CSCI 5333.1 DBMS
Fall 2021

Suggested Solution for HW #2

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

The relation schema:

1	Member(MemberId, Username, Password, ScreenName, Email, StartTime)
Candidate Keys	[1] MemberId, [2] Username, [3] ScreenName
Foreign Keys	
Nullable Attributes	
Non-nullable Attributes	MemberId, Username, Password, ScreenName, Email, StartTime
Notes	
2	ResponseList(RL_Id, Name, Comment)
Candidate Keys	[1] RL_Id
Foreign Keys	
Nullable Attributes	Name, Comment
Non-nullable Attributes	RL_Id
Notes	[1] A surrogate key, RL_Id, is created as the primary key.
3	Response(ResponseId, ResponseText, Order, Comment, RL_Id)
Candidate Keys	[1] ResponseId
Foreign Keys	[1] RL_Id references ResponseList(RL_Id)
Nullable Attributes	Comment
Non-nullable Attributes	ResponseId, ResponseText, Order, RL_Id
Notes	[1] A surrogate key, ResponseId, is created as the primary key.
4	Question(QuestionId, Question, Comment, RL_Id)
Candidate Keys	[1] QuestionId
Foreign Keys	[1] RL_Id references ReponseList(RL_Id)
Nullable Attributes	Comment
Non-nullable Attributes	QuestionId, Question, RL_Id
Notes	[1] A surrogate key, QuestionId, is created as the primary key.
5	Group(GroupId, Name, Comment, GroupType)
Candidate Keys	[1] GroupId
Foreign Keys	
Nullable Attributes	Name, Comment,
Non-nullable Attributes	GroupId, GroupType
Notes	[1] A surrogate key, GroupId, is created as the primary key. [2] The column GroupType of enum type is created with three values {'simple', 'branch', 'sequence'}, representing one of the subclasses. [3] It is possible to store SurveryId in Group as a foreign key instead of storing GroupId in Survey as a foreign key. [4] In this design, the relation Group implements the classes Group, Simple Group, and Sequence Group. The Branch Group is implemented separately.
6	Survey(SurveyId, Name, CreationTime, Comment, OwnerId, GroupId)

Candidate Keys	[1] SurveyId. [2] GroupId
Foreign Keys	[1] OwnerId references Member(MemberId), [2] GroupId references Group(GroupId)
Nullable Attributes	Comment
Non-nullable Attributes	SurveyId, Name, CreationTime, OwnerId, GroupId
Notes	
7	Tag(TagId, TagName, Comment)
Candidate Keys	[1] TagId, [2] TagName
Foreign Keys	
Nullable Attributes	Comment
Non-nullable Attributes	TagId, TagName
Notes	[1] A surrogate key, TagId, is created as the primary key.
8	SurveyTag(ST_Id, SurveyId, TagId)
Candidate Keys	[1] ST_Id, [2] SurveyId, TagId
Foreign Keys	[1] SurveyId references Survey(SurveyId), [2] TagId references Tag(TagId)
Nullable Attributes	
Non-nullable Attributes	SCId, SurveyId, TagId
Notes	[1] A surrogate key, ST_Id, is created as the primary key.
9	SG_Question(SGQ_Id, SGroupId, QuestionId, order)
Candidate Keys	[1] SGQ_Id, [2] SGroupId, QuestionId, order
Foreign Keys	[1] SGroupId references Group(GroupId), [2] QuestionId references Question(QuestionId).
Nullable Attributes	
Non-nullable Attributes	SGQ_Id, SGroupId, QuestionId, order
Notes	[1] A surrogate key, SGQ_Id, is created as the primary key. [2] The GroupType of Group SGroupId referencing to must be ‘simple’.
10	SequenceOrder(SO_Id, ParentGroupId, ChildGroupId, order)
Candidate Keys	[1] SO_Id, [2] ParentGroupId, ChildGroupId, order
Foreign Keys	[1] ParentGroupId references Group(GroupId), [2] ChildGroupId references Group(GroupId)
Nullable Attributes	
Non-nullable Attributes	SO_Id, ParentGroupId, ChildGroupId, order
Notes	[1] A surrogate key, SO_Id, is created as the primary key. [2] The GroupType of Group ParentGroupId referencing to must be ‘sequence’.
11	BranchGroup(BranchGroupId, GroupId, QuestionId)
Candidate Keys	[1] BranchGroupId, [2] GroupId
Foreign Keys	[1] GroupId references Group(GroupId), [2] QuestionId references Question(QuestionId).
Nullable Attributes	
Non-nullable Attributes	BranchGroupId, GroupId, QuestionId
Notes	[1] A surrogate key, BranchGroupId, is created as the primary key.
12	Branch(BranchId, BranchGroupId, NextSubgroupId, ResponseId)
Candidate Keys	[1] BranchId, (2) BranchGroupId, ReponseId
Foreign Keys	[1] BranchGroupId references BranchGroup(BranchGroupId), [2] NextSubgroupId references Group(GroupId), [3] ReponseId references Response(ResponseId)

Nullable Attributes	
Non-nullable Attributes	BranchId, BranchGroupId, NextSubgroupId, ChoiceId
Notes	[1] A surrogate key, BranchId, is created as the primary key.
13	SurveyResponse(SR_Id, CompletionTime, SurveyId, MemberId)
Candidate Keys	[1] SR_Id, [2] SurveyId, MemberId
Foreign Keys	[1] SurveryId references Survey(SurveyId), [2] MemberId references Member(MemberId).
Nullable Attributes	
Non-nullable Attributes	SR_Id, CompletionTime, SurveyId, MemberId
Notes	[1] A surrogate key, SR_Id, is created as the primary key.
14	QuestionResponse(QR_Id, SR_Id, QuestionId, ResponseId)
Candidate Keys	[1] QR_Id, [2] SR_Id, QuestionId
Foreign Keys	[1] SR_Id references SurveryResponse(SR_Id), [2] QuestionId references Question(QuestionId).
Nullable Attributes	
Non-nullable Attributes	QR_Id, SR_Id, QuestionId, ResponseId
Notes	[1] A surrogate key, QR_Id, is created as the primary key.

There are many other acceptable alternative relational schemas.