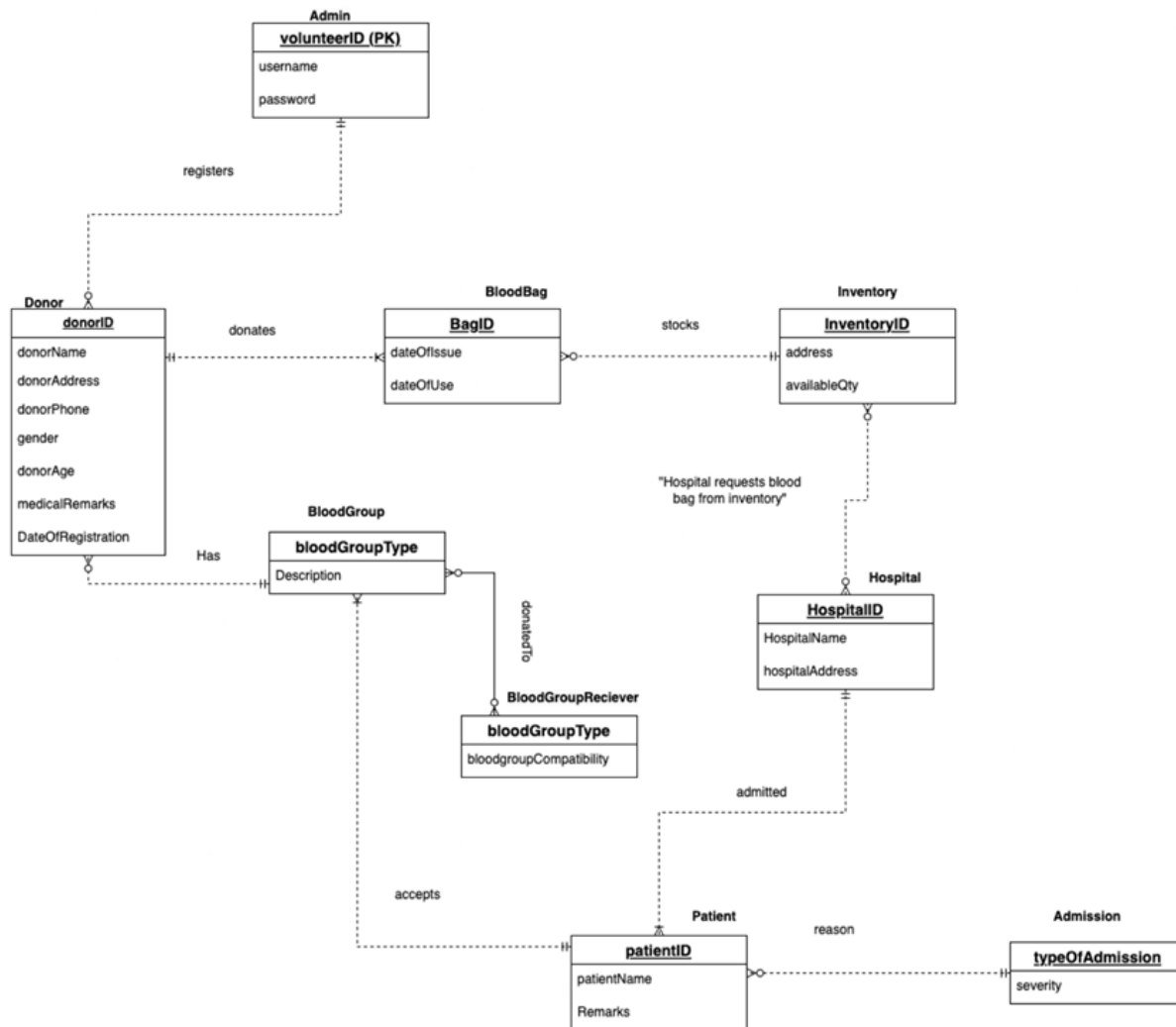
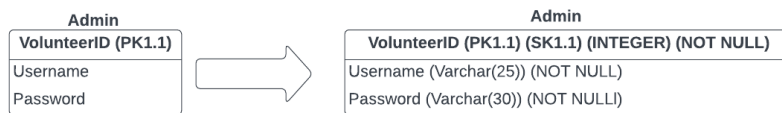


