

CPSC 304 Milestone 4

Milestone #: 4

Date: Apr 2, 2024

Group Number: 54

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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.

Project Description

We aim to create a database application that displays match information for League Of Legends, an online video game where two teams of players fight to destroy the other team's home base. Users may query information about the live state of an online match such as player strength statistics and the progress of destroyed structures.

The user will login to their oracle account and then can insert, delete, and update a playerStat, select a playerStat, project on a playerStat, see all the players that have destroyed a turret on a given mapID, find the count of ownItems in all games, find the ownItems where 2 or more players own, find the items that are owned by everyone, showing all the ownItems, and showing all the playerStats.

Schema

One change in our schema was adding the playerName to playerStats so that we can accurately represent the player's username instead of just displaying them by their key which would be unknown to the user at that time.

playerStats(playerID : integer, playerName: char[20], champID: integer Unique, championName: char[20], manaPoints: integer, healthPoints: integer, creepScore: integer, kills: integer, rank: char[20], mapID: integer),

	playerStats				
playerID	1	2	3	4	5
playerName	CyberReaper666	UREKA	tenko_dogfather	Eric	euoruph
champID	123	234	345	456	567
championName	Ahri	Darius	Ezreal	Jinx	Yasuo
manaPoints	500	300	600	400	200
healthPoints	800	1000	600	900	850
creepScore	150	120	180	160	140
kills	5	7	8	6	9
rank	Iron	Master	Diamond	Platinum	Challenger
mapID	1	1	2	2	3

playerEcon(creepScore: integer, kills: integer, gold: integer, level: integer)

	playerEcon				
creepScore	150	120	180	160	140
kills	5	7	8	6	9
gold	3200	4300	2500	3800	5200
playerLevel	12	15	10	13	10

ownsItem(playerID: integer, name: char[20], mr: integer, ad: integer, ap: integer, armor: integer, cost: integer)

	ownsItem									
playerID	1	2	3	4	5	1	3	1	2	3
itemName	Banshee's Veil	Infinity Edge	Rabadon's Deathcap	Sunfire Cape	Zhonya's Hourglass	Tear of Goddess	Tear of Goddess	Boots	Boots	Boots
mr	60	0	0	0	45	0	0	0	0	0
ad	0	70	0	0	0	0	0	0	0	0
ap	0	0	120	0	75	0	0	0	0	0
armor	45	0	0	60	0	0	0	0	0	0
cost	2900	3400	3800	2900	2600	400	400	300	300	300

gameMode(gamemodeName: char[20], maxPartySize: integer, canBan: integer)

	gamemode				
gamemodeName	Ranked Solo/Duo	Normal Draft	ARAM	Blitz	Dominion
maxPartySize	2	5	5	5	5
canBan	1	1	0	1	0

mapDetermines(mapID: integer, numberOfLanes: integer, gamemodeName: char[20])

	mapDetermines				
mapID	1	2	3	4	5
mapName	Summoner's Rift	Howling Abyss	Twisted Treeline	Nexus Blitz	The Crystal Scar
numberOfLanes	3	3	1	2	3
gamemodeName	Ranked Solo/Duo	Normal Draft	ARAM	Blitz	Dominion

turretStats(location: char[20], healthPoints: integer)

	turretStats				
structureLocation	Top Lane Outer	Mid Lane Outer	Bot Lane Outer	Base Bot	Base Nexus Bot
healthPoints	5000	4500	400	4800	5200

turretDamage(location: char[20], damage: integer)

	turretDamage				
structureLocation	Top Lane Outer	Mid Lane Outer	Bot Lane Outer	Base Bot	Base Nexus Bot
damage	200	180	220	240	210

turret(structureID : integer, location: char[20], mapID: integer, playerId: integer)

	turret				
structureID	1	2	3	4	5
structureLocation	Top Lane Outer	Mid Lane Outer	Bot Lane Outer	Base Bot	Base Nexus Bot
mapID	1	2	2	1	4
playerID	1	2	3	4	5

nexus(structureID : integer, healthPoints : integer, location : char[20], vulnerable: integer, mapID: integer, playerId: integer)

	nexus				
structureID	1	2	3	4	5
healthPoints	10000	10000	10000	10000	10000
structureLocation	Blue Base	Red Base	Blue Base	Red Base	Blue Base
vulnerable	1	1	1	1	1
mapID	1	1	2	2	3
playerID	1	4	2	3	5

inhibitor(structureID : integer, healthPoints: integer, location: char[20], respawnTime: integer, mapID: integer, playerId: integer)

	inhibitor					
structureID	1	2	3	4	5	6
healthPoints	5000	5000	5000	5000	5000	5000
structureLocation	Blue Top	Blue Mid	Blue Bot	Red Top	Red Mid	Red Bot
respawnTime	300	300	300	300	300	300
mapID	1	1	1	1	1	1
playerID	1	1	1	3	3	3

baronJungleObjective(jungleObjectiveID: integer, healthPoints: integer, effectTime: integer, mapID: integer)

	baronJungleObjective				
jungleObjectiveID	1	2	3	4	5
healthPoints	5000	5000	5000	5000	5000
effectTime	180	180	180	180	180
mapID	1	1	1	1	1

dragonJungle(jungleObjectiveID: integer, type: char[20], mapID: integer)

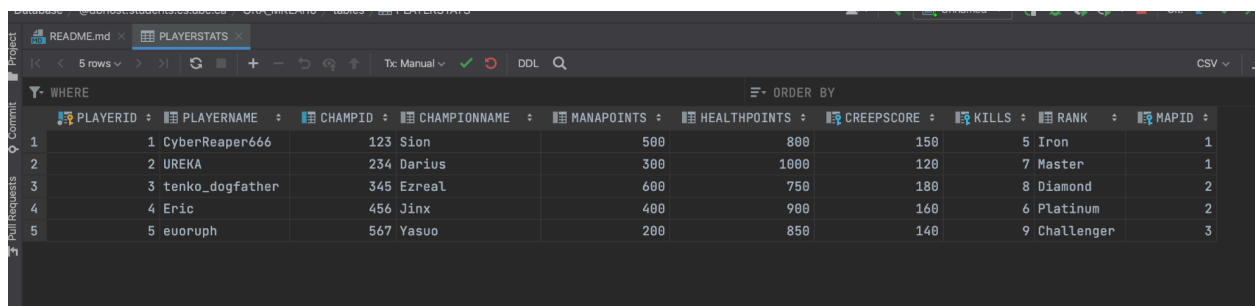
	dragonJungle				
jungleObjective	1	2	3	4	5
dragonType	Infernal	Ocean	Mountain	Cloud	Elder
mapID	1	1	1	1	1

dragonType(type: char[20], healthpoints: integer)

	dragonType				
dragonType	Infernal	Ocean	Mountain	Cloud	Elder
healthPoints	4090	5730	5730	5730	6400

