Team 41: Pokemon Tracker

Team:

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Project URL:

https://pokemon-db.azurewebsites.net/

Executive Summary:

Database Design and Functionality:

- **Database Structure**: Initially, inconsistencies were noted between the ERD, schema, and SQL, impacting naming conventions and relationships. To maintain cohesiveness across entities, attributes, and relationships we re-structured our naming conventions, database flow, and modified the DDL and DML to ensure that all items matched across the board.
- **Refinement of Intersection Table**: The intersection table that we created needed to be heavily modified. We did not have a proper M:N relationship and spent time improving clarity and functionality for the intersection table between trainers and pokemon.
- **Normalization Concerns**: We ran into attribute errors, especially within the Stats table. We had to identify these problems which could have led to potential anomalies. We resolved partial dependencies, particularly in attributes like strong_against and weak_against, we were able to spread out certain attributes across appropriate tables and better connect them with foreign keys.
- **Data Integrity and CRUD Operations**: Several issues were addressed regarding CRUD operations. Errors and inconsistencies, especially in UPDATE operations for Pokémon attributes like 'tier,' were acknowledged and some resolved. Additionally, adjustments to the DELETE operations were made to better handle M:M relationships for data integrity.

User Interface (UI) Enhancements:

- **Usability and Accessibility**: The UI underwent revisions based on feedback regarding user accessibility and ease of navigation. Suggestions to improve the UI for Trainer-to-Pokémon relationships, search functionalities, and information clarity were considered.
- **Homepage and Guidance**: Emphasis was placed on enhancing the homepage to offer users a clear understanding of the application's purpose and functionality, aiming to provide a more user-friendly experience through visual aids or navigation guides.

Responding to Reviewer Feedback:

- **Iterative Approach**: Each review led to targeted actions, including adjustments to the database structure, refining relationships, addressing normalization concerns, and enhancing UI components.

- **Continuous Improvement**: Acknowledging the ongoing nature of improvements, efforts were made to address issues persistently raised by reviewers, with a focus on improving the overall functionality and user experience.

Project and Database Outlines:

We want to create a database that is a one-stop-shop for Pokémon information and trainer stats. For Pokémon this means being able to track their descriptions, stats, and evolutions. For trainers this means being able to track battle results, as well as how pokemon performed in their battles.

There are 1,015 Pokémon in existence for players to catch, trainers have battle results, progressions, and their pokemon's evolutions. Our database driven website will allow people to record their progress with their Pokémon as well as with their battle results.

Pokémon: records the generic stats of each pokemon

- Relationship: 1:M between Pokémon and type – For this relationship there is 1 pokemon but that pokemon can have multiple types. This is why it is a 1:M relationship

Attribute	Data Type	Description
pokemon_id	PK INT auto_increment unique not NULL	Primary key in the table
name	VARCHAR(45) not NULL	The Pokémon's name
type_id	FK TypeID not NULL	The Pokemon's type e.g. Water
description	VARCHAR(45)	Short description describing the Pokemon
tier_rank	VARCHAR(45)	
evolves_into	VARCHAR(45)	If the Pokemon can evolve, which evolution level is it.

Stats:

- Relationship: M:1 between Stats and Pokemon

Attribute	Data Type	Description
stat_id	PRIMARY KEY INT (Not Null)	Primary key in the table
pokemon_id	FOREIGN KEY Pokemon_id INT (Not Null)	Foreign key to Pokemon table.
hit_points	INT (Not Null)	The pokemons health
attack_power	INT (Not Null)	Attack power the Pokémon can deliver

defense_power	INT (Not Null)	The Pokemon's defensive power
speed	INT (Not Null)	The Pokemon's speed

Trainers: records the details of each Pokémon trainer

Attribute	Data Type	Description
trainer_id	PRIMARY KEY INT (Not Null)	Primary key in the table
name	VARCHAR(45) (Not Null)	Trainers name
location	VARCHAR(45) (Not Null)	Trainers location
wins	INT	Number of wins
losses	INT	Number of losses

Battles: records the details of each battle between two trainers and a Pokémon of their choice

