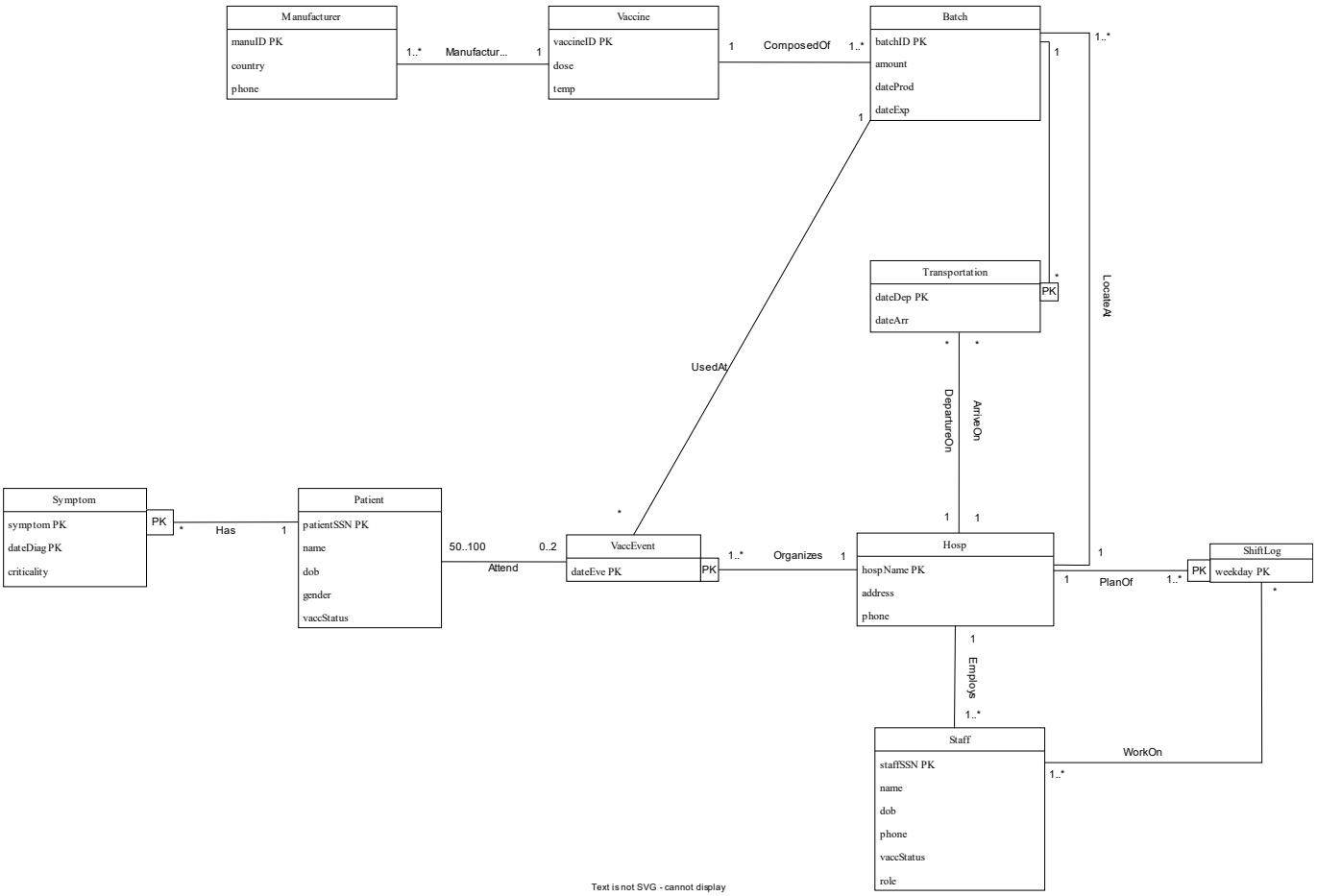
Group Project Final Package

Group 17



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Assumptions:

- Each manufacturer only works from 1 country.
- Each manufacturer can only make one type of vaccine.
- All phone numbers are unique, and no two individuals/manufacturers share a number.
- SSNs are unique.
- Phone numbers and SSNs can not be NULL.
- Any transportation of vaccines must take at least 1 day.
- Vaccine batches can not be split – every vaccine in a vaccine batch must be at the same hospital.
- All staffs must be working at exactly 1 establishment.
- All hospitals and clinics must organise at least 1 vaccination event.
- Hospitals and clinics must have at least 1 staff.
- Staff can work multiple days, and there must be at least one staff member working when a vaccination shift is scheduled.
- Staff members are not required to work vaccination shifts (some staff members can work on no vaccination shift at all).
- No patient attends more than 2 vaccination events.
- Each vaccine type must be used to create at least 1 batch.
- Each vaccine type must have at least 1 manufacturer.
- Each batch must contain only 1 type of vaccine.
- Each hospital and clinic must have at least 1 vaccinations shift plan.
- A patient can be diagnosed with the same illness multiple times on different dates.
- A vaccination event must be hosted by exactly 1 hospital/clinic.
- Multiple patients can have the same symptoms on the same date.
- A patient can be diagnosed with multiple symptoms on the same date.
- There are no entries in ShiftLog when a vaccination event is not taking place. For example, if Central Hospital holds vaccination events every Monday and Thursday, the primary key (Central Hospital, Tuesday) does not exist.

Design explanations:

- Despite sharing many attributes, patients and staff can not be subclasses of a larger class as staff can also be patients.
- Transportation of batches depends only on the batchID and the date of departure as we have made the assumptions that a batch can not be split and that the date of arrival must come after the date of departure. Hence, we borrow the key attribute of Batch and combine it with dateDep to create the primary key for Transportation.
- Vaccination events depend only on the hospName and the date as we have made the assumptions that only one hospital/clinic is organising the event and they can organise only 1 event per day. Hence, we borrow the key attribute of Hosp and combine it with date to create the primary key for VaccEvent.
- Shift logs depend only on the hospName and the day as we have made the assumptions that only one hospital/clinic is responsible for its Shift Log and they can only have 1 shift plan. Hence, we borrow the key attribute of Hosp and combine it with day to create the primary key for ShiftLog.
- Symptoms depends only on the patient and the date of diagnosis and the symptom name as we have made the assumptions that one person can have the same symptom multiple times, a patient can have multiple symptoms on the same day and multiple people can have the same symptoms on the same date. Hence, we borrow the key attribute of Patient and combine it with dateDiag and symptom to create the primary key for Symptom.

Defined relations:

Manufacturer(manuID, country, phone, vaccineID)

Vaccine(vaccineID, dose, temperature)

Batch(batchID, amount, dateProd, dateExp, hospName , vaccineID)

Hosp(hospName, address, phone)

Transportation(batchID, dateDep, dateArr, hospDep, hospArr)

Staff(staffSSN, name, dob, phone, vaccStatus, role, hospName)

ShiftLog(hospName, weekday)

WorkOn(staffSSN, weekday, hospName)

VaccEvent(dateEve, hospName, batchID)

Patient(patientSSN, name, dob, gender, vaccStatus)

Attends(patientSSN, dateEve, hospName)

Symptom(symptom, patientSSN, dateDiag, criticality)

Complete non-trivial functional dependencies:

manuID -> country, phone, vaccineID BCNF

phone -> manuID, country, vaccineID BCNF

vaccineID -> dose, temperature BCNF

hospName -> address, phone BCNF

address -> hospName, phone BCNF

phone -> hospName, address BCNF

batchID -> amount, dateProd, dateExp, hospName, vaccineID BCNF

batchID, dateDep -> dateArr, hospDep, hospArr BCNF

staffSSN -> name, dob, phone, vaccStatus, role, hospName BCNF

phone -> staffSSN, name, dob, vaccStatus, role, hospName BCNF

hospName, dateEve -> batchID BCNF

patientSSN -> name, dob, gender, vaccStatus BCNF

patientSSN, symptom, dateDiag -> criticality BCNF

All relations are in BCNF form.