CPSC 304 Project Cover Page

Milestone #: 4

Date: December 1, 2023

Group Number: 85

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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

Our database models the general structure of an RPG, targeted for anyone interested in exploring how RPGs work at a basic level. Users of this database can see the important components that make up most RPGs, their relationships with each other, and examples of each instance. For some components, users can specify what to view, add, update, and delete from the list of examples, while others have buttons that allow the user to view a specific relationship between certain components.

Final Schema vs Initial Schema

We changed the 3NF Normalization for Dungeon to make 'name' the dominant key attribute for tables. As a result, the 3NF Normalization is as follows:

- Remove (difficulty, boss \rightarrow region) because (difficulty, boss \rightarrow name \rightarrow region)
- Remove (difficulty, boss → minLevel) because (difficulty, boss → name → region)
- Decompose by Synthesis then gives tables:
 - DungeonName(<u>name</u>, boss, difficulty)
 - DungeonMinLevel(<u>name</u>, minLevel)
 - DungeonRegion(<u>name</u>, region)
 - DungeonMinLevelToDifficulty(<u>minLevel</u>, difficulty)

For Equipment, we switched a functional dependency (affectedStat \rightarrow type) to (type \rightarrow affectedStat) because it makes more sense in the context of an RPG. We also changed its 3NF Normalization to make 'name' the dominant key attribute for tables. As a result, the 3NF Normalization is as follows:

- Remove 'affectedStat' from (type, rarity, affectedStat → statBoost) because we
 have (type → affectedStat)
- Remove 'affectedStat' and 'statBoost' from (type, rarity, affectedStat, statBoost → name) because we have (type → affectedStat) and (rarity, affectedStat → statBoost)
- Remove (rarity, affectedStat → statBoost) because (rarity, affectedStat → name → statBoost)
- Decomposing by Synthesis now gives tables:
 - EquipmentUser(<u>name</u>, usedBy)

- EquipmentName(<u>name</u>, rarity, **type**)
- EquipmentStatBoost(<u>name</u>, statBoost)
- EquipmentType(type, affectedStat)

Additionally, Quest no longer has startNPC as an attribute because it is implicitly covered in WorksOn. As well, WorksOn no longer has NPC as part of its primary key since it is possible for a playableCharacter to work on a quest without an NPC. As a result, the NPC attribute can now be NULL in WorksOn.

Final Schema

- ★ Village(<u>name</u>, region, population, minLevel)
- ★ Sells(<u>village</u>, <u>equipment</u>, price)
- ★ EquipmentUser(<u>name</u>, usedBy)
- ★ EquipmentName(<u>name</u>, rarity, **type**)
- ★ EquipmentStatBoost(<u>name</u>, statBoost)
- ★ EquipmentType(<u>type</u>, affectedStat)
- ★ Contains(equipment: varchar, dungeon: varchar)
- ★ DungeonName(<u>name</u>, boss, difficulty)
- ★ DungeonMinLevel(name, minLevel)
- ★ DungeonRegion(name, region)
- ★ DungeonMinLevelToDifficulty(<u>minLevel</u>, difficulty)
- ★ NPC(<u>name</u>, title, **village**)
- ★ Interacts(<u>NPC</u>, <u>playableCharacter</u>)
- ★ Quest(<u>title</u>, difficulty, reward, length, minLevel)
- ★ WorksOn(quest, NPC, playableCharacter)
- ★ PlayableCharacter(<u>username</u>, class, charLevel, health, energy, attack, defense, speed, **pet**)
- ★ PetSpecies(<u>name</u>, **species**)
- ★ PetOwner(<u>name</u>, owner)
- ★ PetAbility(species, ability)
- ★ PetLevel(species, abilityCooldown, pLevel)
- ★ Fights(playableCharacter, monster)
- ★ Monster(<u>name</u>, type, monsLevel, health, attack, defense, **defends**)

