

CPSC 304 Project Cover Page

Milestone #: 4

Date: April 5, 2024

Group Number: 25

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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

Final Project Description:

We created a database tool for an RPG game. Our approach is from the angle of the developers, and our queries can be used to make changes to players, objects, and NPCs in the game (such as adding a new player, updating the owner/status of a shop, and deleting NPCs). We also have several queries which are geared towards data collection, which can be used to improve player experience and as achievements (for example, our division query, which returns all players who have completed all quests under a certain level, might be used to create a “quest achievement”).

Github Repository Link:

https://github.students.cs.ubc.ca/CPSC304-2023W-T2/project_b8o2g_l1i9d_w7o2b

Schema Changes from Milestone 3

There were no major changes to any of the schema. We made slight changes to a few of the attributes based on TA recommendations from our previous meeting.

Project Schema

Server(sid, sname, region)
NPC(nid, nname)
Quest(qname, **giverid**, exp, minlevel, objectives)
Shop(shopid, **ownerid**, status)
Guild_2(rank, goldBonus)
Guild_3(gname, **rank**)
Inventory(invid, **pname**, **sid**, sz)
Item(iname, iid, **invid**, **questname**, value)
Potion_2(type, sz, effect)
Potion_3(**ptname**, **ptid**, **type**, **sz**, **shopid**, price)
Weapon_2(type, rarity, damage)
Weapon_3(**wname**, **wid**, **type**, **rarity**)
QuestItem(**qiname**, **qiid**, type, description)
Player_2(exp, lvl)
Player_4(**exp**, mana)
Player_6(**exp**, health)
Player_7(pname, **sid**, **wname**, **wid**, **exp**, **gname**, role)
Does(**qname**, **pname**, **sid**, progress)

Post-initialization screenshots

SID	SNAME

REGION	

1	ServerCA
Canada	
2	ServerUS
USA	
3	ServerSA
South America	
SID	SNAME

REGION	

4	ServerAS
Asia	
5	ServerEU
Europe	

Server

NID	NNAME

1	Alice
2	Bob
3	Charles
4	David
5	Emily
6	Frank
7	John McTemporary

NPC

SHOPID	OWNERID	STATUS

1	1	open
2	2	open
3	3	closed
4	5	closed
5	6	open
6	7	open

Shop

QNAME	GIVERID	EXP

MINLEVEL OBJECTIVES		

Buy a Weapon	1	100
1 Buy your first weapon		
Buy a Potion	2	150
5 Buy your first potion		
Slay a Monster	3	500
3 Defeat one slime		
QNAME	GIVERID	EXP

MINLEVEL OBJECTIVES		

Join a Guild	4	1000
10 Join the Beginners Guild		
Deliver a Letter	5	300
8 Deliver the letter to Bob		

Quest

RANK	GOLDBONUS

1	500
2	1000
3	1500
4	2000
5	2500

Guild_2

GNAME	RANK

Beginner Guild	1
Intermediate Guild	2
Advanced Guild	3
Expert Guild	4
Pals for Life	5
Rivals for Life	5
Acquaintances for Life	5
Old Hunters	3
Byrgenwerth College	3
Healing Church	3
The Choir	3

Guild_3

INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	-----
Wooden Sword	16	1
Buy a Weapon	5	
Stone Hammer	17	
	10	
Quality Bow	18	
	100	
INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	-----
Iron Sword	19	
	1000	
Diamond Hammer	20	2
	10000	
iron ingot	1	1
	5	
INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	-----
bronze ingot	2	1
	3	
tuna	3	2
	2	
blue hat	4	1
	10	

INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	
dandelion	5	1
	1	
Small Potion of Health	6	3
Deliver a Letter	10	
Medium Potion of Speed	7	5
	20	
INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	
Large Potion of Strength	8	1
	30	
Small Potion of Defense	9	
	10	
Extra-Large Potion of Evasion	10	
	40	
INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	
Steamy Love Letter	11	
Deliver a Letter	-1	
Boar Tusk	12	
Slay a Monster	-1	
Poisoned Vial	13	
Buy a Potion	-1	

Item, page 2

INAME	IID	INVID
-----	-----	-----
QUESTNAME	VALUE	
-----	-----	
Heroes Sword	14	
Buy a Weapon	-1	
Quil of Destiny	15	
Join a Guild	-1	

Item, page 3

TYPE	

RARITY	DAMAGE

sword	
common	5
hammer	
common	10
bow	
uncommon	15
TYPE	

RARITY	DAMAGE

sword	
rare	25
hammer	
legendary	100

Weapon_2

WNAME	WID

TYPE	

RARITY	

Wooden Sword	16
sword	
common	
Stone Hammer	17
hammer	
common	
WNAME	WID

TYPE	

RARITY	

Quality Bow	18
bow	
uncommon	
Iron Sword	19
sword	
WNAME	WID

TYPE	

RARITY	

rare	
Diamond Hammer	20
hammer	
legendary	

Weapon_3

TYPE
SZ
EFFECT
health
small
+10 health
speed
medium
+20 speed
TYPE
SZ
EFFECT
strength
large
+50 strength
defense
small
TYPE
SZ
EFFECT
+10 defense
evasion
extra-large
+75 evasion

Potion_2

PTNAME		PTID	

TYPE			

SZ		SHOPID	PRICE

Small Potion of Health		6	
health			
small		1	50
Medium Potion of Speed		7	
speed			
medium		1	75
PTNAME		PTID	

TYPE			

SZ		SHOPID	PRICE

Large Potion of Strength		8	
strength			
large		1	100
Small Potion of Defense		9	
defense			
PTNAME		PTID	

TYPE			

SZ		SHOPID	PRICE

small		1	50
Extra-Large Potion of Evasion		10	
evasion			
extra-large		1	125

Potion_3

EXP	LVL
-----	-----
100	1
500	3
1000	7
10000	20
100000	50

Player_2

EXP	MANA
100	50
500	100
1000	200
10000	500
100000	800

Player_4

EXP	HEALTH
100	50
500	90
1000	180
10000	400
100000	750

Player_6

PNAME	SID	
-----	-----	
WNAME	WID	EXP
-----	-----	-----
GNAME		

ROLE		

Player1	1	100
PNAME	SID	
-----	-----	
WNAME	WID	EXP
-----	-----	-----
GNAME		

ROLE		

Leeroy Jenkins	1	
Diamond Hammer	20	500
Pals for Life		
officer		
PNAME	SID	
-----	-----	
WNAME	WID	EXP
-----	-----	-----
GNAME		

ROLE		

Chuck E. Cheese	2	
		1000
Beginner Guild		
recruit		

Player_7, page 1

PNAME	SID	
WNAME	WID	EXP
GNAME		
ROLE		
Homer Simpson	3	
Wooden Sword	16	100000
Beginner Guild captain		
PNAME	SID	
WNAME	WID	EXP
GNAME		
ROLE		
GandalfTheCool	5	
Iron Sword	19	100000
Advanced Guild		
3		

Player_7, page 2

INVID	PNAME	SID
SZ		
1	Player1	1
10		
2	Leeroy Jenkins	1
20		
3	Chuck E. Cheese	2
25		
INVID	PNAME	SID
SZ		
4	Homer Simpsonn	3
30		
5	GandalfTheCool	5
50		

Inventory

QNAME		
PNAME	SID	PROGRESS
Buy a Weapon		
Player1	1	100
Slay a Monster		
Player1	1	100
Deliver a Letter		
Player1	1	100
QNAME		
PNAME	SID	PROGRESS
Buy a Potion		
Player1	1	100
Slay a Monster		
Leeroy Jenkins	1	100
Buy a Weapon		
Leeroy Jenkins	1	100
QNAME		
PNAME	SID	PROGRESS
Deliver a Letter		
Leeroy Jenkins	1	100
Buy a Potion		
Leeroy Jenkins	1	100
Join a Guild		
Leeroy Jenkins	1	100

QNAME		

PNAME	SID	PROGRESS
-----	-----	-----
Buy a Weapon		
Chuck E. Cheese	2	100
Deliver a Letter		
Chuck E. Cheese	2	90
Buy a Potion		
Homer Simpsonn	3	80

Does, page 2

List of All SQL Queries and where it can be found in the code

All queries can be found in:

src/group.project/database/DatabaseConnectionHandler

1. Insert X

Insert Player adds a new player to the database. It's SQL can be found in src/group.project/database/DatabaseConnectionHandler at line 45

2. Delete

Delete NPC removes NPC(s) from the database. It's SQL can be found in src/group.project/database/DatabaseConnectionHandler at line 221

3. Update X

Update the owner or status of a NPC shop. Its SQL can be found in src/group.project/database/DatabaseConnectionHandler at line 163.

4. Selection

Selects quests based on filters that are provided in a dropdown. Its SQL can be found in src/group.project/database/DatabaseConnectionHandler.java at line 357

5. Projection X

Select Attributes from Table allows the user to view attributes in a table. Its SQL can be found in src/group.project/database/DatabaseConnectionHandler at line 513.

6. Join X

Selects all items in a specified inventory with values greater than a given variable. Its SQL can be found in DatabaseConnectionHandler at line 382

7. Aggregation with Group By X

Gets the total monetary value of all items in a specified inventory. Its SQL can be found in src/group.project/database/DatabaseConnectionHandler at line 321.

8. Aggregation with Having X

9. Nested Aggregation with Group By X

Gets the average player level in a specified guild. Its SQL can be found in src/group.project/database/DatabaseConnectionHandler at line 551.

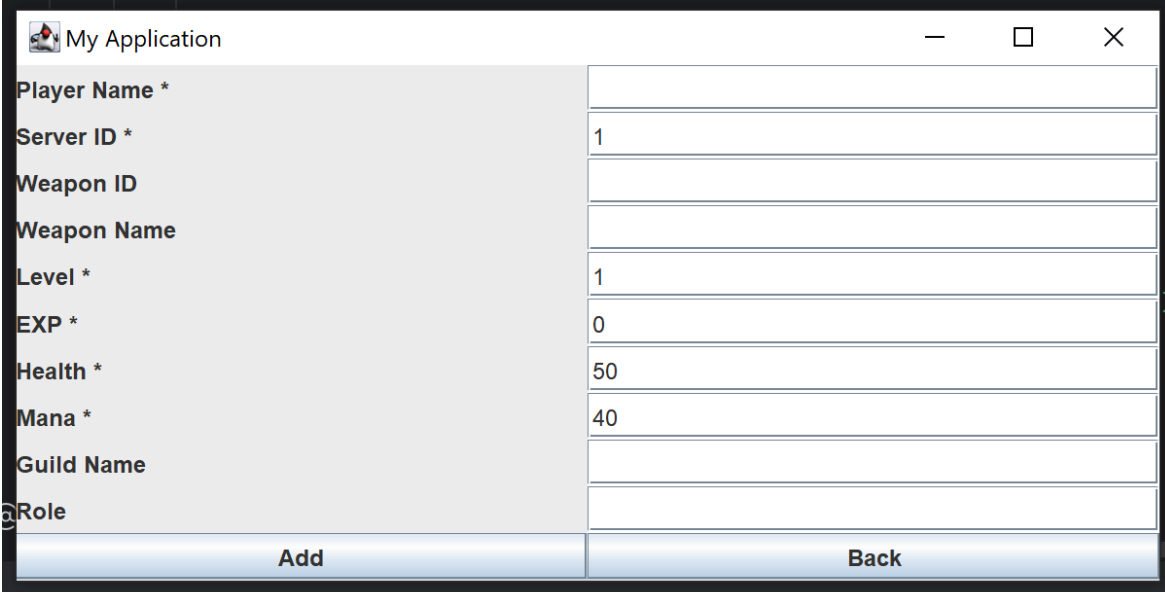
10. Division X

Division retrieves all players who have completed all quests under a user specified level. Its SQL can be found in DatabaseConnectionHandler at line 275.

SQL Queries Screenshots

1. Insert

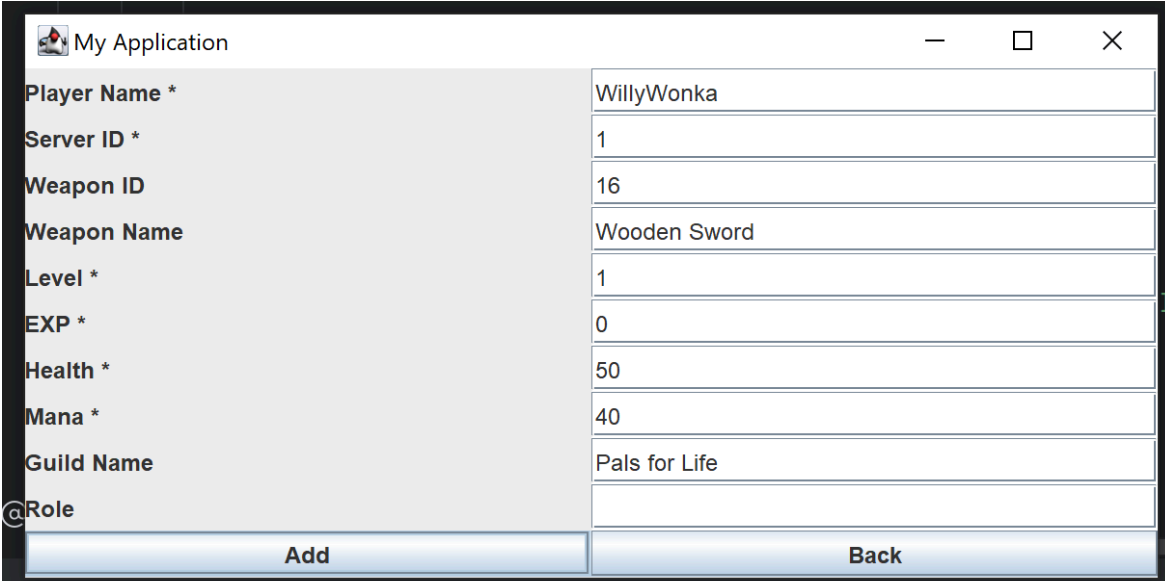
This query changes data in the database.



Player Name *	
Server ID *	1
Weapon ID	
Weapon Name	
Level *	1
EXP *	0
Health *	50
Mana *	40
Guild Name	
Role	

Add **Back**

This is our InsertPanel! Here we can add a new player to the database. Let's start by filling in the fields. Some of the fields have default values placed in them (for a level 1 player), but we can change these if we'd like. An asterisk (*) indicates a mandatory field.



Player Name *	WillyWonka
Server ID *	1
Weapon ID	16
Weapon Name	Wooden Sword
Level *	1
EXP *	0
Health *	50
Mana *	40
Guild Name	Pals for Life
Role	

Add **Back**

Now that we've filled in our data, we can try to add the player. If we've missed any required fields, we'll get an error. Otherwise, we'll get a notification that the player was

successfully added.

My Application

Player Name * WillyWonka

Server ID * 1

Weapon ID 16

Weapon Name

Level *

EXP *

Health *

Mana *

Guild Name Pals for Life

Role

Message

Success!

OK

Add Back

Now that our player's been added, we can go to the SELECTION Panel and run a query to see our new player in the database!

Selected Attributes

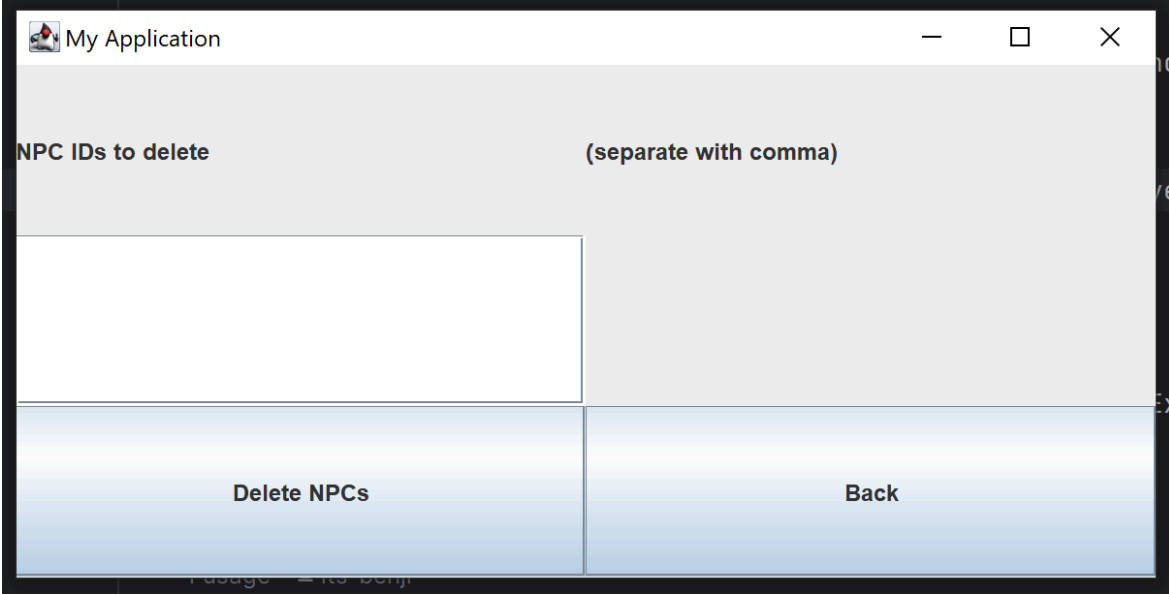
PNAME	SID	WNAME	WID	EXP	GNAME	ROLE
WillyWonka	1	Wooden Sw...	16	0	Pals for Life	Null
Player1	1	Null	Null	100	Null	Null
Leeroy Jenkins	1	Diamond Ha...	20	500	Pals for Life	officer
Chuck E. Ch...	2	Null	Null	1000	Beginner Guild	recruit
Homer Simp...	3	Wooden Sw...	16	100000	Beginner Guild	captain
GandalfThe...	5	Iron Sword	19	100000	Advanced G...	3

OK

Great! Note that (as seen in ROLE) any unfilled columns will be assigned the value NULL.

2. Delete

This query changes data in the database.



The screenshot shows a web application window titled "My Application". Inside the window, there is a panel with a light gray background. At the top of the panel, the text "NPC IDs to delete" is displayed, followed by the instruction "(separate with comma)". Below this text is a white text input field. At the bottom of the panel, there are two blue buttons with white text: "Delete NPCs" on the left and "Back" on the right.

This is our Delete panel, which can be used to delete NPCs from our database. Before we do any deletions, let's take a look at the NPCs we currently have in the system.

Selected Attributes×

NID	NNAME
1	Alice
2	Bob
3	Charles
4	David
5	Emily
6	Frank
7	John McTemporary

OK

There's currently 7 NPCs with IDs 1 to 7. Next, let's delete NPCs 1, 3, and 6.

My Application—□×

NPC IDs to delete

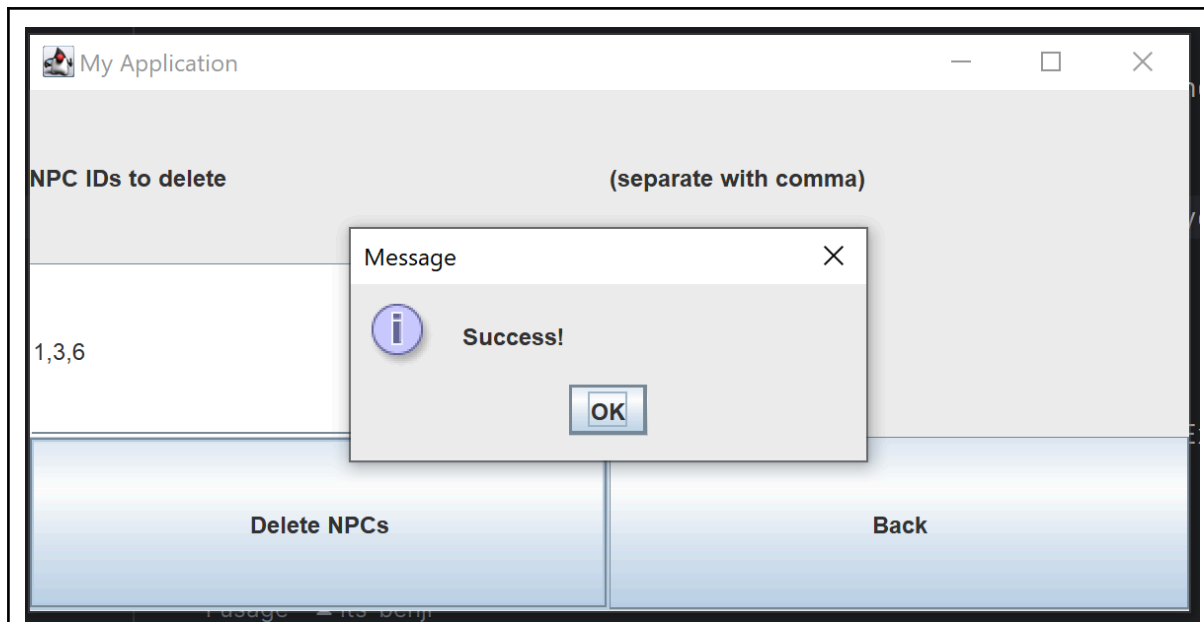
(separate with comma)

1,3,6

Delete NPCs

Back

Then we hit "Delete NPCs."

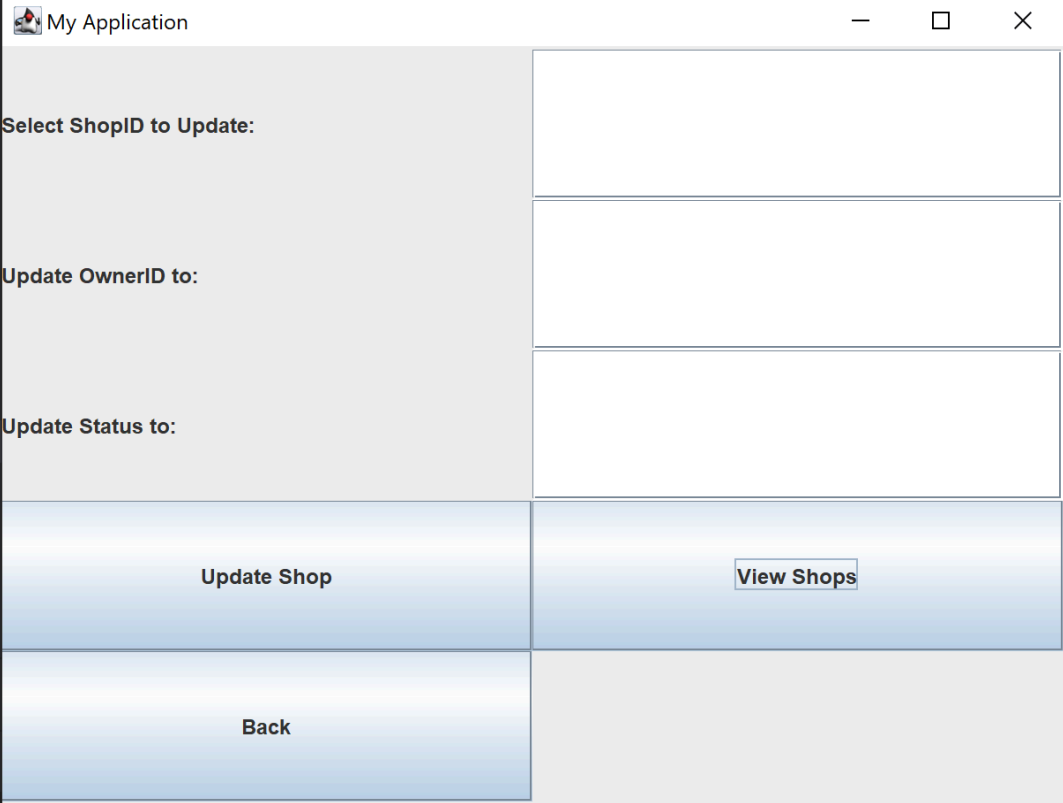


Great! Note that (as seen in ROLE) any unfilled columns will be assigned the value NULL.

Great! Note that (as seen in ROLE) any unfilled columns will be assigned the value NULL.

3. Update

This query changes data in the database.

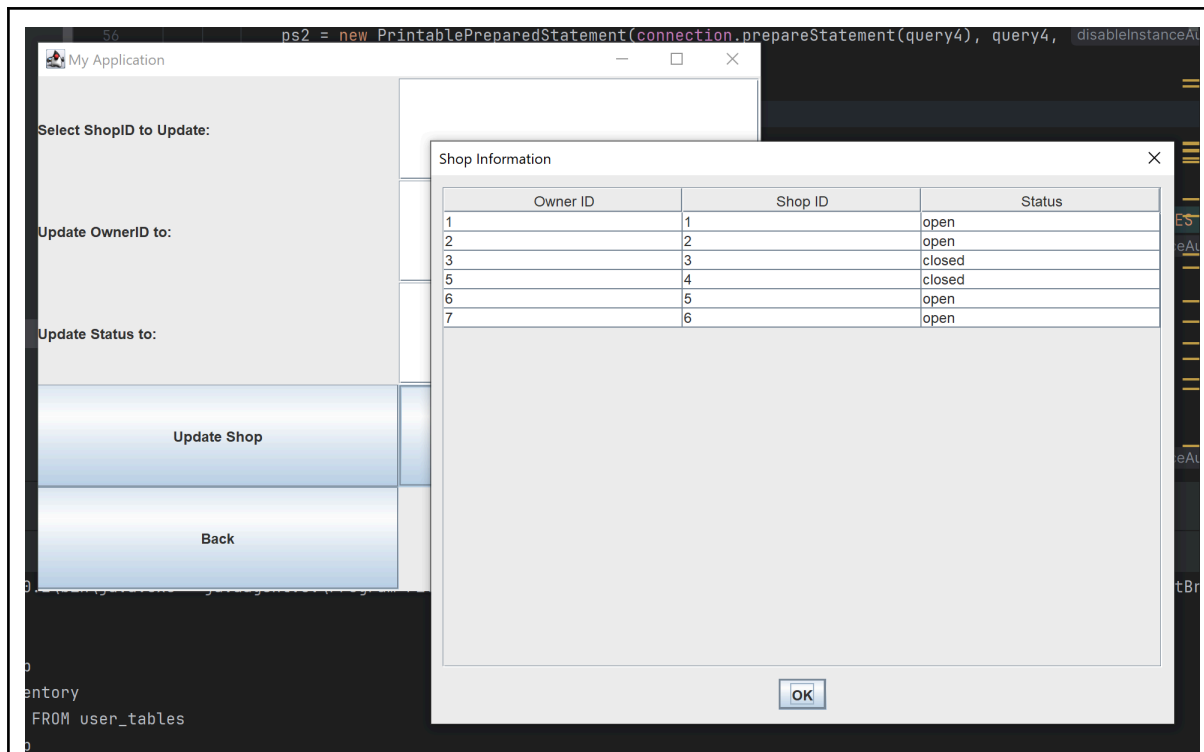


The screenshot shows a Java application window titled "My Application". The window contains a form with the following elements:

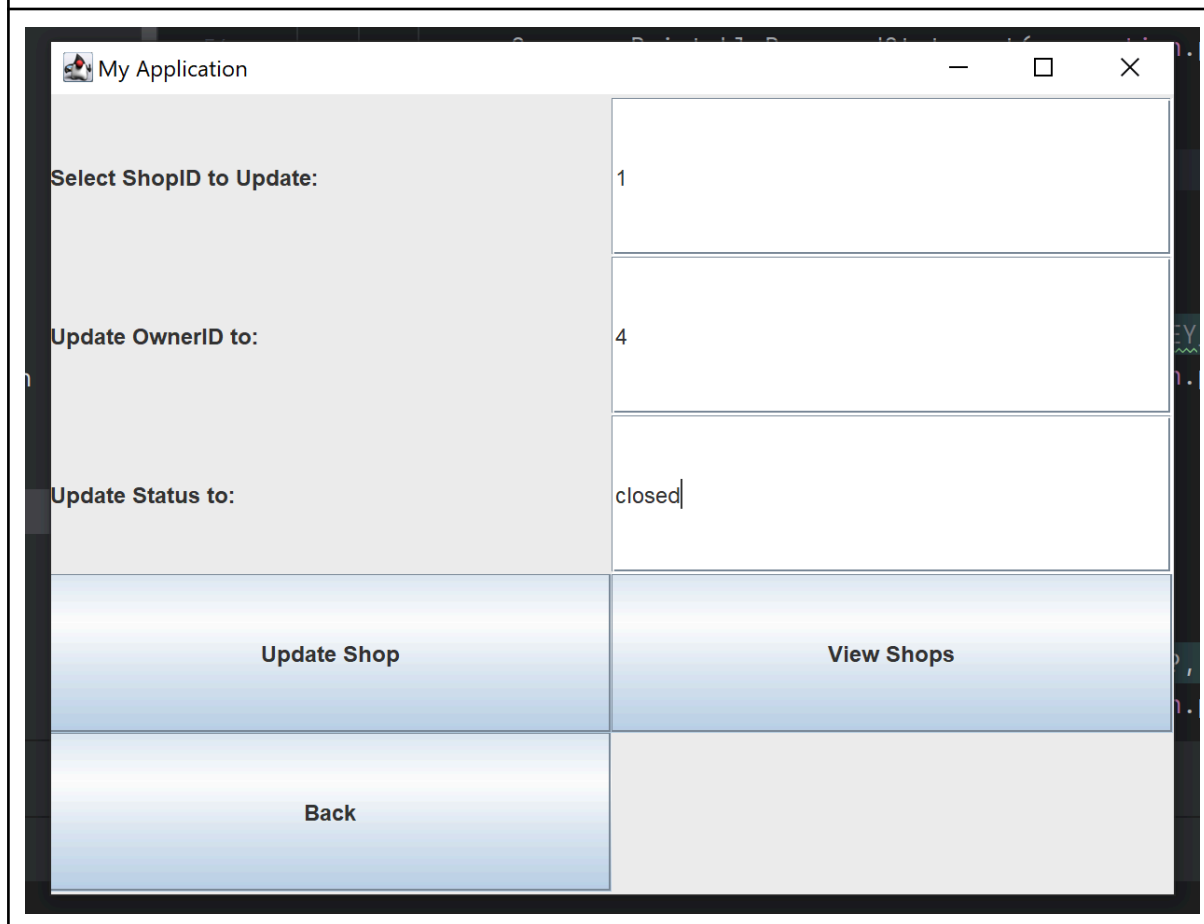
- Select ShopID to Update:** A text label followed by a text input field.
- Update OwnerID to:** A text label followed by a text input field.
- Update Status to:** A text label followed by a text input field.
- Update Shop:** A blue button with a gradient.
- View Shops:** A blue button with a gradient.
- Back:** A blue button with a gradient.

The background of the application shows a code editor with SQL code, including a query starting with "INSERT /*+ IGNORE_ROW_ON_DUPKEY_IND".

This is our Update Panel! Let's start by clicking on "View Shops" to see our current Shops



Currently the first row has Owner ID: 1, Shop ID: 1, Status: open. However, let's say that Shop ID: 1 has a new owner: Owner ID: 4, and the shop will be temporarily closed for updates. We can update this back in the main panel.



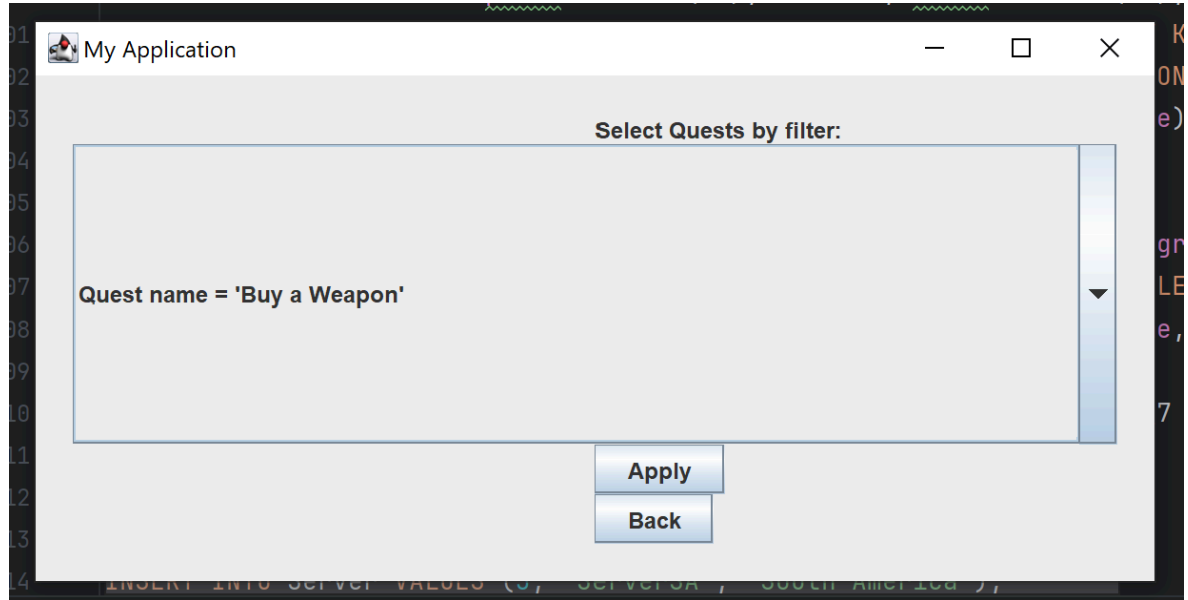
Once we've added in the details, we click "Update Shop" to update the database.

The screenshot shows a web application window titled "My Application". The main form has three input fields on the left and three corresponding text boxes on the right. The first row is labeled "Select ShopID to Update:" with the value "1" in the text box. The second row is labeled "Update OwnerID to:" with the value "4" in the text box. The third row is labeled "Update Status to:" with an empty text box. Below these fields are three buttons: "Update Shop", "View Shops", and "Back". A modal dialog box titled "Message" is centered over the form, displaying a blue information icon, the text "Success!", and an "OK" button. At the bottom of the application window, a SQL query is visible: `name FROM user_tables`.

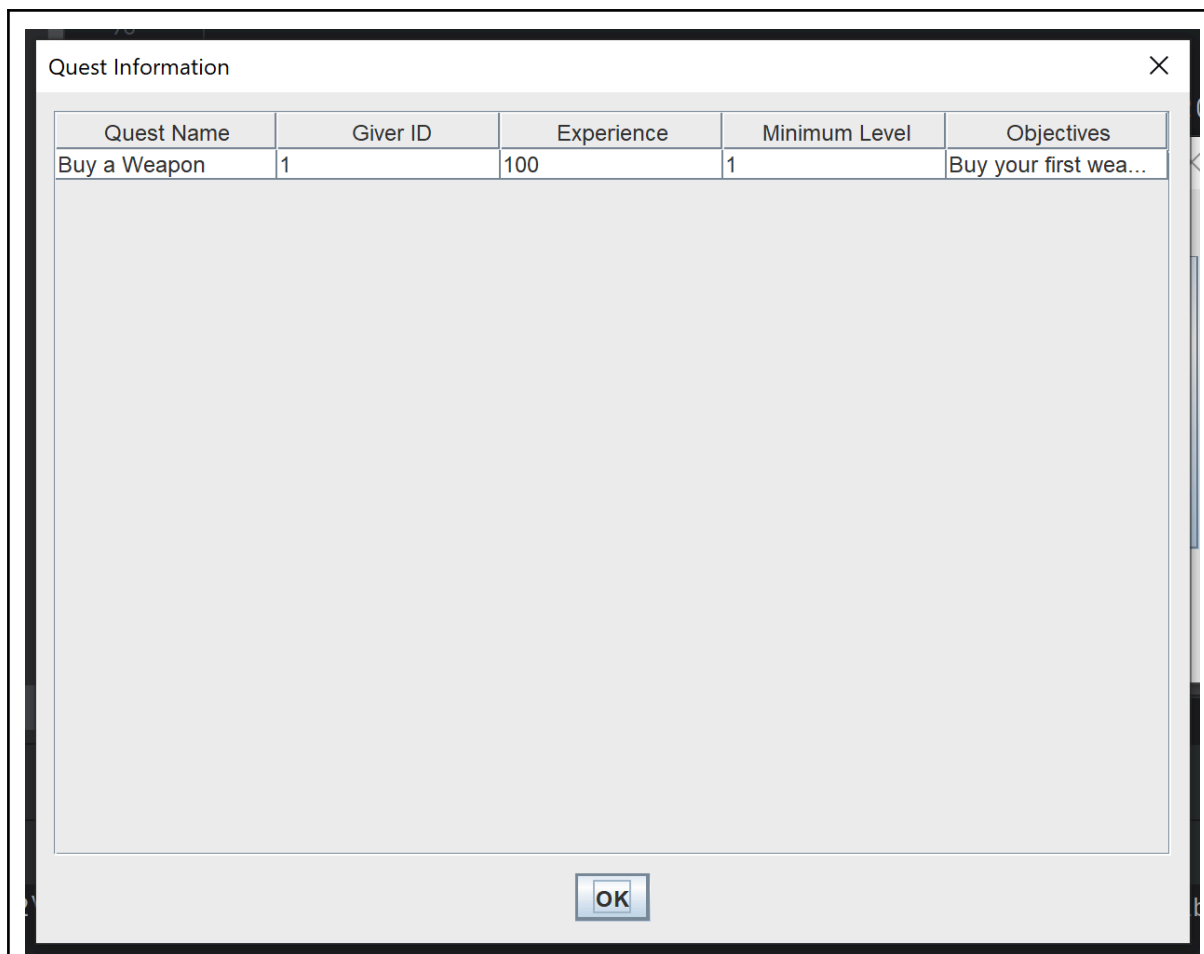
If successful, we'll get a "Success!" notification (if not, we'll get an error notification). Once this is done, we can check "View Shops" to see the new changes!

4. Select

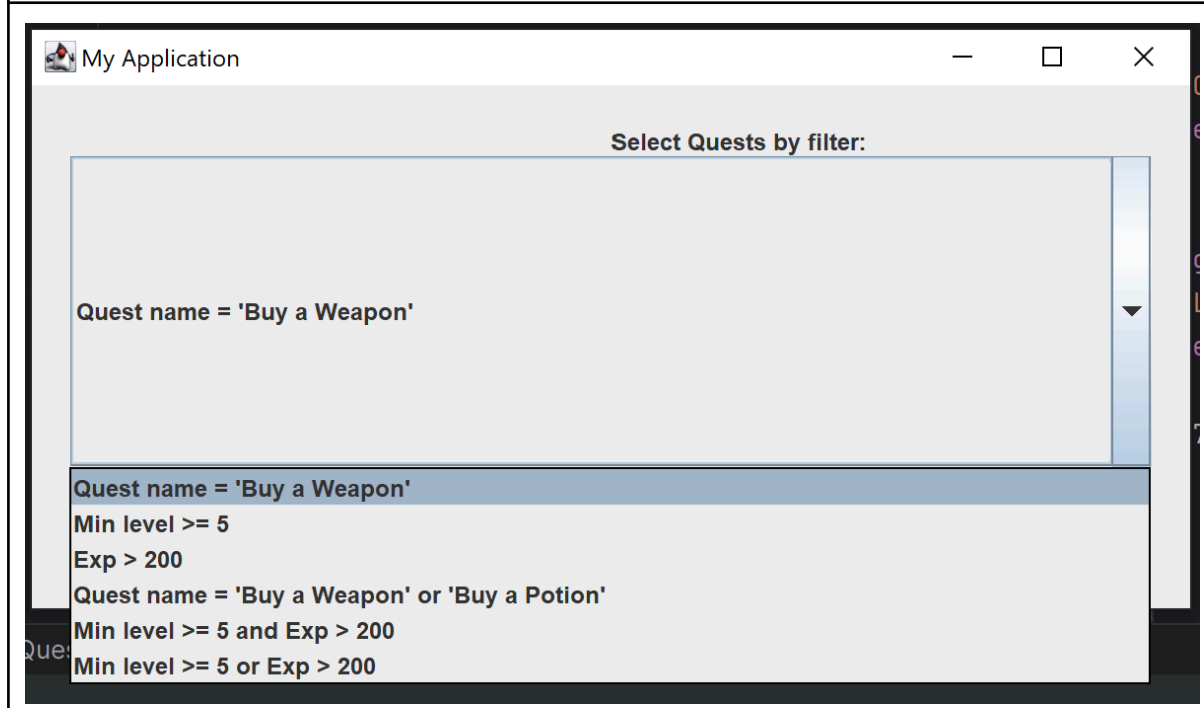
This query doesn't change data in the database.



This is our Select Panel! This is the default view. If we'd like to see the results for the pictured query, we can press "Apply."



