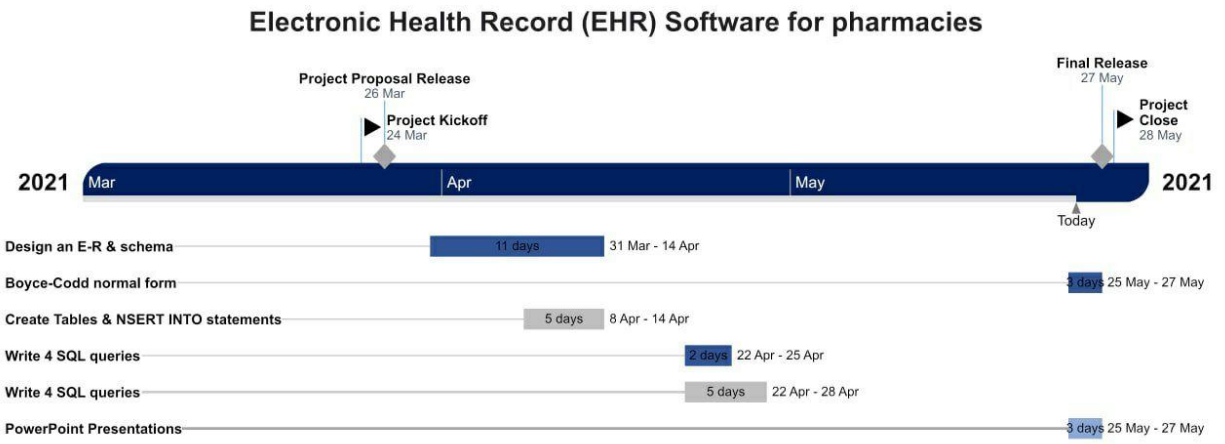
SEN2104

Data Management Systems Project Report

Project Title: (EHR) software for pharmacies



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made by umniyah abbood

The 20th century has seen considerable advances in many technical fields and artificial intelligence, which have contributed to a rise in all fields. Our project is related to the health field. It will advance the life standard for both patients and pharmacists. Our aim of the EHR is to allow health care organizations to be linked to the same database, which gives them fixable access to all data.

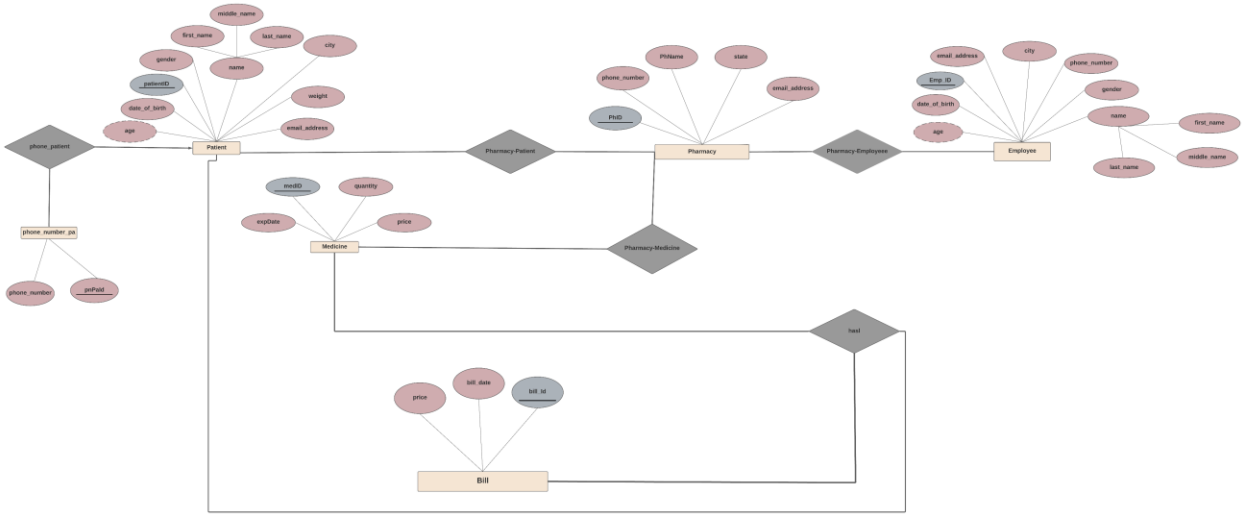
After investigation, we have noticed problems that pharmacists deal with daily; we aim to limit those hassles, so the pharmacist can make decisions more accurately and more effectively, in a shorter time, and without making fallacies.

