

cs348-hw1

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Part 2

2.1. E-R Diagram (35 points)

Some thing needs to be noticed. Since the software I used can't draw double line, so the mandatory participation will be showed like this to signal double line. Which is total participation.



Entity Relationship

Name

Has

☐ Identifying

Entity One

Pokemon

Participation	Cardinality
<input type="radio"/> Mandatory	<input type="radio"/> One
<input type="radio"/> Optional	<input type="radio"/> Many
<input checked="" type="radio"/> Unspecified	<input checked="" type="radio"/> Unspecified

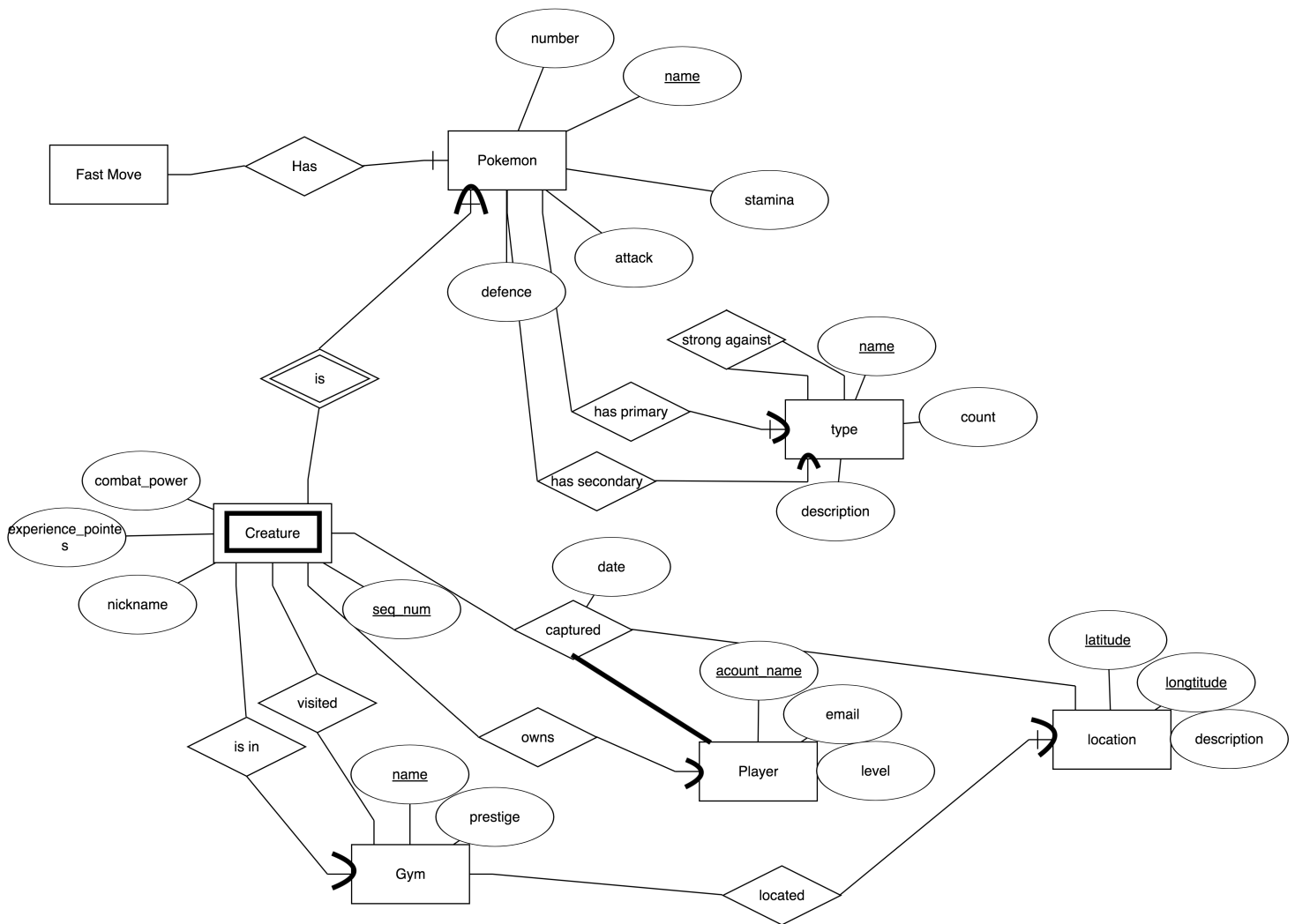
Entity Two

Fast Move

Participation	Cardinality
<input checked="" type="radio"/> Mandatory	<input type="radio"/> One
<input type="radio"/> Optional	<input type="radio"/> Many
<input type="radio"/> Unspecified	<input checked="" type="radio"/> Unspecified

+ Add Attribute

View Exact Constraints



Assumptions:

1. Every fast move is part of same pokemon.
2. Type has only one unique name.
3. Every pokemon has only one primary type.
4. For every type is strong against 0 or more other types.
5. Different pokemon could have same fast moves.
6. A creature could be capture and then released, which could allow other player to capture it later on.

