

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	Swimmer (SwimmerId , 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	Caretaker (CT_Id , FName, LName, Phone, Email)
Candidate Keys	[1] CT_Id
Foreign Keys	
Nullable Attributes	
Notes	
3	OtherCaretaker (OC_Id , 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	Level (LevelId , Level, Description)
Candidate Keys	[1] LevelId, [2] Level
Foreign Keys	
Nullable Attributes	Possibly Description, depending on assumptions made.
Notes	
5	LevelHistory (LH_Id , 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	Coach (CoachId , FName, LName, Phone, Email)
Candidate Keys	(1) CoachId
Foreign Keys	
Nullable Attributes	
Notes	

7	Meet(<u>MeetID</u> , 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(<u>VenueId</u> , 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(<u>EventId</u> , 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(<u>ParticipationId</u> , 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(<u>VTL_Id</u> , 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(<u>VT_Id</u> , 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(<u>CommitmentId</u> , 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.