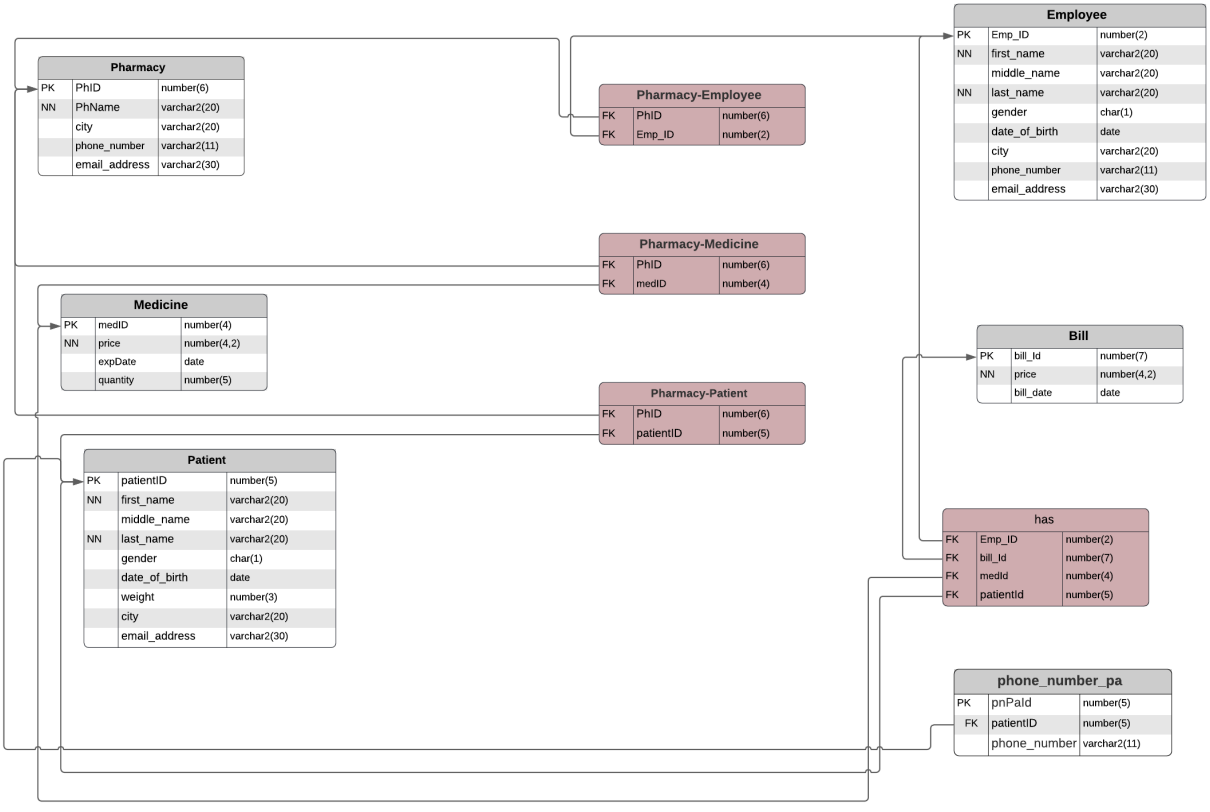
Here are some problems faced by these pharmacists, which our software will solve:-

(i) Patients can forget their medicine name.
(ii) Patients can give misleading information. They mostly do not give pharmacists all the information they need. If the patient does not know all the medicine that he is recently taking, that may cause an overlap between medicines, which puts the patient's life in danger.
(iii) Taking all this information every single time could be exhausting and time-consuming.