- ★ Boss(<u>name</u>, ability)
- ★ Neutral(<u>name</u>, triggeredBy)

Post-setup Data

Village

NAME	REGION	POPULATION	MINLEVEL
Tutorial Town	Lowlands	25	1
Farms	Lowlands	40	5
Aria Falls	Wicked Forest	20	20
Shipton	Beach	50	30
Frostford	Mount Veritas	25	40

Sells

VILLAGE	EQUIPMENT	PRICE
Tutorial Town	Short Sword	100
Farms	Chainmail	250
Aria Falls	Demonic Staff	800
Shipton	Magic Boots	500
Frostford	Frost Glaive	900

EquipmentName

NAME	RARITY	TYPE
Light Bow Shadow Cloak Ritual Grail Singed Wand Soulless Sabre Short Sword	Uncommon Uncommon Rare Rare Epic Common	Bow Cloak Spell Staff Sword Sword
Chainmail Demonic Staff Magic Boots Frost Glaive	Common Rare Common Epic	Armour Staff Boots Polearm

EquipmentUser

NAME	USEDBY
Short Sword	
Chainmail	Јау
Demonic Staff	Simon
Magic Boots	
Frost Glaive	Alice

EquipmentStatBoost

NAME	STATB00ST
Light Bow	12
Shadow Cloak	15
Ritual Grail	50
Singed Wand	20
Soulless Sabre	45
Short Sword	5
Chainmail	10
Demonic Staff	40
Magic Boots	5
Frost Glaive	75

EquipmentType

TYPE	AFFECTEDST
Sword	Attack
Polearm	Attack
Armour	Defense
Staff	Attack
Boots	Speed
Helmet	Health
Bow	Attack
Cloak	Speed
Spell	Energy

Contains

EQUIPMENT	DUNGEON
Light Bow Ritual Grail Shadow Cloak Singed Wand Soulless Sabre	The Abandoned Farm The Raging Catacombs Lair of the Perished Mountain The Eternal Cells The Bleak Tunnels

DungeonName

NAME	BOSS	DIFFICULTY
The Abandoned Farm	The Bull	1
Lair of the Perished Mountain	The Frost Dragon	4
The Raging Catacombs	Skulls of Fear	3
The Eternal Cells	The Prison Guard	3
The Bleak Tunnels	The Tree of Evil	2
Dimension of Paranoia	Transcended Nightmare	10

DungeonMinLevel

NAME	MINLEVEL
The Abandoned Farm	5
Lair of the Perished Mountain	40
The Raging Catacombs	30
The Eternal Cells	30
The Bleak Tunnels	20
Dimension of Paranoia	100

DungeonRegion

NAME	REGION
The Abandoned Farm Lair of the Perished Mountain The Raging Catacombs The Eternal Cells The Bleak Tunnels Dimension of Paranoia	Lowlands Mount Veritas Beach Beach Wicked Forest The Void

DungeonMinLevelToDifficulty

MINLEVEL	DIFFICULTY
5	1
10	1
20	2
30	3
40	4
50	5
65	6
75	7
90	8
95	9
100	10

NPC

NAME	TITLE	VILLAGE
Gerald	Leader	Tutorial Town
Franky	Blacksmith	Tutorial Town
Gordon	Head Chef	Tutorial Town
Sarah	Combat Teacher	Tutorial Town
Rachel	Shopkeeper	Tutorial Town
Lily	Musician	Tutorial Town
Lisa	Librarian	Tutorial Town
Severus	Potion Master	Tutorial Town
Archibald	Forest Elf Leader	Aria Falls
Thornald	1)	
Fletchald	Forest Elf Seeker	Aria Falls
NAME	TITLE	VILLAGE
Clerald	Forest Elf Healer	Aria Falls
Levius	Forest Fairy	Aria Falls
Petra	Farmer	Farms
Rob	Animal Keeper	Farms
Harold	Farmer	Farms
Maurelle		Shipton
Ichiko	Shipwright	Shipton
Reese	Mechanic	Shipton
Davil i ma	Chinuniaht	Shipton
Pauline		
Teddy	Shiphand	Shipton

