Entity-Relationship Diagram (Hospital Management System)

Bill (double rectangle / weak entity): room-cost, medicine-cost, other-charges, total-cost, bill-date (underlined, dashed)

Paid (relationship): Bill (1,1) — Patient (1,N)

Test: test-id, test-cost, test-name

Patient attributes: p-age (dashed), blood-group, gender, phone-number (double), email (double), p-id (underlined), date-of-birth, name (first-name, last-name, middle-name), p_address (door-number, street, town, State)

Prescribes (relationship): Patient (1) — Medicine (M); Test (K); Doctor (N)

Medicine: quantity, id (underlined), medicine-name (underlined), expiry-date, cost

Doctor: qualification (double), specialization (double)

Relationship (relationship): Doctor (0,5) Senior — (0,1) Junior

Employee: first-name, middle-name, last-name, name, door-number, street, town, state, e_address, e-id (underlined), phone-number (underlined), email (underlined), name (underlined), joining-date, phone-number (double), e-age (dashed), e_date-of-birth, salary

ISA (Patient): Out-patient, In-patient

Out-patient: arrival-date, mild-disease

In-patient: arrival-date, discharge-date, disease

Has (relationship): In-patient (0,N) — Relative (1,1)

Allocated (relationship): In-patient (1,1) — Room (0,15)

Relative (double rectangle / weak entity): name (dashed, underlined), phone-number, relation

Room: room-number (underlined), number-of-patients (dashed), room-cost, room-type

Govern (relationship): Room (1,1) — Nurse (0,1)

Nurse: qualification (double), communication skills

ISA (Employee): Driver, Nurse

Driver: license-number (underlined)

Drive (relationship): Driver (1,1) — Vehicle (1,1); p-id

Vehicle: vehicle-number (underlined), model, color

Corrections

- Changing test name and medicine name under simple key attribute as there is no need for it to be composite.
- We have put relative entity under strong entity instead of nurse entity.(It can be clear by attributes that nurse has key as id and relative doesn't)
- Also vehicle is strong entity since it also has key attribute vehicle-number.
- The relationships mentioned such as weak and strong are incorrect and shouldn't consider as there is no need to mention them.(As relation between strong and strong entities is weak, weak and strong entities is strong)
- Nurse is in partial participation with room entity.
- Number of rooms in the hospital is 25.
- A senior doctor can have 5 junior doctors work under him.
- Mentioned cardinality ratios in quaternary relationship (N:1:K:M) as 3 of them have no specific value of constraint in participation.
- Room has partial participation in Allocate relationship.
- Given p-id is not formed by email and phone. Also name in relative can be partial key and bill-date(also time) can be partial key in bill entity.
- Qualification and specialization of doctor and nurse entities are multivalued attributes.
- Also every employee is given an email on combination of phone-number and name.