Hence, our project is Electronic Health Record (EHR) Software for pharmacies to have a full record of the patients. Besides, this software will be distributed to all pharmacies.

Our database will include the pharmacy's name, address, and phone number and will save the employee’s personal information, additionally the medicines that each pharmacy has, and keep the records of the bills. Moreover, the patient's records will be saved in the database such as their personal information.





Pharmacy

PK	PhID	number(6)
NN	PhName	varchar2(20)
	city	varchar2(20)
	phone_number	varchar2(11)
	email_address	varchar2(30)

Pharmacy-Employee

FK	PhID	number(6)
FK	Emp_ID	number(2)

Employee

PK	Emp_ID	number(2)
NN	first_name	varchar2(20)
	middle_name	varchar2(20)
NN	last_name	varchar2(20)
	gender	char(1)
	date_of_birth	date
	city	varchar2(20)
	phone_number	varchar2(11)
	email_address	varchar2(30)

Pharmacy-Medicine

FK	PhID	number(6)
FK	medID	number(4)

Medicine

PK	medID	number(4)
NN	price	number(4,2)
	expDate	date
	quantity	number(5)

Bill

PK	bill_Id	number(7)
NN	price	number(4,2)
	bill_date	date

Pharmacy-Patient

FK	PhID	number(6)
FK	patientID	number(5)

Patient

PK	patientID	number(5)
NN	first_name	varchar2(20)
	middle_name	varchar2(20)
NN	last_name	varchar2(20)
	gender	char(1)
	date_of_birth	date
	weight	number(3)
	city	varchar2(20)
	email_address	varchar2(30)

has

FK	Emp_ID	number(2)
FK	bill_Id	number(7)
FK	medId	number(4)
FK	patientId	number(5)

phone_number_pa

PK	pnPaId	number(5)
FK	patientID	number(5)
	phone_number	varchar2(11)

R1(Pharmacy)=(PhID ,PhName, city, phone_number, email_address)

R2(Medicine)=(medID,price, expDate, quantity)

R3(Patient)=(patientID,first_name, middle_name, last_name, gender, date_of_birth, weight, city, email_address)

R4 (employee)=(Emp_ID,first_name, middle_name, last_name, gender, date_of_birth, city, phone_number, email_address)

R5 (Bill)= (bill_Id, price, bill_date, pnPaId,phone_number)

R6 (has)=(Emp_ID, bill_Id, medId, patientId)

R7 (phone_number_pa)=(pnPaId,patientID, phone_number)

R8 (Pharmacy-Employee)={PhID, Emp_ID }

R9 (Pharmacy-Medicine)={ PhID, medID }

R10 (Pharmacy-Patient)={ PhID, patientID }

FD for Pharmacy= **{PhID** -> PhName, city, phone_number,email_address}

(PhID+)=PhName, city, phone_number, email_address

FD for Medicine={**medID**->price, expDate, quantity}

(medID+)={ price, expDate, quantity }

FD for Patient={**patientID**->first_name, middle_name, last_name, gender, date_of_birth, weight, city, email_address}

(patientID+)={ first_name, middle_name, last_name, gender, date_of_birth, weight, city, email_address }

FD for employee={**Emp_ID**-> first_name, middle_name, last_name, gender, date_of_birth, city, phone_number, email_address}

(Emp_ID+)={ first_name, middle_name, last_name, gender, date_of_birth, city, phone_number, email_address }

FD for Bill={**bill_Id**-> price, bill_date}

(bill_Id+)= { price, bill_date }

FD for has = {**Emp_ID, bill_Id, medId, patientId** -> Emp_ID, bill_Id, medId, patientId }