CS 5200 Hands-on #2: Design

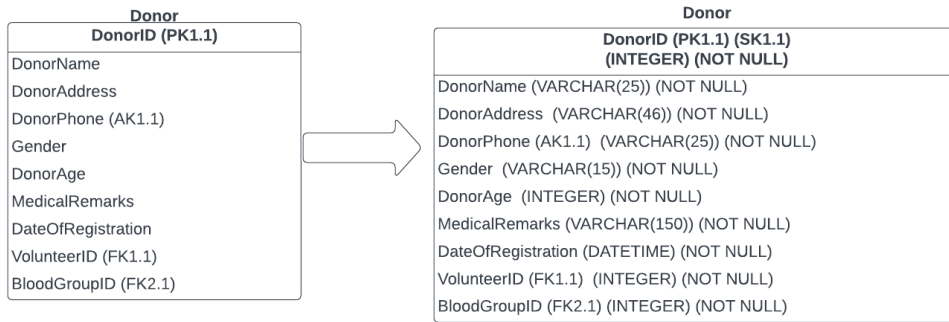


2. (40pt) Transformation Process from ER model to Database Design

(20pt) For each entity,
describe the transformation
from an entity to a table

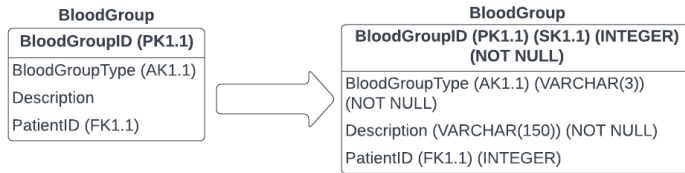


Admin					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
VolunteerID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
Username	VARCHAR(25)	NOT NULL	NONE	ALTERNATE KEY	UNIQUE (PK1.1)
Password	VARCHAR(30)	NOT NULL	NONE	NONE	NONE

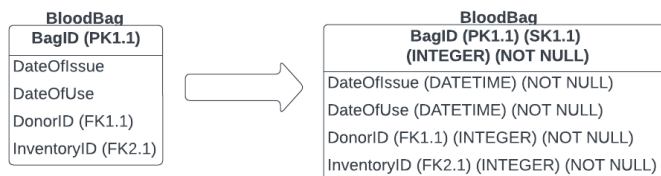


Donor

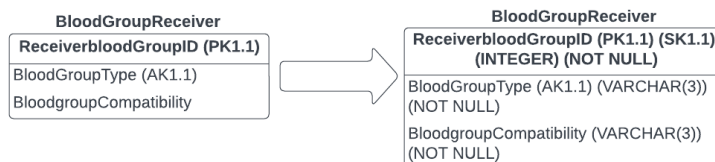
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
DonorID	INTEGER	NONE	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
DonorName	VARCHAR(25)	NOT NULL	NONE	NONE	NONE
DonorAddress	VARCHAR(46)	NOT NULL	NONE	NONE	USPS ADDRESS
DonorPhone	INTEGER	NOT NULL	NONE	NONE	ALTERNATE KEY (AK1.1)
Gender	VARCHAR(15)	NOT NULL	NONE	NONE	NONE
DonorAge	INTEGER	NOT NULL	NONE	NONE	NONE
MedicalRemarks	VARCHAR(150)	NOT NULL	NONE	NONE	NONE
DateOfRegistration	DATETIME	NOT NULL	NONE	NONE	NONE
VolunteerID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS ADMIN (FK1.1)
BloodGroupID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS BLOODGROUP (FK2.1)



BloodGroup					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
BloodGroupID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
BloodGroupType	VARCHAR(3)	NOT NULL	NONE	ALTERNATE KEY	(AK1.1)
Description	VARCHAR(150)	NOT NULL	NONE	NONE	NONE
PatientID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS PATIENT (FK1.1)



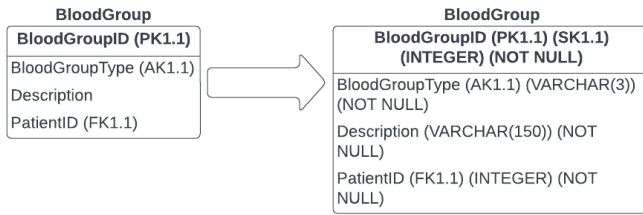
BloodBag					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
BagID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
DateOfIssue	DATETIME	NOT NULL	NONE	NONE	NONE
DateOfUse	DATETIME	NOT NULL	NONE	NONE	NONE
DonorID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS DONOR (FK1.1)
InventoryID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS INVENTORY (FK2.1)



