Group Project Database Schema

Situation #1: Small amount of questions being repeatedly answered in the same order.

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| --- | --- | --- | --- | --- |
| Users | Responses | Questions | Options | References |
| ***userID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***username***: varchar(255), NOT NULL  ***password***: varchar(255), NOT NULL  ***type***: varchar(255), NOT NULL  ***score***: int, NOT NULL | ***date***: date, NOT NULL, PRIMARY KEY  ***userID***: int, NOT NULL, PRIMARY KEY, FOREIGN KEY  ***questionID***: int, NOT NULL, PRIMARY KEY, FOREIGN KEY  ***optionID***: int, NOT NULL, PRIMARY KEY, FOREIGN KEY | ***questionID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***qDescription***: varchar(255), NOT NULL | ***optionID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***optionDescription***: varchar(255), NOT NULL  ***questionID***: int, NOT NULL, FOREIGN KEY  ***correct***: bool, NOT NULL | ***referenceID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***referenceLink***: varchar(255), NOT NULL  ***optionID***: int, NOT NULL, FOREIGN KEY |

It is optional for a customer to place multiple orders, an order must be placed by one customer, otherwise it won’t be placed at all

Defining relationships & describing multiplicities:

1. Each user must make multiple responses to answer each of the questions
2. Multiple responses must be made by each user
3. Each question must have multiple responses
4. Multiple responses must be made to each question
5. Each question must have multiple options
6. Multiple options are mandatory for each question
7. Each option may contain multiple references
8. Multiple references may belong to each option

* One user ***must*** make one or more responses
* Multiple responses ***must*** be made by one or more users
* One question ***must*** have one or more responses
* Many responses ***must*** be made to one question
* One question ***must*** have one or more options
* Many options ***must*** belong to one question
* One option ***may*** contain one or more references
* Many references ***may*** belong to one option

1 user can make multiple responses, multiple responses can be made by 1 user.

1 question can have multiple responses, multiple responses can belong to 1 question.

1 question can have multiple options, multiple options can belong to 1 question.

Situation #2: Large amount of questions, system pulls random number for users to answer.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Users | Test | Test-questions | Questions | Options | References |
| ***userID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***username***: varchar(255), NOT NULL  ***password***: varchar(255), NOT NULL  ***type***: varchar(255), NOT NULL  ***score***: int, NOT NULL | ***testID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***date***: date, NOT NULL, PRIMARY KEY  ***userID***: int, NOT NULL, PRIMARY KEY, FOREIGN KEY | ***questionID***: int, NOT NULL, auto\_increment, PRIMARY KEY, FOREIGN KEY  ***optionID***: int, NOT NULL, auto\_increment, PRIMARY KEY, FOREIGN KEY  ***testID***: int, NOT NULL, auto\_increment, PRIMARY KEY, FOREIGN KEY | ***questionID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***qDescription***: varchar(255), NOT NULL | ***optionID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***optionDescription***: varchar(255), NOT NULL  ***questionID***: int, NOT NULL, FOREIGN KEY  ***correct***: bool, NOT NULL | ***referenceID***: int, NOT NULL, auto\_increment, PRIMARY KEY  ***referenceLink***: varchar(255), NOT NULL  ***optionID***: int, NOT NULL, FOREIGN KEY |

Defining relationships & describing multiplicities:

1. Each user may take multiple tests
2. Multiple tests can be taken by each user
3. Each test must consist of multiple test questions
4. Multiple test questions must be included in each test
5. Each question can be included in multiple sets of test questions
6. Multiple sets of test questions can include each question
7. Each question must include multiple options
8. Multiple options must belong to each question
9. Each option can contain multiple references
10. Multiple references can be included in each option

* One user ***may*** take many tests
* Many tests ***may*** be taken by one or more users
* One test ***must*** consist of one or more test questions
* Many test questions ***must*** be included in one test
* One question ***may*** be included in many test questions
* Many test questions ***must*** include one or more questions
* One question ***must*** include one or more options
* Many options ***must*** belong to one question
* One option ***may*** contain one or more references
* Many references ***may*** belong to one option

1 question can be included in multiple tests

multiple tests can include 1 question.

1 question can have multiple options

multiple options can belong to 1 question.

Doing normalisation first works for small databases, not big ones. Normalisation assumes that you know all the fields and tables that are going to be included. If you don’t, it’s better to do ER modelling first.