(Emp_ID, bill_Id, medId, patientId)+= { Emp_ID, bill_Id, medId, patientId }

FD for phone_number_pa={**pnPaId**-> patientID, phone_number}

(pnPaId+)={ patientID, phone_number}

FD for Pharmacy-Employee={**PhID, Emp_ID** -> PhID, Emp_ID }

(PhID, Emp_ID)+= {PhID, Emp_ID }

FD Pharmacy-Medicine={**PhID, medID** -> PhID, medID }

(PhID, medID)+={ PhID, medID }

FD Pharmacy-Patient={**PhID, patientID** -> PhID, patientID }

(PhID, patientID)+={ PhID, patientID }

--Create Tables and Constraints

```
CREATE TABLE Pharmacy(PhID NUMBER(6) PRIMARY KEY, PhName VARCHAR2(20) NOT NULL, city VARCHAR2(20), phone_number VARCHAR2(11), email_address VARCHAR2(30));
```

```
CREATE TABLE Medicine( medID NUMBER(4) PRIMARY KEY, price NUMBER(4,2) NOT NULL, expDate DATE,quantity NUMBER(5));
```

```
CREATE TABLE Patient( patientID NUMBER(5) PRIMARY KEY, first_name VARCHAR2(20) NOT NULL, middle_name VARCHAR2(20), last_name VARCHAR2(20) NOT NULL, gender CHAR(1), date_of_birth DATE, weight NUMBER(3), city VARCHAR2(20), email_address VARCHAR2(30));
```

```
CREATE TABLE Employee( Emp_ID NUMBER(2) PRIMARY KEY, first_name VARCHAR2(20) NOT NULL, middle_name VARCHAR2(20), last_name VARCHAR2(20) NOT NULL, gender CHAR(1), date_of_birth DATE, city VARCHAR2(20), phone_number VARCHAR2 (11), email_address VARCHAR2(30));
```

```
CREATE TABLE Bill( bill_ID NUMBER(7) PRIMARY KEY, price NUMBER(4,2) NOT NULL, bill_date DATE);

CREATE TABLE Pharmacy_Employee( PhId NUMBER(6) REFERENCES Pharmacy(PhID),Emp_ID NUMBER(2) REFERENCES Employee(Emp_ID));


CREATE TABLE Pharmacy_Medicine( PhId NUMBER(6) REFERENCES Pharmacy(PhID),medID NUMBER(4) REFERENCES Medicine(medID));


CREATE TABLE Pharmacy_Patient(PhId NUMBER(6) REFERENCES Pharmacy(PhID),patientID NUMBER(5) REFERENCES Patient(patientID));


CREATE TABLE has(Emp_ID NUMBER(2) REFERENCES Employee(Emp_ID), bill_ID NUMBER(7) REFERENCES Bill(bill_ID), medID NUMBER(4) REFERENCES Medicine(medID), patientID NUMBER(5) REFERENCES Patient(patientID));


CREATE TABLE phone_number_pa(pnPaID NUMBER(5) PRIMARY KEY, patientID NUMBER(5) REFERENCES Patient(patientID),phone_number VARCHAR2(11));


/* populate relations */

INSERT INTO Pharmacy VALUES (111111,'Medlife','new castle',53804826087,'jackemail');

INSERT INTO Pharmacy VALUES (222222,'Health Warehouse','new york',53804826007,'johnemail');

INSERT INTO Pharmacy VALUES (333333,'Carepoint','akron',53804825087,'jadeemail');
```

```
INSERT INTO Medicine VALUES (8921,12.34,'01-JUN-2025',00000);

INSERT INTO Medicine VALUES (5012,09.34,'03-JAN-2026',00004);

INSERT INTO Medicine VALUES (8905,45.30,'04-APR-2027',00003);



INSERT INTO Patient VALUES (00001,'joud','alonso','fred','F','02-FEB-
1999',60,'huntsville','joudemail');

INSERT INTO Patient VALUES (00002,'ahmd','alfred','trump','M','02-JUN-
1949',61,'juneau','ahmdemail');

INSERT INTO Patient VALUES (00003,'sigo','fredrick','joe','X','03-JAN-
1969',62,'tucson','sigoemail');


INSERT INTO Employee VALUES (23,'alex','edward','lex','X','03-NOV-
1969','aubum',53804823087,'alexemail');

INSERT INTO Employee VALUES (24,'joey','donald','rex','M','13-MAY-
1989','hilo',53802826087,'joeyemail');

INSERT INTO Employee VALUES (25,'jane','bideen','fex','F','23-AUG-
1979','Paducah',53794823087,'janeemail');

INSERT INTO Bill VALUES (1111111,22.22,'03-NOV-2000');

INSERT INTO Bill VALUES (1111112,66.22,'07-JUN-2021');

INSERT INTO Bill VALUES (1111113,77.22,'09-JUL-2006');


INSERT INTO Pharmacy_Employee VALUES (111111,23);
```

```
INSERT INTO Pharmacy_Employee VALUES (222222,24);
INSERT INTO Pharmacy_Employee VALUES (333333,25);

INSERT INTO Pharmacy_Medicine VALUES (111111,8921);
INSERT INTO Pharmacy_Medicine VALUES (222222,5012);
INSERT INTO Pharmacy_Medicine VALUES (333333,8905);

INSERT INTO Pharmacy_Patient VALUES (111111,00001);
INSERT INTO Pharmacy_Patient VALUES (222222,00002);
INSERT INTO Pharmacy_Patient VALUES (333333,00003);

INSERT INTO has VALUES (23,1111111,8921,00001);
INSERT INTO has VALUES (24,1111112,5012,00002);
INSERT INTO has VALUES (25,1111113,8905,00003);

INSERT INTO phone_number_pa VALUES (77777,00001,57734687981);
INSERT INTO phone_number_pa VALUES (77788,00002,56634687981);
INSERT INTO phone_number_pa VALUES (77799,00003,55534687981);
```

