ISTE-230 Introduction to Database & Data Modeling

Homework # 5 – HAS-A and IS-A Relationships

DUE:
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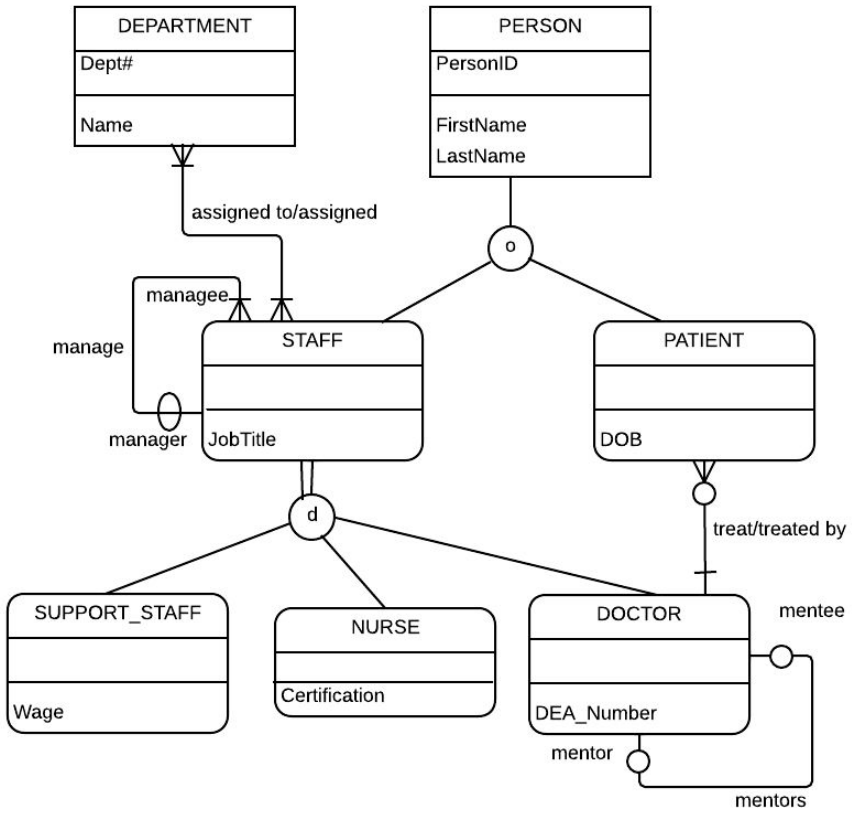
Submit this document, edited to include your answers, to the HW#5 Dropbox by the stated deadline.

Wellness Hospital



Using the E-R diagram for Wellness Hospital, that appears on the previous page, please provide your answer to the following questions.

1. (5 points) List the relationship verb phrase for each 'HAS-A' relationship that appears in the diagram.

YOUR ANSWER: doctor has a patient, department has a staff, staff has a support_staff, staff has a nurse, staff has a doctor

2. (5 points) List the relationship verb phrase for each binary relationship that appears in the diagram.

YOUR ANSWER: assigned to / assigned, treat / treated by

3. (5 points) List the relationship verb phrase for each recursive relationship that appears in the diagram.

YOUR ANSWER: managee / manage / manager, mentor / mentors / mentee

4. (5 points) List the name of each supertype entity that appears in the diagram.

YOUR ANSWER: person, department

5. (6 points) List the name of each subtype entity that appears in the diagram.

YOUR ANSWER: staff, support_staff, patient, nurse, doctor

6. (5 points) Provide an example of an entity instance of PERSON.

YOUR ANSWER: patient

7. (5 points) List the relationship verb phrase for every 1:1 relationship that appears in the diagram.

YOUR ANSWER: mentor / mentors / mentee

8. (5 points) List the relationship verb phrase for every 1:N (N:1) relationship that appears in the diagram.

YOUR ANSWER: treat / treated by, managee / manage / manager

9. (5 points) List the relationship verb phrase for every M:N relationship that appears in the diagram.

YOUR ANSWER: assigned to / assigned

10. (5 points) List the name of each strong entity that appears in the diagram.

YOUR ANSWER: person, department

11. (6 points) List the name of each weak entity that appears in the diagram.

YOUR ANSWER: staff, support_staff, patient, nurse, doctor

12. (4 points) Must a STAFF:managee be managed by a manager? Explain how you determined your answer from the E-R diagram provided.

YOUR ANSWER: no because manager has an oval meaning it is not required

13. (4 points) Can there be an instance of DOCTOR that is not an instance of STAFF? Explain your answer.

YOUR ANSWER: no because doctor branches off of staff

14. (4 points) Can a DOCTOR treat more than one PATIENT? Explain how you determined your answer from the E-R diagram provided.

YOUR ANSWER: yes because doctor to patient has crows feet meaning it can have multiple patients

15. (4 points) Must every instance of PERSON belong to a subtype? Fully explain how you determined your answer from the E-R diagram provided.

YOUR ANSWER: no because it only has a single line and not a double line connecting the relationship

16. (4 points) Could an instance of PERSON be both a STAFF and a PATIENT? Fully explain how you determined your answer from the E-R diagram provided.

YOUR ANSWER: yes because the relationship has an 'o' in it meaning it can overlap

17. (4 points) Must every instance of STAFF belong to a subtype? Fully explain how you determined your answer from the E-R diagram provided.

YOUR ANSWER: yes because it has a double line and not a single line connecting the relationship

18. (4 points) Could an instance of STAFF be both a SUPPORT_STAFF and a DOCTOR? Fully explain how you determined your answer from the E-R diagram provided.

YOUR ANSWER: no because the relationship has a 'd' in it meaning it is disjointed

19. (5 points) If a discriminator were to be added to PERSON, fully explain what that would entail and why?

YOUR ANSWER: each subtype will have its own attribute added because of the overlap rule

20. (5 points) If a discriminator were to be added to STAFF, fully explain what that would entail and why?

YOUR ANSWER: each subtype will have the same attribute assigned because of the disjoint rule

21. (5 points) Fully state the business rules for the **assigned to/assigned** relationship without using technical terms.

YOUR ANSWER: a department is assigned to multiple staff, staff are assigned multiple departments