

INFS1200/7900 Information Systems

Assignment 1 (10 Marks)

Due: 21 Sept 2018 @ 5.00 PM

Assignment 1 consists of the design, which includes an Entity-Relationship diagram, mapping to the relational schema and further normalization of the relational schema if required. The necessary information for schema design is given in the Universe of Discourse (UoD) described below. This part can be done individually or in a group of two students.

1 Submission

Submissions will be done via Blackboard. Marking will be done through an electronic marking tool called Gradescope, which will also be used for providing feedback.

Please use the supplied answer template for all answers. Your work must fit in the predefined sections or it will not be marked

Submit your assignment electronically via the provided link on Blackboard under the Assessment folder.

1.1 Submission for Groups

Submission should be made by ONE team member only.

Extra submissions will attract penalties.

2 Universe of Discourse

The FIFA World Cup, often simply called the World Cup, is an international association football competition contested by the senior men's national teams of the members of the Fédération Internationale de Football Association (FIFA), the sport's global governing body. The championship has been awarded **every four years** since the inaugural tournament in 1930, except in 1942 and 1946 when it was not held because of the Second World War.

The most recent competition was held in Russia in June and July

You have been tasked with the planning and development of a system to keep statistics on all of the World Cups. Your design should be able to keep data on each of the points mentioned below:

1. The year & host country of each **tournament**. The tournament is held every 4 years & the same country may host it multiple times.
2. The **countries** that have participated in the World Cup (and the specific year/s **name** they participated) and their current populations.
3. All the members of each **team** in each World Cup – **players**, managers, support staff etc. **coaches**
4. **Matches** played in each tournament
 - a. The two teams playing **need one more relationship** **N-ary (3) with Match**
 - b. Players who scored goals
 - c. Players who saved goals
 - d. The date, time and venue for each match **subset**
 - e. Whether the match was a pool match or an elimination match. Record the penalty shoot-out score for any elimination matches.
5. Tickets sold to each match, the price of the **ticket**, and the **customer** that bought it. Record at least the name, email, and country of each customer.
6. The club team that each player plays for outside of the world cup (Liverpool, Manchester City, Real Madrid etc.). This club does not have to be in the same country that they play for.

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ticket, customer, match (relationship: 2 or 3-nary)
member (managers, players, support staff) - should be subclass or attributes
scored/ saved goals - should they have a attribute on the relationship
verb between tournament and match

3 Schema Design

The following describes what is expected in the design part of the assignment.

ER Diagram

Part 1: Create an ER diagram using the notation taught in lectures to represent the conceptual schema described by the Universe of Discourse. Depending on your design choices, you may need to use the extended ER diagram.

State clearly any assumptions you make regarding your design approach on your ER Diagram. Please note that you cannot make assumptions to simplify or compromise the completeness of the Universe of Discourse. If there are any points that need clarification, in the specification of the Universe of Discourse as given above, you must first attempt to clarify them with your tutor and/or lecturer.

Mapping

Part 2: Map the ER diagram created in 2.1 to a relational schema.

Remember to include ALL your foreign keys!

Functional Dependencies & Normalisation

Answer the following questions based on the relation & description below:

PRODUCTS[MatchID, ProductID, ProductType, Description, Price, Alcoholic, VendorID, VendorName, Quantity, SeniorDiscount]

Products sold at the World Cup have an identification number which identifies their product type and description, senior discount eligibility and alcoholic nature. Vendors in stadiums are identified by an ID which informs their name. The matchID and vendorID should inform the quantity of products sold during the game. Each product has a set price in each match.

Part 3: List all functional dependencies in the PRODUCTS relation

Part 4: Normalise the PRODUCTS relation to BCNF

4 Marking

Assignment 1 is allocated 60 points which are converted into 10 course marks.

ER Diagram	25 points
Mapping	15 points
Functional Dependencies	5 points
Normalization	5 points

5 Collaboration

Database design is best done in teams, not only to share the workload but also to share and exchange ideas and discuss design choices. Therefore, you are encouraged (not required) to work in a group of two. Students working in a group will submit only ONE copy of the solution, which can be done through the account of either member of the group. *Both students working in a group will be given a common mark.*

Students who believe they have sound reasons for late submission should refer to the course profile (section 5.3 on Late Submissions).

6 Plagiarism

The University has strict policies with regard to plagiarism. Penalties for engaging in unacceptable behaviour can range from cash fines or loss of grades in a course, through to expulsion from the University. You are required to read and understand the policies on academic integrity and plagiarism in the course profile (section 6.1).

If you have any questions regarding acceptable level of collaboration with your peers, please see either the lecturer or your tutor for guidance. Remember that ignorance is not a defence!