University of Jeddah
College of computer science & engineering
Department of computer science and artificial intelligence

Give Blood Give Life

Section: 10610

[A3]

Dr: Dalal Bakhit

Name	ID
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Phase 1:

Problem Description

Our idea of creating a database for blood donation came from a statement that we all believe in which is "Give blood, give life". Every 2 seconds in the world, someone needs blood or platelets due to surgery, cancer treatment, and transfusions for blood loss from traumatic injuries. Blood donation is split into two types, and each type serves a particular set of patients:

Donation: can be whole blood donation, or partial blood donation which has plasma, platelets and red cells

List of Entities

Patient (Patient Id, First name, Last name, Patient blood type, Patient condition, Patient address)

Donor (Donor Id, First name, Last name, Donor blood type, Donor address, Donor contact number)

Blood Bank (Blood bank name, Blood bank address, Blood bank donor's name, Blood bank contact number, Donation type)

Hospital (File number, Blood bank name, Donor's name, Donor's age, Donor's weight, Donor's phone number, Donor's gender, Blood type)

Primary role

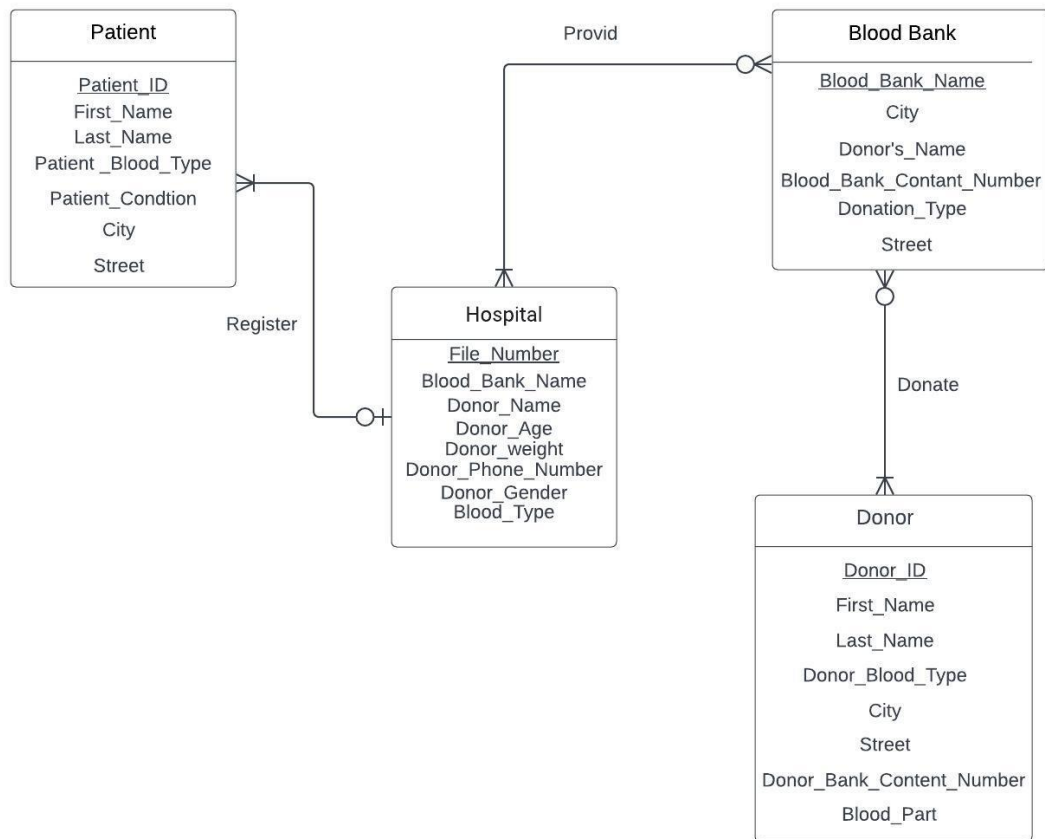Taif: Hospital

Yara: Donation

Rimas: Blood Bank

Asmaa: Patient

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Phase 2:

Business rules:

We have a blood donation center that deals with a hospital. We will develop the database of the responsible center.

 - Each Patient has (Patient Id, First name, Last name, Patient blood type, Patient condition, Patient address).

- Patient can register to any hospital, and the hospital contains (File number, Blood bank name, Donor's name, Donor's age, Donor's weight, Donor's phone number, Donor's gender, Blood type).

 - Each hospital must accept more than one patient.

- Hospitals may request blood bags from several blood banks.

- Each blood bank has Blood Bank (Blood bank name, Blood bank address, Blood bank donor's name, Blood bank contact number, Donation type).

 - Each blood bank have to provide a blood bag for one or more hospital.

