Healthcare Management System

SU HEALTH

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Project Summary:

The proposed database management project is for a healthcare institution. In today's digital age, most of our day to day activities are made easy by leveraging technologies. These technological inventions are able to perform to their utmost potential by providing it's users a personalized experience through its interface. But eventually, all of this is possible because of proper management and analysis of the user generated "data". Data, in the current age, is the most valuable resource, and to use it in an effective manner, its proper management is vital.

The task of managing data in an effective way is a tough one and thus the data which is generated inside a hospital from a variety of sources possesses a far greater challenge and even increases the complexity of the problem. Moreover, there are some places that still prefer taking customer information through forms and other paper media, and this too makes it difficult to manage data from such sources. Having a proper and well-established database system in place will not only reduce the work load on staff of the hospital, but also make the entire work flow inside a hospital smooth and would even help in making accurate decisions.

This project focuses on the data generated inside a hospital and proposes a solution to manage it effectively and in a secure manner. The system would be able to keep patient records and would also be used to schedule appointments with doctors. Moreover, in addition to keeping patient's medical information which would include past medical history (with the patient's consent) and also any treatment done in the hospital in the past, it would also be able to manage the bills generated for taking a particular treatment in the hospital. Also, this system would help to keep the doctors and nurses updated with the list of patients under them. There would also be an option to acquire the patient information through forms but eventually all the data would be loaded in the system. In addition to all of this, the reports would be made available to patients in both, electronic and paper format.

The primary users here would be hospital personnel, which would include the staff and the doctors in a hospital. The patient records would also be maintained by this system and thus, would help the doctors in diagnosing a disease faster and in a better way, because of the effectively managed data of the patients which might even include their medical history in some cases. With the proper integration of plans and effective deployment of the system, this system would provide option for the staff to lookup for the patient details and make necessary changes to it which would include updating the type of disease and looking at the history of the patient as well. Moreover, the doctors too would be able to view the data of the patient. The patient would also be provided with an option of filling out digital forms that would gather the patient data upon their admission and it would also give them necessary details about their billing information.

Entity and Attribute Table:

1. **Patient**: This entity captures information about the patient who visited the hospital for medical attention or services.

Entity Name: **Patient**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Patient_ID	NUMERIC	Not Null	Unique identifier for a patient
Other Attributes	PFName	VARCHAR(20)	Not null	First Name of the patient
	PLName	VARCHAR(20)	Not null	Last Name of the patient
	PGender	VARCHAR(10)	Not Null	Gender of the patient
	PDoB	VARCHAR(10)	Not Null	Patient's Date of Birth
	PWeight	DECIMAL(6,2)	Not Null	Patient's Weight
	PHeight	DECIMAL(6,2)	Not Null	Patient's Height
	PNext_Of_Kin	VARCHAR(20)	Not Null	Patient's Family member
	PHome_Phone	VARCHAR(20)	Not Null	Contact Information
	PHouseNo	VARCHAR(20)	Not Null	Patient's House No.
	PStreetName	VARCHAR(20)	Not Null	Street's Name
	PCity	VARCHAR(10)	Not Null	City of residence
	PState	VARCHAR(20)	Not Null	State of residence
	Other_Details	VARCHAR(50)	Null	Additional patient information
Foreign Key	PDoctor_ID	NUMERIC	Not Null	Unique identifier for a doctor

2. **Staff**: This entity contains information about the staff inside the hospital

Entity Name: **Staff**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Staff_ID	NUMERIC	Not Null	Unique identifier for a staff
	SFName	VARCHAR(20)	Not Null	Staff's First Name
	SLName	VARCHAR(20)	Not Null	Staff's Last Name
	SGender	VARCHAR(10)	Not Null	Staff's Gender
	SJob_Title	VARCHAR(20)	Not Null	Department/ Expertise of work
	SQualifications	VARCHAR(30)	Not Null	Qualifications for the job
	SOther_Details	VARCHAR(50)	Null	Additional details

3. **Doctor**: This entity contains information about a doctor in the hospital.

Entity Name: **Doctor**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Doctor_ID	NUMERIC	Not Null	Unique identifier for a doctor
	DFName	VARCHAR(20)	Not Null	Doctor's First Name
	DLName	VARCHAR(20)	Not Null	Doctor's Last Name
	DPost	VARCHAR(20)	Not Null	Post in the hospital
	DRoom_No	VARCHAR(10)	Not Null	Assigned office no. in the hospital

4. **Patient Record**: This entity contains different details about patient's admission in the hospital.

Entity Name: **Patient_Record**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	PatientRecord_ID	INT IDENTITY(2001,1)	Not Null	Unique identifier for a patient record
	Patient_Record_Component_Details	VARCHAR(50)	Not Null	Additional details about a patient's visit to the hospital.
	Admission_DateTime	VARCHAR(20)	Not Null	Date and Time of visit
Foreign Key	RPatient_ID	NUMERIC	Not Null	Unique patient identifier
Foreign Key	RStaff_ID	NUMERIC	Not Null	Unique staff identifier
Foreign Key	RComponent_code	NUMERIC	Not Null	Unique identifier for the component
Foreign Key	RDoctor_ID	NUMERIC	Not Null	Unique Identifier for a doctor

5. **Record Components**: This entity is used to store information about initial diagnosis and next steps of action taken for a patient.

Entity Name: **Record_Components**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Component_Code	NUMERIC	Not Null	Unique identifier for the component
	Component_Description	VARCHAR(60)	Not Null	Gives information about patient's initial condition

6. **Patient Room**: This entity gives details about the room where the patient is looked at.

Entity Name: **Patient_Room**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Room_ID	NUMERIC	Not Null	Gives unique id to a room no.
Foreign Key	Room_Patient_ID	NUMERIC	Not Null	Unique Patient identifier
	Room	INT	Not Null	Room no. associated with the room id
	Duration	INT	Null	Length of stay in a room
	Date_From_To	VARCHAR(20)	Null	Date of admission to discharge

7. **Patient payment methods**: This entity gives details about the total bill generated.

Entity Name: **Patient_Payment_Methods**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Payment_ID	NUMERIC	Not Null	Unique identifier for a payment
	Method_Details	VARCHAR(50)	Not Null	Details about payment method used
Foreign Key	Payment_Patient_ID	NUMERIC	Not Null	Unique patient identifier

8. **Bills**: This entity gives details about the bills.