BloodGroupReceiver					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
ReceiverbloodGroupID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
BloodGroupType	VARCHAR(3)	NOT NULL	NONE	ALTERNATE KEY	(AK1.1)
BloodgroupCompatibility	VARCHAR(3)	NOT NULL	NONE	NONE	NONE



Inventory					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
InventoryID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
Address	VARCHAR(46)	NOT NULL	NONE	NONE	(AK1.1)
AvailableQty	INTEGER	NOT NULL	NONE	NONE	NONE



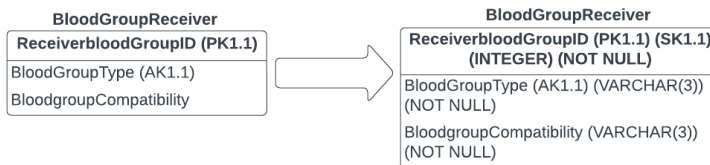
BloodGroup

Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
BloodGroupID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
BloodGroupType	VARCHAR(3)	NOT NULL	NONE	ALTERNATE KEY	(AK1.1)
Description	VARCHAR(150)	NOT NULL	NONE	NONE	NONE
PatientID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS PATIENT (FK1.1)

BloodGroupReceiver

BloodGroupReceiver

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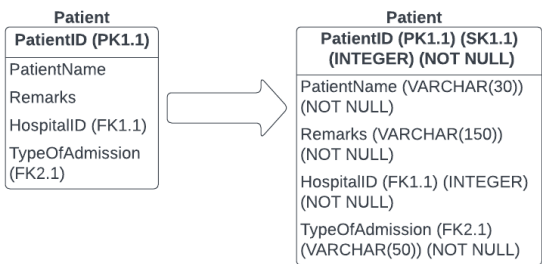
BloodGroupReceiver

Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
ReceiverbloodGroupID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
BloodGroupType	VARCHAR(3)	NOT NULL	NONE	ALTERNATE KEY	UNIQUE (AK1.1)
BloodgroupCompatibility	VARCHAR(3)	NOT NULL	NONE	NONE	NONE

BloodGroupAndReceiver

BloodGroupAndReceiver					
DonatorBloodGroupID (FK1.1) (INTEGER) (NOT NULL) ReceiverBloodGroupID (FK2.1) (INTEGER) (NOT NULL)					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
DonatorBloodGroupID (FK1.1)	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS BLOODGROUP (FK1.1)
ReceiverBloodGroupID (FK2.1)	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS BLOODGROUPRECEIVER (FK2.1)

<div> <div> Donator </div> <div> Receiver </div> </div>					
					(FK2.1)



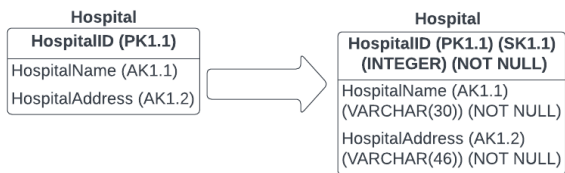
Patient					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
PatientID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
PatientName	VARCHAR(30)	NOT NULL	None	NONE	NONE
Remarks	VARCHAR(150)	NOT NULL	NONE	NONE	NONE
HospitalID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS HOSPITAL (FK1.1)
TypeOfAdmission	VARCHAR(50)	NOT NULL	NONE	FOREIGN KEY	REFERS ADMISSION (FK2.1)

Admission

Admission



Admission					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
.TypeOfAdmission	VARCHAR(50)	NOT NULL	NONE	PRIMARY KEY	UNIQUE (PK1.1)
Severity	INTEGER	NOT NULL	NONE	NONE	NONE

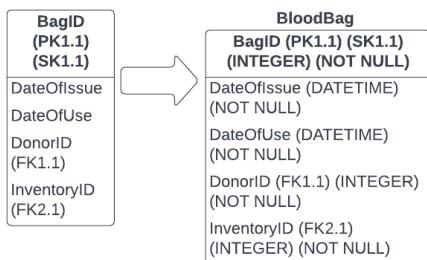


Hospital					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
HospitalID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
HospitalName	VARCHAR(30)	NOT NULL	NONE	ALTERNATE KEY	(AK1.1) UNIQUE
HospitalAddress	VARCHAR(46)	NOT NULL	NONE	ALTERNATE KEY	(AK1.2) UNIQUE