- Many blood banks must receive several blood donations. Donations contain (donor ID, first name, last name, donor blood type, donor address, donor contact number)

- Each donor could donate to at least to one blood bank.

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Phase 3:

Patient
Patient_ID
First_Name
Last_Name
Patient _Blood_Type
Patient_Condtion
City
Street

Provid

Blood Bank
Blood_Bank_Name
City
Donor's_Name
Blood_Bank_Contant_Number
Donation_Type
Street

Register

Hospital
File_Number
Blood_Bank_Name
Donor_Name
Donor_Age
Donor_weight
Donor_Phone_Number
Donor_Gender
Blood_Type

Donate

Donor
Donor_ID
First_Name
Last_Name
Donor_Blood_Type
City
Street
Donor_Bank_Content_Number
Blood_Part

Patient

Patient_ID	First_Name	Last_Name	Patient_Blood_Type	Patient_Condtion	City	Street	File_Number

Hospital

File_Number	Blood_Bank_Name	Donor_Name	Donor_Age	Donor_Weghit	Donor_Phone_Number	Donor_Gender	Blood_Type

Blood_Hospital_Information

File_Number	Blood_Bank_Name	Date_Provided

Blood_Bank

Blood_Bank_Name	City	Street	Donor_Name	Blood_Bank_Content_Number	Donation_Type

Donor_Bloos_Information

Blood_Bank_Name	Donor_ID	Provided_Date

Donor

Donor_ID	First_Name	Last_Name	Donor_Blood_Type	City	Street	Donor_Bank_Content_Number	Blood_Part

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Phase 4:

The condition for 1NF:

All relation must have unique primary key.

Remove repeating group or remove multi value attribute.

already in 1 NF.

The condition for 2NF:

1-Remove partial functional dependencies.

already in 2NF.

The condition for 3NF:

1-Remove transitive dependencies. already in 3NF; No transitive dependency

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Queries:

1- Count the number of patients from the patients ID

```
96    SELECT patient_id, COUNT(patient_id) AS number_of_patients FROM patient GROUP BY patient_id;
97
```

PATIENT_ID	NUMBER_OF_PATIENTS
2110233	1
2110240	1
2110250	1
2110278	1
2113140	1

Download CSV

5 rows selected.

2-Display the donors' names in ascending Order

```
98    SELECT file_number, blood_bank_name,donor_name,donor_age ,donor_weight,donor_phone_number,donor_gender,blood_type FROM hospital ORDER BY donor_name;
99
```

FILE_NUMBER	BLOOD_BANK_NAME	DONOR_NAME	DONOR_AGE	DONOR_WEIGHT	DONOR_PHONE_NUMBER	DONOR_GENDER	BLOOD_TYPE
2110233	Dallah blood bank	ahmad	30	89	0512312321	male	O
2113100	Give blood give life	faisal	19	70	0538493898	male	A
2110211	Center blood bank	fatima	23	60	0567263546	female	O
2110244	friends blood bank	khalid	36	76	0524135261	male	A
2110222	Wateen bolld bank	nourah	45	66	0598787687	female	AB

Download CSV

5 rows selected.

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3- Display the patient's id, first name, blood type and the donor that will donate

```
99
100    SELECT hospital.file_number, hospital.donor_name, patient.first_name, patient.patient_blood_type
101    FROM hospital JOIN patient ON hospital.file_number=patient.file_number;
```

FILE_NUMBER	DONOR_NAME	FIRST_NAME	PATIENT_BLOOD_TYPE
2113100	faisal	yara	O
2110211	fatima	rimas	O
2110222	nourah	taif	A
2110233	ahmad	asmaa	AB
2110244	khalid	sara	B

Download CSV

5 rows selected.

4-Display the patients in table patient with last name 'alshehri'

```
102
103    SELECT patient_id,first_name,last_name
104    FROM patient
105    WHERE last_name IN(SELECT last_name FROM patient WHERE last_name='alshehri');
```

PATIENT_ID	FIRST_NAME	LAST_NAME
2113140	yara	alshehri
2110240	rimas	alshehri

Download CSV

2 rows selected.

