Data and Applications

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Group Assignment - 2 - Critical Analysis of the Required Document

1 Completeness of the Document

1. Foreign keys aren't part of an ER model, they are part of the relational database model, we use lines between the entities to represent the relationship.
2. None of the relationships were given a name, only the cardinality ratios and the participating entities were mentioned
3. There was one **n>3** relationship of degree 6 having no name and no cardinality constraints.

2 Correctness of the Document

1. Winner is represented as a separate entity type, however a relationship already exists between winner and owner. It would be more appropriate to represent this as a degree 3 relationship between event owner and dog. We chose to remove this entity as not only was it redundant, it redefined the same relation multiple times
2. Winner is represented as a weak entity even though it has a primary key in the form of name + owner id.
3. Foreign Key for dog in the form of Owner ID.
4. Using event ID as a foreign key in JUDGES, DOG, OWNER, TICKET-BUYER
5. Winner is represented as a weak entity even though it has a primary key in the form of name + OWNER ID (which is a foreign key).
6. Dog is also represented as a weak entity even though it has a primary key in the form of name + OWNER ID (which is a foreign key).

2.1 Observed Redundancies

1. Winner is represented as a separate entity type, however a relationship already exists between winner and owner. It would be more appropriate to represent this as a degree 3 relationship between event owner and dog. We chose to remove this entity as not only was it redundant, it redefined the same relation multiple times.

2. The owner to event relationship is redundant.

3 Comprehensiveness of the Document

1. Since some entities were incorrectly labelled (as mentioned above), there was some effort needed to reorganise the EER diagram. But apart from these few changes, it was moderately difficult to construct the diagram from the given requirements document.

2. Under the retrievals point 5 "Search" it was mentioned that searching for a sub-string would output all the possible matching records. The example given adjoining the same seems to be incorrect. According to "Team Data Worms", searching for "Joh" through the database should also output "Jonathan" which honestly seems to be counter-intuitive.

4 Modifications

1. The unnamed relationship of degree 6 has many redundant entities participating, however since their use is not explained we will keep all these entities in the relationship and treat them as important.

2. The unnamed relation of degree 6 was named participates and its degree was reduced to 5. This was essential in order to reduce redundancies and in order to avoid redefining similar relationships multiple times.

3. Cardinality constraints for degree 6 relationship were not mentioned, hence we assigned the constraints based on a general understanding of the requirements.

4. The cardinality constraints were assigned as follows
$\boxed{(DOG : OWNER : EVENT : JUDGE : TICKET - BUYER) = (D : 1 : N : 1 : T)}$,
this is because :

   - Each dog must participate in at least one event and a given dog can participate in multiple events.
   - A given event can be attended by multiple ticket buyers, dogs and owners and hence it can participate in this relationship multiple times.

- Each judge has to judge at least one event and can judge at most 1 event (as specified by the requirements document.
- Each ticket buyer can buy tickets for multiple events and hence can participate in the relationship multiple times.
- Given a tuple with values for DOG, EVENT, JUDGE and TICKET-BUYER, we can uniquely identify the OWNER of the given dog.
- This means there will be a lot of tuples for which the value of dog and owner will be the same and event judge and ticket buyer will be different, only dog is required to identify the owner but we keep the above to ensure that our requirements are as close to the clients needs as possible.

