

Part 1: Derive Entities and Attributes from a Text Description

1. Document the entities that should be added to diagram.

Entities: Horse, Owner, Barn, Jockey, Trainer, Schedule, Race, Entry, Person

2. Document possible attributes for the Horse entity based on the requirements scenario

Ans:

Registration Number Name, Type, Gender, Trainer ID, Dam (Mother) ID, Sire (Father) ID, Barn ID, Date of Purchase, Purchase Price

3. Document possible attributes for the Barn entity based on the requirements.

Ans:

Attributes for the Barn Entity:

Barn ID (Primary Key)

Barn Name

4. Document possible attributes for the Person entity based on the requirements.

Ans:

Attributes for the Person Entity:

Person ID (Primary Key), Name, Address, Phone Number, Role (Owner, Trainer, Jockey)

5. Document possible attributes for the Schedule entity based on the requirements.

Ans:

Attributes for the Schedule Entity:

- Schedule ID (Primary Key)
- Race Track ID (Foreign Key from Race Track entity)
- Date

6. Document possible attributes for the Race entity based on the requirements.

Ans:

Attributes for the Race Entity:

- Race ID (Primary Key)
- Schedule ID (Foreign Key from Schedule entity)
- Race Number
- Purse

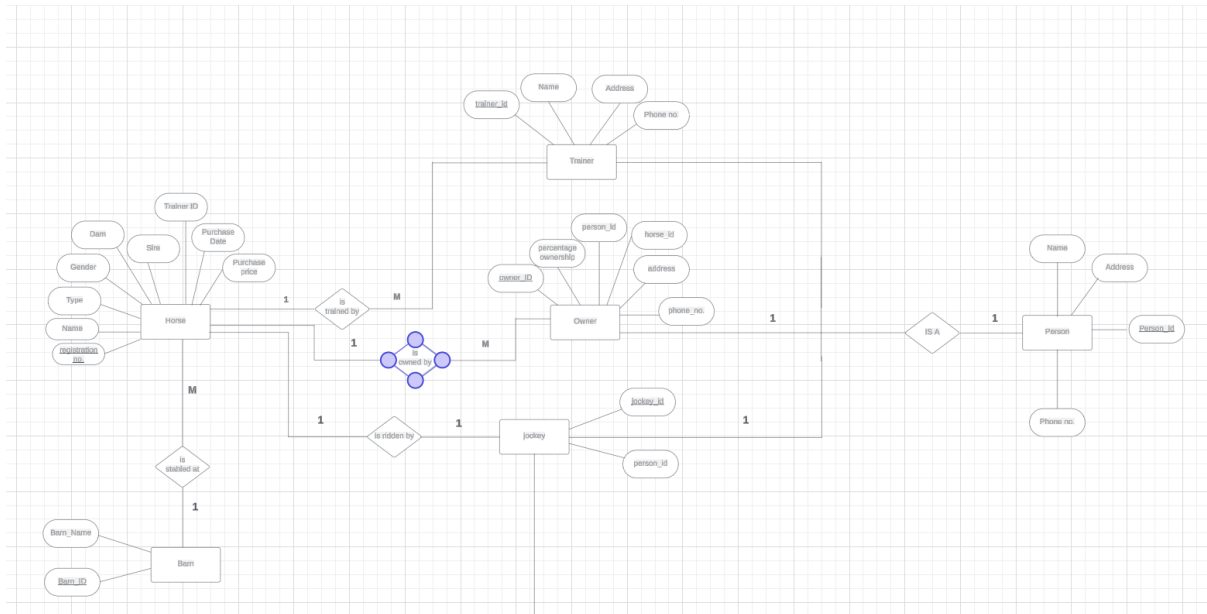
7. Document possible attributes for the Entry entity based on the requirements.

Ans:

Attributes for the Entry Entity:

- Entry ID
- Race ID
- Horse ID
- Jockey ID
- Gate Position
- Finishing Position

8. Make a screen capture showing the ER diagram with four entities.



9. Make a screen capture showing the ER diagram with nine entities and their attributes for the Darling Downs Race Track scenario.

[https://github.com/ronish645/CS457LAB_ronish-19707-/blob/main/Lab%20assignment1%20\(1\).pdf](https://github.com/ronish645/CS457LAB_ronish-19707-/blob/main/Lab%20assignment1%20(1).pdf)

Part 2: Derive Relationships from a Text Description

1. Horse-Trainer Relationship: A Trainer can train multiple horses. (One-to-Many)
2. Horse-Owner Relationship: A horse can have multiple Owners as well as an Owner can own multiple horses. (Many-to-Many)
3. Horse-Barn Relationship: A Barn can accommodate multiple horses. (One-to-Many)
4. Entry-Horse Relationship: A Horse can have multiple Entries. (One-to-Many)
5. Entry-Jockey Relationship: A Jockey can participate in multiple Entries. (One-to-Many)
6. Race-Entry Relationship: A Race can have multiple Entries. (One-to-Many)

Participants constrain.