- Relationship 1:M between Trainers and Battles
- Relationship: 1:M between Pokémon to Battles

| Attribute	Data Type	Description
battle_id	PRIMARY KEY INT	Primary key in table
trainer_1	FOREIGN KEY TrainerID (Not Null)	Foreign key to Trainer Table
trainer_2	FOREIGN KEY TrainerID (Not Null)	Foreign key to Trainer Table
outcome	VARCHAR(45) (Not Null)	What was the outcome of the battle
timestamp	DATETIME (Not Null)	Time the battle occurred

Types: records information on each Pokémon Type

Attribute	Data Type	Description
type_id	PRIMARY KEY INT (Not Null)	Primary key of the table
type_name	VARCHAR(45) (Not Null)	Name of the type
weak_against	INT (Not Null)	Integer that represents the ID of the type to which this type is weak
strong_against	INT (Not Null)	Integer that represents the ID of the type to which this type is strong

Trainer_Pokemon Intersection Table: each entry represents a unique Pokémon that is owned by a specific trainer.

- Relationship: M:M between Trainer_Pokemon and Pokémon
- Relationship: M:M between Trainer_Pokemon and Trainer

Attribute	Data Type	Description
trainer_pokemon_id	PRIMARY KEY INT (Not Nul)	Primary key in the table
trainer_id	FOREIGN KEY TrainerID (Not Null)	Foreign key to Trainer table
pokemon_id	FOREIGN KEY Pokemon_id (Not Null)	Foreign key to Pokemon table
nickname	VARCHAR(45)	Trainer defined nickname for their Pokemon