Pharmacy

	PHID	PHNAME	CITY	PHONE_NUMBER	EMAIL_ADDRESS
1	111111	Medlife	new castle	53804826087	jackemail
2	222222	Health Warehouse	new york	53804826007	johnemail
3	333333	Carepoint	akron	53804825087	jadeemail

Patient

PATIENTID	FIRST_NAME	MIDDLE_NAME	LAST_NAME	GENDER	DATE_OF_BIRTH	WEIGHT	CITY	EMAIL_ADDRESS
1	joud	alonso	fred	F	02-FEB-99	60	huntsville	joudemail
2	ahmd	alfred	trump	M	02-JUN-49	61	juneau	ahmdemail
3	sigo	fredrick	joe	X	03-JAN-69	62	tucson	sigoemail

employee

	EMP_ID	FIRST_NAME	MIDDLE_NAME	LAST_NAME	GENDER	DATE_OF_BIRTH	CITY	PHONE_NUMBER	EMAIL_ADDRESS
1	23	alex	edward	lex	X	03-NOV-69	aubum	53804823087	alexemail
2	24	joey	donald	rex	M	13-MAY-89	hilo	53802826087	joeyemail
3	25	jane	bideen	fex	F	23-AUG-79	Paducah	53794823087	janeemail

bill

	BILL_ID	PRICE	BILL_DATE
1	1111111	22.22	03-NOV-00
2	1111112	66.22	07-JUN-21
3	1111113	77.22	09-JUL-06

Pharmacy_Employee

	PHID	EMP_ID
1	111111	23
2	222222	24
3	333333	25

Medicine

	MEDID	PRICE	EXPDATE	QUANTITY
1	8921	12.34	01-JUN-25	0
2	5012	9.34	03-JAN-26	4
3	8905	45.3	04-APR-27	3

Pharmacy_Medicine

	PHID	MEDID
1	111111	8921
2	222222	5012
3	333333	8905

has

	EMP_ID	BILL_ID	MEDID	PATIENTID
1	23	1111111	8921	1
2	24	1111112	5012	2
3	25	1111113	8905	3

Pharmacy_Patient

	PHID	PATIENTID
1	111111	1
2	222222	2
3	333333	3

phone_number_pa

	PNPAID	PATIENTID	PHONE_NUMBER
1	77777	1	57734687981
2	77788	2	56634687981
3	77799	3	55534687981

--2joins(with conditions)

--display the full name of all patients on each pharmacy

```
Select ph.PhName, pa.first_name||' '|| pa.middle_name ||' '||pa.last_name
"Patient Full Name"

from Pharmacy ph, Patient pa,Pharmacy_Patient ph_pa

where ph.PhID=ph_pa.PhID AND pa.patientID=ph_pa.patientID;
```