1. Horse-Trainer Relationship: Every horse must have a Trainer assigned.
2. Horse-Barn Relationship: Every horse must be stabled at a barn.

3.Horse-Owner Relationship: Every horse must have at least one owner.

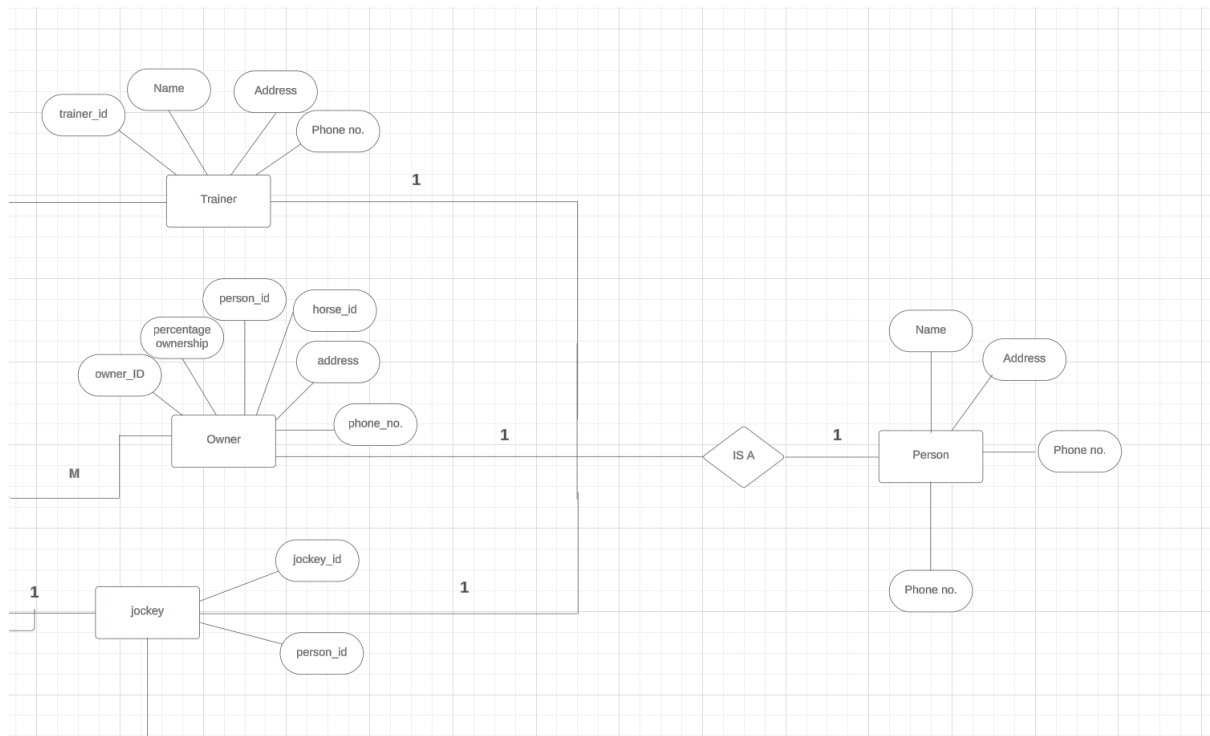
4.Person-Trainer Relationship: Every person involved in horse racing is not necessarily a trainer. Here, weak entities are trainers, and Entries depend on other entities to exist.

Cardinality Constraints:

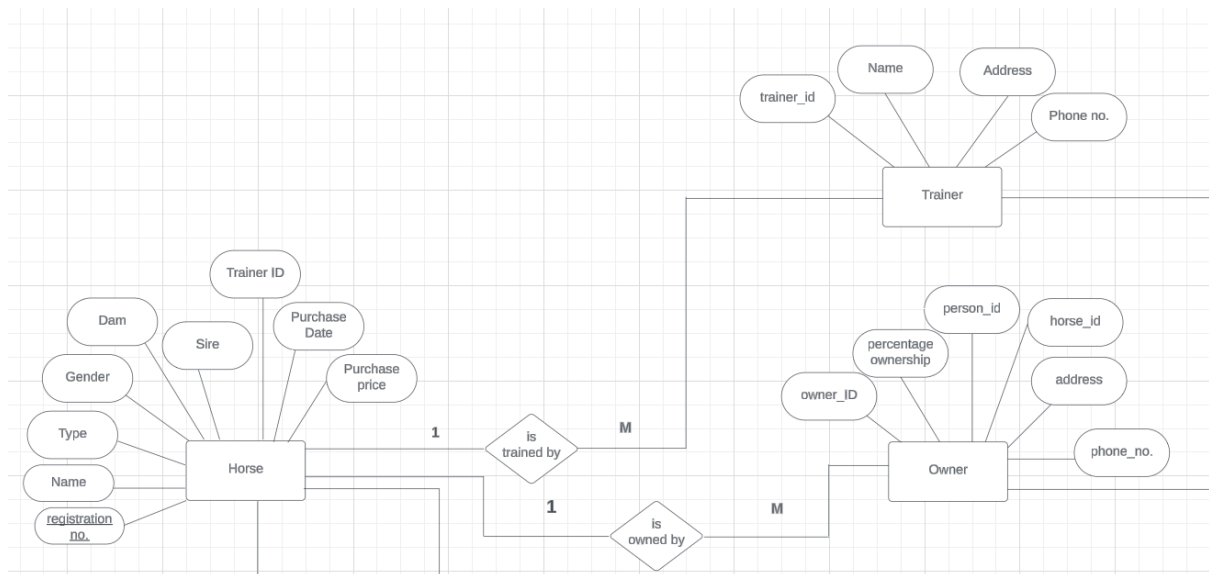
- One horse can be trained by only one trainer but a trainer can train many horses.
- One horse can be owned by one or more owners and an owner can own one or more horses.
- Each horse is stabled at one barn.
- Each race can have multiple entries but each entry is associated with one race.

Weak Entity: Trainer and owner could be weak entities as they are dependent on the Horse entity. If there is no horse entity, the owner and trainer entity cannot exist.

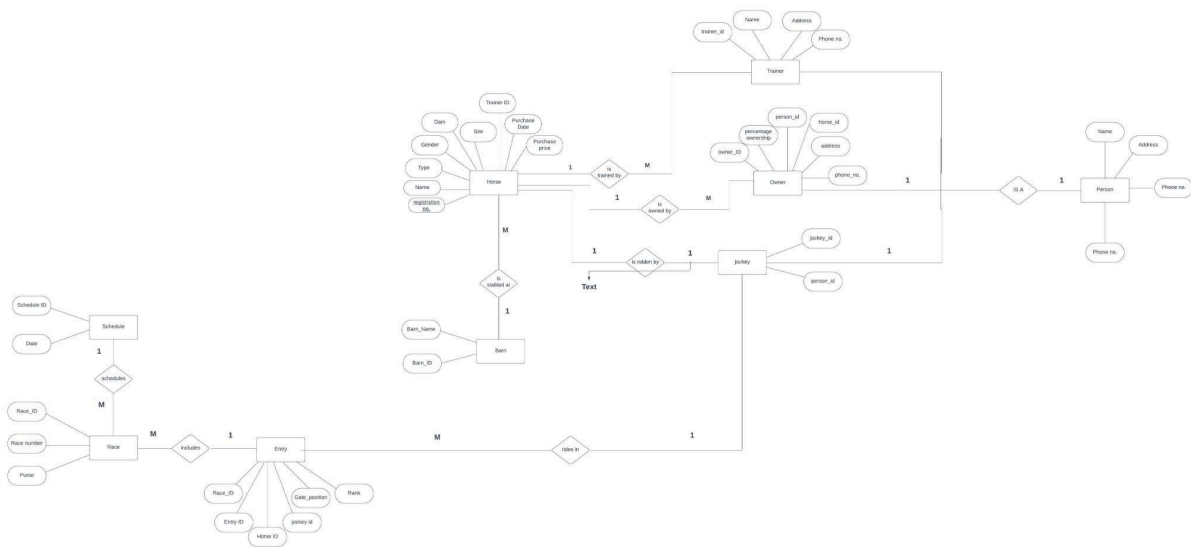
2. Make a screen capture showing the ER diagram with the Person, Owner, Trainer, and Jockey entities and the IsA relationships between them.



3. Make a screen capture showing the ER diagram with the Horse, Owner, and Trainer entities, the relationships between them, and their attributes.



4. Make a screen capture showing the ER diagram with the 7 entities, 2 weak entities, 12 relationships, and 18 attributes.