2.2 Converting an E-R Diagram to the relational model (35 points)

There is no underline in markdown, so I use bold for primary key.

Type

name | count | description | strong_against_type

name: primary key
strong_against_type: type foreign key

Pokemon

name | number | stamina | attack | defense | primary_type_name | secondary_type_name

name: primary key
primary_type_name: type foreign key
secondary_type_name: type foreign key

Creature

seq_num | combat_power | experience_points | nickname | pokemon_name

seq_num: the sequence number for creature
pokemon_name: foreign key to pokemon Creature is a weak entity.

Gym

name | prestige | longitude | latitude

Name: primary key
Longitude, Latitude: foreign key to location

Occupied(is in)

seq_num | pokemon_name | gym_name

seq_num, pokemon_name: foreign key to creature
gym_name: foreign key to gym

Player

account_name | email | level

account_name: primary key for player

visited

seq_num | pokemon_name | gym_name

seq_num, pokemon_name: foreign key to creature
gym_name: foreign key to gym

Owns

account_name | **seq_num** | **pokemon_name**

account_name: primary key for player

seq_num, pokemon_name : foreign key to creature

Captured

account_name | **seq_num** | **pokemon_name** | **longitude** | **latitude**

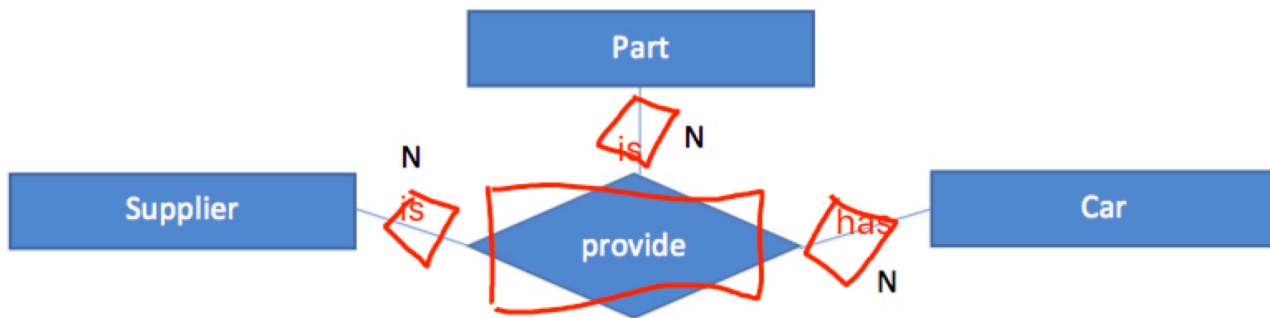
account_name: primary key for player

seq_num, pokemon_name : foreign key to creature

Longitude, Latitude: foreign key to location

2.3. ER Basics (30 points)

(15 points) Convert in the ER diagram below showing ternary relationships into equivalent ER diagram having only binary relationship. Also, convert the ER diagram into an equivalent relational model.



Car, Part and Supplier will just have it's own unique id in each table, plus there will be three relation table and one provider table showing as below.

Car and provider

id | ****provider_id** **

id: foreign key for car

provide_id : foreign key for provider

Supplier and provider

id | ****provider_id** **

id: foreign key for supplier

provide_id : foreign key for provider

Part

id | **provider_id **

id: foreign key for part

provide_id : foreign key for provider

Provide

provider_id

provide_id : foreign key for provider

(15 points) a. What is the primary key of a weak entity when converted to the relational model, explain with example.

A weak entity's primary key consists extra discriminator attributes and its identifying entity's primary key. For example, course and lab in purdue. Lab can't exists alone without courses. Every course has a course id and every lab has a lab id. And different labs of same course can't have the same lab id. But, different courses labs could have the same lab id. So, the lab's primary key is including course id, course primary key, and lab id.

b. What are the advantages of weak entity set, why do not we always create strong entities? Explain with example.

The benefit of using weak entity set is that we don't need to create a unique key for every weak entity. Plus, the weak entity will have extra information of dependency. The reason of the case we don't wanna use the strong entity is the disability of creating unique key or identifier, or the entity depends on other entity. The example in the above will be correspondingly shows that the lab session can't exists without the existance of the course, so we choose weak entity.