ER Diagram:
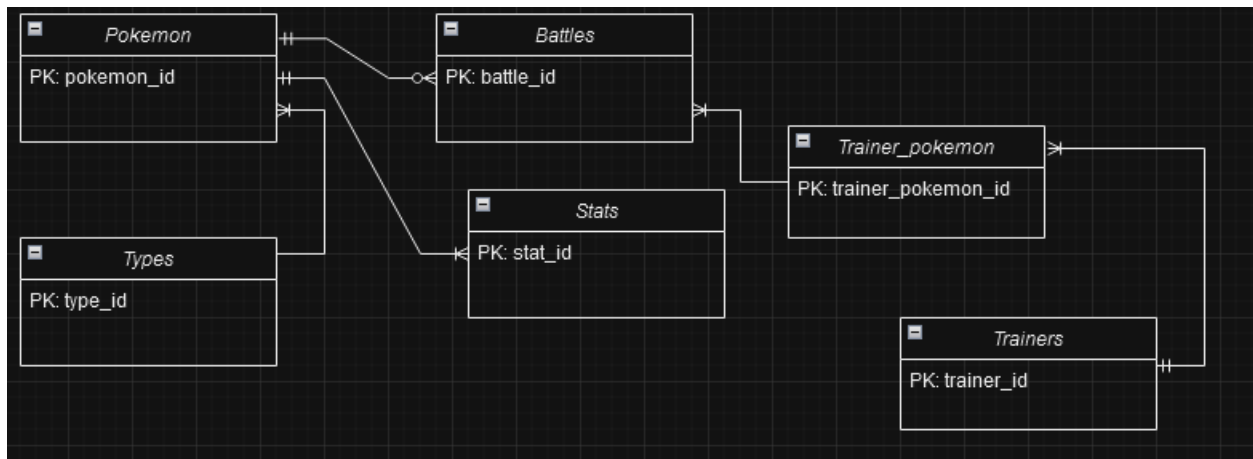
Schema:
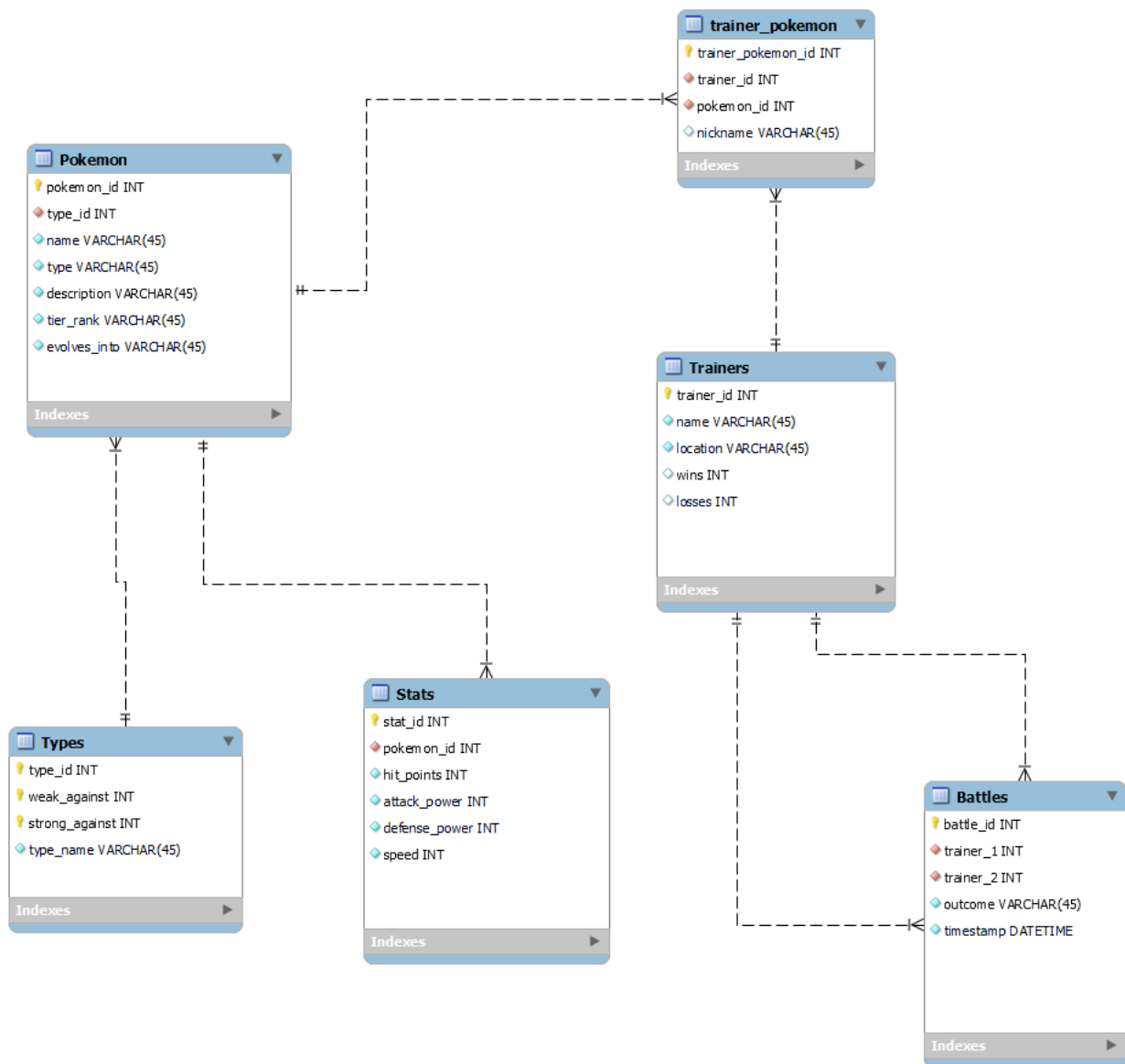
Example Data:

Pokemon Table

pokemon_id	name	type	description	tier_rank	evolution
1	Bulbasaur	Grass	A grass type pokemon	Starter	Ivysaur

| 2 | Ivysaur | Grass | A grass type pokemon | Basic | Venusaur |
| 3 | Venusaur | Grass | A grass type pokemon | Final | |

Stats Table

stat_id	pokemon_id	hit_points	attack_power	defense_power	speed
1	1	45	49	49	65
2	2	60	62	63	80
3	3	80	100	123	100

Trainer Table

trainer_id	name	location	wins	losses
1	Ash	Kanto	20	2
2	Brock	Kanto	10	3
3	Misty	Kanto	7	4

Battles Table

battle_id	trainer_1	trainer_2	outcome	timestamp
7	14	15	Trainer 1 wins	2023-11-01 14:55:00
8	16	11	Trainer 2 wins	2023-10-05 08:40:00
9	13	12	Trainer 1 wins	2023-10-13 21:05:00