If the image is not clear,

[https://github.com/ronish645/CS457LAB_ronish-19707-/blob/main/Lab%20assignment1%20\(1\).pdf](https://github.com/ronish645/CS457LAB_ronish-19707-/blob/main/Lab%20assignment1%20(1).pdf)

Part 3: Complete an ER Diagram

1. Document the names of each primary key attribute you selected or created for (a) Horse,

(b) Barn, (c) Person, (d) Schedule, (e) Owner, (f) Trainer, and (g) Jockey.

(a) regisNumber (b) barnID (c) personID (d) scheduleID (e) ownerID (could vary, the student

chooses the name) (f) trainerID (could vary, the student chooses the name) (g) jockeyID (could

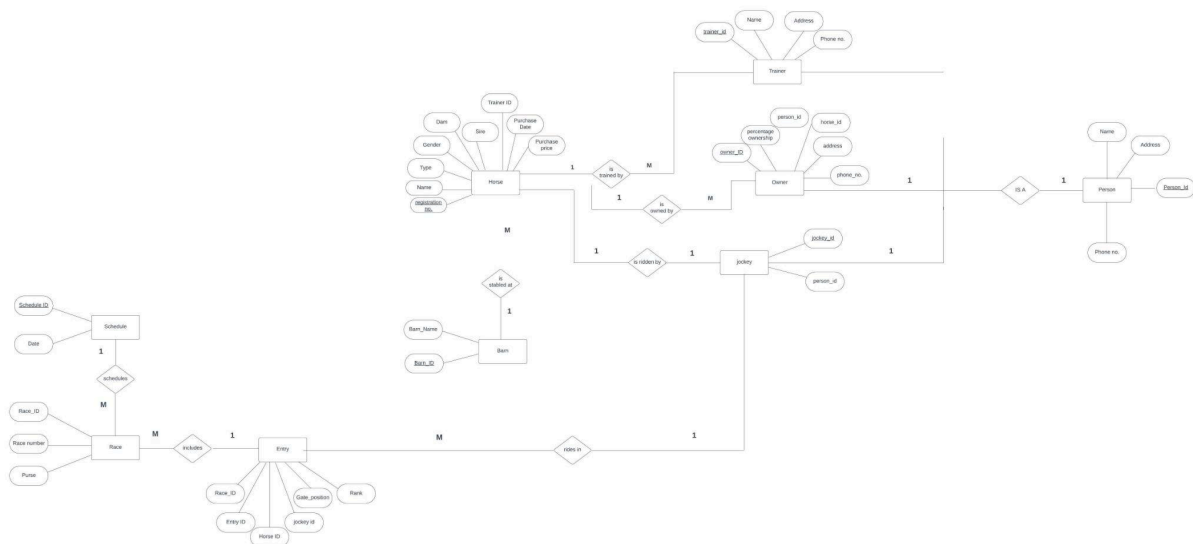
vary, the student chooses the name).

Answer:

The primary key for each entities are:

- a. Horse: registration_number
- b. Barn: barn_id
- c. Person: Person_id
- d. Schedule: schedule_id
- e. Owner: owner_id
- f. Trainer: trainer_id
- g. Jockey: jockey_id

2. Make a screen capture showing the ER diagram with primary keys for all of the strong Entities.



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3. Document the names of the binary relationships that are missing one or both cardinality values.

(1) StabledAt (2) RunsIn (3) RidesIn

Answer:

StabledAt: This relationship shows where a horse is usually kept. The cardinality in this case, would describe the number of horses one stable can hold and also how many stables a horse may be kept at.

RunsIn: As such, this relationship links a horse to the races it runs in. The cardinality would indicate the number of races a horse can represent and also how many horses are allowed in one entry.

RidesIn: It is a jockey-entries relationship. The cardinality would specify the number of entries that a jockey may ride in, and also how many jockeys can be riding for one entry (normally just 1).

4. Document your assumptions about the missing cardinality values as an English statement that is understandable by an end user.

(1) A barn can have many horses stabled at it

(2) A horse may run in many entries

(3) A jockey may run in many entries

Answers:

Each barn provides shelter for several horses. This means that we can have any number of horses staying in a single barn, but each horse is assigned to just one barn at a time for its care and shelter needs."

A horse can participate in multiple races over time, which means it might be listed in numerous race entries. However, it will only run in one race at a time according to the schedule."

A jockey can ride different horses in various races, meaning that their name may appear in several race entries. Like horses, a jockey can only compete in one race at a time per schedule but may race multiple times on a race day or throughout a racing season.