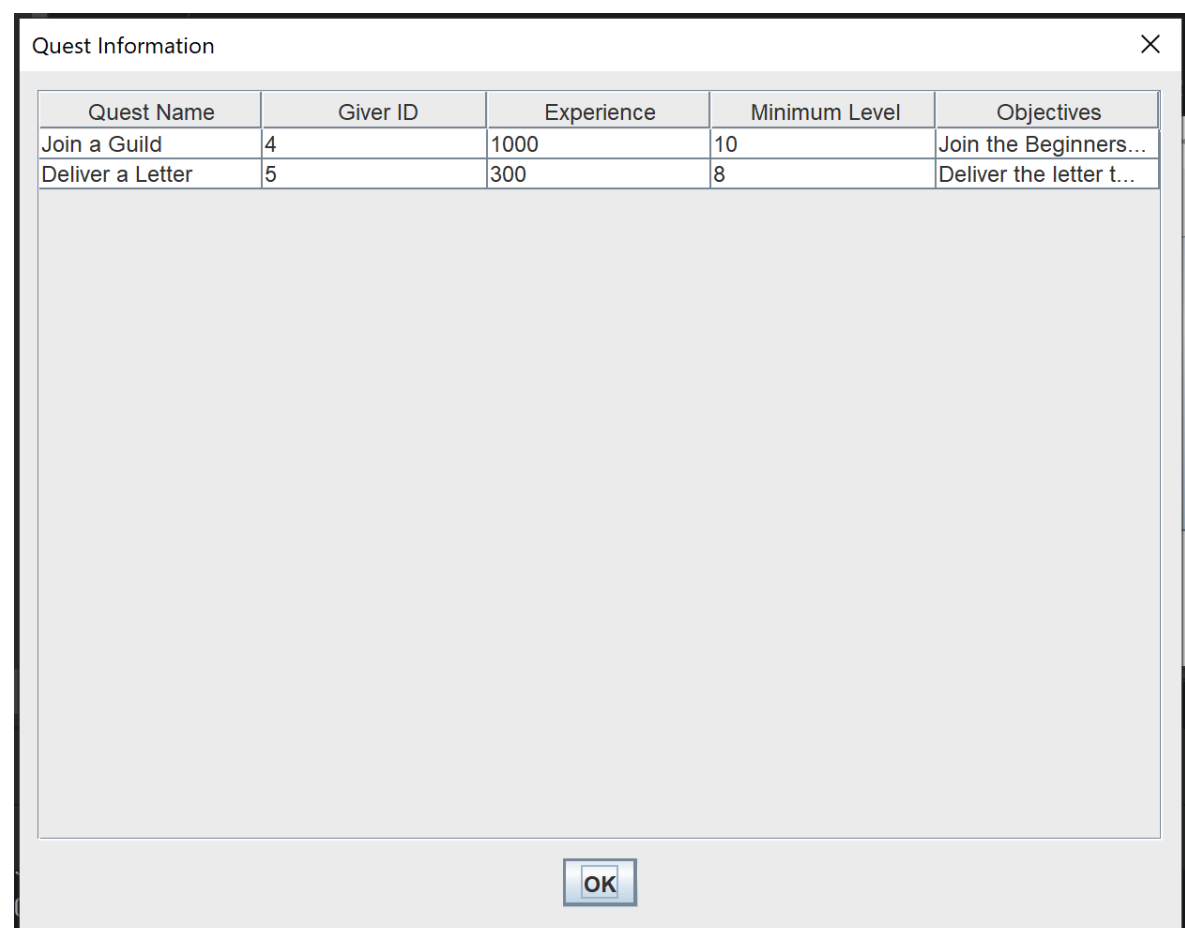
After viewing the query, we can return to the main panel by pressing “OK.” Then, to do a different Select query, we can press the dropdown arrow on the right of the query.



Let's select “Min level >=5 and Exp > 200.”



Once again, we can click "Apply" to view the resulting Select query.



The process is the same for all the other queries in Select!

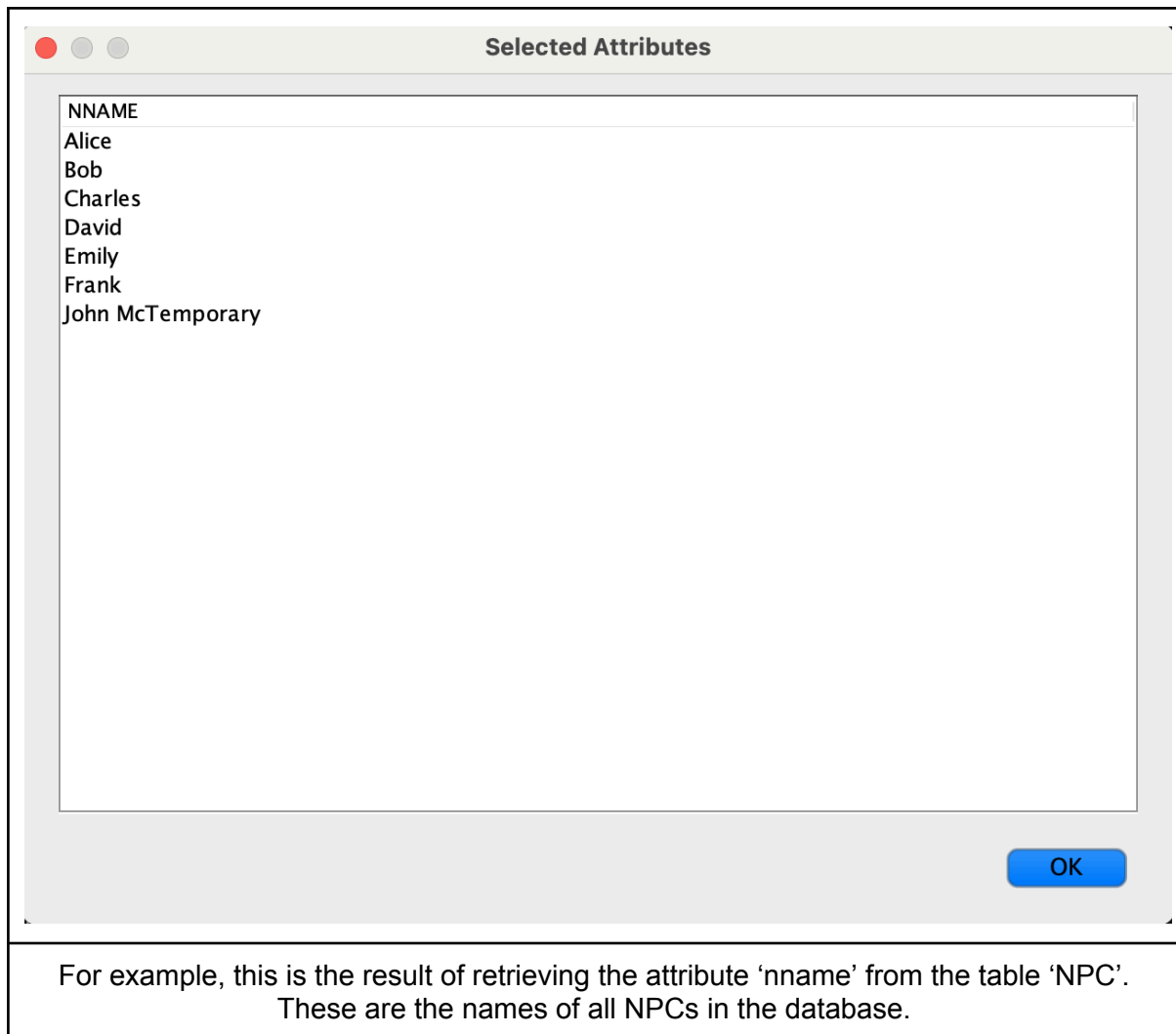
5. Projection

This query does not change data in the database.

The screenshot shows a web application window titled "My Application". Inside the window, there is a form with the following elements:

- A label "Choose desired table" above a dropdown menu.
- The dropdown menu currently displays "NPC" and has a blue arrow icon on the right.
- Below the dropdown are two buttons: "Get Attributes" and "Back".
- Below the buttons is a label "Choose attributes from table: NPC".
- Below the label is a list box containing two items: "NID" and "NNAME". The "NNAME" item is highlighted with a blue background.
- Below the list box is a "Submit" button.

The user selects the desired table from the dropdown at the top of the screen. All tables in the database are available to choose from. Pressing 'Get Attributes' refreshes the combo-box below with all of the table's attributes. The user then selects one or more attributes from the combo-box, and presses 'Submit' to get the values.



6. Join

This query does not change data in the database.

My Application

Inventory to search (by ID)

1

Return all items with value greater than

5

Get All Items

Back

The user enters the inventory ID to search in the top text field, then the minimum item value in the bottom text field. Clicking 'Get All Items' will retrieve info on all items in the specified inventory where the item value is greater than the minimum value.

Item Information

Item ID	Item Name	Inventory ID	Quest Name	Value
4	blue hat	1		10
8	Large Potion of St...	1		30

OK

This is the result of finding all items in inventory ID 1 with value greater than 5. There are two such items, with values 10 and 30 respectively.

7. Aggregation with Group By

This query does not change data in the database.

My Application

Get Inventory total value

Inventory ID:

Apply

Back

The user can click on 'Apply' to retrieve, for the inventory with the ID specified, the sum of values of all items in that inventory.



8. Aggregation with Group By / Having

This query does not change data in the database.

GNAME	RANK
-----	-----
Beginner Guild	1
Intermediate Guild	2
Advanced Guild	3
Expert Guild	4
Pals for Life	5
Rivals for Life	5
Acquaintances for Life	5
Old Hunters	3
Byrgenwerth College	3
Healing Church	3
The Choir	3

This is the relevant data that exists in our database when applying this query.

Get ranks with most guilds

Back

The user can click 'Get ranks with most guilds' to find the guild ranks with the most guilds at that rank.



Nested Aggregation with Group By

This query does not change data in the database.
--

PNAME	SID	
WNAME	WID	EXP
GNAME		
ROLE		
Player1	1	100

PNAME	SID		
WNAME	WID	EXP	
GNAME			
ROLE			
Leeroy Jenkins	1		
Diamond Hammer	20	500	
Pals for Life officer			

PNAME	SID		
WNAME	WID	EXP	
GNAME			
ROLE			
Chuck E. Cheese	2		
Beginner Guild recruit		1000	

PNAME	SID		
WNAME	WID	EXP	
GNAME			
ROLE			
Homer Simpsonn	3		
Wooden Sword	16	100000	
Beginner Guild			
captain			

PNAME	SID		
WNAME	WID	EXP	
GNAME			
ROLE			
GandalfTheCool	5		
Iron Sword	19	100000	
Advanced Guild			
3			

EXP	LVL
100	1
500	3
1000	7
10000	20
100000	50

This is the relevant existing data for Players, their levels, and the Guilds that they are in.



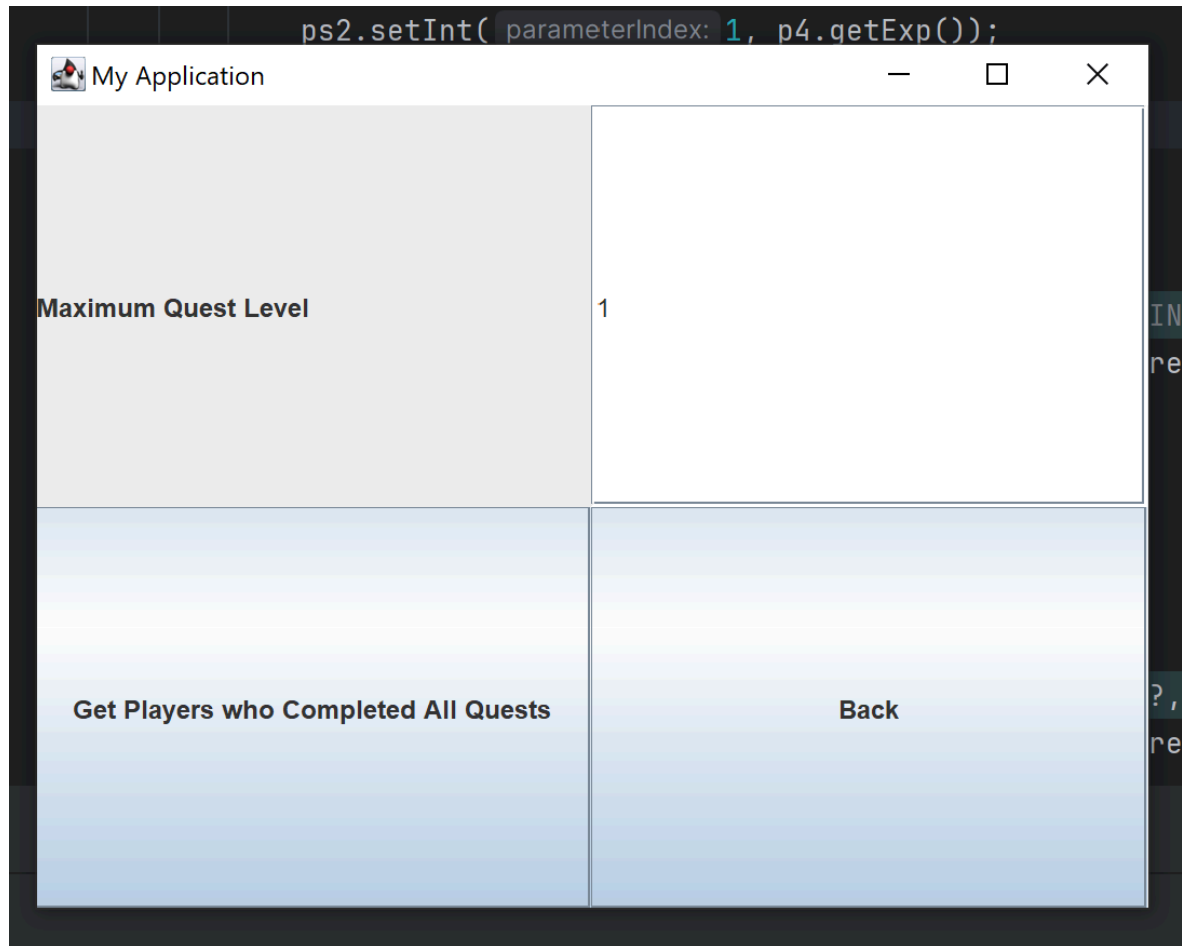
Quest Information	
Guild Name	Average Player Level
Pals for Life	3.00
Advanced Guild	50.00
Beginner Guild	28.50

OK

We can see that the Beginner Guild has an average player level of 28.5, the Advanced Guild has an average player level of 50, and Pals for Life has an average player level of 3, which matches the data in our database.

10. Division

This query does not change data in the database.



This is our Division Panel! Let's start by checking for all players who have completed all level 1 quests (or below). We put "1" into the textbox, and click "Get Players Who Completed All Quests."

ps2.setInt(parameterIndex: 1, p4.getExp());

My Application

Item Information

Player Name	Quests Completed where level <= 1
Player1	1
Chuck E. Cheese	1
Leeroy Jenkins	1

OK


Maximum

Get P

/a.exe "

It looks like there are currently 3 players who have completed all level 1 quests. Now let's check to see how many players have completed all level 10 quests or below.


```
ps2.setInt( parameterIndex: 1, p4.getExp());
```

 My Application

Maximum Quest Level	10
Get Players who Completed All Quests	Back

Once we've added in the value, we press "Get Players Who Completed All Quests."

Item Information

Player Name	Quests Completed where level <= 10
Leeroy Jenkins	5

OK

It looks like only one player has currently completed all quests at or below level 10.