

# CPSC 304 Project Cover Page

Milestone #: 4

Date: April 2, 2025

Group Number: 114

Name	Student Number	CS Alias (userid)	Preferred Email Address
Alan Zhou	70409610	l5p5q	alanzhou318@gmail.com
Kevin Lei	60813573	l9b0l	kevinleimc@gmail.com
Wendi Liu	65854515	m5j4e	liu.wendi@yahoo.ca

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

### A short description of the final project, and what it accomplished.

Our final project is focused on modelling data from a generic RPG video game using Oracle SQL. This database was designed to efficiently store and manage game-related data, such as a player's details, item inventory, quests, as well as missions. Our final project was optimized using BCNF in our database design, which led to more efficient data storage and retrievals. Constraints were also added to ensure data integrity and used to ensure that the necessary fields were never null. This final project is an interactive website that demonstrates the 10 SQL queries, and allows the user to see how some of the tables are structured.

### A description of how your final schema differed from the schema you turned in. If the final schema differed, explain why.

We added a few ON DELETE CASCADE statements to some of our tables as we realized that they were missing, and that during the deletion of a player, some player items would still exist. We also found that there were some other values that should be constrained with NOT NULL.

### A list of all SQL queries used to satisfy the rubric items and where each query can be found in the code (file name and line number(s)).

The SQL for the following queries can be found in *AppService.js*:

1. Query #1 - *insertPlayertable()* - Line 112

```
INSERT INTO PlayerJoins VALUES (player_seq.NEXTVAL, :username, :email,  
SYSDATE, NULL, NULL)
```

2. Query #2 - *updateUserGuild()* - Line 135

```
UPDATE PlayerJoins SET guildName = :guildName, role = :guildRole WHERE  
username = :username
```

```
UPDATE Guild SET memberCount = (SELECT COUNT(*) FROM PlayerJoins P WHERE  
p.guildName = :guildName)
```

3. Query #3 - *deletePlayer()* - Line 161

```
DELETE FROM PlayerJoins WHERE username = :username
```

4. Query #4 - *selectPlayerTuples()* - Line 177

```
SELECT * FROM PlayerJoins WHERE ${query}
```

The query variable is a Boolean expression consisting of:

- Attributes (column names)
- Operators (=, <, >)
- Literals (user-input values wrapped in single quotes)
- Logical operators (AND, OR)

5. Query #5 - *selectArmourTuples()* - Line 191

```
SELECT ${query} FROM ArmourName
```

6. Query #6 - *getUserArmour()* - Line 87

```
SELECT armourID, boostType, name
FROM PlayerJoins PJ
INNER JOIN CraftsArmour CA
ON PJ.accountID = CA.accountID
WHERE PJ.username = :username
```

7. Query #7 - *getMostPopularItems()* - line 203

```
SELECT name AS itemName, COUNT(*) AS ownershipCount
FROM Owns
GROUP BY name
ORDER BY ownershipCount DESC
```

Aggregation GROUP BY query - this query gets the most popular items from the Owns table. Uses count and groups by the item name.

8. Query #8 - *getGuildsWithMoreThanTwoMembers()* - line 218

```
SELECT guildName, COUNT(*) AS memberCount
FROM PlayerJoins
WHERE guildName IS NOT NULL
GROUP BY guildName
HAVING COUNT(*) > 1
ORDER BY memberCount DESC
```

Aggregation with HAVING query - this query retrieves all guilds from the PlayerJoins table that have more than one member, counting the number of members in each guild. The results are grouped by guildName, filtered using the HAVING clause, and ordered by the member count in descending order.

9. Query #9 - *getGuildsWithAboveAverageFriendship()* - line 235

```
WITH OverallAverage AS (  
    SELECT AVG(B2.friendshipLevel) AS overallAvgFriendship  
    FROM Befriends B2  
)  
SELECT P.guildName,  
    AVG(B.friendshipLevel) AS avgFriendshipLevel,  
    AVG(B.friendshipLevel) - (SELECT overallAvgFriendship FROM  
OverallAverage) AS differenceFromAverage  
FROM PlayerJoins P  
JOIN Befriends B ON P.accountID = B.account1ID  
GROUP BY P.guildName  
HAVING AVG(B.friendshipLevel) > (SELECT overallAvgFriendship FROM  
OverallAverage)
```

Nested Aggregation with GROUP BY query - this query calculates the average friendship level for each guild and compares it to the overall average friendship level across all friendships. It returns guilds where the average friendship level is higher than the overall average along with the difference from the overall average.