Entity Name: **Bills**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Bill_ID	NUMERIC	Not Null	Uniquely identifies the bill
	Total_Amount_Due	DECIMAL(6,2)	Not Null	Gives the total amount due
	Date_Of_Payment	VARCHAR(20)	Not Null	Provides date of last payment
	Other_Details	VARCHAR(50)	Null	Additional details about the bills and products bought
Foreign Key	Bill_Patient_ID	NUMERIC	Not Null	Unique patient identifier

9. **Bill Items**: This entity gives details about the different bills generated for different medication and treatment taken.

Entity Name: **Bill_Items**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Item_No	NUMERIC	Not Null	Uniquely identifies items in one bill
Foreign key	Final_Bill_ID	NUMERIC	Not Null	Uniquely identifies a bill
	Name	VARCHAR(20)	Not Null	Name of item
	Quantity	INT	Not Null	Specifies the quantities in one bill
	Total_Cost	DECIMAL(6,2)	Not Null	Total cost of one type of item

10. **Match**: To join many to many patient and doctor tables

Entity Name: **Match**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Match_ID	NUMERIC	Not Null	Unique identifier for a match
Foreign Key	MDoctor_ID	NUMERIC	Not Null	Unique identifier for a doctor

	MPatient_ID	NUMERIC	Not Null	Unique patient identifier

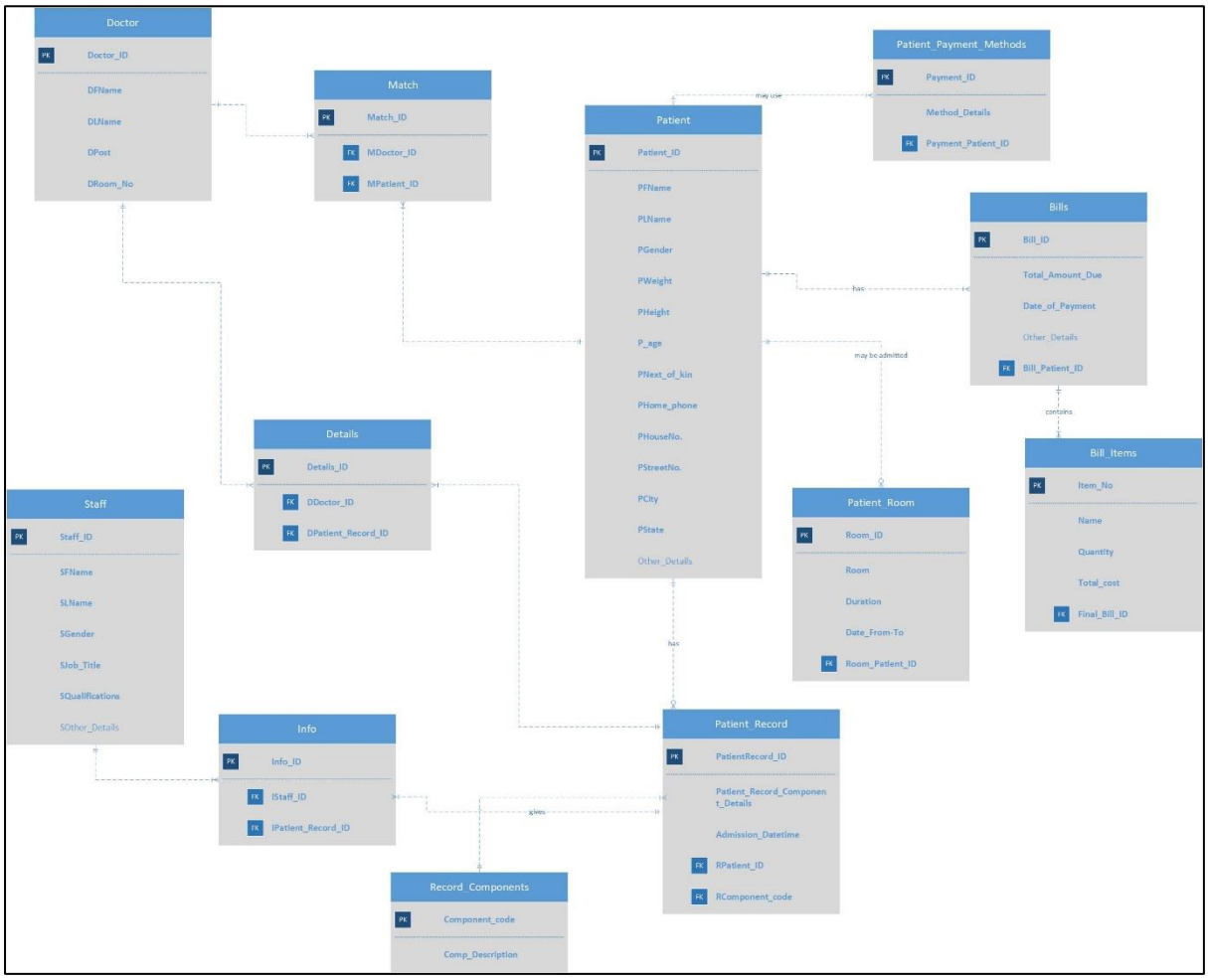
11. **Details**: To join many to many patient record and doctor tables

Entity Name: **Details**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Details_ID	NUMERIC	Not Null	Unique identifier for details
Foreign Key	DDoctor_ID	NUMERIC	Not Null	Unique identifier for a doctor
	DPatient_Record_ID	NUMERIC	Not Null	Unique patient record identifier

12. **Info**: To join many to many patient record and staff tables

Entity Name: **Info**	Attribute Name	Field Type	Null/ Not Null	Explanation
Primary Key	Info_ID	NUMERIC	Not Null	Unique identifier for info
Foreign Key	IStaff_ID	NUMERIC	Not Null	Unique staff identifier
	IPatient_Record_ID	NUMERIC	Not Null	Unique patient record identifier

Relational Data Model:



Business Rules:

1. One patient can have one or more patient records.
2. A single patient can have one or more methods of payment.
3. The patient record of every single patient can be for a different purpose, determined by the record components such as admission, general visit or check-up/ follow-up.
4. One patient may have one or many bills.
5. The staff would be decided based on the condition of the patient and also on availability of the staff. One staff may look after one or more patients.
6. The doctor would be assigned on their availability after a general information and check-up by a hospital staff (a nurse).
7. In case of admission of a patient, the rooms would be assigned based on availability.
8. All the admitted patient records would be updated in the system on a daily basis, and this would include the reports, medications prescribed and bills.