Procedures:

```sql
1   CREATE OR REPLACE PROCEDURE info_donor(info_id IN DONOR.DONOR_ID%TYPE)
2   AS
3     info_fn DONOR.FIRST_NAME%TYPE;
4     info_ln DONOR.LAST_NAME%TYPE;
5     info_donorBT DONOR.DONOR_BLOOD_TYPE%TYPE;
6     info_city DONOR.CITY%TYPE;
7     info_street DONOR.STREET%TYPE;
8     info_donorCN DONOR.DONOR_BANK_CONTACT_NUMBER%TYPE;
9     info_bloodP DONOR.BLOOD_PART%TYPE;
10  BEGIN
11    SELECT FIRST_NAME, LAST_NAME, DONOR_BLOOD_TYPE, CITY, STREET, DONOR_BANK_CONTACT_NUMBER, BLOOD_PART
12    INTO info_fn, info_ln, info_donorBT, info_city, info_street, info_donorCN, info_bloodP
13    FROM DONOR WHERE DONOR_ID = info_id;
14
15    DBMS_OUTPUT.PUT_LINE('Donor Id : '|| info_id);
16    DBMS_OUTPUT.PUT_LINE('Donor First Name : '|| info_fn);
17    DBMS_OUTPUT.PUT_LINE('Donor Last Name : '|| info_ln);
18    DBMS_OUTPUT.PUT_LINE('Donor Blood Type : '|| info_donorBT);
19    DBMS_OUTPUT.PUT_LINE('City : '|| info_city);
20    DBMS_OUTPUT.PUT_LINE('Street : '|| info_street);
21    DBMS_OUTPUT.PUT_LINE('Donor Contant Number : '|| info_donorCN);
22    DBMS_OUTPUT.PUT_LINE('Donor Blood Part : '|| info_bloodP);
23  END;
```

```sql
1   EXEC info_donor(1110240)
```

```
Statement processed.
Donor Id : 1110240
Donor First Name : fatima
Donor Last Name : alghamdi
Donor Blood Type : O
City : jeddah
Street : alfaisalyah
Donor Contant Number : 0567263546
Donor Blood Part : platelets
```

```sql
1   CREATE OR REPLACE PROCEDURE UpdateBP(DONOR_ID IN NUMBER, NewBP VARCHAR2)
2     AS
3   BEGIN
4   UPDATE DONOR SET BLOOD_PART = NewBP WHERE DONOR_ID = DONOR_ID;
5
6   COMMIT;
7
8   END;
```

