

# CPSC 304 Project Cover Page

**Milestone #: 4**

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**Group Number:** 73

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

### Summary:

The domain of our application is Pokemon gaming and the tracking of game statistics. With the ability to customize their own Pokemon games, users will be able to tailor their game experiences according to their preferences. Furthermore, in regards to the tracking of game statistics domain, users are able to track individual player progression data, including Pokemons they've captured, quests they completed, etc.

### Description:

Our application displays the data for the tables at the bottom of the page, where the user can scroll through and see the data they have added freely; each table also has an add and remove button for the user to manipulate the table. Above that we have our query functions for projection, joins, selection, and update for the Pokemon table and our aggregate queries for the user to find the average region count, the game with the least amount of regions, the most popular Pokemon type, and the division query to find the game that includes all the roles. Errors are also correctly handled when users input any wrong information.

### Final Schema:

We updated all the tables that had a type constraint of DATE for the date attributes in `pokemon_caught`, `quest_assigned`, and `gymMaster_owns`. We changed the type constraint to VARCHAR instead because it was easier to work with when creating the add/remove functionalities for our tables in the frontend.

We updated the schema for `Pokemon_Caught` to have 'type1' and 'type2' instead of just type so that we can have a non-primary key UNIQUE constraint on 'type1' because all Pokemon's have at least one type.

Also updated the foreign key constraints with the ISA hierarchy with `People_has` and `NPC_LivesIn`, `GymMaster_owns`, and `Trainer`. Instead of the three (`NPC_LivesIn`, `GymMaster_owns`, and `Trainer`), each having a foreign key to `gameID`, we just made the `pid` the foreign key to `People_has`, then in `people_has` it would have the foreign key to `gameID`. So essentially, instead of every single child of the ISA hierarchy having a foreign key to the game, we just made the parent of the ISA hierarchy have the foreign key to the game, and the children have a foreign key to the parent. This just made the relations and tables easier to set up.

### Schema and Screenshots:

`game(gameid, game_difficulty, generation)`

desc game		
Name	Null?	Type
-----	-----	-----
GAMEID	NOT NULL	NUMBER(38)
GAME_DIFFICULTY		VARCHAR2(15)
GENERATION		VARCHAR2(52)

`items_has(item#, rarity, gameid, itemname)`

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```
|desc items_has
```

Name	Null?	Type
ITEM#	NOT NULL	NUMBER(38)
RARITY		VARCHAR2(15)
GAMEID		NUMBER(38)
ITEMNAME		VARCHAR2(20)

[gym\\_includes\(gym#, difficulty, type, \*\*gameid\*\*\)](#)

```
|desc gym_includes
```

Name	Null?	Type
GYM#	NOT NULL	NUMBER(38)
DIFFICULTY		VARCHAR2(10)
TYPE		VARCHAR2(10)
GAMEID	NOT NULL	NUMBER(38)

[region\\_apartof\(regionname, type, gym#, \*\*gameid\*\*\)](#)

```
|desc region_apartof
```

Name	Null?	Type
REGIONNAME	NOT NULL	VARCHAR2(30)
TYPE		VARCHAR2(20)
GYM#		NUMBER(38)
GAMEID		NUMBER(38)

[enterableareas\(area#, type\)](#)

```
|desc enterableareas
```

Name	Null?	Type
AREA#	NOT NULL	NUMBER(38)
TYPE		VARCHAR2(30)

[leadsto\(regionname, area#\)](#)

```
|desc leadsto
```

Name	Null?	Type
REGIONNAME		VARCHAR2(20)
AREA#		NUMBER(38)

[type\\_weakness\(type, weakness\)](#)

```
|desc type_weakness
```

Name	Null?	Type
TYPE	NOT NULL	VARCHAR2(15)
WEAKNESS		VARCHAR2(50)

[people\\_has\(pid, \*\*gameid\*\*\)](#)

```
|desc people_has
```

Name	Null?	Type
PID	NOT NULL	NUMBER(38)
GAMEID		NUMBER(38)

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[pokemon\\_caught\(name, type1, type2, specialattack, caught\\_since, pid\)](#)

desc pokemon_caught		
Name	Null?	Type
-----		
NAME	NOT NULL	VARCHAR2(15)
TYPE1	NOT NULL	VARCHAR2(10)
TYPE2		VARCHAR2(10)
SPECIALATTACK		VARCHAR2(20)
CAUGHT_SINCE		DATE
PID		NUMBER(38)

[badge\\_gym\(badge, gym#, gameid\)](#)

desc badge_gym		
Name	Null?	Type
-----		
BADGE	NOT NULL	VARCHAR2(50)
GYM#		NUMBER(38)
GAMEID		NUMBER(38)

[gymmaster\\_owns\(pid, name, badge, owns\\_since\)](#)

desc gymmaster_owns		
Name	Null?	Type
-----		
PID	NOT NULL	NUMBER(38)
NAME		VARCHAR2(25)
BADGE		VARCHAR2(15)
OWNS_SINCE		DATE

[role\\_catchphrase\(role, catch\\_phrase\)](#)

desc role_catchphrase		
Name	Null?	Type
-----		
ROLE	NOT NULL	VARCHAR2(15)
CATCH_PHRASE		VARCHAR2(50)

[npc\\_livesin\(pid, name, role, regionname\)](#)

desc npc_livesin		
Name	Null?	Type
-----		
PID	NOT NULL	NUMBER(38)
NAME		VARCHAR2(25)
ROLE		VARCHAR2(15)
REGIONNAME		VARCHAR2(30)

[trainer\(pid, name, fav\\_pokemon\)](#)

desc trainer		
Name	Null?	Type
-----		
PID	NOT NULL	NUMBER(38)
NAME		VARCHAR2(25)
FAV_POKEMON		VARCHAR2(15)

### difficulty\_reward(difficulty, reward)

desc difficulty_reward		
Name	Null?	Type
-----	-----	-----
DIFFICULTY	NOT NULL	VARCHAR2(15)
REWARD		VARCHAR2(20)

### quest\_assigned(questid, difficulty, pid, date\_accepted)

desc quest_assigned		
Name	Null?	Type
-----	-----	-----
QUESTID	NOT NULL	NUMBER(38)
DIFFICULTY		VARCHAR2(15)
PID		NUMBER(38)
DATE_ACCEPTED		DATE

## SQL Queries & Location:

### INSERT

```
`INSERT INTO ${req.body.tableName} (${Object.keys(req.body.input).join(', ')}) VALUES  
(${Object.values(req.body.input).join(', ')})`;
```

/server/appController.js (line 114)

### DELETE

```
`DELETE FROM ${req.body.tableName} WHERE ${req.body.primaryKey} =  
${req.body.input}`
```

/server/appController.js (line 133)

### UPDATE

```
'UPDATE REGION_APARTOF SET GAMEID = :1, GYM# = :2 WHERE REGIONNAME  
= :3';  
const bindings = [gameID, gymNum, regionName];
```

/server/tables/regionService.js (line 34)

### SELECTION

```
`SELECT * FROM pokemon_caught ${whereClause}`
```

/server/appController.js (line 83)

### PROJECTION

```
`SELECT ${selectedFields} FROM ${req.body.tableName}`;
```

/server/appController.js (line 191)

### JOIN

```
`SELECT * FROM pokemon_caught pc, people_has ph WHERE pc.${commonAttribute} = ph.${commonAttribute}`;
```

/server/appController.js (line 156)

### Aggregation with GROUP BY

```
'SELECT AVG(count) FROM (SELECT g.GAMEID, count(*) AS count FROM GAME g, REGION_APARTOF r WHERE g.GAMEID = r.GAMEID GROUP BY g.GAMEID)'
```

/server/tables/regionService.js (line 71)

### Aggregation with HAVING

```
SELECT t.TYPE FROM TYPE_WEAKNESS t, POKEMON_CAUGHT p WHERE  
p.TYPE1 = t.TYPE or p.TYPE2 = t.TYPE GROUP BY TYPE HAVING COUNT(*) =  
(SELECT MAX(count) FROM (SELECT count(*) AS count FROM TYPE_WEAKNESS  
t1, POKEMON_CAUGHT p1 WHERE p1.TYPE1 = t1.TYPE or p1.TYPE2 = t1.TYPE  
GROUP BY TYPE));
```

/server/tables/typeService.js (line 33)

### NESTED Aggregation with GROUP BY

```
'SELECT GAMEID FROM REGION_APARTOF GROUP BY GAMEID HAVING  
COUNT(*) = (SELECT MIN(COUNT(*)) FROM REGION_APARTOF a GROUP BY  
GAMEID);'
```

/server/tables/regionService.js (line 47)

### DIVISION

```
'SELECT g1.GAMEID FROM GAME g1 WHERE NOT EXISTS (SELECT r.ROLE FROM  
ROLE_CATCHPHRASE r MINUS SELECT n1.ROLE FROM PEOPLE_HAS p1,  
NPC_LIVESIN n1 WHERE p1.GAMEID = g1.GAMEID AND n1.PID = p1.pid);'
```

/server/tables/gameService.js (line 35)

## Screenshots for each Query:

[INSERT](#)

### EnterableAreas

Area#	Type
50	idk
123	a
243	asdf
0	house
1	forest
2	cave
3	store
4	Pokemon Center
5	tunnle

Area#:

999

Type:

TESTING

Add

Remove

Add

### EnterableAreas

Area#	Type
50	idk
123	a
999	TESTING
243	asdf
0	house
1	forest
2	cave
3	store
4	Pokemon Center
5	tunnle

Area#:

999

Type:

TESTING

Add

Inserted successfully!

Add

Remove

DELETE

EnterableAreas

Area#	Type
50	idk
123	a
999	TESTING
243	asdf
0	house
1	forest
2	cave
3	store
4	Pokemon Center
5	tunnle

area#:

50

Add

Remove

Remove

EnterableAreas

Area#	Type
123	a
999	TESTING
243	asdf
0	house
1	forest
2	cave
3	store
4	Pokemon Center
5	tunnle

Add

Remove

UPDATE

Region\_apartof

RegionName	Type	Gym#	GameID
testing	test	99	8
Hearthrome City	town	2	2
Celestic City	city	1	1
Jubilife City	city	54	1
Full Moon Island	island	27	1
Twin Leaf Town	town	28	2
Lilycove City	city	9	0
Mossui Town	town	26	0
Nuvema Town	town	36	1
Seafolk Village	village	18	1
Seven Island	island	37	2

AddRemove

Update Pokémon Region Gym

Which region would you like to update?

Region Name:

What game and gym would you like to change for that region?

Game ID:

Gym Number:

Update Gym



Update Pokémon Region Gym

Which region would you like to update?

Region Name:

What game and gym would you like to change for that region?

Game ID:  Gym Number:

Region gym updated successfully!

Region\_apartof

RegionName	Type	Gym#	GameID
testing	test	100	8
Hearthrome City	town	2	2
Celestic City	city	1	1
Jubilife City	city	54	1
Full Moon Island	island	27	1
Twin Leaf Town	town	28	2
Lilycove City	city	9	0
Mossui Town	town	26	0
Nuvema Town	town	36	1
Seafolk Village	village	18	1
Seven Island	island	37	2

Add

Remove

SELECTION

SELECTION

OR:

☐ fire ☐ water ☐ grass ☐ normal ☐ electric ☐ ice ☐ fighting ☐ poison ☐ ground ☐ flying ☐ psychic ☐ bug

AND:

☐ reserved by pid 12 or greater ☐ type2 is poison

SELECTION

OR:

☒ fire ☒ water ☒ grass ☐ normal ☐ electric ☐ ice ☐ fighting ☐ poison ☐ ground ☐ flying ☐ psychic ☐ bug

AND:

☒ reserved by pid 12 or greater ☒ type2 is poison

NAME	TYPE1	TYPE2	SPECIALATTACK	CAUGHT_SINCE	PID
Bulbasaur	grass	poison	Max Overgrowth	21-03-2020	1
Venusaur	grass	poison	Trailblze	21-05-2020	1
Charizard	fire	flying	Inferno	21-02-2022	1
Blastoise	water		Hydro Pump	21-01-2020	0
Ninetales	fire		Solar Beam	07-12-2013	9

## [PROJECTION](#)

### Projection

Table Name:

Fields:

Projection

Clear List

### Projection

Table Name:

Fields:

Projection

Clear List

NAME	TYPE1	TYPE2
Bulbasaur	grass	poison
Venusaur	grass	poison
Charizard	fire	flying
Blastoise	water	
Beedrill	bug	poison
Butterfree	bug	flying
Pidgeot	normal	flying
Rattata	normal	
Arbok	poison	
Pikachu	electric	
Sandslash	ground	
Ninetales	fire	
Magneton	electric	steel
Muk	poison	dark
Gengar	ghost	poison
Onix	rock	ground
Rhydon	ground	rock
Scyther	bug	flying

[JOIN](#)

JOIN POKEMON\_CAUGHT and PEOPLE\_HAS

WHERE:

JOIN POKEMON\_CAUGHT and PEOPLE\_HAS

WHERE:

NAME	TYPE1	TYPE2	SPECIALATTACK	CAUGHT_SINCE	PID	PID_1	GAMEID
Bulbasaur	grass	poison	Max Overgrowth	21-03-2020	1	1	0
Venusaur	grass	poison	Trailblaze	21-05-2020	1	1	0
Charizard	fire	flying	Inferno	21-02-2022	1	1	0
Blastoise	water		Hydro Pump	21-01-2020	0	0	0
Magnetron	electric	steel	Thunder Shock	17-10-2006	2	2	0
Muk	poison	dark	Sludge Bomb	12-11-2001	2	2	0
Rhydon	ground	rock	Mud Slap	24-12-2010	3	3	0
Scyther	bug	flying	Aerial Strike	14-11-2011	3	3	0
Pidgeot	normal	flying	Gust	19-09-2004	4	4	1
Rattata	normal		Super Fang	11-12-2002	5	5	1
Arbok	poison		Glare	19-10-2023	5	5	1
Butterfree	bug	flying	Supersonic	10-09-2010	6	6	1
Gengar	ghost	poison	Shadow Ball	13-05-2007	7	7	2
Onix	rock	ground	Rock Slide	21-04-2008	7	7	2
Beedrill	bug	poison	Poison Jab	07-01-2015	8	8	2
Pikachu	electric		Thunderbolt	13-09-2000	9	9	3
Sandslash	ground		Scorching Sands	23-10-2000	9	9	3
Ninetales	fire		Solar Beam	07-12-2013	9	9	3

[Aggregation with GROUP BY](#)

AVERAGE REGION COUNT

AVERAGE REGION COUNT

AVERAGE REGION COUNT: 3

[Aggregation with HAVING](#)

## MOST POPULAR TYPE

## MOST POPULAR TYPE

MOST POPULAR TYPE: POISON

[NESTED Aggregation with GROUP BY](#)

## GAME WITH LEAST REGIONS

## GAME WITH LEAST REGIONS

GAME WITH LEAST REGIONS: 4

GAME WITH LEAST REGIONS: 0

[DIVISION](#)

## GAME WITH ALL ROLES

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## GAME WITH ALL ROLES

GAME WITH ALL ROLES: 0