SQL CODE:

```
/* The following the code for the implementation of a healthcare database management
system*/

--Creation of all the required tables

--Patient Table
Create table Patient
(
Patient_ID numeric primary key,
PFName varchar(20) not null,
PLName varchar(20) not null,
PGender varchar(10) not null,
P_age numeric not null,
PWeight decimal(6,2) not null,
PHeight decimal(6,2) not null,
PNext_Of_Kin varchar(20) not null,
PHome_Phone varchar(20) not null,
PHouseNo varchar(20) not null,
PStreetName varchar(20) not null,
PCity varchar(10) not null,
PState varchar(20) not null,
POther_Details varchar(50) null
);

select * from Patient;
drop table Patient;


--Staff Table
create table Staff
(
Staff_ID numeric primary key,
SFName varchar(20) not null,
SLName varchar(20) not null,
SGender varchar(10) not null,
SJob_Title varchar(20) not null,
SQualifications varchar(30) not null,
SOther_Details varchar(50) null
);

select * from Staff;
drop table Staff;

--Info Table
create table Info
(
Info_ID numeric primary key,
IStaff_ID numeric not null foreign key references Staff(Staff_ID),
IPatient_Record_ID numeric not null foreign key references
Patient_Record(PatientRecord_ID)
);

drop table Info;

--Doctor Table
create table Doctor
(
Doctor_ID numeric primary key,
DFName varchar(20) not null,
DLName varchar(20) not null,
DPost varchar(20) not null,
```

```
DRoom_No varchar(10) not null
);

select * from Doctor;
drop table Doctor;

--Match table
create table Match
(
Match_ID numeric primary key,
MDoctor_ID numeric not null foreign key references Doctor(Doctor_ID),
MPatient_ID numeric not null foreign key references Patient(Patient_ID)
);

drop table Match;

--Patient Record Table
create table Patient_Record
(
PatientRecord_ID numeric primary key,
Patient_Record_Component_Details varchar(50) not null,
Admission_Datetime varchar(20) not null,
RPatient_ID numeric not null foreign key references Patient(Patient_ID),
RComponent_Code numeric not null foreign key references
Record_Components(Component_Code)
);

select * from Patient_Record;
drop table Patient_Record;

--Details Table
create table Details
(
Details_ID numeric primary key,
DDoctor_ID numeric not null foreign key references Doctor(Doctor_ID),
DPatient_Record_ID numeric not null foreign key references
Patient_Record(PatientRecord_ID)
);

drop table Details;

--Record Components Table
create table Record_Components
(
Component_Code numeric primary key,
Component_Description varchar(60) not null
);

select * from Record_Components;
drop table Record_Components;


--Patient Room Table
create table Patient_Room
(
Room_ID numeric primary key,
Room integer not null,
Duration integer null,
Date_From_To varchar(20) null,
Room_Patient_ID numeric not null foreign key references Patient(Patient_ID)
);
```

```
select * from Patient_Room;
drop table Patient_Room;


--Patient payment Methods Table
create table Patient_Payment_Methods
(
Payment_ID numeric primary key,
Method_Details varchar(50) not null,
Payment_Patient_ID numeric not null foreign key references Patient(Patient_ID)
);

select * from Patient_Payment_Methods;
drop table Patient_Payment_Methods;


--Bills Table
create table Bills
(
Bill_ID numeric primary key,
Total_Amount_Due decimal(6,2) not null,
Date_Of_Payment      varchar(20) not null,
Other_Details varchar(50) null,
Bill_Patient_ID numeric not null foreign key references Patient(Patient_ID)
);

select * from Bills;
drop table Bills;

--Bill Items table
create table Bill_Items
(
Item_No numeric primary key,
Name varchar(20) not null,
Quantity integer not null,
Total_Cost decimal(6,2) not null,
Final_Bill_ID numeric not null foreign key references Bills(Bill_ID)
);

select * from Bill_Items;
drop table Bill_Items;
----------------Populating the tables-----------------------------

/*************Patient Details************************/

insert into
Patient values(1, 'Nathan', 'Kerr', 'M', 45, 149.91, 180.34, 'Martha', '315-395-9581',
'321', 'Avondale Pl', 'Syracuse', 'New York',
NULL);

insert into
Patient values(2, 'John', 'Smith', 'M', 30, 159.91, 160.34, 'Pam', '315-395-9682',
'114', 'Lafayette Rd', 'Syracuse', 'New York',
NULL);

insert into
Patient values(3, 'Diane', 'Nelsen', 'F', 61, 151.91, 180.34, 'Robert', '315-395-
9031', '678', 'Victoria Pl', 'Syracuse', 'New York',
'Cough and Cold');

insert into
```

```
Patient values(4, 'Christy', 'Jones', 'F', 50, 165.91, 156.34, 'Michael', '315-395-
8097', '104', 'Columbus Av', 'Syracuse', 'New York',
'Dizziness, feverish & cold');

insert into
Patient values(5, 'Simaant', 'Patil', 'M', 29, 151.00, 160.34, 'Jayant', '315-395-
9550', '559', 'Lancaster Av', 'Syracuse', 'New York',
'Cough');

insert into
Patient values(6, 'Megan', 'Schultz', 'F', 45, 151.91, 150.34, 'John', '315-395-9901',
'708', 'Concord Pl', 'Syracuse', 'New York',
'Bike accident, extreme pain in the right leg');

select * from Patient;

/**********Details of Staff**************************/

insert into
Staff values(1, 'Megan', 'Fox', 'F', 'Receptionist', 'Qualified Professional', null);

insert into
Staff values(2, 'Amy', 'Schrute', 'F', 'Nurse', 'Qualified Nurse', null);

insert into
Staff values(3, 'Stanley', 'Davis', 'M', 'Nurse', 'Qualified Nurse', null);

insert into
Staff values(4, 'Carol', 'Danvers', 'F', 'Nurse', 'Qualified Nurse', null);

select * from Staff;


/**************Info Details**************************/
insert into
Info values(1, 2, 1);

insert into
Info values(2, 2, 2);

insert into
Info values(3, 3, 3);

insert into
Info values(4, 4, 4);

insert into
Info values(5, 2, 5);

insert into
Info values(6, 4, 6);

insert into
Info values(7, 2, 1);

select * from Info;

/************Details of Doctors**********************/

insert into
Doctor values(1, 'Gregory', 'House', 'Physician', '103');
```

```
insert into
Doctor values(2, 'Meredith', 'Grey', 'Physician', '003');

insert into
Doctor values(3, 'Steve', 'Rogers', 'Physician', '105');

insert into
Doctor values(4, 'Steven', 'Strange', 'Surgeon', '106');

select * from Doctor;

/***********Match Details*****************/
insert into
Match values(1, 2, 1);

insert into
Match values(2, 2, 2);

insert into
Match values(3, 3, 3);

insert into
Match values(4, 1, 4);

insert into
Match values(5, 3, 5);

insert into
Match values(6, 4, 6);

insert into
Match values(7, 1, 1);

select * from Match;


/***********Patient Record*****************/
insert into Patient_Record values(1, 'General Checkup', '03/09/19 - 13:30', 1, 301);
insert into Patient_Record values(2, 'Follow-up', '03/13/19 - 10:30', 2, 302);
insert into Patient_Record values(3, 'First time visit', '04/06/19 - 14:00', 3, 303);
insert into Patient_Record values(4, 'Need to admit', '04/08/19 - 12:00', 4, 304);
insert into Patient_Record values(5, 'General checkup', '04/09/19 - 10:00', 5, 305);
insert into Patient_Record values(6, 'Need for surgery', '04/10/19 - 12:00', 6, 306);
insert into Patient_Record values(7, 'Follow up', '04/20/19 - 12:00', 1, 307);

select * from Patient_Record;


/***************Details Table*****************************/
insert into
Details values(1, 2, 1);

insert into
Details values(2, 2, 2);

insert into
Details values(3, 3, 3);

insert into
Details values(4, 1, 4);

insert into
```

```
Details values(5, 3, 5);

insert into
Details values(6, 4, 6);

insert into
Details values(7, 1, 1);

select * from Details;

/***************Record Components***********************/
insert into Record_Components values(301, 'Health checkup');
insert into Record_Components values(302, 'Follow-up on fever');
insert into Record_Components values(303, 'New patient with cough and cold');
insert into Record_Components values(304, 'Body ache, high fever and dizziness');
insert into Record_Components values(305, 'Check up on cough');
insert into Record_Components values(306, 'Bike accident, possile fracture in right
leg');
insert into Record_Components values(307, 'Follow up');

select * from Record_Components;

/***************Patient Room*****************************/
insert into Patient_Room values(1, 102, null, null, 1);
insert into Patient_Room values(2, 102, null, null, 2);
insert into Patient_Room values(3, 103, null, null, 3);
insert into Patient_Room values(4, 202, 5, '04/08/19-04/12/19', 4);
insert into Patient_Room values(5, 103, null, null, 5);
insert into Patient_Room values(6, 204, 10, '04/10/19-04/20/19', 6);
insert into Patient_Room values(7, 102, null, null, 1);


select * from Patient_Room;
/***************Patient Payment Methods*************************/
insert into Patient_Payment_Methods values(1, 'Credit Card', 1);
insert into Patient_Payment_Methods values(2, 'Cash', 2);
insert into Patient_Payment_Methods values(3, 'Debit Card', 3);
insert into Patient_Payment_Methods values(4, 'Credit Card', 4);
insert into Patient_Payment_Methods values(5, 'Cash', 5);
insert into Patient_Payment_Methods values(6, 'Credit card and Insurance', 6);
insert into Patient_Payment_Methods values(7, 'Credit Card', 1);

select * from Patient_Payment_Methods;

/******************Bills*****************************************/
insert into Bills values(100, 30.00, '03/09/19', null, 1);
insert into Bills values(200, 15.00, '03/13/19', null, 2);
insert into Bills values(300, 50.00, '04/06/19', null, 3);
insert into Bills values(400, 630.00, '04/12/19', 'Bill contains admission expenses as
well', 4);
insert into Bills values(500, 30.00, '04/09/19', null, 5);
insert into Bills values(600, 1260.00, '04/20/19','Bill contains cost of surgery', 6);
insert into Bills values(700, 30.00, '04/20/19', null, 1);

select * from Bills;
/******************Bill Items***********************************/
insert into Bill_Items values (1001,'Cough Syrup', 1, 15, 100);
insert into Bill_Items values (3001,'Cough Syrup', 1, 15, 300);
insert into Bill_Items values (3002,'Cold Tablets', 2,20, 300);
insert into Bill_Items values (4001,'Glucose', 4, 100, 400);
insert into Bill_Items values (4002,'Cough Syrup', 2, 30, 400);
insert into Bill_Items values (4003,'Pain Killers', 2, 60, 400);
```

```
insert into Bill_Items values (5001,'Cough Syrup', 1, 15, 500);
insert into Bill_Items values (6001,'Pain Killers', 2, 60, 600);
insert into Bill_Items values (6002,'Glucose', 10, 200, 600 );
insert into Bill_Items values (7001,'Cough Syrup', 1, 30, 700);

select * from Bill_Items;
```