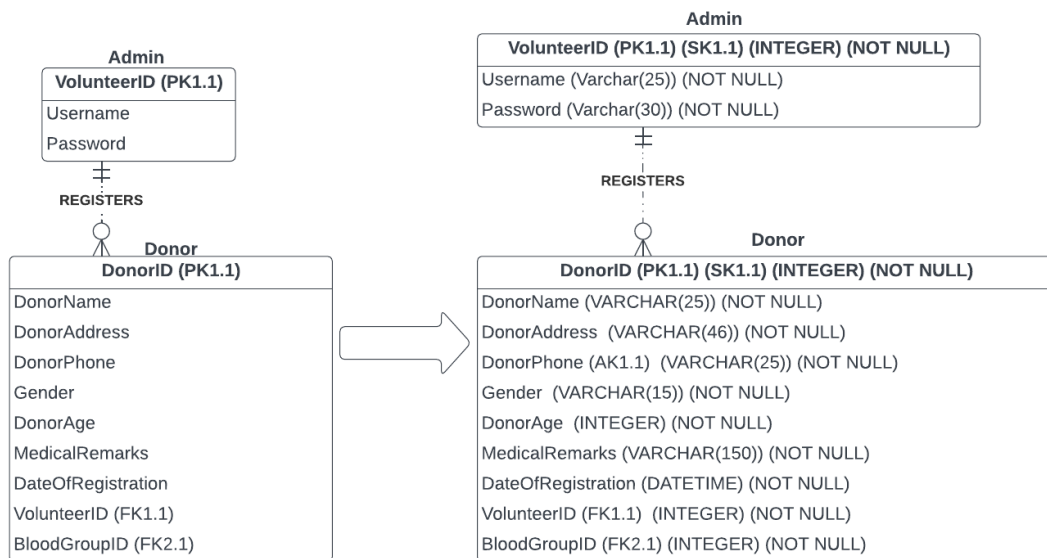
Inventory					
Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
InventoryID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
Address	VARCHAR(46)	NOT NULL	NONE	ALTERNATE KEY	(AK1.1) UNIQUE
AvailableQty	INTEGER	NOT NULL	NONE	NONE	NONE

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Column Name	Data Type	Null Status	Default Value	Key Constraint	Remarks
BagID	INTEGER	NOT NULL	1	PRIMARY KEY	SURROGATE KEY IDENTITY (1,1) (PK1.1)
DateOfIssue	DATETIME	NOT NULL	NONE	NONE	MUST SMALLER THAN/EQUAL TO DateOfUse
DateOfUse	DATETIME	NOT NULL	NONE	NONE	MUST LARGER THAN/EQUAL TO DateOfIssue
DonorID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS DONOR (FK1.1)
InventoryID	INTEGER	NOT NULL	NONE	FOREIGN KEY	REFERS INVENTORY (FK2.1)

(20pt) For each relationship,
1) present a relationship
between entities to a
relationship between tables
in the UML format and then