Queries

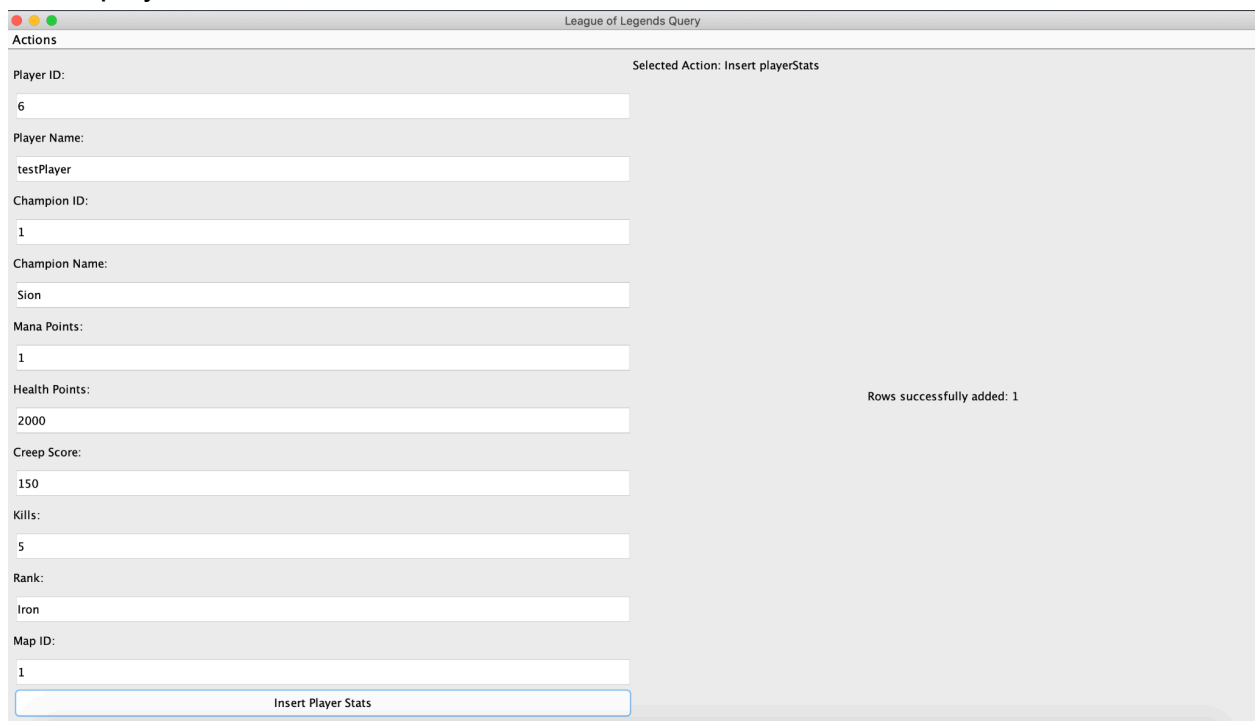
Insert



The screenshot shows a database query tool interface. The top bar indicates the project is 'PLAYERSTATS'. Below the toolbar, a table is displayed with the following columns: PLAYERID, PLAYERNAME, CHAMPID, CHAMPIONNAME, MANAPOINTS, HEALTHPOINTS, CREEPScore, KILLS, RANK, and MAPID. The table contains 5 rows of data.

PLAYERID	PLAYERNAME	CHAMPID	CHAMPIONNAME	MANAPOINTS	HEALTHPOINTS	CREEPScore	KILLS	RANK	MAPID
1	CyberReaper666	123	Sion	500	800	150	5	Iron	1
2	UREKA	234	Darius	300	1000	120	7	Master	1
3	tenko_dogfather	345	Ezreal	600	750	180	8	Diamond	2
4	Eric	456	Jinx	400	900	160	6	Platinum	2
5	euoruph	567	Yasuo	200	850	140	9	Challenger	3

- playerStats before insert



The screenshot shows a GUI titled 'League of Legends Query'. It has a section for 'Actions' and a 'Selected Action: Insert playerStats'. The form contains several input fields for player details, followed by an 'Insert Player Stats' button. A message on the right indicates 'Rows successfully added: 1'.

Player ID: 6

Player Name: testPlayer

Champion ID: 1

Champion Name: Sion

Mana Points: 1

Health Points: 2000

Creep Score: 150

Kills: 5

Rank: Iron

Map ID: 1

Insert Player Stats

Rows successfully added: 1

- GUI for insert PlayerStats with valid insert details

League of Legends Query

WHERE ORDER BY

	PLAYERID	PLAYERNAME	CHAMPID	CHAMPIONNAME	MANAPOINTS	HEALTHPOINTS	CREEPScore	KILLS	RANK	MAPID
1	1	CyberReaper666	123	Sion	500	800	150	5	Iron	1
2	2	UREKA	234	Darius	300	1000	120	7	Master	1
3	3	tenko_dogfather	345	Ezreal	600	750	180	8	Diamond	2
4	4	Eric	456	Jinx	400	900	160	6	Platinum	2
5	5	euoruph	567	Yasuo	200	850	140	9	Challenger	3
6	6	testPlayer	1	Sion	1	2000	150	5	Iron	1

- playerStats after valid insert

League of Legends Query

Actions

Selected Action: Insert playerStats

Player ID:

Player Name:

Champion ID:

Champion Name:

Mana Points:

Health Points:

Creep Score:

Kills:

Rank:

Map ID:

Insert Player Stats

Error: Please fill in all fields

- Error message when not all fields are filled

League of Legends Query

Actions

Selected Action: Insert playerStats

Player ID: 1

Player Name: testPlayer

Champion ID: 123

Champion Name: Sion

Mana Points: 400

Health Points: 2000

Creep Score: 150

Kills: 5

Rank: Challenger

Map ID: 1

Insert Player Stats

Error: Tuple can't be inserted

- Error message when unique constraint is violated

League of Legends Query

Actions

Selected Action: Insert playerStats

Player ID: 7

Player Name: testPlayer

Champion ID: 1

Champion Name: Sion

Mana Points: 500

Health Points: 2000

Creep Score: 1

Kills: 1

Rank: 1

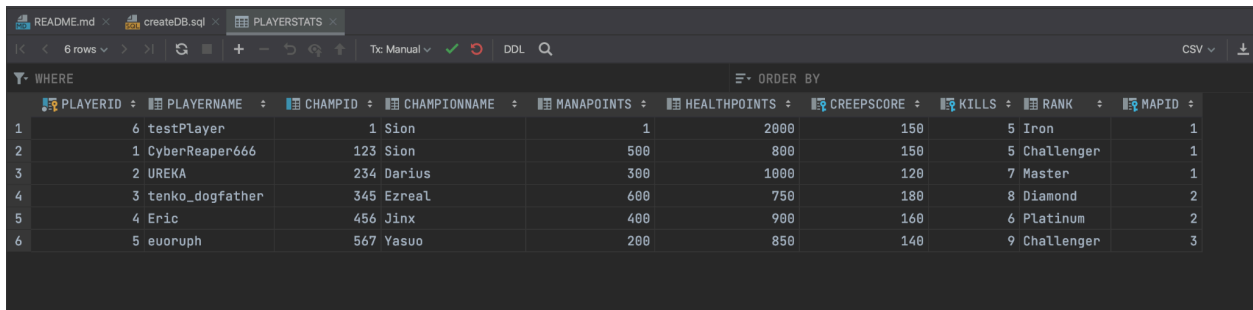
Map ID: 1

Insert Player Stats

Error: Tuple can't be inserted

- Error message when the foreign keys do not exist in the other table

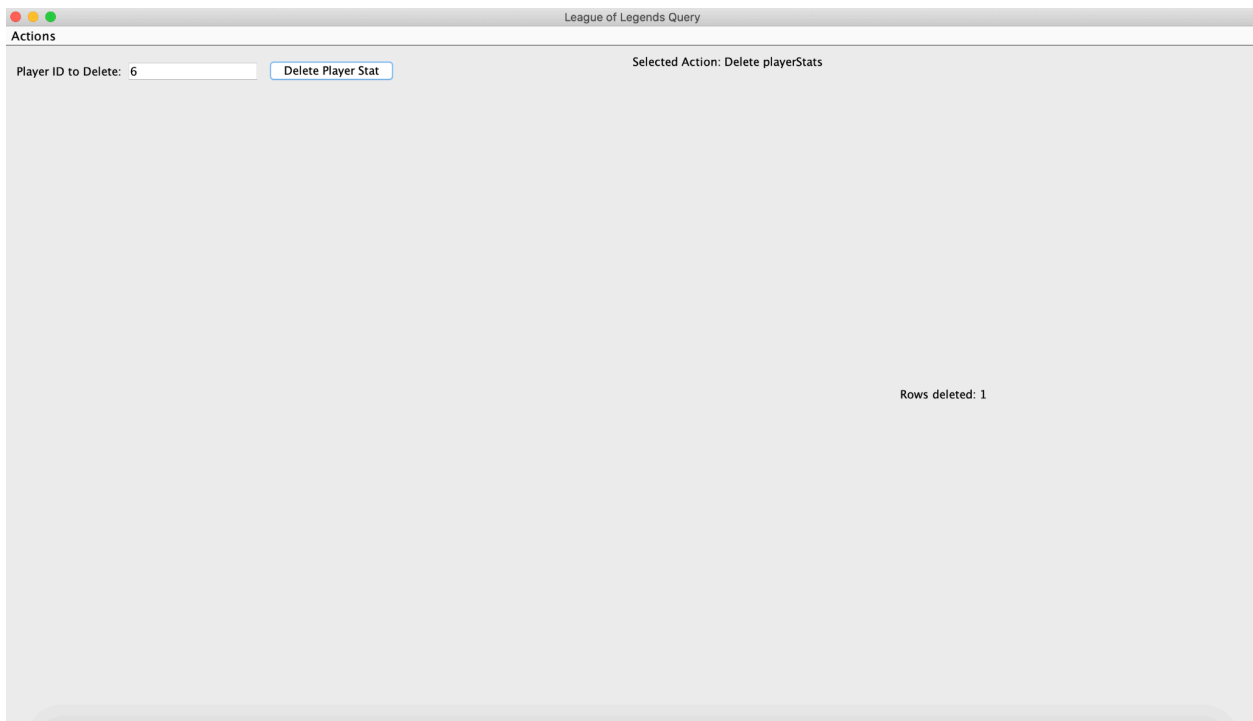
Delete



A screenshot of a database viewer interface. The top bar shows tabs for 'README.md', 'createDB.sql', and 'PLAYERSTATS'. Below the tabs, there's a toolbar with icons for navigation and actions. The main area displays a table with 10 columns: PLAYERID, PLAYERNAME, CHAMPID, CHAMPIONNAME, MANAPOINTS, HEALTHPOINTS, CREEPScore, KILLS, RANK, and MAPID. The table contains 6 rows of data.

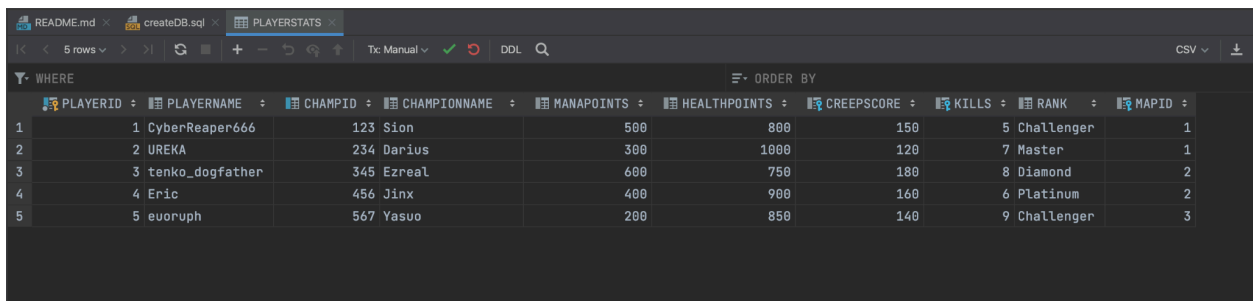
	PLAYERID	PLAYERNAME	CHAMPID	CHAMPIONNAME	MANAPOINTS	HEALTHPOINTS	CREEPScore	KILLS	RANK	MAPID
1	6	testPlayer	1	Sion	1	2000	150		5 Iron	1
2		1 CyberReaper666	123	Sion	500	800	150		5 Challenger	1
3		2 UREKA	234	Darius	300	1000	120		7 Master	1
4		3 tenko_dogfather	345	Ezreal	600	750	180		8 Diamond	2
5		4 Eric	456	Jinx	400	900	160		6 Platinum	2
6		5 euoruph	567	Yasuo	200	850	140		9 Challenger	3

- playerStats before delete



A screenshot of a web application titled 'League of Legends Query'. It features a form with a label 'Player ID to Delete:' followed by a text input field containing the number '6'. To the right of the input field is a button labeled 'Delete Player Stat'. Above the button, the text 'Selected Action: Delete playerStats' is displayed. Below the form area, a message 'Rows deleted: 1' is shown.

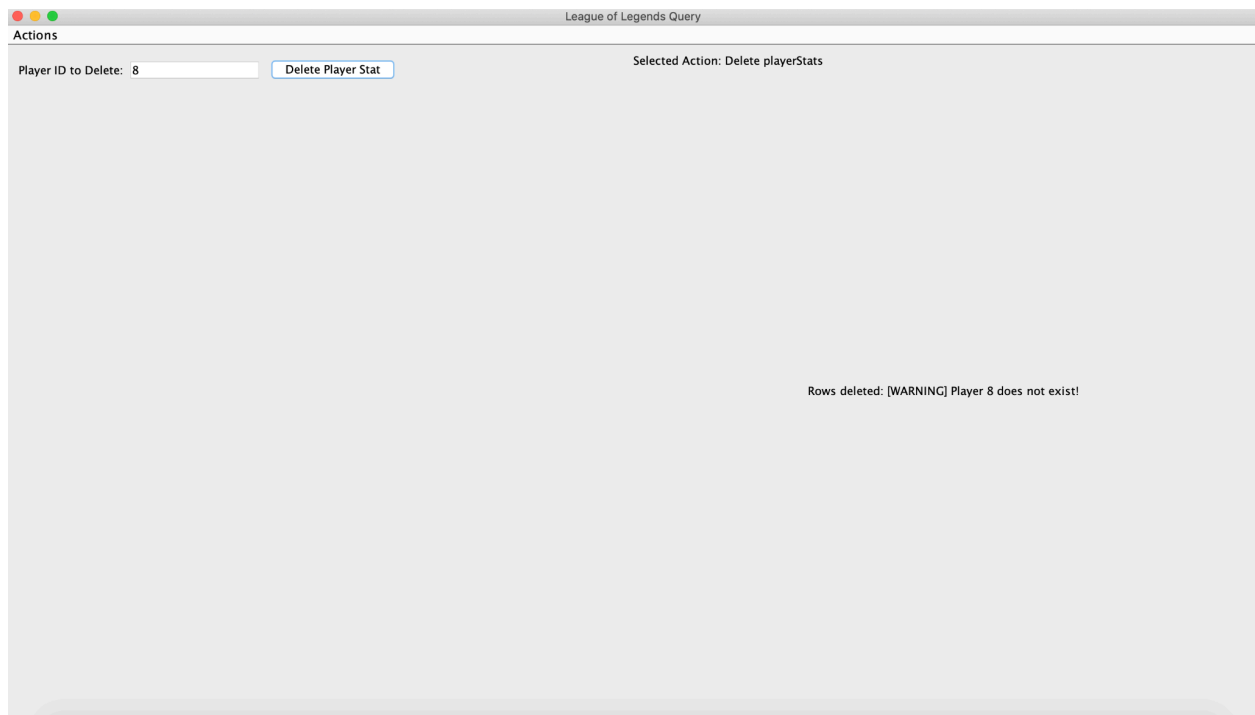
- Gui with deleting player with playerId = 6



A screenshot of the same database viewer interface as before, but now showing the state after deleting the row with playerId 6. The table now contains 5 rows of data.

	PLAYERID	PLAYERNAME	CHAMPID	CHAMPIONNAME	MANAPOINTS	HEALTHPOINTS	CREEPScore	KILLS	RANK	MAPID
1		1 CyberReaper666	123	Sion	500	800	150		5 Challenger	1
2		2 UREKA	234	Darius	300	1000	120		7 Master	1
3		3 tenko_dogfather	345	Ezreal	600	750	180		8 Diamond	2
4		4 Eric	456	Jinx	400	900	160		6 Platinum	2
5		5 euoruph	567	Yasuo	200	850	140		9 Challenger	3

- playerStats after delete



- Error message when playerID inputted doesn't exist

League of Legends Query

Actions

Selected Action: Show Own Items

Owns Item relation:

Player ID	Item Name	mr	ad	ap	armor	cost
1	Banshee's Veil	60	0	0	45	2900
2	Infinity Edge	0	70	0	0	3400
3	Rabadon's Deathcap	0	0	120	0	3800
4	Sunfire Cape	0	0	0	60	2900
5	Zhonya's Hourglass	45	0	75	0	2600
1	Tear of Goddess	0	0	0	0	400
3	Tear of Goddess	0	0	0	0	400
1	Boots	0	0	0	0	300
2	Boots	0	0	0	0	300
3	Boots	0	0	0	0	300
4	Boots	0	0	0	0	300
5	Boots	0	0	0	0	300

- ownsItem table before deleting player with playerID = 1 from playerStats

League of Legends Query

Actions

Selected Action: Show Own Items

Owns Item relation:

Player ID	Item Name	mr	ad	ap	armor	cost
2	Infinity Edge	0	70	0	0	3400
3	Rabadon's Deathcap	0	0	120	0	3800
4	Sunfire Cape	0	0	0	60	2900
5	Zhonya's Hourglass	45	0	75	0	2600
3	Tear of Goddess	0	0	0	0	400
2	Boots	0	0	0	0	300
3	Boots	0	0	0	0	300
4	Boots	0	0	0	0	300
5	Boots	0	0	0	0	300

- lownsItem table after deleting player with playerId = 1 from playerStats

Update

League of Legends Query

Actions

Selected Action: Update playerStats

Available tuples:

All Available tuples to choose:

Player ID	Player Name	Champion ID	Champion Name	Mana Points	Health Points	Creep Score	Kills	Rank	Map ID
1	CyberReaper666	123	Sion	500	800	150	5	Iron	1
2	UREKA	234	Darius	300	1000	120	7	Master	1
3	tenko_dogfather	345	Ezreal	600	750	180	8	Diamond	2
4	Eric	456	Jinx	400	900	160	6	Platinum	2
5	euoruph	567	Yasuo	200	850	140	9	Challenger	3
6	testPlayer	1	Sion	1	2000	150	5	Iron	1

Select Player ID to update:

1

Updated Player Name:

Updated Champion ID:

Updated Champion Name:

Updated Mana Points:

Updated Health Points:

Updated Creep Score:

Updated Kills:

Updated Rank:

Challenger

Updated Map ID:

Insert Player Stats

Rows updated: 1

- GUI for update with inputs for updating player with playerId = 1 to have rank Challenger

League of Legends Query

Actions

Selected Action: Update playerStats

Available tuples:

All Available tuples to choose:

Player ID	Player Name	Champion ID	Champion Name	Mana Points	Health Points	Creep Score	Kills	Rank	Map ID
1	CyberReaper666	123	Sion	500	800	150	5	Challenger	1
2	UREKA	234	Darius	300	1000	120	7	Master	1
3	tenko_dogfather	345	Ezreal	600	750	180	8	Diamond	2
4	Eric	456	Jinx	400	900	160	6	Platinum	2
5	euoruph	567	Yasuo	200	850	140	9	Challenger	3
6	testPlayer	1	Sion	1	2000	150	5	Iron	1

Select Player ID to update:

Updated Player Name:

Updated Champion ID:

Updated Champion Name:

Updated Mana Points:

Updated Health Points:

Updated Creep Score:

Updated Kills:

Updated Rank:

Updated Map ID:

Insert Player Stats

Result will display here

- Table after the update

League of Legends Query

Actions

Selected Action: Update playerStats

Available tuples:

All Available tuples to choose:

Player ID	Player Name	Champion ID	Champion Name	Mana Points	Health Points	Creep Score	Kills	Rank	Map ID
1	CyberReaper666	123	Ahri	500	800	150	5	Iron	1
2	UREKA	234	Darius	300	1000	120	7	Master	1
3	tenko_dogfather	345	Ezreal	600	750	180	8	Diamond	2
4	Eric	456	Jinx	400	900	160	6	Platinum	2
5	euoruph	567	Yasuo	200	850	140	9	Challenger	3

Select Player ID to update:

Updated Player Name:

Updated Champion ID:

Updated Champion Name:

Updated Mana Points:

Updated Health Points:

Updated Creep Score:

Updated Kills:

Updated Rank:

Updated Map ID:

Update Player Stats

Error: Tuple can't be updated

- Error message when unique constraint violated, same for foreign key violation

Selection

PLAYERID	PLAYERNAME	CHAMPID	CHAMPIONNAME	MANAPOINTS	HEALTHPOINTS	CREEPScore	KILLS	RANK	MAPID
6	testPlayer	1	Sion	1	2000	150	5	Iron	1
1	CyberReaper666	123	Sion	500	800	150	5	Challenger	1
2	UREKA	234	Darius	300	1000	120	7	Master	1
3	tenko_dogfather	345	Ezreal	600	750	180	8	Diamond	2
4	Eric	456	Jinx	400	900	160	6	Platinum	2
5	euoruph	567	Yasuo	200	850	140	9	Challenger	3

- playerStats currently

League of Legends Query

Actions

Selected Action: Select playerStats

Enter Player Selection Criteria; Leave blank for no criteria

Attributes: playerId, playerName, champID, championName, manaPoints, healthPoints

Example: rank = 'Diamond' AND healthPoints = 100 OR manaPoints = 0

rank = 'Challenger'

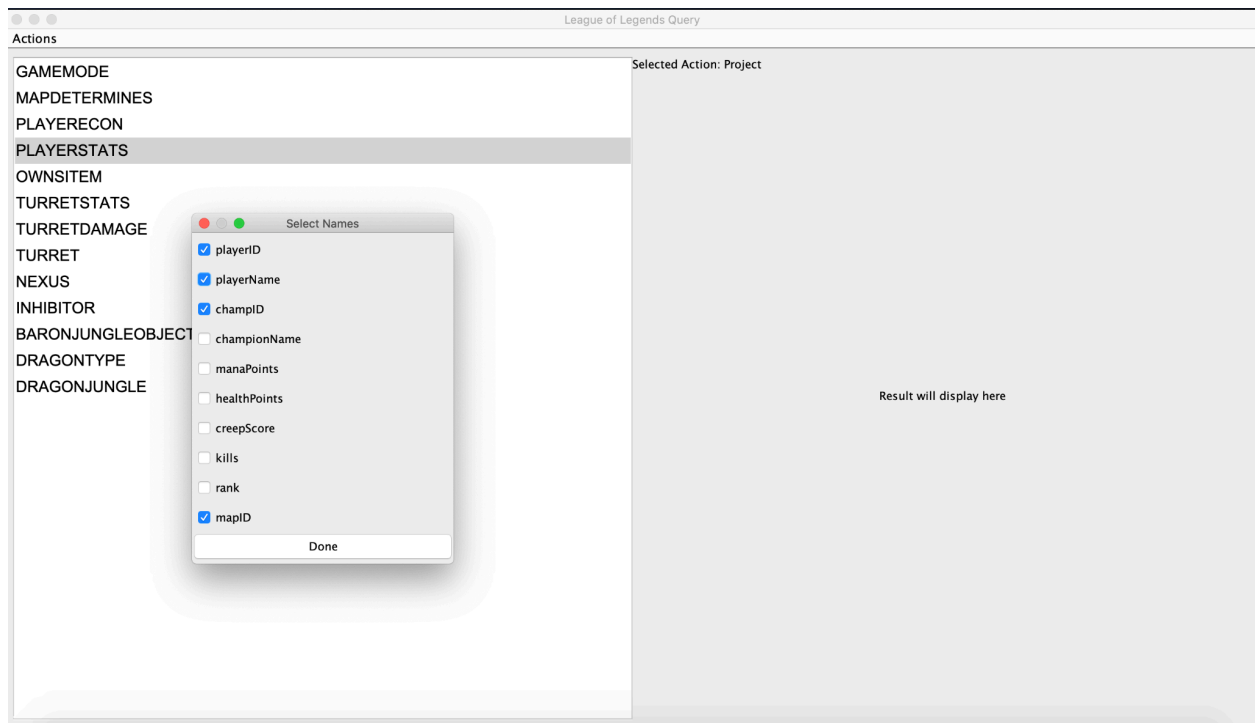
Run Query

All Available tuples to choose:

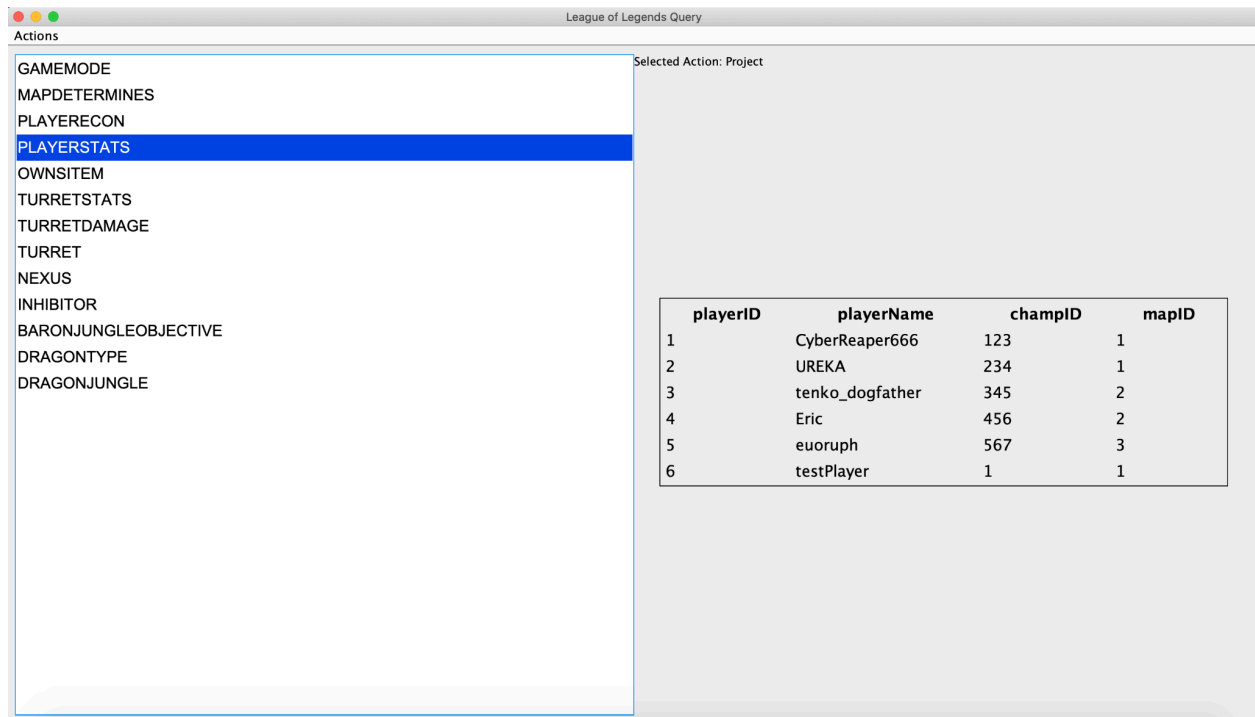
Player ID	Player Name	Champion ID	Champion Name	Mana Points	Health Points	Creep Score	Kills	Rank	Map ID
1	CyberReaper666	123	Sion	500	800	150	5	Challenger	1
5	euoruph	567	Yasuo	200	850	140	9	Challenger	3

- GUI input and output for selecting players with rank = 'Challenger'

Projection

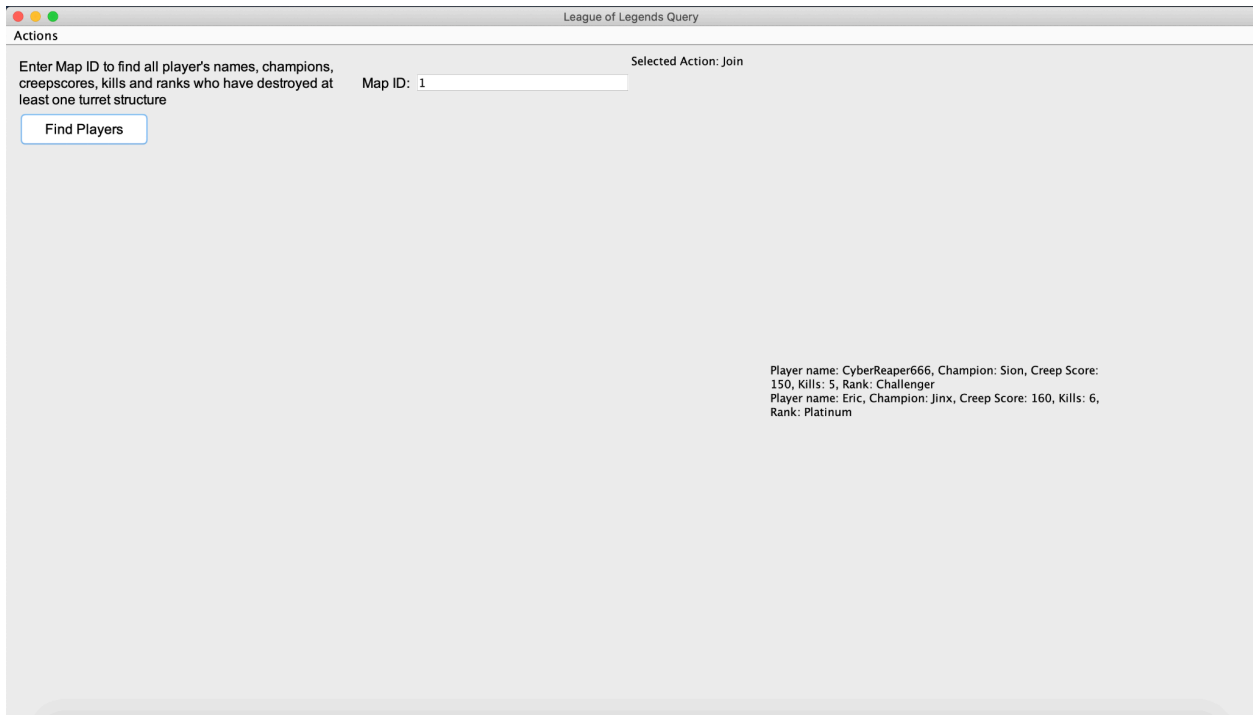


- GUI for projection on playerStats with playerID, playerName, champID, and mapID selected



- Result of the projection query in GUI

Join



League of Legends Query

Actions

Enter Map ID to find all player's names, champions, creepscores, kills and ranks who have destroyed at least one turret structure

Map ID:

Selected Action: Join

Find Players

Player name: CyberReaper666, Champion: Sion, Creep Score: 150, Kills: 5, Rank: Challenger
Player name: Eric, Champion: Jinx, Creep Score: 160, Kills: 6, Rank: Platinum

- GUI for join given a mapID



League of Legends Query

Actions

Enter Map ID to find all player's names, champions, creepscores, kills and ranks who have destroyed at least one turret structure

Map ID:

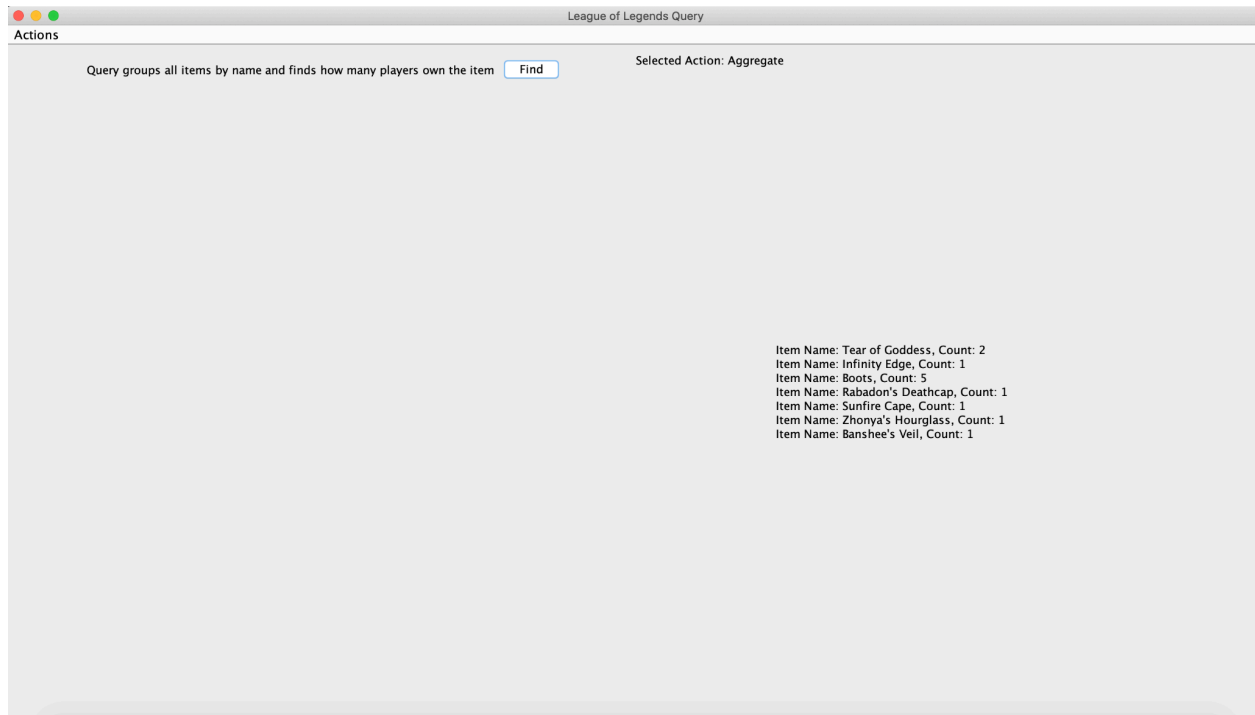
Selected Action: Join

Find Players

No player has destroyed any turrets on this map

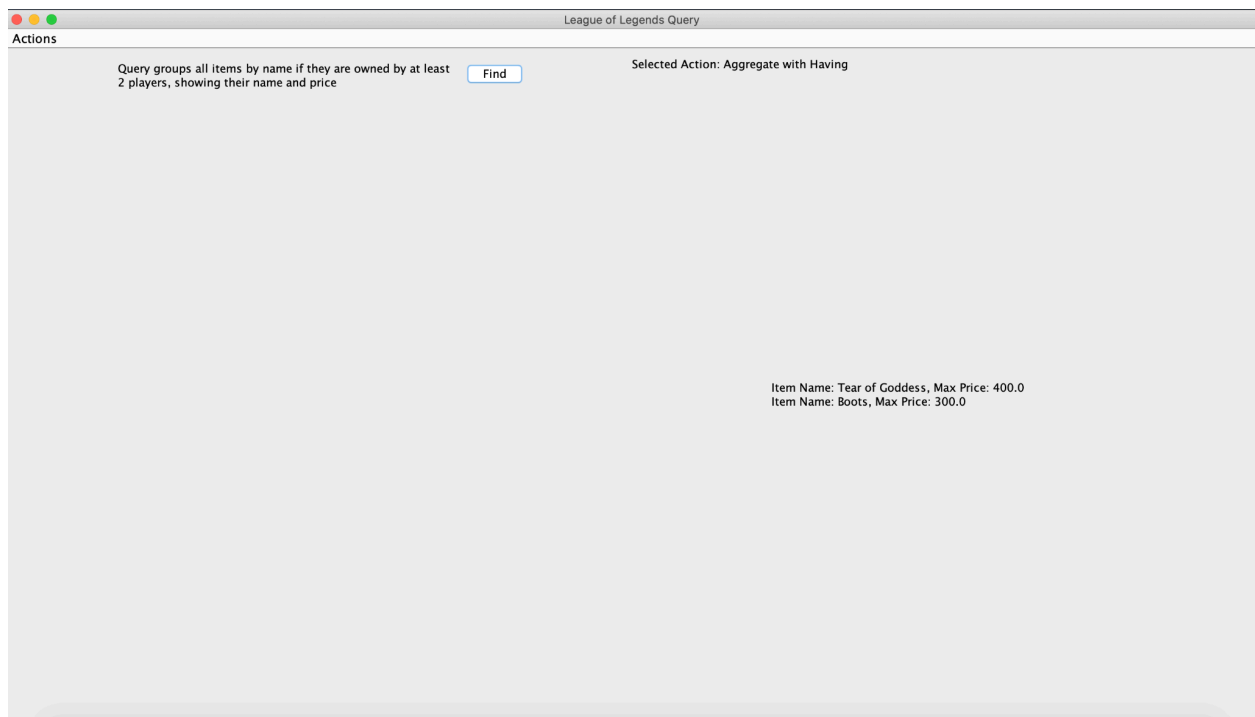
- Error message if the mapID doesn't exist or there are no turrets destroyed on that mapID

Aggregation with Group By



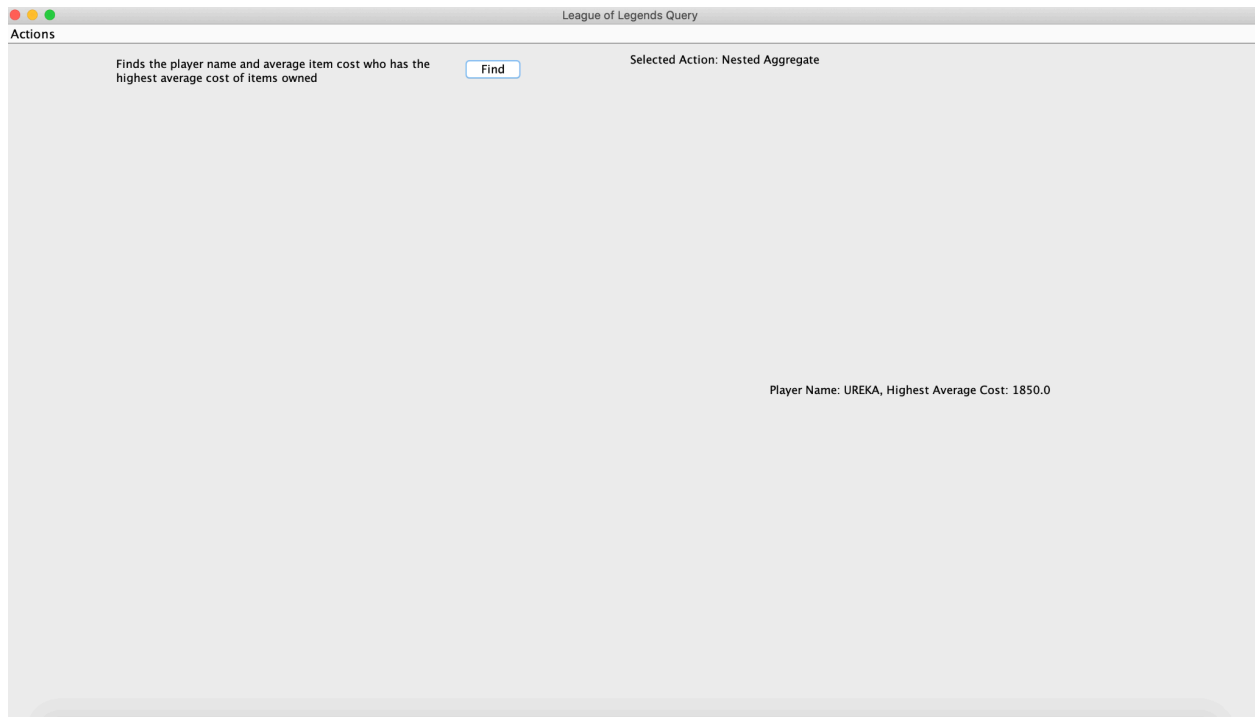
- GUI for aggregation with group by, grouping by itemName, then projecting Count(*)

Aggregation with Having



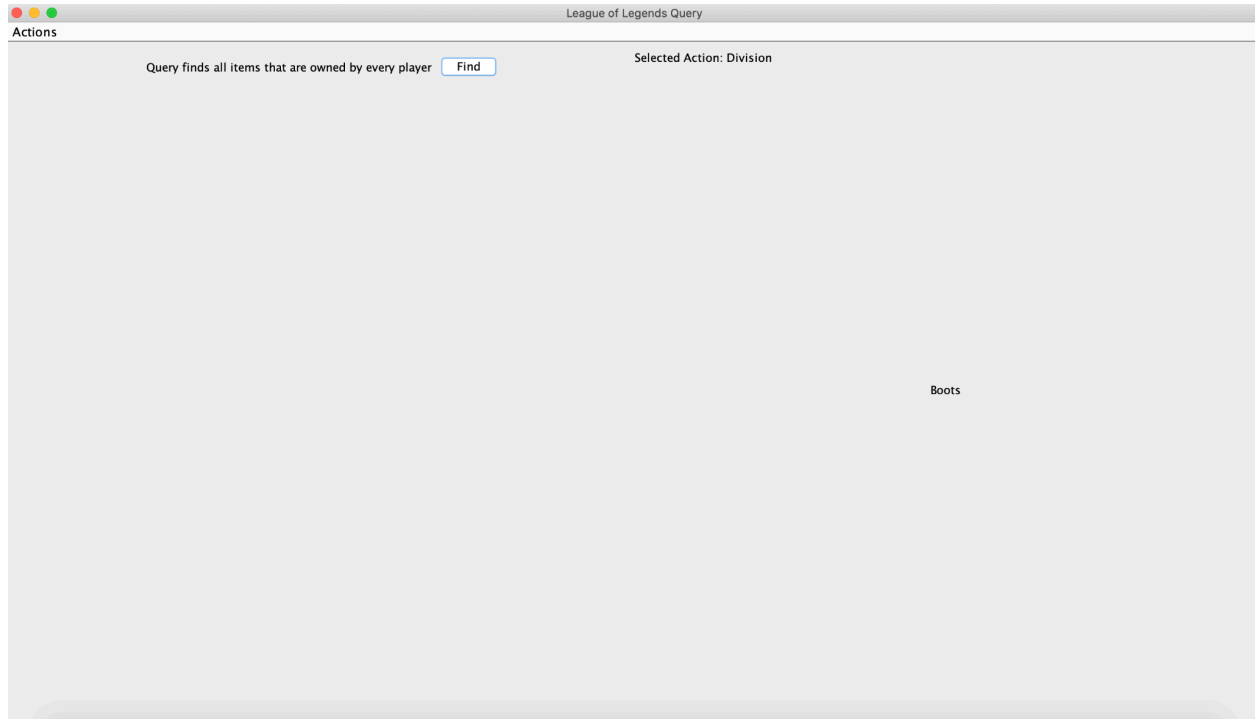
- GUI for aggregation with having, grouping by itemName, having Count(*) >= 2

Nested Aggregation with Group By



- GUI for nested aggregation with group by, grouping by playerName finding their avg cost of items, then projecting the playerName and the max average cost

Division



- GUI for division finding the itemName with every playerId