**CSCI 4333.1 Design of Database Systems  
Spring 2017**

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**Suggested Solution for HW #5**

This is a sample design. Other reasonable designs are acceptable.

The relation schema:

|  |  |  |
| --- | --- | --- |
| 1 | LevelHistory(SwimmerId, LevelId, StartDate, Comment, LH\_ID) | |
| Candidate Keys | | (1) {SwimmerId, LevelId, LH\_ID} |
| Foreign Keys | | (1) SwimmerId refers to Swimmer(SwimmerId) (2) LevelId refers to Level(LevelId) |
| Nullable Attributes | | Comment |
| Notes | | (1) A surrogate LH\_ID key is created |
| 2 | Level(LevelId, Level, Description) | |
| Candidate Keys | | (1) LevelId |
| Foreign Keys | |  |
| Nullable Attributes | |  |
| Notes | | (1) It is assumed each level ID requires a description |
| 3 | Event(EventID, LevelId, MeetId, Title, StartTime, EndTime) | |
| Candidate Keys | | (1) {EventId, LevelId, MeetId} |
| Foreign Keys | | (1) LevelId refers to Level(LevelId) (2) MeetId refers to Meet(MeetId) |
| Nullable Attributes | |  |
| Notes | | (1) Each event must have a title, start time, and end time, and cannot have null fields. |
| 4 | Meet(MeetId, CoachId, VenueId, Title, Date, StartTime, EndTime) | |
| Candidate Keys | | (1) {MeetId, CoachId, VenueId} |
| Foreign Keys | | (1) CoachId refers to Coach(CoachId) (2) VenueId refers to Venue(VenueId) |
| Nullable Attributes | | End Time |
| Notes | | (1) I’m assuming that an end time isn’t always known or needed and can be nullable. |
| 5 | Venue(VenueID, Address, City, State, ZipCode, Phone, Name) | |
| Candidate Keys | | (1) VenueID |
| Foreign Keys | |  |
| Nullable Attributes | |  |
| Notes | | (1) I’m assuming all information is needed for an entry and that nothing can be null. |
| 6 | V\_TaskList(MeetId, Required, Description, Penalty, PenaltyAmt, V\_TaskListID) | |
| Candidate Keys | | (1) {MeetId, V\_TaskListID} |
| Foreign Keys | | (1) MeetId refers to Meet(MeetId) |
| Nullable Attributes | | Penalty, PenaltyAmt |
| Notes | | (1) As the problem states, not every task incurs a penalty, and not every penalty is monetary, hence these attributes can be null. (2) A surrogate V\_TaskListID key is created |
| 7 | V\_Task(V\_TaskListId, V\_TaskId, Name, Comment, Num\_V) | |
| Candidate Keys | | (1) {V\_TaskListId, V\_Task} |
| Foreign Keys | | (1) V\_TaskListId refers to V\_TaskList(V\_TaskListId) |
| Nullable Attributes | | Comment |
| Notes | | (1) A surrogate V\_TaskId key is created |
| 8 | Commitment(V\_TaskId, CT\_Id, CommitmentId, CoachId, CommitTime, Rescinded, RescindTime, CarriedOut, Comment) | |
| Candidate Keys | | (1) {V\_TaskId, CT\_Id, CoachId, CommitmentId} |
| Foreign Keys | | (1) V\_TaskId refers to V\_Task(V\_TaskId) (2) CoachId refers to Coach(CoachId) (3) CT\_Id refers to Caretaker(CT\_Id) |
| Nullable Attributes | | RescindTime, Comment |
| Notes | | (1) A surrogate CommitmentID key is created |
| 9 | Caretaker(CT\_Id, FName, LName, Phone, EMail) | |
| Candidate Keys | | (1) CT\_Id |
| Foreign Keys | |  |
| Nullable Attributes | |  |
| Notes | | (1) All information is needed; therefore, no attributes can be null |
| 10 | OtherCare(CT\_Id, SwimmerId, Relationship, StartDate) | |
| Candidate Keys | | (1) {CT\_Id, SwimmerId} |
| Foreign Keys | | (1) SwimmerId refers to Swimmer(SwimmerId) (2) CT\_Id refers to Caretaker(CT\_Id) |
| Nullable Attributes | |  |
| Notes | | (1) All information is needed; therefore, no attribute is null |
| 11 | MainCare(CT\_Id, SwimmerID, Relationship, Since) | |
| Candidate Keys | | (1) {CT\_Id, SwimmerId} |
| Foreign Keys | | (1) SwimmerId refers to Swimmer(SwimmerId) (2) CT\_Id refers to Caretaker(CT\_Id) |
| Nullable Attributes | |  |
| Notes | | (1) All information is needed; therefore, no attribute is null |
| 12 | Coach(CoachId, FName, LName, Phone, Email) | |
| Candidate Keys | | (1) CoachID |
| Foreign Keys | |  |
| Nullable Attributes | |  |
| Notes | | (1) All information is needed; therefore, no attribute is null |
| 13 | Swimmer(SwimmerId, LevelId, FName, LName, Phone, Email, JoinTime) | |
| Candidate Keys | | (1) SwimmerId |
| Foreign Keys | | (1) LevelId refers to Level(LevelId) |
| Nullable Attributes | |  |
| Notes | |  |
| 14 | Participation(SwimmerId, EventId, ParticipationId, CoachId, Committed, CommitTime, Participated, Result, Comment) | |
| Candidate Keys | | (1) Committed, CommitTime, Participated, Result, Comment |
| Foreign Keys | | (1) SwimmerId refers to Swimmer(SwimmerId) (2) Event refers to Event(EventId) (3) CoachId refers to Coach(CoachId) |
| Nullable Attributes | | Comment |
| Notes | | (1) A surrogate ParticipationId key is needed |