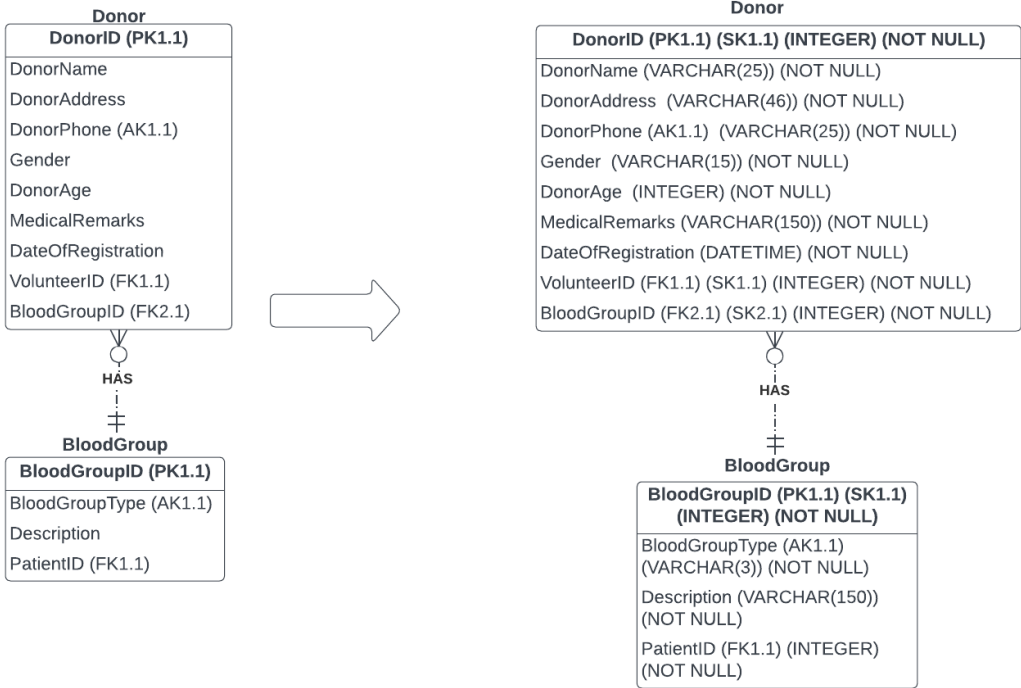
Registers: Admin-to-Donor Relationship

Donor Is Required Parent	Action on Admin (Parent)	Action on Donor (Child)
Insert	None	Get an Parent. Else, Prohibit
Modify Key OR Foreign Key	Prohibit. Admin used the sorrogate Key.	Prohibit. Admin used the surrogate key.
Delete	Prohibit. Admin should not be modified after being inserted	None

Donor

Donor

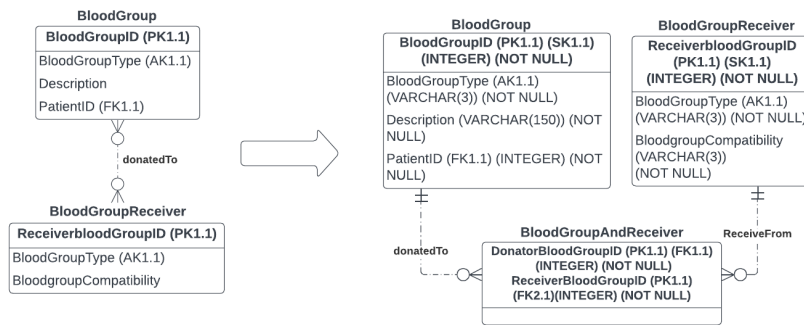
	NOT USING SURROGATE	
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Has: Donor-to-BloodGroup Relationship

Donor Is Required Parent	Action on BloodGroup (Parent)	Action on Donor (Child)
Insert	None	Get a parent Else, Prohibit
Modify Key OR Foreign Key	Prohibit. BloodGroup used the surrogate key	Prohibit. BloodGroup used the surrogate key
Delete	Prohibit. BloodGroup will not change after be inserted	None

