Homework 3 Part A: Design and EER Diagram

Construct an EER diagram (with inheritance/specialization/generalization) that would be capable of modeling information for the CT^2 concussion mobile health application being developed at UConn. Design an EER schema for this application, and draw an ER diagram for the schema. Specify key attributes of each entity type, and structural constraints on each relationship type. Note any unspecified requirements, and make appropriate assumptions to make the specification complete. While MySQL Workbench does allow the design of EER diagrams, there is no symbol for a relationship (diamond in ER diagram) and it is difficult to label the relationship with cardinalities (1, n, m, etc.). As a result, I recommended that you utilize one of the PPTs from the class notes on EER design that you can grab and save as a PPT to modify and change for your solution. For Part A – upload a PPT titled: PartA_lastname_firstname.pptx.

The Connecticut Concussion Tracker (CT^2) mobile application. CT^2 is a collaboration between the Departments of Physiology and Neurobiology, and Computer Science & Engineering at the University of Connecticut and Schools of Nursing and Medicine in support of a new law passed in the state of Connecticut to track concussions of kids between ages 7 to age 19 in public schools (CT Law HB6722). As shown in the figure on the next page, the Android mobile application CT^2 consists of a UI with 7 additional tabbed screens: ‘Home’, ‘List’, and, ‘Student’, ‘Cause’, ‘Symptoms’, ‘Follow-up’, and ‘Return’, respectively. Briefly, we explain each screen. The ‘Home’ tab allows the user to enter a concussion, to retrieve an open case, or to find a student by typing the student’s last name and first name. If a user has access to ‘Retrieve Open Cases’, this returns the ‘List’ tab in the top row. The ‘Student’ tab, the last screenshot in the top row, allows the user to input the student’s general information (e.g., name, date of birth, school) and the date that the incident occurred. The ‘Cause’ tab, the first screenshot of the bottom row, allows the user via drop down options to specify where the injury was caused, with what it was caused, etc. After the user saves the data he/she entered in the ‘Cause’ tab, he/she can proceed to the ‘Symptoms’ tab where the symptoms the student had within 48 hours and other pertinent data are entered. To finish, the ‘Follow-up’ and ‘Return’ tabs allow users to record the status of the student over time and when the student can return to various activities at school. The figure contains additional explanation of the different screens. In addition, you need to keep track of students and the overall process for all of the screens is tracking the concussion incident. A student may have multiple incidents (one for each concussion) and the incident may be open (ongoing) or closed (resolved). Your database needs to be able to model multiple incidents for each student. Remember, for screens that use check boxes (like symptoms), you need to be able to store multiple symptoms. Other drop downs would store just one value but you need to model tables that would store values that are utilized to fill drop downs and checkbox lists in the mobile application. Note that you need to model both the information for concussion related data and also information that would be stored and saved for drop downs, select lists, etc.

There are four different types of users or roles that you also need to model that are the individuals that utilize the mobile application. The Nurse role represents the actions that a school nurse would take in order to manage a student’s concussion incident from its occurrence to its resolution; the Athletic Trainer (AT) role represents the actions that a trainer would take at an athletic event including a limited preliminary assessment if a concussion incident occurs at the event; the Coach role represents the actions a coach of a sport would take to report a concussion incident at an athletic event with very limited information on the student; and, the Parent role which represents the actions to both report a concussion incident on his/her child while attending the athletic event or to track the current status of his/her children that have ongoing concussions. You need to take into consideration these four types of users when modeling the database and think about what information you need to keep on each user, including shared information across users and information unique to users.
For the left screen, you need database tables for the four drop downs to allow a user to select the appropriate school. For the right screen the student name is saved and two dates and the gender.

- The location of incident is shown and needs to be stored in the DB. If the location is the school, there is a value for the location within the school. If sport, the types of sport are shown. For impact location there are values like back of head, front of head, face, neck, etc. Head gear usage is YES/NO. You also need to store "other values".

- The mild and severe symptoms are shown in the right selection box. There are a number of Y/N answers to store. The removed by could be Coach, Athletic Trainer, Teach, Nurse, or Parent. Need to track time of unconsciousness. The Concussion assessment is None or SCAT.

- Lingering symptoms are also tracked separately including an other. Symptom Resolved selection is < 1 week, < weeks, etc. Diagnosed by is Medical Doctor, Nurse, Nurse Practitioner, etc., Medical Imaging is Xray, CT, MRI, etc. For Return to learn you need to keep track of days absent, drop downs, and dates.
Homework 3 Part B: EER to relational Conversion Algorithm

Convert the class solution to be distributed for Homework 3 Part B to a set of relational tables. Clearly identify each Step in the algorithm process (see the Chapter 9 PPTs). For Part B – upload a word doc titled: PartB_lastname.firstname.docx.

Note that Employees would have entity children for: Nurse, Athletic Trainer/Coach For HMWK 3A Soln.