Types Table

type_id	type_name	weak_against	strong_against
1	Fire	2	3
2	Water	3	1
3	Grass	1	2

Trainer-Pokemon Intersection Table

trainer_pokemon_id	trainer_id	pokemon_id	Nickname
1	1	12	Butterfree
2	1	25	Pikachu

3	4	1	Bulbasaur

UI Screenshots:

Home page for Website:

CS340 Pokemon DB

CREATE/UPDATE/DELETE Pokemon <mark>Nullable Relationship: Evolves into</mark>

Search Pokemon

Search by: [Name ▼] [Search keyword]

[Search]

Pokemon Data Table

Pokemon ID	Name	Type	Description	Tier Rank	Evolves Into	
20	Charmander	3	fire type	Beginner	Charmeleon	[Delete]
21	Squirtle	2	The "Tiny Turtle" Pokemon	Beginner	Wartortle	[Delete]
26	Jigglypuff	11	Sings its foes to sleep.	Beginner	Wigglypuff	[Delete]

[Add Pokemon] [Update Pokemon]

CREATE/UPDATE/DELETE Trainer info:

Trainers Data Table

Trainer id	Name	Location	wins	losses	
1	Ash Ketchum	Vermilion City	2	1	Delete
2	Brock Harrison	Vermilion City	1	1	Delete
3	Misty Williams	Vermilion City	1	0	Delete

Add Trainer | Update Trainer

CREATE/UPDATE/DELETE Battle info:

Battles Data Table

Battle ID	Trainer 1	Trainer 2	Outcome	Timestamp	
6	Brock Harrison	Misty Williams	Trainer 2 won	Nov 6, 2023, 3:30 PM	Delete
9	Ash Ketchum	Brock Harrison	1	Nov 22, 2023, 8:00 AM	Delete
11	Ash Ketchum	Brock Harrison	1	Nov 21, 2023, 7:45 AM	Delete
12	Ash Ketchum	Brock Harrison	1	Nov 27, 2023, 11:00 PM	Delete
13	Ash Ketchum	Brock Harrison	1	Nov 29, 2023, 8:00 AM	Delete
16	Brock Harrison	Brock Harrison	2	Nov 22, 2023, 7:30 AM	Delete
8	Ash Ketchum	Brock Harrison	1	Nov 22, 2023, 6:00 AM	Delete
10	Ash Ketchum	Brock Harrison	1	Nov 23, 2023, 6:45 AM	Delete

Add Battle | Update Battle

CREATE/UPDATE/DELETE Stats info:

Battles Data Table

Battle ID	Trainer 1	Trainer 2	Outcome	Timestamp	
6	Brock Harrison	Misty Williams	Trainer 2 won	Nov 6, 2023, 3:30 PM	Delete
9	Ash Ketchum	Brock Harrison	1	Nov 22, 2023, 8:00 AM	Delete
11	Ash Ketchum	Brock Harrison	1	Nov 21, 2023, 7:45 AM	Delete
12	Ash Ketchum	Brock Harrison	1	Nov 27, 2023, 11:00 PM	Delete
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10	Ash Ketchum	Brock Harrison	1	Nov 23, 2023, 6:45 AM	Delete

Add Battle | Update Battle

CREATE/UPDATE/DELETE Pokemon to Trainer Relationship (Intersection Tabel):

Pokemon to Trainer Relationship Table

Trainer to Pokemon ID	Trainer ID	Pokemon ID	Nickname	
21	2-Brock Harrison	21-Squirtle	Squirrel	Delete
20	3-Misty Williams	20-Charmander	Pika	Delete

Add Relationship   Edit Relationship

CREATE/UPDATE/DELETE Type info:

Types Data Table

Type id	Name	weak against	strong against	
1	Grass	Water	Fire	Delete
2	Water	Grass	Water	Delete
3	Fire	Fire	Grass	Delete
4	Bug	Fire	Grass	Delete
5	Dark	Bug	Fire	Delete
10	Rock	Water	Grass	Delete
9	Electric	Rock	Water	Delete
11	Fairy	Grass	Rock	Delete
12	Fire	no type selected	no type selected	Delete

Add type   Edit Type