	PHNAME	Patient Full Name
1	Medlife	joud alonso fred
2	Health Warehouse	ahmd alfred trump
3	Carepoint	sigo fredrick joe

--display the full name of all patients who has a bill and its price and the employee name who created the bill

```
Select b.bill_ID, b.price, e.first_name||' '|| e.middle_name ||' '||e.last_name
"Employee Full Name",pa.first_name||' '|| pa.middle_name ||' '||pa.last_name
"Patient Full Name"

from Employee e, bill b,has h, Patient pa

where e.Emp_ID=h.Emp_ID AND b.bill_ID=h.bill_ID AND pa.patientID=h.patientID;
```

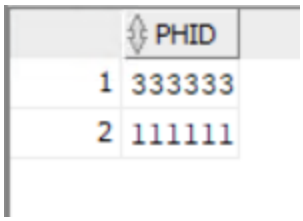
	BILL_ID	PRICE	Employee Full Name	Patient Full Name
1	1111111	22.22	alex edward lex	joud alonso fred
2	1111112	66.22	joey donald rex	ahmd alfred trump
3	1111113	77.22	jane bideen fex	sigo fredrick joe

--medid who have a quantity less than 4 get phid from Pharmacy_medicine.

```
Select PhID

From Pharmacy_medicine

where medid IN ( SELECT medid FROM MedicineWhere quantity < 4);
```



	PHID
1	333333
2	111111

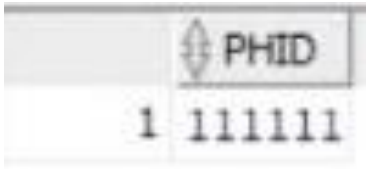
--patientid who have pnpaid less than 77788 get phid Pharmacy_patient

```
SELECT PhID

FROM Pharmacy_patient

WHERE patientid IN(SELECT  patientid FROM phone_number_pa

WHERE pnpaid < 77788);
```



	PHID
1	111111

--2set operations

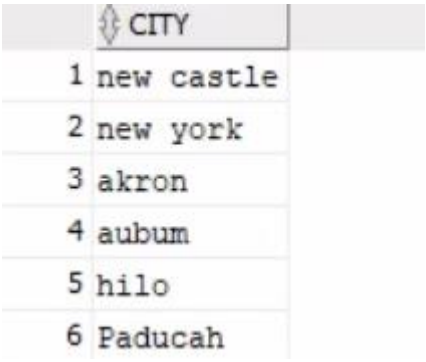
--UNION of price from Bill table , and price from Medicine table

Select price from Bill UNION Select price from Medicine;

	PRICE
1	9.34
2	12.34
3	22.22
4	45.3
5	66.22
6	77.22

--UNION ALL of city from Pharmacy table and city from employee table

Select city from Pharmacy UNION ALL Select city from Employee;



	CITY
1	new castle
2	new york
3	akron
4	aubum
5	hilo
6	Paducah

--2aggregate operations (must include joins)

--display which is the nearest medicines that are going to get expired and its id and in each pharmacy ordered ascending

```
select ph.PhName,m.medID,  ROUND (min((MONTHS_BETWEEN (m.expdate, sysdate)/12))) year

from Pharmacy ph, medicine m, Pharmacy_Medicine ph_m

where m.medID=ph_m.medID AND ph.PhID=ph_m.PhID

group by ph.phid, ph.PhName,m.medID order by year ASC;
```

	PHNAME	MEDID	YEAR
1	Medlife	8921	4
2	Health Warehouse	5012	5
3	Carepoint	8905	6

--display the prices of the total medicines in each pharmacy

```
select ph.PhName, sum(m.price)

from Pharmacy ph, medicine m, Pharmacy_Medicine ph_m

where m.medID=ph_m.medID AND ph.PhID=ph_m.PhID

group by ph.phid, ph.PhName;
```

	pharmcy name	total price
1	Carepoint	45.3
2	Medlife	12.34
3	Health Warehouse	9.34