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SQL Code:

```sql
CREATE TABLE patient (
    patient_id INT NOT NULL,
    first_name VARCHAR2(45) NOT NULL,
    last_name VARCHAR2(45) NOT NULL,
    patient_blood_type VARCHAR2(45) NOT NULL,
    patient_condition  VARCHAR2(45) NOT NULL,
    city VARCHAR2(45) NOT NULL,
    street VARCHAR2(45) NOT NULL,
    file_number INT NOT NULL ,
    PRIMARY KEY (patient_id) );
CREATE TABLE hospital (
    file_number INT NOT NULL,
    blood_bank_name VARCHAR2(45) NOT NULL,
    donor_name VARCHAR2(45) NOT NULL,
    donor_age INT NOT NULL,
    donor_weight INT NULL,
    donor_phone_number VARCHAR2(45) NULL,
    donor_gender VARCHAR2(45) NULL,
    blood_type VARCHAR2(45) NULL ,
    PRIMARY KEY (file_number));
CREATE TABLE blood_bank (
    blood_bank_name VARCHAR2(45) NOT NULL,
    city VARCHAR2(45) NOT NULL,
    street VARCHAR2(45) NOT NULL,
    donor_name VARCHAR2(45) NOT NULL,
    blood_bank_contact_number VARCHAR2(10) NULL,
    donation_type VARCHAR2(45) NULL,
    PRIMARY KEY (blood_bank_name));
CREATE TABLE donor (
    donor_id INT NOT NULL,
    first_name VARCHAR2(45) NOT NULL,
    last_name VARCHAR2(45) NOT NULL,
```

```sql
    donor_blood_type VARCHAR2(45) NOT NULL,

    city VARCHAR2(45) NULL,

    street VARCHAR2(45) NULL,

    donor_bank_contact_number VARCHAR2(10) NOT NULL,

    blood_part VARCHAR2(45) NOT NULL,

    PRIMARY KEY (donor_id));

CREATE table blood_hospital_information(

    file_number INT NOT NULL,

    blood_bank_name VARCHAR2(45) NOT NULL,

    Date_provided Date not null,

    PRIMARY KEY(file_number,blood_bank_name)

);

CREATE table donor_blood_information(

    blood_bank_name VARCHAR2(45) NOT NULL,

    donor_id INT NOT NULL,

    provided_date Date not null,

    PRIMARY KEY(blood_bank_name,donor_id)

);

insert into patient VALUES

(2113140,'yara','alshehri','O','yes','jeddah','almanar',2113100)insert into patient VALUES

(2110240,'rimas','alshehri','O','no','jeddah','alnuzha',2110211)

insert into patient VALUES

(2110250,'taif','alharbi','A','yes','abha','alsalamah',2110222)

insert into patient VALUES

(2110233,'asmaa','mahdi','AB','no','makkah','alharameen',2110233)

insert into patient VALUES

(2110278,'sara','alotaibi','B','yes','jeddah','alnaseem',2110244)

insert into hospital VALUES(2113100,'Give blood give life','faisal',19, 70,'0538493898','male','A')

insert into hospital VALUES(2110211,'Center blood bank', 'fatima', 23, 60,'0567263546', 'female', 'O')

insert into hospital VALUES(2110222,'Wateen bolld bank','nourah',45,66,'0598787687','female','AB')

insert into hospital VALUES(2110233,'Dallah blood bank', 'ahmad',30,89,'0512312321','male','O')

insert into hospital VALUES(2110244,'friends blood bank','khalid',36,76,'0524135261','male','A')

insert into blood_bank VALUES('Give blood give life','jeddah','alsalamah','faisal','0538493898','full')

insert into blood_bank VALUES('Center blood bank','jeddah','alfaisalyah','fatima','0567263546','full')

insert into blood_bank VALUES('Wateen bolld bank','abha','alharameen','nourah','0598787687','partial')

insert into blood_bank VALUES('Dallah blood bank','makkah','alajwad','ahmad','0512312321','partial')
```

```sql
insert into blood_bank VALUES('friends blood bank','jeddah','alnaseem','khalid','0524135261','full')

insert into donor VALUES(0013140,'faisal','alshehri','A','jeddah','alsalamah','0538493898','blood')

insert into donor VALUES(1110240,'fatima','alghamdi','O','jeddah','alfaisalyah','0567263546','platelets')

insert into donor VALUES(2210250,'nourah','alshahrani','AB','abha','alharameen','0598787687','blood')

insert into donor VALUES(3310233,'ahmad','alasmari','O','makkah','alajwad','0512312321','platelets')

insert into donor VALUES(4410278,'khalid','alamri','A','jeddah','alnaseem','0524135261','blood')

ALTER TABLE patient ADD CONSTRAINT file_no_fk FOREIGN KEY(file_number) REFERENCEs
hospital(file_number)

SELECT patient_id, COUNT(patient_id) AS number_of_patients FROM patient GROUP BY patient_id;

SELECT file_number, blood_bank_name,donor_name,donor_age
,donor_weight,donor_phone_number,donor_gender,blood_type;

SELECT hospital.file_number, hospital.donor_name, patient.first_name, patient.patient_blood_type
FROM hospital JOIN patient ON hospital.file_number=patient.file_number;

SELECT patient_id,first_name,last_name FROM patient

WHERE last_name IN(SELECT last_name FROM patient WHERE last_name='alshehri');CREATE OR
REPLACE PROCEDURE info_donor(info_id IN DONOR.DONOR_ID%TYPE)

AS

 info_fn DONOR.FIRST_NAME%TYPE;

 info_ln DONOR.LAST_NAME%TYPE;

 info_donorBT DONOR.DONOR_BLOOD_TYPE%TYPE;

 info_city DONOR.CITY%TYPE;

 info_street DONOR.STREET%TYPE;

 info_donorCN DONOR.DONOR_BANK_CONTACT_NUMBER%TYPE;

 info_bloodP DONOR.BLOOD_PART%TYPE;

BEGIN

 SELECT FIRST_NAME, LAST_NAME, DONOR_BLOOD_TYPE, CITY, STREET,
DONOR_BANK_CONTACT_NUMBER, BLOOD_PART

 INTO info_fn, info_ln, info_donorBT, info_city, info_street, info_donorCN, info_bloodP

 FROM DONOR WHERE DONOR_ID = info_id;

 DBMS_OUTPUT.PUT_LINE('1 # : '|| info_id);

 DBMS_OUTPUT.PUT_LINE('2 # : '|| info_fn);

 DBMS_OUTPUT.PUT_LINE('3 # : '|| info_ln);

 DBMS_OUTPUT.PUT_LINE('4 # : '|| info_donorBT);

 DBMS_OUTPUT.PUT_LINE('5 # : '|| info_city);

 DBMS_OUTPUT.PUT_LINE('6 # : '|| info_street);

 DBMS_OUTPUT.PUT_LINE('7 # : '|| info_donorCN);

 DBMS_OUTPUT.PUT_LINE('8 # : '|| info_bloodP);

END;
```

```
EXEC info_donor(0013140)
CREATE OR REPLACE PROCEDURE UpdateBP(DONOR_ID IN NUMBER, NewBP VARCHAR2)
 AS
BEGIN
UPDATE DONOR SET BLOOD_PART = NewBP WHERE DONOR_ID = DONOR_ID;
COMMIT; END;
call UpdateBP(2210250, 'platelets')
```