

CSCI 4333.1 Design of Database Systems

Spring 2017

Suggested Solution for HW #5

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

The relation schema:

1	<u>Swimmer</u> (<u>SwimmerId</u> , FName, LName, Phone, Email, JoinTime, CurrentLevelId, Main_CT_Id, Main_CT_Relationship, Main_CT_Since)
Candidate Keys	[1] SwimmerId
Foreign Keys	[1] Main_CT_Id references CareTaker(CT_Id), [2] CurrentLevelId references Level(LevelId).
Nullable Attributes	
Notes	[1] The relationship "Main Caretaker" is implemented as three attributes Main_CT_Id, Main_CT_Relationship, Main_CT_Since. It is also acceptable to use a separate relation to implement the relationship. [2] CurrentLevelId is a derived column that can be obtained from the table LevelHistory.
2	<u>Caretaker</u> (<u>CT_Id</u> , FName, LName, Phone, Email)
Candidate Keys	[1] CT_Id
Foreign Keys	
Nullable Attributes	
Notes	
3	<u>OtherCaretaker</u> (<u>OC_Id</u> , SwimmerId, CT_Id, Relationship, Since)
Candidate Keys	[1] OC_Id, [2] {SwimmerId, CT_Id}
Foreign Keys	[1] SwimmerId references Swimmer(SwimmerId), [2] CT_Id references Caretaker(CT_Id)
Nullable Attributes	
Notes	[1] A surrogate key, OC_Id, is created as the primary key. This is optional.
4	<u>Level</u> (<u>LevelId</u> , Level, Description)
Candidate Keys	[1] LevelId, [2] Level
Foreign Keys	
Nullable Attributes	Possibly Description, depending on assumptions made.
Notes	
5	<u>LevelHistory</u> (<u>LH_Id</u> , SwimmerId, LevelId, StartDate, Comment)
Candidate Keys	[1] LH_Id, [2] SwimmerId, LevelId
Foreign Keys	[1] SwimmerId references Swimmer(SwimmerId), [2] LevelId references Level(LevelId).
Nullable Attributes	Comment
Notes	(1) A surrogate key, LH_Id, is created as the primary key. This is optional.
6	<u>Coach</u> (<u>CoachId</u> , FName, LName, Phone, Email)
Candidate Keys	(1) CoachId
Foreign Keys	
Nullable Attributes	
Notes	

7	Meet (MeetID , Title, Date, StartTime, EndTime, VenueId, CoachId)	
Candidate Keys		[1] MeetId
Foreign Keys		[1] CoachId references Coach(CoachId), [2] VenueId references Venue(VenueId)
Nullable Attributes		
Notes		
8	Venue (VenueId , Name, Address, City, State, ZipCode, Phone)	
Candidate Keys		[1] VenueId, [2] Name (likely), [3] {Address, City, State, ZipCode} (likely)
Foreign Keys		
Nullable Attributes		
Notes		
9	Event (EventId , Title, StartTime, EndTime, MeetId, LevelId)	
Candidate Keys		[1] EventId
Foreign Keys		[1] MeetId references Meet(MeetId), [2] LevelId references Level(LevelId).
Nullable Attributes		
Notes		
10	Participation (ParticipationId , SwimmerId, EventId, Committed, CommitTime, Participated, Result, Comment, CommentCoachId)	
Candidate Keys		[1] ParticipationId, [2] SwimmerId, EventId.
Foreign Keys		[1] SwimmerId references Swimmer(SwimmerId), [2] EventId references Event(EventId), [3] CommentCoachId references Coach(CoachId)
Nullable Attributes		Committed, CommitTime, Participated, Result, Comment, CommentCoachId
Notes		(1) A surrogate key, ParticipationId, is created as the primary key. It is optional.
11	V_TaskList (VTL_Id , MeetId, Required, Description, Penalty, PenaltyAmt)	
Candidate Keys		[1] VTL_Id, [2] MeetId
Foreign Keys		[1] MeetId references Meet(MeetId)
Nullable Attributes		Penalty, PenaltyAmt
Notes		[1] A surrogate key, VTL_Id, is created as the primary key.
12	V_Task (VT_Id , VTL_Id , Name, Comment, Num_V)	
Candidate Keys		[1] VT_Id, [2] {VTL_Id, Name} (likely)
Foreign Keys		[1] VTL_Id references V_TaskList(VTL_Id)
Nullable Attributes		Comment (possibly)
Notes		[1] A surrogate key, VT_Id, is created as the primary key. [2] Num_V is not nullable and has a default value of 1.
13	Commitment (CommitmentId , CT_Id, VT_Id, CommitTime, Rescinded, RescindTime, CarriedOut, Comment, CommentCoachId)	
Candidate Keys		[1] CommitmentId, [2] {CT_ID, VT_Id}
Foreign Keys		[1] CT_Id references Caretaker(CT_Id), [2] VT_Id references V_Task(VT_Id), [3] CommentCoachId references Coach(CoachId)
Nullable Attributes		Rescinded, RescindTime, CarriedOut, Comment, CommentCoachId
Notes		[1] A surrogate key, CommitmentId, is created as the primary key.