Link to the EER diagram(In case the below image is not clear) -

https://whimsical.com/SLqbQFhzyhpYQN7AF4Fbs5

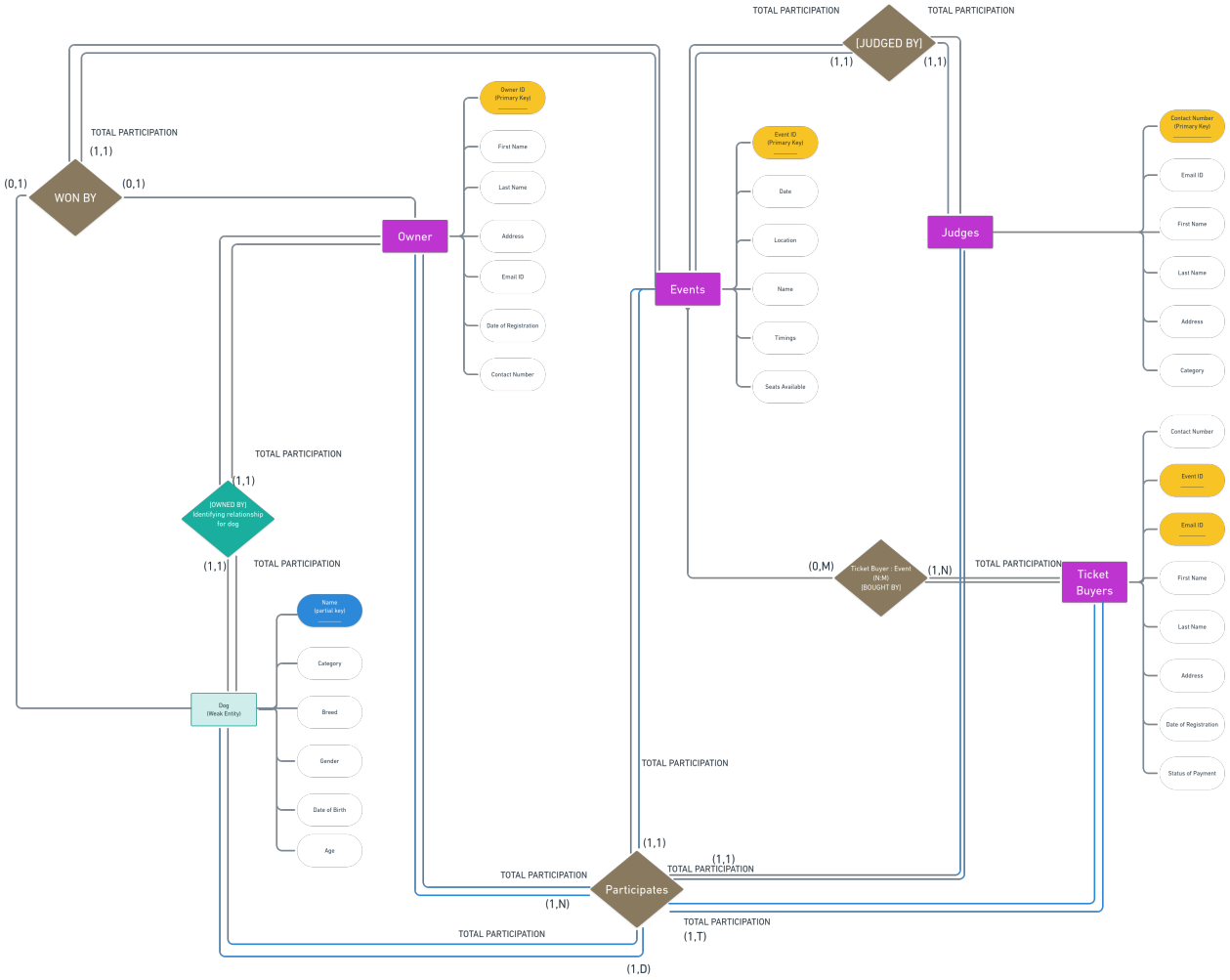
TOTAL PARTICIPATION
[JUDGED BY]
TOTAL PARTICIPATION
(1,1)
(1,1)
TOTAL PARTICIPATION
(1,1)
(0,1)
WON BY
(0,1)
Owner
Owner ID (Primary Key)
First Name
Last Name
Address
Email ID
Date of Registration
Contact Number
Events
Event ID (Primary Key)
Date
Location
Name
Timings
Seats Available
Judges
Contact Number (Primary Key)
Email ID
First Name
Last Name
Address
Category
TOTAL PARTICIPATION
(1,1)
[OWNED BY] Identifying relationship for dog
(1,1)
TOTAL PARTICIPATION
Name (partial key)
Category
Breed
Gender
Date of Birth
Age
Dog (Weak Entity)
(0,M)
Ticket Buyer - Event (N,M) [BOUGHT BY]
(1,N)
TOTAL PARTICIPATION
Ticket Buyers
Contact Number
Event ID
Email ID
First Name
Last Name
Address
Date of Registration
Status of Payment
TOTAL PARTICIPATION
(1,1)
TOTAL PARTICIPATION
(1,1)
TOTAL PARTICIPATION
(1,N)
Participates
TOTAL PARTICIPATION
(1,T)
TOTAL PARTICIPATION
(1,D)

Figure 1: