“Pokéhub”

Final Project

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IST659

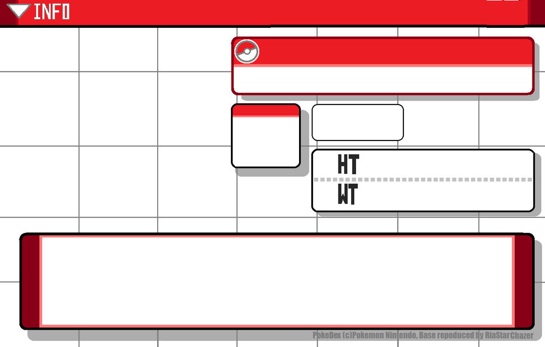


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# Part 1

## Summary

PokéHub was created in October 2021 for the purpose of creating an easily accessible and informative database for young (and old) Pokémon players. This database will supply players with a quick and simple way to find answers to any of their questions regarding Pokémon types, evolutions, and strengths.

## Stakeholders

* PokéHub manager
  + Myself
* Support staff
  + Rachel
    - Wife
* Database Testers/Game Players
  + Isaac and Hannah
    - Children

## Business Rules

* Each Pokémon has at least one or more types: Grass, Water, Fire, Ghost, Poison, Dark, Ground, Bug, Normal, Flying, Electric, Fairy, Psychic, Fighting, Steel, Ice, Rock or Dragon.
* Each Pokémon must have a name, height, and weight.
* Each Pokémon can evolve zero, one or two times and always at a certain level based on each individual Pokémon.
* An evolution may change or add to the Pokémon type.
* After an evolution, the Pokémon’s name will change.
* Other business rules will be defined in later iterations of the database

## Data Questions

* Which Pokémon evolve twice?
* Which Pokémon gain a type after an evolution?
* At what level does a specific Pokémon evolve?
* Are there Pokémon that never evolve?

## Conceptual Model

Diagram

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## Logical Model

Diagram

Description automatically generated

# Part 2

## Updated Logical Model

Diagram

Description automatically generated

## Data Definition Language – Creating Tables and constraints

drop table if exists Pokemon

drop table if exists type

drop table if exists pokemon\_type

drop table if exists evolution

drop table if exists Pokemon\_evolution

CREATE TABLE Pokemon(

pokemon\_id int identity primary key,

name varchar(25) not null,

height\_feetinches int,

weight\_lbs int,

caught\_level int not null,

caught\_location varchar(30),

strengths varchar(100) not null

)

create table Type(

type\_id int identity primary key,

type varchar(50) not null

)

create table Pokemon\_type (

pokemon\_type\_id int identity primary key,

type\_id int not null,

pokemon\_id int not null,

constraint fk1\_pokemon\_type foreign key (type\_id) references Type(type\_id),

constraint fk2\_pokemon\_type foreign key (pokemon\_id) references Pokemon(pokemon\_id)

)

create table Evolution (

evolution\_id int identity primary key,

post\_evolution\_name varchar (20) not null,

additional\_type\_added varchar (20)

)

ALTER TABLE Pokemon

ADD

evolution\_level int,

evolution\_instances int

create table Pokemon\_evolution (

pokemon\_evolution\_id int identity,

pokemon\_id int,

evolution\_id int,

constraint fk1\_pokemon\_evolution foreign key (pokemon\_id) references Pokemon(pokemon\_id),

constraint fk2\_pokemon\_evolution foreign key (evolution\_id) references Evolution(evolution\_id)

)

## Data Manipulation Language

### Adding Data Using INSERT Statements

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Charmander', 2.00, 18.7, 10, 'Volcanic Cave', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Squirtle' , 1.08, 19.8, 7, 'Fountainspring Cave', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Growlithe' , 2.04, 41.9 , 12, 'Sandsear Cave', 1)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Pikachu', 1.04, 13.2, 17, 'Trophy Garden', 1)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Abra', 2.11 , 43.0, 4, 'Route 203', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Magikarp', 2.11, 22.0, 19, 'Lake Valor', 20, 1)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Gyarados' , 21.04, 518.1, 52, 'Route 222', 0)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location )

values

('Eevee', 1.00, 14.3 , 22, 'Pallet Town')

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Furret', 5.11, 71.7 , 34, 'Spacious Cave' , 0)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Bulbasaur', 2.04, 15.2, 10, 'Grassland Cave', 16, 2)

update pokemon

set evolution\_instances = '0'

where pokemon\_id = 9

insert into Type

(Type)

Values

('Grass')

insert into Type

(Type)

Values

('Water')

insert into Type

(Type)

Values

('Fire')

insert into Type

(Type)

Values

('Electric')

insert into Type

(Type)

Values

('Psychic')

insert into Type

(Type)

Values

('Poison')

insert into Type

(Type)

Values

('Normal')

INSERT INTO Pokemon\_type(type\_id,pokemon\_id)

VALUES

((SELECT type\_id FROM Type WHERE type='Fire'),(SELECT pokemon\_id FROM Pokemon WHERE name='Charmander'))

INSERT INTO Pokemon\_type(type\_id,pokemon\_id)

VALUES

((SELECT type\_id FROM Type WHERE type='Water'),(SELECT pokemon\_id FROM Pokemon WHERE name='Squirtle')),

((SELECT type\_id FROM Type WHERE type='Fire'),(SELECT pokemon\_id FROM Pokemon WHERE name='Growlithe')),

((SELECT type\_id FROM Type WHERE type='Electric'),(SELECT pokemon\_id FROM Pokemon WHERE name='Pikachu')),

((SELECT type\_id FROM Type WHERE type='Psychic'),(SELECT pokemon\_id FROM Pokemon WHERE name='Abra')),

((SELECT type\_id FROM Type WHERE type='Water'),(SELECT pokemon\_id FROM Pokemon WHERE name='Magikarp')),

((SELECT type\_id FROM Type WHERE type='Water'),(SELECT pokemon\_id FROM Pokemon WHERE name='Gyarados')),

((SELECT type\_id FROM Type WHERE type='Normal'),(SELECT pokemon\_id FROM Pokemon WHERE name='Eevee')),

((SELECT type\_id FROM Type WHERE type='Normal'),(SELECT pokemon\_id FROM Pokemon WHERE name='Furret')),

((SELECT type\_id FROM Type WHERE type='Grass'),(SELECT pokemon\_id FROM Pokemon WHERE name='Bulbasaur'))

insert into Evolution

(post\_evolution\_name)

values

('Charmeleon'),

('Wartortle'),

('Arcanine'),

('Abra'),

('Kadabra'),

('Ivysaur')

insert into Evolution

(post\_evolution\_name, additional\_type\_added)

values

('Charizard', 'Flying'),

('Gyarados', 'Flying')

INSERT INTO Pokemon\_evolution(evolution\_id,pokemon\_id)

VALUES

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Charmeleon'),(SELECT pokemon\_id FROM Pokemon WHERE name='Charmander')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Arcanine'),(SELECT pokemon\_id FROM Pokemon WHERE name='Growlithe')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Wartotle'),(SELECT pokemon\_id FROM Pokemon WHERE name='Squirtle')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Kadabra'),(SELECT pokemon\_id FROM Pokemon WHERE name='Abra')),

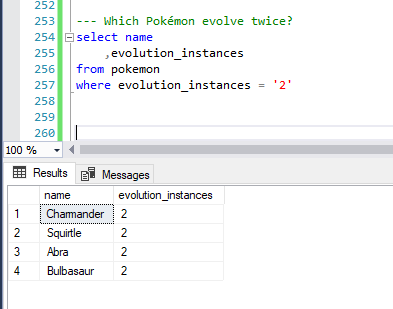
((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Ivysaur'),(SELECT pokemon\_id FROM Pokemon WHERE name='Bulbasaur')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Charizard'),(SELECT pokemon\_id FROM Pokemon WHERE name='Charmeleon')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Magikarp'),(SELECT pokemon\_id FROM Pokemon WHERE name='Gyarados'))

### Querying Data Using SELECT Statements

--Which Pokémon evolve twice?



--Which Pokémon gain a type after an evolution?

Graphical user interface, application

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Are there Pokémon that never evolve?

Graphical user interface, text, application

Description automatically generated

## Programming Objects

### Stored Procedure

At what level does a specific Pokémon evolve?

Graphical user interface, text, application

Description automatically generated

Create View

Graphical user interface, text, application

Description automatically generated

## User Interface

Connected database to access

Graphical user interface, application, Word

Description automatically generated

Table

Description automatically generated

Relationships

Graphical user interface

Description automatically generated

Graphical user interface, application, Word

Description automatically generated

## Reflection

I think the next time I create a database, I will overly detail my logical drawings if I make them. I found myself having to add and change things on my drawing just so that I could keep track of what I was doing and needing in SQL. I think my biggest issues stemmed from the relational model. I had a very difficult time visualizing my relations and figuring out how to remove the many to many relationships.

# Full SQL code

drop table if exists Pokemon

drop table if exists type

drop table if exists pokemon\_type

drop table if exists evolution

drop table if exists Pokemon\_evolution

CREATE TABLE Pokemon(

pokemon\_id int identity primary key,

name varchar(25) not null,

height\_feetinches int,

weight\_lbs int,

caught\_level int not null,

caught\_location varchar(30),

strengths varchar(100) not null

)

create table Type(

type\_id int identity primary key,

type varchar(50) not null

)

create table Pokemon\_type (

pokemon\_type\_id int identity primary key,

type\_id int not null,

pokemon\_id int not null,

constraint fk1\_pokemon\_type foreign key (type\_id) references Type(type\_id),

constraint fk2\_pokemon\_type foreign key (pokemon\_id) references Pokemon(pokemon\_id)

)

create table Evolution (

evolution\_id int identity primary key,

post\_evolution\_name varchar (20) not null,

additional\_type\_added varchar (20)

)

ALTER TABLE Pokemon

ADD

evolution\_level int,

evolution\_instances int

alter table Pokemon

ADD

weaknesses varchar (20) not null

ALTER TABLE Pokemon

DROP COLUMN

strengths,

weaknesses

create table Pokemon\_evolution (

pokemon\_evolution\_id int identity,

pokemon\_id int,

evolution\_id int,

constraint fk1\_pokemon\_evolution foreign key (pokemon\_id) references Pokemon(pokemon\_id),

constraint fk2\_pokemon\_evolution foreign key (evolution\_id) references Evolution(evolution\_id)

)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Charmander', 2.00, 18.7, 10, 'Volcanic Cave', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Squirtle' , 1.08, 19.8, 7, 'Fountainspring Cave', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Growlithe' , 2.04, 41.9 , 12, 'Sandsear Cave', 1)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Pikachu', 1.04, 13.2, 17, 'Trophy Garden', 1)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Abra', 2.11 , 43.0, 4, 'Route 203', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Magikarp', 2.11, 22.0, 19, 'Lake Valor', 20, 1)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Gyarados' , 21.04, 518.1, 52, 'Route 222', 0)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location )

values

('Eevee', 1.00, 14.3 , 22, 'Pallet Town')

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_instances )

values

('Furret', 5.11, 71.7 , 34, 'Spacious Cave' , 0)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, caught\_location, evolution\_level, evolution\_instances )

values

('Bulbasaur', 2.04, 15.2, 10, 'Grassland Cave', 16, 2)

insert into Pokemon

(name , height\_feetinches, weight\_lbs, caught\_level, evolution\_level, evolution\_instances )

values

('Charmeleon', 3.07, 41.9, 17, 36, 1)

select \* from pokemon

update pokemon

set evolution\_instances = '0'

where pokemon\_id = 9

insert into Type

(Type)

Values

('Grass')

insert into Type

(Type)

Values

('Water')

insert into Type

(Type)

Values

('Fire')

insert into Type

(Type)

Values

('Electric')

insert into Type

(Type)

Values

('Psychic')

insert into Type

(Type)

Values

('Poison')

insert into Type

(Type)

Values

('Normal')

insert into Type

(Type)

Values

('Dragon')

insert into Type

(Type)

Values

('Flying')

insert into Type

(Type)

Values

('Bug')

insert into Type

(Type)

Values

('Dark')

insert into Type

(Type)

Values

('Ice')

insert into Type

(Type)

Values

('Steel')

insert into Type

(Type)

Values

('Fairy')

insert into Type

(Type)

Values

('Ground')

insert into Type

(Type)

Values

('Fighting')

insert into Type

(Type)

Values

('Rock')

select \* from Type

select \* from Pokemon\_type

insert into Evolution

(post\_evolution\_name)

values

('Charmeleon'),

('Wartortle'),

('Arcanine'),

('Kadabra'),

('Ivysaur')

insert into Evolution

(post\_evolution\_name, additional\_type\_added)

values

('Charizard', 'Flying'),

('Gyarados', 'Flying')

select \* from Evolution

INSERT INTO Pokemon\_type(type\_id,pokemon\_id)

VALUES

((SELECT type\_id FROM Type WHERE type='Fire'),(SELECT pokemon\_id FROM Pokemon WHERE name='Charmander'))

INSERT INTO Pokemon\_type(type\_id,pokemon\_id)

VALUES

((SELECT type\_id FROM Type WHERE type='Water'),(SELECT pokemon\_id FROM Pokemon WHERE name='Squirtle')),

((SELECT type\_id FROM Type WHERE type='Fire'),(SELECT pokemon\_id FROM Pokemon WHERE name='Growlithe')),

((SELECT type\_id FROM Type WHERE type='Electric'),(SELECT pokemon\_id FROM Pokemon WHERE name='Pikachu')),

((SELECT type\_id FROM Type WHERE type='Psychic'),(SELECT pokemon\_id FROM Pokemon WHERE name='Abra')),

((SELECT type\_id FROM Type WHERE type='Water'),(SELECT pokemon\_id FROM Pokemon WHERE name='Magikarp')),

((SELECT type\_id FROM Type WHERE type='Water'),(SELECT pokemon\_id FROM Pokemon WHERE name='Gyarados')),

((SELECT type\_id FROM Type WHERE type='Normal'),(SELECT pokemon\_id FROM Pokemon WHERE name='Eevee')),

((SELECT type\_id FROM Type WHERE type='Normal'),(SELECT pokemon\_id FROM Pokemon WHERE name='Furret')),

((SELECT type\_id FROM Type WHERE type='Grass'),(SELECT pokemon\_id FROM Pokemon WHERE name='Bulbasaur'))

INSERT INTO Pokemon\_evolution(evolution\_id,pokemon\_id)

VALUES

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Charmeleon'),(SELECT pokemon\_id FROM Pokemon WHERE name='Charmander')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Arcanine'),(SELECT pokemon\_id FROM Pokemon WHERE name='Growlithe')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Wartotle'),(SELECT pokemon\_id FROM Pokemon WHERE name='Squirtle')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Kadabra'),(SELECT pokemon\_id FROM Pokemon WHERE name='Abra')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Ivysaur'),(SELECT pokemon\_id FROM Pokemon WHERE name='Bulbasaur')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Charizard'),(SELECT pokemon\_id FROM Pokemon WHERE name='Charmeleon')),

((SELECT evolution\_id FROM evolution WHERE post\_evolution\_name ='Magikarp'),(SELECT pokemon\_id FROM Pokemon WHERE name='Gyarados'))

--- Which Pokémon evolve twice?

select name

,evolution\_instances

from pokemon

where evolution\_instances = '2'

--- Which Pokémon gain a type after an evolution?

select name

, additional\_type\_added

from pokemon

inner join Pokemon\_evolution on pokemon.pokemon\_id = Pokemon\_evolution.pokemon\_id

inner join evolution on evolution.evolution\_id = Pokemon\_evolution.evolution\_id

where additional\_type\_added != 'NULL'

--- At what level does a specific Pokémon evolve?

go

create procedure find\_evolution\_level (@name varchar(20)) as

select name

, evolution\_level

from Pokemon

where name = @name

go

exec find\_evolution\_level @name = 'Growlithe'

--- Are there Pokémon that never evolve?

select name

from pokemon

where evolution\_instances = 0

go

create view Pokemon\_Count as

select count(name) as Number\_of\_Pokemon

from pokemon

go

select \* from Pokemon\_Count

select \* from Pokemon\_evolution

select \* from Evolution

select\* from Type

select \* from Pokemon\_type

select \* from Pokemon