Final Relational Schema

Person (ssn, firstName, lastName, birthdate, address)

Staff (staffID, ssn[FK1], salary, hireDate)
FK1: ssn → Person(ssn)

- On update restrict - SSNs are government issued identifiers and are meant to never change, so updates should be restricted.
- On delete cascade - If a person's record is deleted, that means they are no longer in the system. Therefore, the corresponding staff record must be deleted as well.

Doctor (licenseNumber, staffID[FK2], experience)
FK2: staffID → Staff(staffID)

- On update restrict - StaffIDs are issued by hospital systems to keep track of staff and do not change in practice, so updates should be restricted.
- On delete cascade - If a staff's record is deleted, that means they no longer work there. Therefore, the corresponding doctor record must be deleted as well.

Nurse (staffID[FK3], shiftType, regExpiration)
FK3: staffID → Staff(staffID)

- On update restrict - StaffIDs are issued by hospital systems to keep track of staff and do not change in practice, so updates should be restricted.
- On delete cascade - If a staff's record is deleted, that means they no longer work there. Therefore, the corresponding nurse record must be deleted as well.

Department (deptID, name, managerID[FK4])
FK4: managerID → Staff(staffID)

- On update restrict - StaffIDs are issued by hospital systems to keep track of staff and do not change in practice, so updates should be restricted.
- On delete restrict - Departments require a manager, so as long as the staff member manages the department, their record may not be deleted.

WorksIn (staffID[FK5], deptID[FK6])

FK5: staffID → Staff(staffID)

- On update restrict - StaffIDs are issued by hospital systems to keep track of staff and do not change in practice, so updates should be restricted.
- On delete cascade - If a staff's record is deleted, that means they no longer work there. Therefore, the corresponding staff/department assignments should be deleted.

FK6: deptID → Department(deptID)

- On update restrict - deptIDs are issued by hospital systems as organizational identifiers and do not change in practice, so updates should be restricted.
- On delete cascade - If a department's record is deleted, that means the department no longer exists. Therefore, the corresponding staff/department assignments should be deleted.

Room (number, type, deptID[FK7])

FK7: deptID → Department(deptID)

- On update restrict - deptIDs are issued by hospital systems as organizational identifiers and do not change in practice, so updates should be restricted.
- On delete restrict - Since the relationship between rooms and departments has total participation on the room side, we should restrict department deletions. Rooms must first be reassigned or deleted before deleting the department.

Assigned (roomNumber[FK8], staffID[FK9])

FK8: roomNumber → Room(number)

- On update restrict - roomNumbers are issued by hospital systems and do not change in practice, so updates should be restricted.
- On delete cascade - If a room's record is deleted, that means the room no longer exists. Therefore, the corresponding nurse assignments should be deleted.

FK9: staffID → Nurse(staffID)

- On update restrict - StaffIDs are issued by hospital systems to keep track of staff and do not change in practice, so updates should be restricted.

- On delete cascade - If a nurse's record is deleted, that means the nurse no longer works there. Therefore, the corresponding room assignments should be deleted.

Patient (ssn[FK10], contact, funds, roomNumber[FK11])
FK10: ssn → Person(ssn)

- On update restrict - SSNs are government issued identifiers and are meant to never change, so updates should be restricted.
- On delete cascade - If a person's record is deleted, that means they are no longer in the system. Therefore, the corresponding patient record must be deleted as well.

FK11: roomNumber → Room(number)

- On update restrict - roomNumbers are issued by hospital systems and do not change in practice, so updates should be restricted.
- On delete restrict - If a patient is assigned to a room, we should restrict deletions until after they are unassigned.

Appointment (patientSsn[FK12], date, time, cost)
FK12: patientSsn → Patient(ssn)

- On update restrict - SSNs are government issued identifiers and are meant to never change, so updates should be restricted.
- On delete restrict - Appointments have an associated cost. A patient shouldn't be removed from the system when appointments are still scheduled for them.

Symptom ((patientSsn, date, time)[FK13], type, numDays)
FK13: (patientSsn, date, time) → Appointment(patientSsn, date, time)

- On update cascade - If an appointment's date or time changes, we should reflect that for the symptoms table to reflect the new appointment details. Even though the SSN should never change, we should cascade date/time updates to ensure the symptom corresponds to the correct appointment.
- On delete cascade, if an appointment is deleted, the symptoms that correspond to that appointment should also be deleted.

ScheduledFor ((patientSsn, date, time)[FK14], licenseNumber[FK15])

FK14: (patientSsn, date, time) → Appointment(patientSsn, date, time)

- On update cascade - If an appointment's date or time changes, we should reflect that in the ScheduledFor table to reflect the new appointment details. Even though the SSN should never change, we should cascade date/time updates to ensure the appointment corresponds to the correct doctor.
- On delete cascade - If an appointment is deleted, it will no longer be scheduled for any doctors.

FK15: licenseNumber → Doctor(licenseNumber)

- On update restrict - License numbers are medical board issued identifiers and are meant to never change, so updates should be restricted.
- On delete restrict - Since appointments must be assigned to a doctor, we should restrict the deletion until after appointments are unassigned or deleted.

(Order was changed to PatientOrder because it's a reserved word in MySQL.)

PatientOrder (orderNumber, patientSsn[FK16], licenseNumber[FK17], priority, date, cost)

FK16: patientSsn → Patient(ssn)

- On update restrict - SSNs are government issued identifiers and are meant to never change, so updates should be restricted.
- On delete restrict - Orders have an associated cost. A patient shouldn't be removed when orders are being sent for them.

FK17: licenseNumber → Doctor(licenseNumber)

- On update restrict - License numbers are medical board issued identifiers and are meant to never change, so updates should be restricted.
- On delete restrict - Since orders must be placed by a doctor, we should restrict the deletion until after orders are unassigned or deleted.

Prescription (orderNumber[FK18], drugType, dosageMg)

FK18: orderNumber → PatientOrder(orderNumber)

- On update restrict - Order numbers are unique issued identifiers and are meant to never change, so updates should be restricted.

- On delete cascade - Since prescription is a type of order, it cannot exist independently. If the order is deleted, then the prescription must also be deleted.

LabWork (orderNumber[FK19], type)

FK19: orderNumber → PatientOrder(orderNumber)

- On update restrict - Order numbers are unique issued identifiers and are meant to never change, so updates should be restricted.
- On delete cascade - Since lab work is a type of order, it cannot exist independently. If the order is deleted, then lab work must also be deleted.