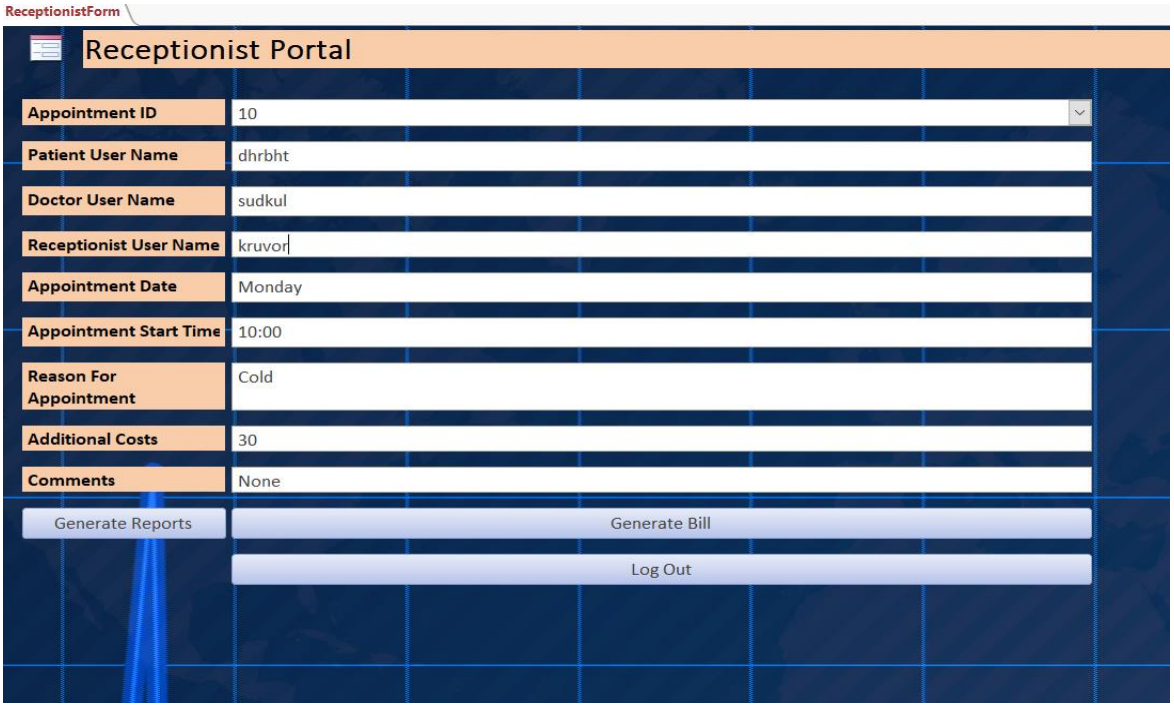
PATIENT SUMMARY FORM

The doctor can view the details of the patient such as his appointment details and his medical exam details. Also, the doctor can delete the exam details.



RECEPTIONIST FORM

This form consists of receptionist portal information, which gives the feature of bill generation. Also, there is a button which can navigate to report generation form. Also, the receptionist can log out of the system.



REPORT GENERATION FORM

This form consists of buttons which can generate reports according to the data available in the healthcare portal database. The four reports generated are as follows: Most frequent medical exam report, Number of appointments per day report, Number of bills per patient and total income.

INTERFACE IMPLEMENTATION USING REPORTS

MOST FREQUENT MEDICAL EXAM REPORT

This report shows the most frequent medical exams conducted at the healthcare center.

ReportsForm | MostFrequentMedicalExamsReport

MostFrequentMedicalExams — Wednesday, April 24, 2019 12:56:29 PM

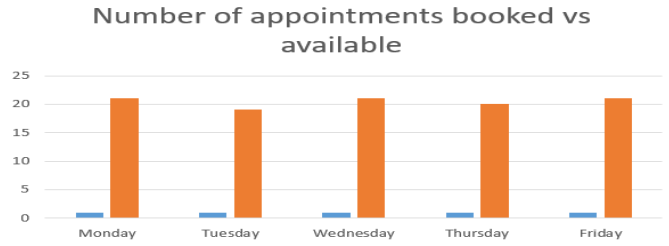
CountOfExamID	ExamName	ExamDesc	ExamCost
3	Blood Exam	A blood test is a laboratory analysis performed on a blood sample that is usually extracted from a vein in the arm using a hypodermic needle, or via fingerprick.	50
2	CT Scan	A computerized tomography (CT) scan combines a series of X-ray images taken from different angles around your body and uses computer processing to create cross-sectional images (slices) of the bones, blood vessels and soft tissues inside your body.	200
2	EMG	inserting fine needle electrodes in muscles and observing the recorded motor unit potentials when the muscles are activated to help distinguish whether weakness is due to muscle or nerve dysfunction	250
2	MRI Scan	Magnetic resonance imaging is a medical imaging technique used in radiology to form pictures of the anatomy and the physiological processes of the body in both health and disease.	350
2	X-Ray	X-ray is a quick and simple imaging test that can spot problems in your bones, teeth, chest and more.	80
1	Urine Exam	The tests detect and/or measure several substances in the urine, such as byproducts of normal and abnormal metabolism, cells, cellular fragments, and bacteria	100

APPOINTMENTS PER DAY REPORT

This report shows the number of appointments booked as well as available according to day of the week.

Number of Appointments per day Report — Wednesday, April 24, 2019 1:51:40 PM

CountOfDoctorUserName	DayoftheWeek	ActiveFlg
1	Friday	0
1	Monday	0
1	Thursday	0
2	Tuesday	0
1	Wednesday	0
21	Friday	1
21	Monday	1
20	Thursday	1
19	Tuesday	1
21	Wednesday	1
108		



BILLS GENERATED PER PATIENT REPORT

This report displays the number of bills generated by each patient at the healthcare center.

ReportsForm | NoOfBillsperPatientReport

No Of Bills Per Patient

Wednesday, April 24, 2019
12:59:27 PM

PatientUserName	CountOfBillID
anayak	2
dhrbht	3
	5

Page 1 of 1

TOTAL INCOME REPORT

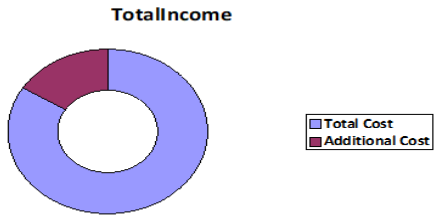
The total income of the healthcare center can be observed with the help of this report.

ReportsForm | TotalIncomeReport

Total Income

Wednesday, April 24, 2019
1:00:28 PM

UserName	BillID	AdditionalCost	TotalCost	DateOfBill
dhrbht	1	0	80	4/23/2019
anayak	2	20	70	4/24/2019 12:55:21 AM
dhrbht	3	20	60	4/24/2019 1:10:41 AM
anayak	4	20	30	4/24/2019 3:19:37 AM
dhrbht	5	30	40	4/24/2019 12:55:15 PM
5		90	280	



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