10. Query #10 - *getPlayersMissionsCompletedDivision()* - line 274

```
CREATE VIEW GivenMissions(missionID) AS  
    SELECT missionID  
    FROM Mission  
    WHERE (Note: the checkmarked missions in the frontend are given here in the  
format missionID = <id> OR missionID = <id> OR ...>)  
  
SELECT accountID, username  
FROM PlayerJoins PJ  
WHERE NOT EXISTS (  
    (SELECT missionID  
    FROM GivenMissions)  
    MINUS  
    (SELECT DISTINCT missionID  
    FROM Completes C  
    WHERE PJ.accountID = C.accountID)  
)
```





Division query - this query performs division on the players' accountIDs using the chosen missionIDs that are checkmarked by the user. It returns the accountIDs and usernames of the players who have completed all of the given missions.

## Screenshots of relations

### ArmourName

 name varchar	 rarity varchar	 equiptype varchar	 boosttype varchar
Breastplate	rare	upper	attack
Cool Shoes	epic	boots	attack
Fleet footwear	rare	boots	attack
Light headgear	common	helmet	defence
Nice helmet	rare	helmet	defence





### ArmourStat

 rarity varchar	 boosttype varchar	 equiptype varchar	 stat int4
rare	attack	boots	3
common	attack	helmet	1
common	defence	helmet	2
rare	defence	helmet	4
rare	attack	upper	5
rare	defence	upper	6

### Befriends

Account1ID	Account2ID	FriendshipLevel
1	2	10
2	3	23
2	5	5
3	5	1
7	8	5

Challenges

  charactername varchar	  q... i..	attempttimestamp timestamp
Bob	1	2025-01-01 00:00:00
Joe	1	2025-01-05 00:00:00
Bob	2	2025-01-01 00:00:00
Joe	2	2025-01-05 00:00:00
Joe	3	2025-01-06 00:00:00

CharacterStats

 class varchar	 characterlevel int4	attack int4	defence int4
fighter	1	5	3
mage	1	7	1
tank	1	3	5
fighter	2	6	4
mage	2	8	2
tank	2	4	6
fighter	3	8	4
mage	3	9	3
tank	3	4	8

## Completes

AccountID	MissionID	CompletionTimestamp
1	101	2025-01-01T07:00:00.000Z
1	102	2025-01-01T07:00:00.000Z
1	103	2025-01-05T07:00:00.000Z
1	104	2025-01-05T07:00:00.000Z
1	105	2025-01-05T07:00:00.000Z
2	101	2025-01-01T07:00:00.000Z
2	103	2025-01-05T07:00:00.000Z
2	104	2025-01-05T07:00:00.000Z
3	101	2025-01-01T07:00:00.000Z
3	103	2025-02-05T07:00:00.000Z
5	101	2025-02-22T07:00:00.000Z
5	103	2025-02-22T07:00:00.000Z
7	103	2025-02-25T07:00:00.000Z
8	103	2025-02-25T07:00:00.000Z

## Consumable

Name	Count	Rarity	BoostType
Sandwich	5	common	attack
Strength potion	2	rare	attack
Healing Herb	3	rare	health
Energy Drink	4	common	stamina
Elixir of Wisdom	1	legendary	mana

# ConsumableStat








Rarity	Stat	BoostType
common	2	attack
common	4	defence
common	5	stamina
common	5	health
rare	5	attack
rare	8	defence
rare	10	stamina
rare	10	health
rare	10	mana
legendary	10	attack
legendary	16	defence
legendary	20	mana

# Collectible



Name	ObtainedFrom
Bracelet	Mission reward
Crown	Mission reward
Ancient Coin	Hidden treasure
Golden Feather	Rare bird drop
Dragon Scale	Defeated a dragon