100 %

Results | Messages

	Patient_ID	PFName	PLName	PGender	P_age	PWeight	PHeight	PNext_Of_Kin	PHome_Phone	PHouseNo	PStreetName	PCity	PState	POther_Details
1	1	Nathan	Kerr	M	45	149.91	180.34	Martha	315-395-9581	321	Avondale Pl	Syracuse	New York	NULL
2	2	John	Smith	M	30	159.91	160.34	Pam	315-395-9682	114	Lafayette Rd	Syracuse	New York	NULL
3	3	Diane	Nelsen	F	61	151.91	180.34	Robert	315-395-9031	678	Victoria Pl	Syracuse	New York	Cough and Cold
4	4	Christy	Jones	F	50	165.91	156.34	Michael	315-395-8097	104	Columbus Av	Syracuse	New York	Dizziness, feverish & cold
5	5	Simaant	Patil	M	29	151.00	160.34	Jayant	315-395-9550	559	Lancaster Av	Syracuse	New York	Cough
6	6	Megan	Schultz	F	45	151.91	150.34	John	315-395-9901	708	Concord Pl	Syracuse	New York	Bike accident, extreme pain in the right l

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 6 rows

Results | Messages

	Staff_ID	SFName	SLName	SGender	SJob_Title	SQualifications	SOther_Details
1	1	Megan	Fox	F	Receptionist	Qualified Professional	NULL
2	2	Amy	Schrute	F	Nurse	Qualified Nurse	NULL
3	3	Stanley	Davis	M	Nurse	Qualified Nurse	NULL
4	4	Carol	Danvers	F	Nurse	Qualified Nurse	NULL

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 4 rows

100 %

Results | Messages

	Doctor_ID	DFName	DLName	DPost	DRoom_No
1	1	Gregory	House	Physician	103
2	2	Meredith	Grey	Physician	003
3	3	Steve	Rogers	Physician	105
4	4	Steven	Strange	Surgeon	106

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 4 rows

Results | Messages

	Component_Code	Component_Description
1	301	Health checkup
2	302	Follow-up on fever
3	303	New patient with cough and cold
4	304	Body ache, high fever and dizziness
5	305	Check up on cough
6	306	Bike accident, possile fracture in right leg
7	307	Follow up