BloodGroup

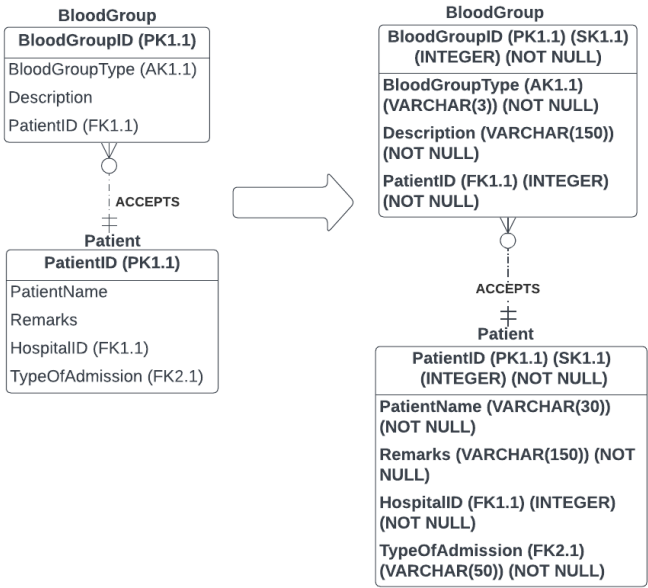


donatedTo: BloodGroup-to-BloodGroupAndReceiver Relationship			ReceiveFrom: BloodGroupAndReceiver-to-BloodGroupReceiver Relationship		
BloodGroupAndReceiver Is Required Parent	Action on BloodGroup	Action on BloodGroupAndReceiver	BloodGroupAndReceiver Is Required Parent	Action on BloodGroupReceiver	Action on BloodGroupAndReceiver
Insert	None	Get a parent Else, Prohibit	Insert	None	Get a parent Else, Prohibit
Modify Key OR Foreign Key	Prohibit. BloodGroup used the surrogate key	Prohibit. BloodGroup used the surrogate key	Modify Key OR Foreign Key	Prohibit. BloodGroupReceiver used the surrogate key	Prohibit. BloodGroupReceiver used the surrogate key
Delete	Prohibit if BloodGroup is referred in BloodGroupAndReceiver. Else, Allow	None	Delete	Prohibit if BloodGroupReceiver is referred in BloodGroupAndReceiver. Else, Allow	None

BloodGroup

BloodGroup

	Else, Allow			BloodGroup/Relationship Else, Allow
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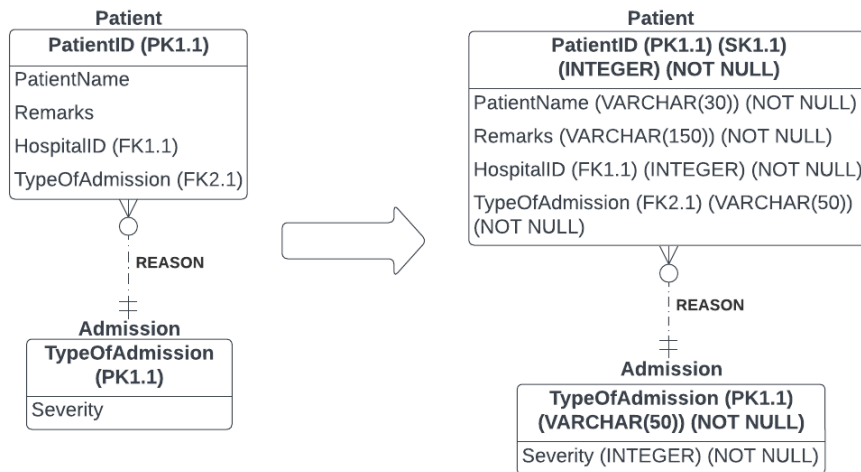


Accepts: Patient-to-BloodGroupRelationship

Patient Is Required Parent	Action on Patient	Action on BloodGroup
Insert	INSERT trigger on Patient to create row in BloodGroup. BloodGroup will be given data for BloodGroupType and Description. Other columns will be null.	Will be created by INSERT trigger on Patient.
Modify Key OR Foreign Key	Prohibit. Patient used the surrogate key.	Prohibit. Patient used the surrogate key.
Delete	Prohibit. The medical history for each patient should never be deleted	Prohibit. The medical history for each patient should never be deleted

Patient

Patient



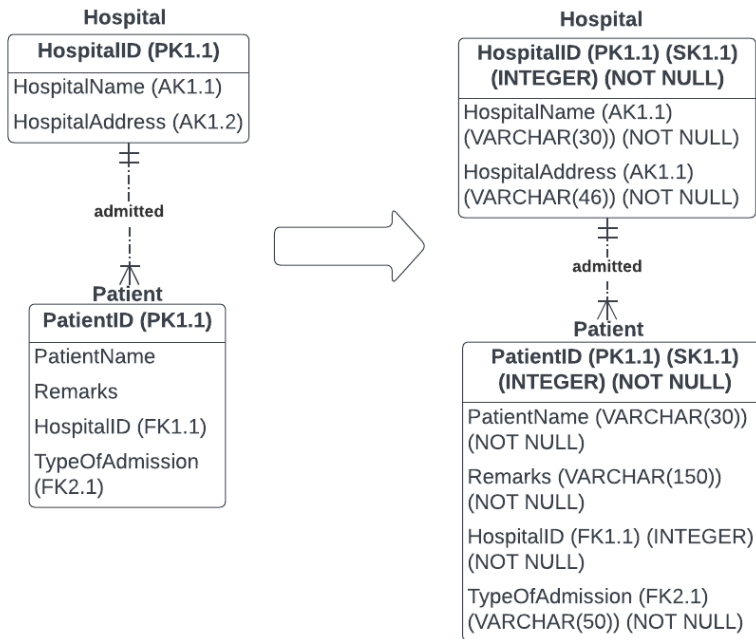
Reason: Admission-to-Patient Relationship