## CraftsArmour

 <b>armourid</b> int4	<b>name</b> varchar	<b>boosttype</b> varchar	 <b>accountid</b> int4
1	Light headgear	defence	1 
2	Nice helmet	defence	1 
3	Breastplate	attack	1 
4	Breastplate	defence	2 
5	Fleet footwear	attack	5 

## CreatesCharacter

 <b>name</b> varchar	<b>characterlevel</b> int4	<b>class</b> varchar	 <b>playerid</b> int4
Alice	2	mage	3
Bob	3	fighter	1
Cody	1	tank	9
Eve	2	fighter	4
Joe	3	tank	2
Kai	3	mage	7
Luna	2	tank	6
Max	1	mage	5
Zane	1	fighter	8














## Equips

  <b>armourid</b> int4	 <b>charactername</b> varchar
1 	Joe
2 	Bob
3 	Bob
4 	Joe
5 	Joe

# Guild

Name	MemberCount	Description
Goats Guild	3	A guild for goats all around the world
Best Players	2	Only the best players are in this guild
Guild 1	1	guild 1 description
Guild 2	1	guild 2 description
Guild 3	1	guild 3 description



# HaveStage

 stageid int4	  questid int4	objective varchar
1	1 	defeat 3 enemies
2	1 	find treasure chest
3	1 	defeat all enemies
1	2 	find hidden path
2	2 	defeat all enemies
1	3 	find hidden path
2	3 	defeat all enemies
1	4 	collect 5 herbs
1	5 	reach location without being seen
2	5 	defeat all enemies

# Item

Name	Description
Bracelet	A token of your friendship
Crown	Reward for defeating your first boss
Ancient Coin	A rare coin from ancient times
Golden Feather	A shimmering feather from a rare bird
Dragon Scale	A tough scale from a defeated dragon
Sandwich	A tasty sandwich that boosts attack
Strength potion	A potion that increases your strength temporarily
Healing Herb	A magical herb that restores health
Energy Drink	A beverage that restores stamina
Elixir of Wisdom	A rare potion that increases mana





# LearnsSkill

 name varchar	effect varchar	 charactername varchar
Alice Cast	Grants a 1.5x buff for magical attacks	Alice
Alice Dodge	50% chance of taking no damage	Alice
Bob Block	Decreases incoming damage by defence	Bob
Bob Punch	Deals damage to enemy based on attack	Bob
Joe Protect	Decreases incoming damage by 2x defence	Joe

# Mission

MissionID	Requirement	Reward
101	kill 3 monsters	10 coins
102	defeat a boss character	crown
103	add a friend	friendship bracelet
104	finish first quest	10 coins
105	finish all quests	100000 coins


## Owns

  accountid int4	  name varchar
1	Bracelet
1	Crown
2	Bracelet
3	Bracelet
4	Ancient Coin
5	Bracelet
6	Dragon Scale
7	Bracelet
8	Bracelet


## PlayerJoins

AccountID	Username	Email	CreateDate	Role	GuildName
1	playerone	ipplaygames@email.com	2025-01-01T07:00:00.000Z	member	Best Players
2	thegoat	goatedgamer@email.com	2025-01-05T07:00:00.000Z	leader	Goats Guild
3	legoat	goatedgamer@email.com	2025-02-05T07:00:00.000Z	deputy	Goats Guild
4	dabest	bestest@email.com	2025-02-20T07:00:00.000Z	leader	Best Players
5	mountaingoat	mountaingoat@email.com	2025-02-21T07:00:00.000Z	member	Goats Guild
6	solo	soloplayer@email.com	2025-02-22T07:00:00.000Z		
7	lesunshine	a@gmail.com	2025-02-22T07:00:00.000Z	leader	Guild 1
8	lebron	b@gmail.com	2025-02-22T07:00:00.000Z	leader	Guild 2
9	leGM	c@gmail.com	2025-02-22T07:00:00.000Z	leader	Guild 3

## QuestInfo

 questid int4	bosscharacter varchar
1	Skeleton King
2	Ferocious Bear
3	Prickly Cactus
4	Aquatic Monstrosity
5	Arrogant Tyrant

## QuestLocation

 bosscharacter varchar	location varchar
Aquatic Monstrosity	Enchanted Lake
Arrogant Tyrant	Castle
Ferocious Bear	Forest
Prickly Cactus	Desert
Skeleton King	Dungeon