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 7 rows

Results Messages

	PatientRecord_ID	Patient_Record_Component_Details	Admission_Datetime	RPatient_ID	RComponent_Code
1	1	General Checkup	03/09/19 - 13:30	1	301
2	2	Follow-up	03/13/19 - 10:30	2	302
3	3	First time visit	04/06/19 - 14:00	3	303
4	4	Need to admit	04/08/19 - 12:00	4	304
5	5	General checkup	04/09/19 - 10:00	5	305
6	6	Need for surgery	04/10/19 - 12:00	6	306
7	7	Follow up	04/20/19 - 12:00	1	307

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 7 rows

100 %

Results Messages

	Info_ID	IStaff_...	IPatient_Record_ID
1	1	2	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	2	5
6	6	4	6
7	7	2	1

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 7 rows

100 %

Results Messages

	Match_ID	MDoctor_ID	MPatient_ID
1	1	2	1
2	2	2	2
3	3	3	3
4	4	1	4
5	5	3	5
6	6	4	6
7	7	1	1

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 7 rows

100 %

Results Messages

	Details_ID	DDoctor_ID	DPatient_Record_ID
1	1	2	1
2	2	2	2
3	3	3	3
4	4	1	4
5	5	3	5
6	6	4	6
7	7	1	1

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 7 rows

Results Messages

	Payment_ID	Method_Details	Payment_Patient_ID
1	1	Credit Card	1
2	2	Cash	2
3	3	Debit Card	3
4	4	Credit Card	4
5	5	Cash	5
6	6	Credit card and Insurance	6
7	7	Credit Card	1

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 7 rows

100 %

Results | Messages

	Room_ID	Room	Duration	Date_From_To	Room_Patient_ID
1	1	102	NULL	NULL	1
2	2	102	NULL	NULL	2
3	3	103	NULL	NULL	3
4	4	202	5	04/08/19-04/12/19	4
5	5	103	NULL	NULL	5
6	6	204	10	04/10/19-04/20/19	6
7	7	102	NULL	NULL	1

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 7 rows

100 %

Results | Messages

	Bill_ID	Total_Amount_Due	Date_Of_Payment	Other_Details	Bill_Patient_ID
1	100	30.00	03/09/19	NULL	1
2	200	15.00	03/13/19	NULL	2
3	300	50.00	04/06/19	NULL	3
4	400	630.00	04/12/19	Bill contains admission expenses as well	4
5	500	30.00	04/09/19	NULL	5
6	600	1260.00	04/20/19	Bill contains cost of surgery	6
7	700	30.00	04/20/19	NULL	1

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 7 rows

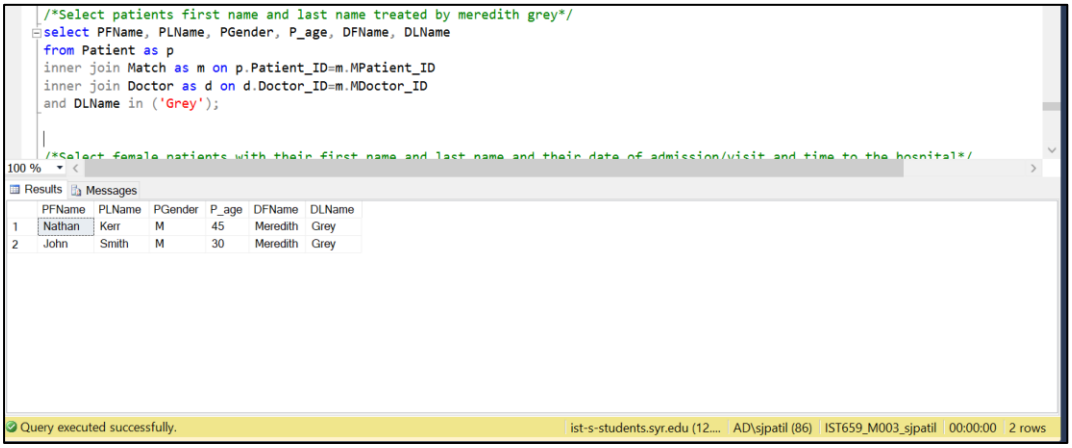
Results | Messages

	Item_No	Name	Quantity	Total_Cost	Final_Bill_ID
1	1001	Cough Syrup	1	15.00	100
2	3001	Cough Syrup	1	15.00	300
3	3002	Cold Tablets	2	20.00	300
4	4001	Glucose	4	100.00	400
5	4002	Cough Syrup	2	30.00	400
6	4003	Pain Killers	2	60.00	400
7	5001	Cough Syrup	1	15.00	500
8	6001	Pain Killers	2	60.00	600
9	6002	Glucose	10	200.00	600
10	7001	Cough Syrup	1	30.00	700

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 10 rows

Major Data Questions:

1. Display the first and last name of the patient treated by Dr. Meredith Grey

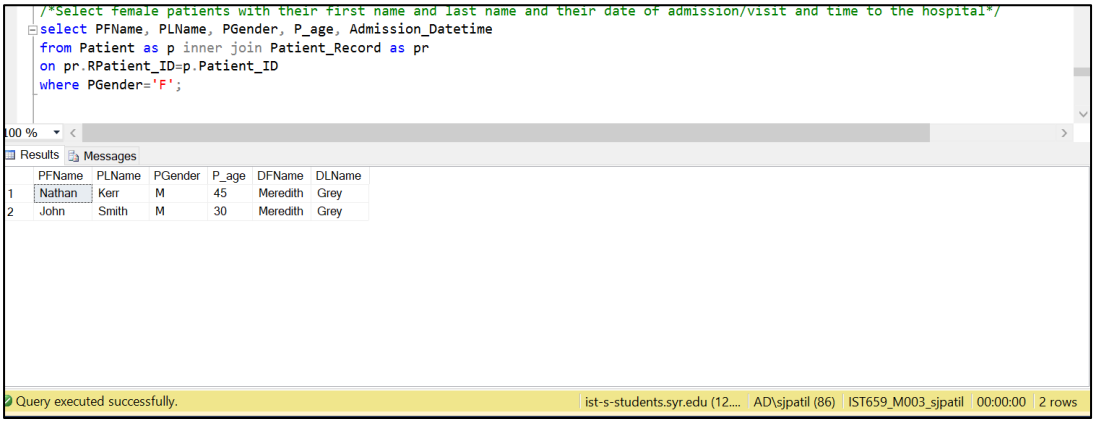


```
/*Select patients first name and last name treated by meredith grey*/
select PFName, PLName, PGender, P_age, DFName, DLName
from Patient as p
inner join Match as m on p.Patient_ID=m.MPatient_ID
inner join Doctor as d on d.Doctor_ID=m.MDoctor_ID
and DLName in ('Grey');
```