Admission Is Required Parent	Action on Admission	Action on Patient
Insert	None	Get a parent
Modify Key OR Foreign Key	Prohibit. Admission used the surrogate key.	Prohibit. Admission used the surrogate key.
Delete	Prohibit. Admission should not be modified after being inserted	None

Hospital
HospitalID (PK1.1)

Hospital
HospitalID (PK1.1)

	modified after being inserted	
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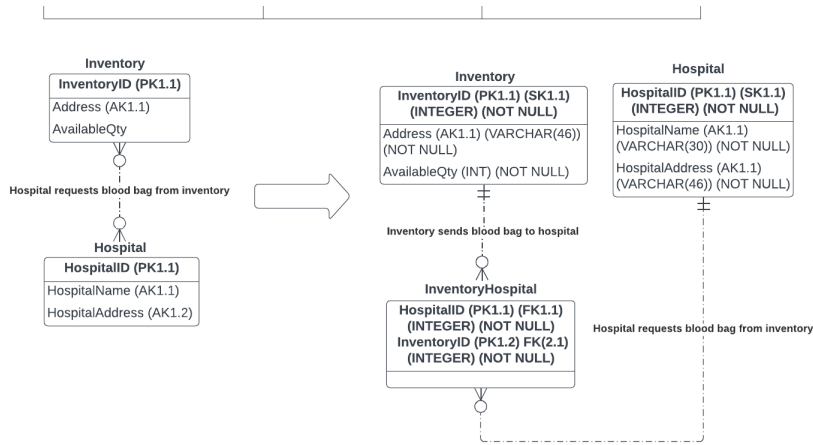


Admitted: Hospital-to-Patient Relationship

Hospital Is Required Parent	Action on Hospital	Action on Patient
Insert	INSERT trigger on Hospital to create row in Patient. Patient will be given data for PatientName and Remarks. Other columns will be null.	Will be created by INSERT trigger on Hospital.
Modify Key OR Foreign Key	Prohibit. Hospital used the surrogate key.	Prohibit. Hospital used the surrogate key.
Delete	Prohibit. The medical history for each patient should never be deleted	Prohibit. The medical history for each patient should never be deleted

Inventory

Hospital



Inventory sends blood bag to hospital
Inventory-to-InventoryHospital Relationship

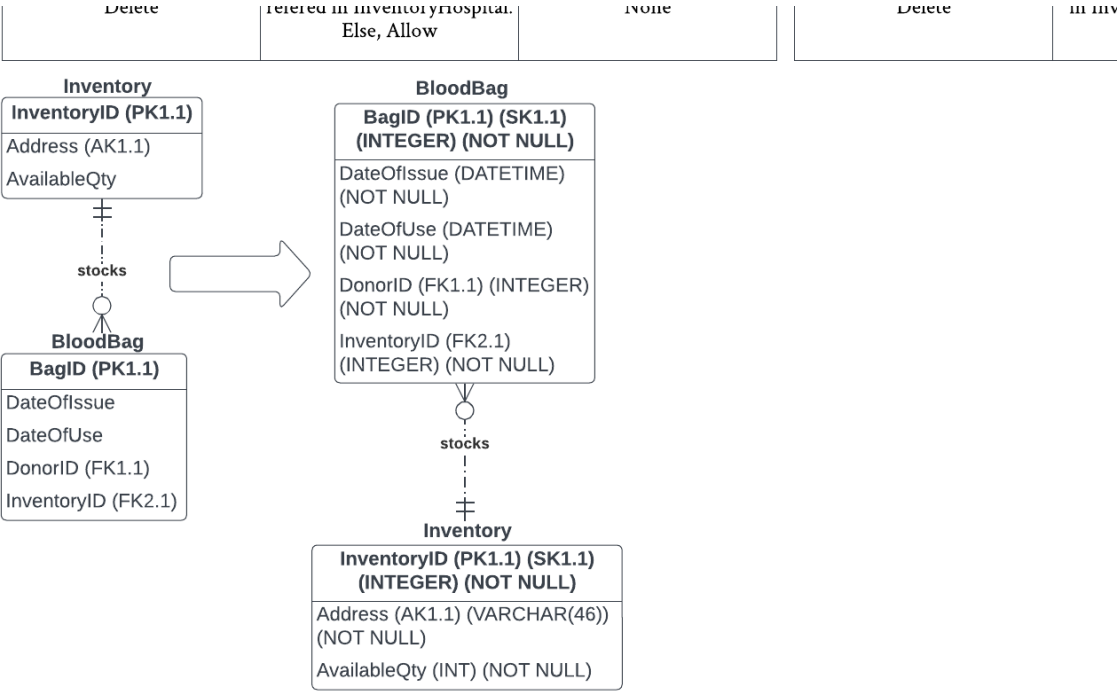
Inventory Is Required Parent	Action on Inventory	Action on InventoryHospital
Insert	None	Get a parent Else, Prohibit
Modify Key OR Foreign Key	Prohibit. Inventory used the surrogate key	Prohibit. Inventory used the surrogate key
Delete	Prohibit if Inventory is referred in InventoryHospital. Else, Allow	None

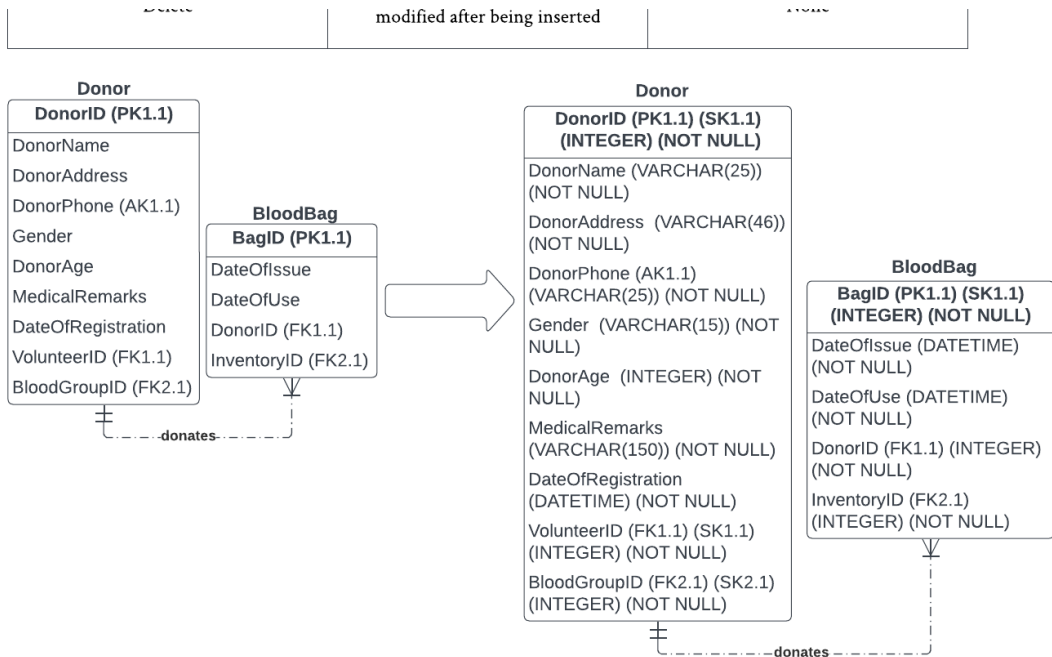
Hospital requests blood bag from inventory
Hospital-to-InventoryHospital Relationship

Hospital Is Required Parent	Action on Hospital	Action on InventoryHospital
Insert	None	Get a parent Else, Prohibit
Modify Key OR Foreign Key	Prohibit. Hospital used the surrogate Key.	Prohibit. Hospital used the surrogate Key.
Delete	Prohibit if Hospital is referred in InventoryHospital. Else, Allow	None

Inventory
InventoryID (PK1.1)

BloodBag
BagID (PK1.1) (SK1.1)





donates: Donor-to-BloodBag Relationship

Donor Is Required Parent	Action on Donor	Action on BloodBag
Insert	INSERT trigger on Donor to create row in BloodBag. BloodBag will be given data for DateOfIssue and DateOfUse. Other columns will be null.	Will be created by INSERT trigger on Donor.
Modify Key OR Foreign Key	Prohibit. Donor used the surrogate Key.	Prohibit. Donor used the surrogate Key.
Delete	Prohibit. The medical history for each patient should never be deleted	Prohibit. The medical history for each patient should never be deleted

3. (10pt) Database Design