	PFName	PLName	PGender	P_age	DFName	DLName
1	Nathan	Kerr	M	45	Meredith	Grey
2	John	Smith	M	30	Meredith	Grey

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 2 rows

2. Display all the female patients with their date and time of visit to the hospital

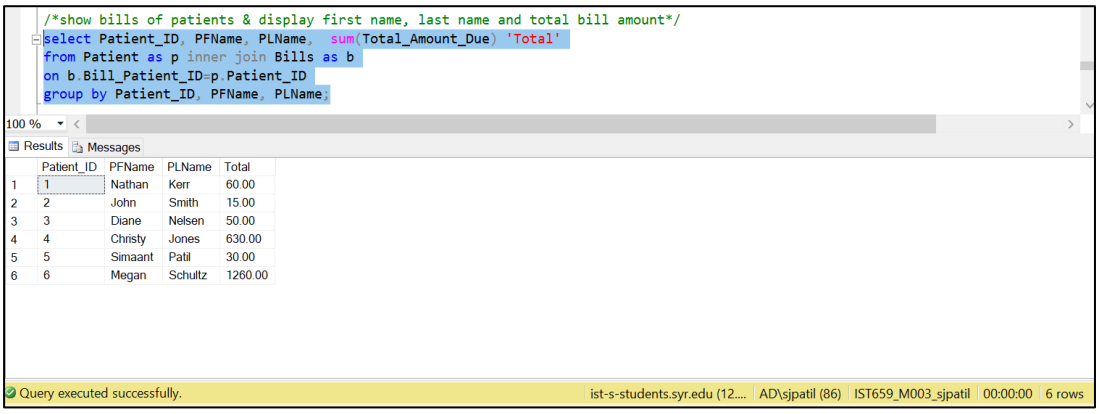


```
/*Select female patients with their first name and last name and their date of admission/visit and time to the hospital*/
select PFName, PLName, PGender, P_age, Admission_Datetime
from Patient as p inner join Patient_Record as pr
on pr.RPatient_ID=p.Patient_ID
where PGender='F';
```

	PFName	PLName	PGender	P_age	DFName	DLName
1	Nathan	Kerr	M	45	Meredith	Grey
2	John	Smith	M	30	Meredith	Grey

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 2 rows

3. Display the names of patients with their total bills



```
/*show bills of patients & display first name, last name and total bill amount*/
select Patient_ID, PFName, PLName, sum(Total_Amount_Due) 'Total'
from Patient as p inner join Bills as b
on b.Bill_Patient_ID=p.Patient_ID
group by Patient_ID, PFName, PLName;
```

	Patient_ID	PFName	PLName	Total
1	1	Nathan	Kerr	60.00
2	2	John	Smith	15.00
3	3	Diane	Nelsen	50.00
4	4	Christy	Jones	630.00
5	5	Simaant	Patil	30.00
6	6	Megan	Schultz	1260.00

Query executed successfully. ist-s-students.syr.edu (12.... AD\sjpatil (86) IST659_M003_sjpatil 00:00:00 6 rows

4. Display names of patients and the corresponding doctors they consulted.

```
/*Selecting names of patients and their corresponding visits to other doctors*/
select p.PFName, p.PLName, d.DFName, d.DLName, p.Patient_ID, d.Doctor_ID
from Patient as p,
Doctor as d,
Match as m where m.MDoctor_ID=d.Doctor_ID and m.MPatient_ID=p.Patient_ID
group by p.Patient_ID,d.Doctor_ID, p.PFName, p.PLName, d.DFName, d.DLName;
```

100 %

Results | Messages

	PFName	PLName	DFName	DLName	Patient_ID	Doctor_ID
1	Nathan	Kerr	Gregory	House	1	1
2	Nathan	Kerr	Meredith	Grey	1	2
3	John	Smith	Meredith	Grey	2	2
4	Diane	Nelsen	Steve	Rogers	3	3
5	Christy	Jones	Gregory	House	4	1
6	Simaant	Patil	Steve	Rogers	5	3
7	Megan	Schultz	Steven	Strange	6	4

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 7 rows

5. Select the names of patients paying via cards

```
/*Select the names of patients paying via cards*/
select PFname, PLName, Method_Details
from Patient as p inner join Patient_Payment_Methods as pm
on pm.Payment_Patient_ID=p.Patient_ID
where Method_Details in ('Credit Card', 'Debit Card');
```

100 %

Results | Messages

	PFname	PLName	Method_Details
1	Nathan	Kerr	Credit Card
2	Diane	Nelsen	Debit Card
3	Christy	Jones	Credit Card
4	Nathan	Kerr	Credit Card

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 4 rows

6. Displaying patients between age of 30 and 60

```
/*Selecting patients between age of 30 to 60*/
select PFName, PLName, P_age, PGender
from Patient
where P_age between 30 and 60;
```

100 %

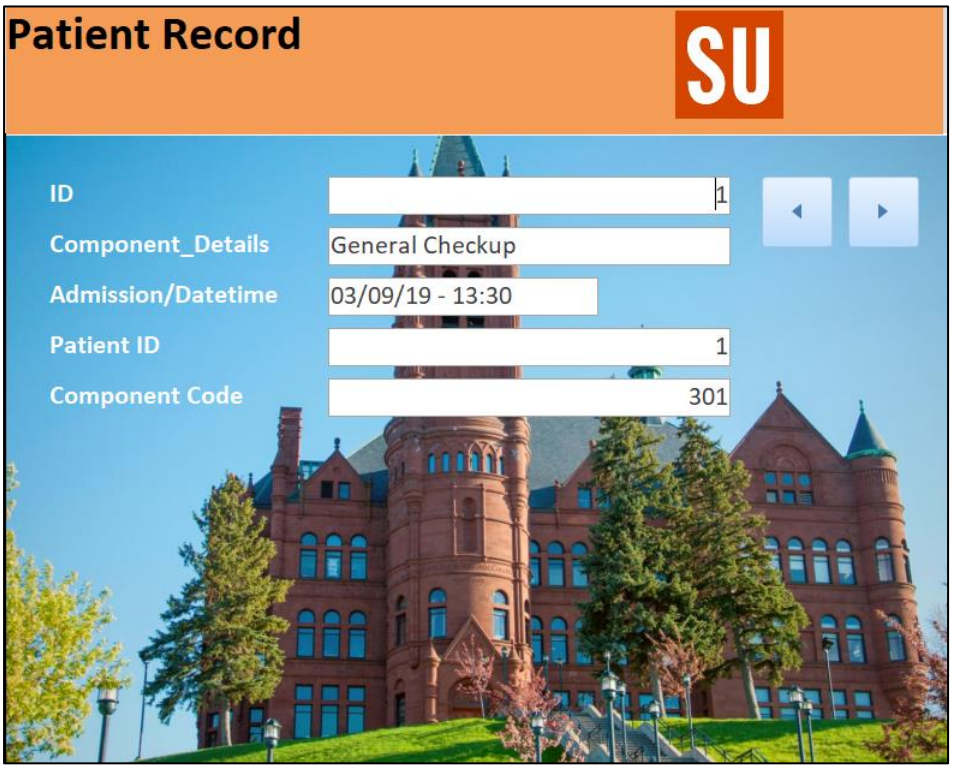
Results | Messages

	PFName	PLName	P_age	PGender
1	Nathan	Kerr	45	M
2	John	Smith	30	M
3	Christy	Jones	50	F
4	Megan	Schultz	45	F

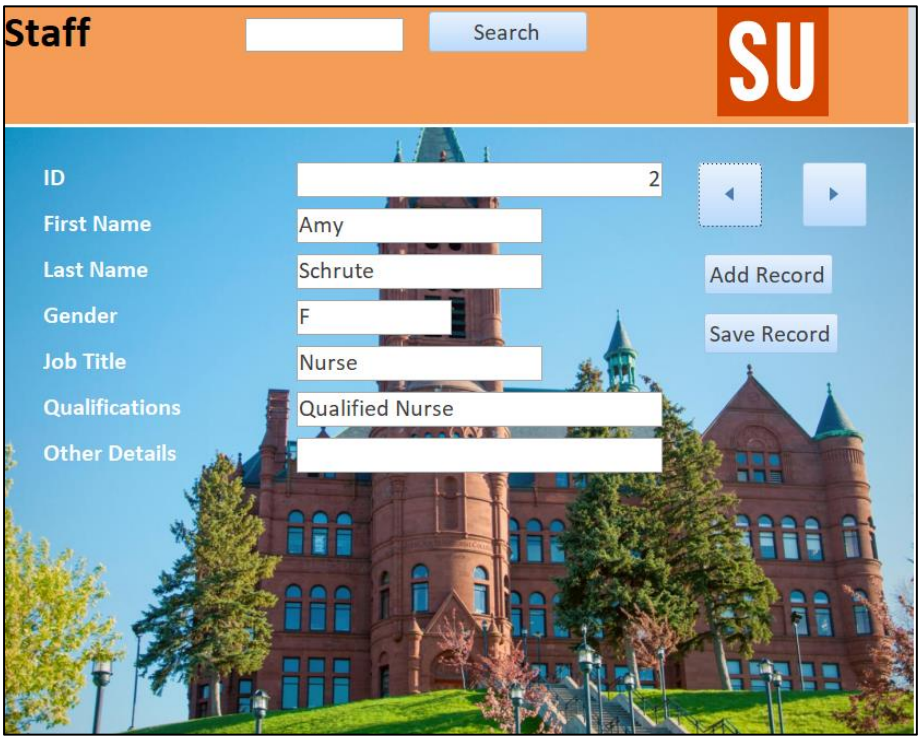
Query executed successfully. | ist-s-students.syr.edu (12.... | AD\sjpatil (86) | IST659_M003_sjpatil | 00:00:00 | 4 rows

Forms:

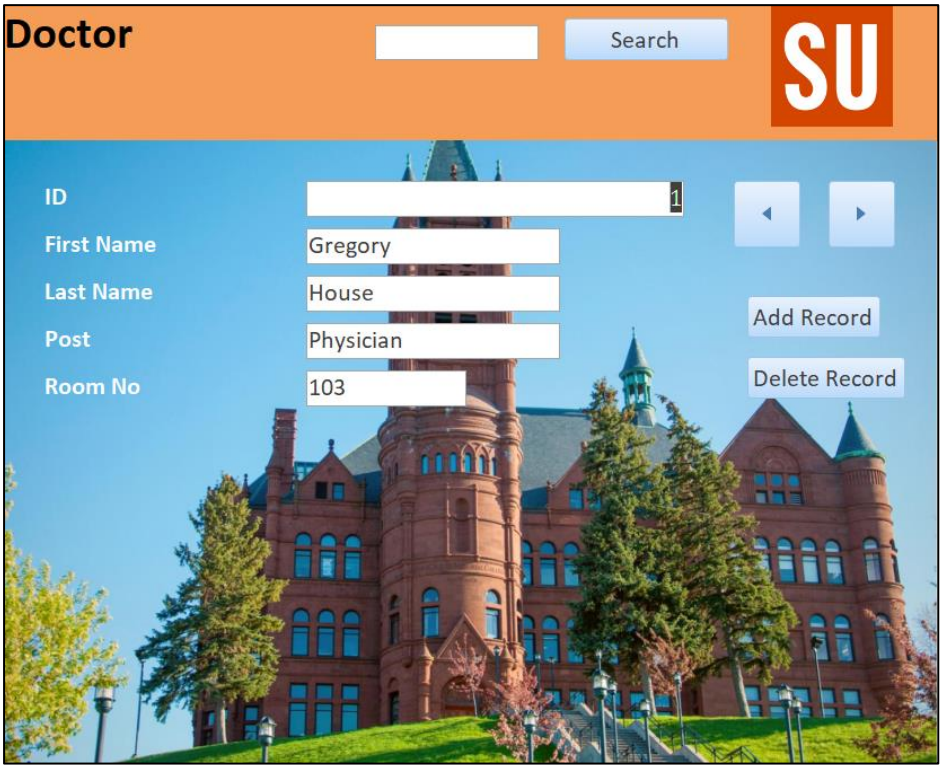
1. **Patient Details**



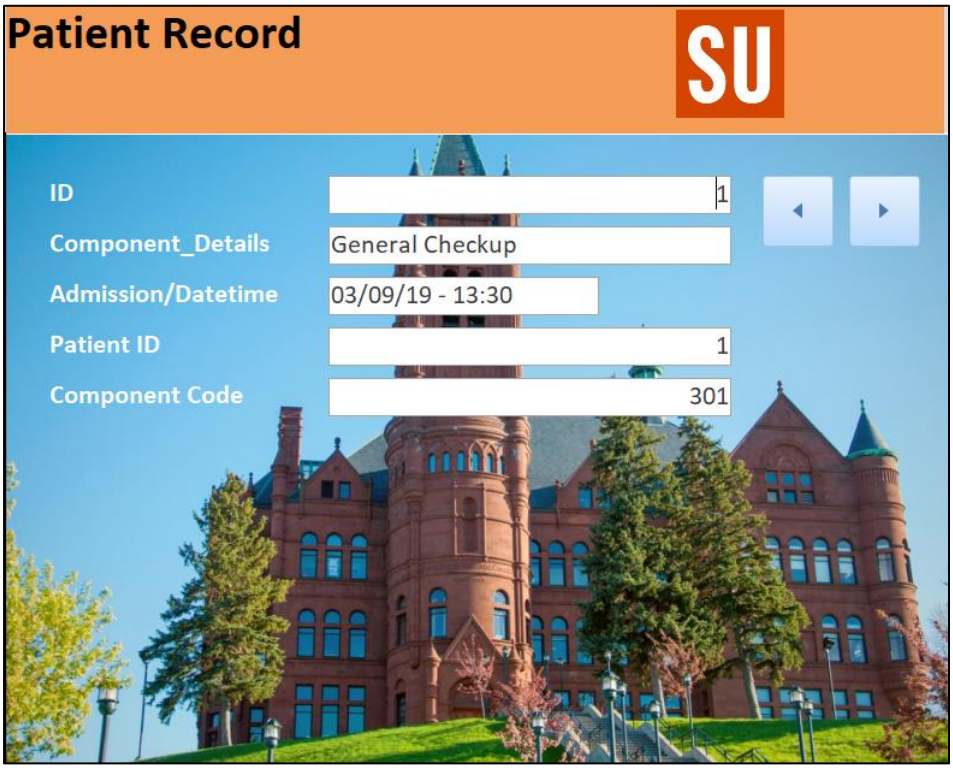
2. **Staff Details**



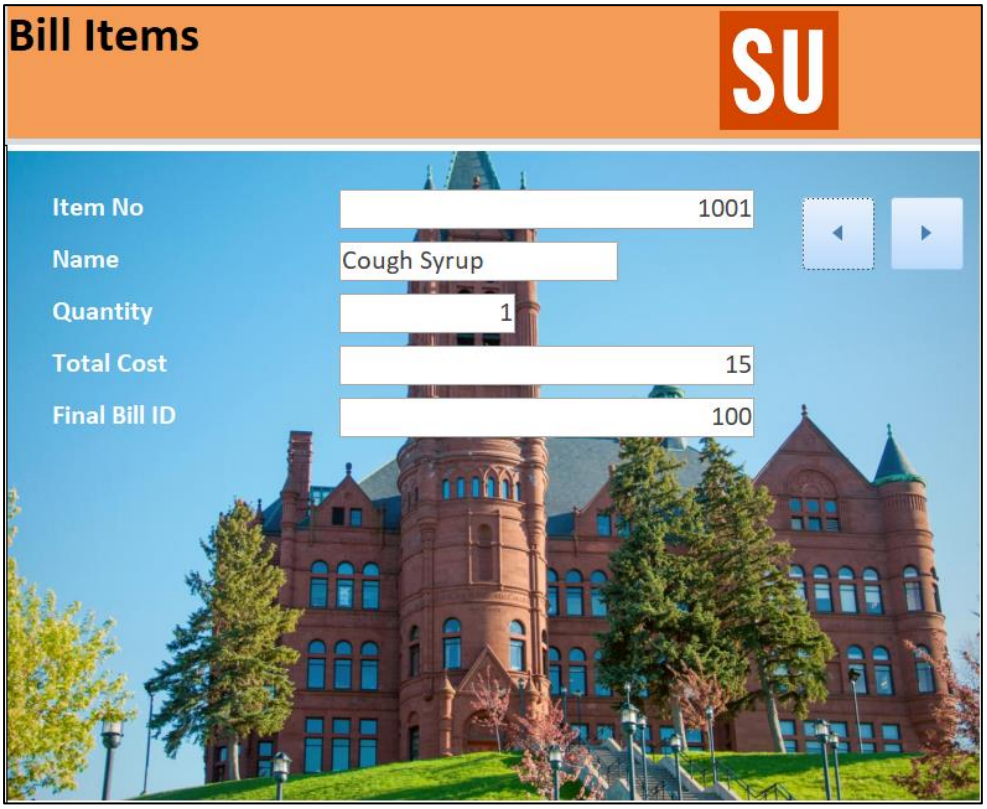
3. **Doctor Details**



4. **Patient Record Details**



5. **Patient's bill items**



Reports:

1. **First and Last name of patients treated by Dr. Meredith Grey**

Patients Treated by Dr. Grey

Last Name	Gender	Age	Doctor's First Name	Doctor's Last Name
Kerr	M	45	Meredith	Grey
Smith	M	30	Meredith	Grey

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2. **Date and Time of visit of female patients**

Female patients

First Name	Last Name	Gender	Age	Admission/Datetime
Christy	Jones	F	50	04/08/19 - 12:00
Diane	Nelsen	F	61	04/06/19 - 14:00
Megan	Schultz	F	45	04/10/19 - 12:00

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3. **Total Bill Amount of Patients**

Total Bill of Each Patient

Patient ID	PFName	PLName	Total
1	Nathan	Kerr	60
2	John	Smith	15
3	Diane	Nelsen	50
4	Christy	Jones	630
5	Simaant	Patil	30
6	Megan	Schultz	1260

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4. **List of patients paying via cards**

Patients paying via cards

First Name	Last Name	Method Details
Christy	Jones	Credit Card
Diane	Nelsen	Debit Card
Nathan	Kerr	Credit Card

Sunday, April 28, 2019 Page 1 of 1

5. **Patients and the corresponding doctors treating them**

Patient and Doctor Names

First Name	Last Name	Patient ID	Doctor ID	Doctor's First Name	Doctor's Last Name
Nathan	Kerr	1			
			1	Gregory	House
			2	Meredith	Grey
John	Smith	2			
			2	Meredith	Grey
Diane	Nelsen	3			
			3	Steve	Rogers
Christy	Jones	4			
			1	Gregory	House
Simaant	Patil	5			
			3	Steve	Rogers
Megan	Schultz	6			
			4	Steven	Strange

6. **Patients with age between 30 and 60**

Patients between the age of 30 and 60

First Name	Last Name	Gender	Age
Nathan	Kerr	M	45
John	Smith	M	30
Diane	Nelsen	F	61
Christy	Jones	F	50
Simaant	Patil	M	29
Megan	Schultz	F	45

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