NAME	TITLE	VILLAGE
Chad Sampson Joyce Erin Wrysley Vander Rue	Apprentice Adventurer Ice Climber Medic Leader Guardian Cook	Shipton Frostford Frostford Frostford Frostford Frostford Frostford Frostford

Interacts

Gerald J Maurelle L Petra S	lle ay ockhart teven lice

Quest

TITLE	DIFFICULTY	REWARD	LENGTH	MINLEVEL
First Steps	1	100	1	1
Grasping the Basics	1	350	3	2
Too Many Weeds	2	600	2	5
Stop the Landslide!	2	500	1	10
Forest Restoration	3	800	3	20
Operation Anti-Invasion	3	1500	5	25
Security Checkup	2	700	2	25
Collect Clams	4	1500	2	30
A Perilous Journey	5	2000	4	40
Disease Overhaul	6	8000	5	50
Slippery Hike	5	3500	1	50

WorksOn

QUEST	NPC	PLAYABLECH	QUEST	NPC	PLAYABLECH
First Steps Grasping the Basics Too Many Weeds	Gerald Gerald Gerald Gerald Gerald Gerald Gerald Gerald Gerald Ferald	Jay Elle Simon Alice Lockhart Kate Edward Felix Lockhart Kate	Too Many Weeds Stop the Landslide! Stop the Landslide! Forest Restoration Forest Restoration	Petra Petra Petra Petra Petra Petra Petra Petra Archibald Archibald	Simon Felix Keanu Elle Kate Jerry Lockhart Lockhart Kate Jay Elle

QUEST	NPC	PLAYABLECH
Forest Restoration	Archibald	Steven
Forest Restoration	Archibald	Keanu
Forest Restoration	Archibald	Felix
Forest Restoration	Archibald	Lockhart
Forest Restoration	Archibald	Kate
Operation Anti-Invasion	Fletchald	Lockhart
Operation Anti-Invasion	Fletchald	Kate
Security Checkup	Franky	Lockhart
Security Checkup	Franky	Kate
Collect Clams	Maurelle	Јау
Collect Clams	Maurelle	Edward
QUEST	NPC	PLAYABLECH
Collect Clams	Maurelle	Steven
Collect Clams	Maurelle	Elle
Collect Clams	Maurelle	Kate
Collect Clams	Maurelle	Lockhart
Collect Clams	Maurelle	Alice
A Perilous Journey	Sampson	Jay
A Perilous Journey	Sampson	Elle
A Perilous Journey	Sampson	Steven
A Perilous Journey	Sampson	Lockhart
A Perilous Journey	Sampson	Alice
A Perilous Journey	Sampson	Kate
QUEST	NPC	PLAYABLECH
Disease Overhaul	Erin	Lockhart
Disease Overhaul	Erin	Kate
Slippery Hike	Joyce	Jay
Slippery Hike	Joyce	Elle
Slippery Hike	Joyce	Lockhart
Slippery Hike	Joyce	Edward
Slippery Hike	Joyce	Alice
Slippery Hike	Joyce	Kate

PlayableCharacter

USERNAME	CLASS	CHARLEVEL	HEALTH	ENERGY	ATTACK	DEFENSE	SPEED PET
Јау	Warrior	5	400	100	30	15	10 Bob
Elle	Mage	10	1200	110	40	25	15 Larry
Simon	Archer	20	1000	150	80	50	25 Tabby
Alice	Warrior	30	2000	270	100	80	30 Edwin
Steven	Assassin	40	3000	370	150	110	50 Stacy
Felix	Scout	15	350	100	40	20	30
Edward	Assassin	25	2200	250	95	20	30
Lockhart	Mage	77	3400	850	150	125	50
Keanu	Warrior	50	3000	120	180	150	35
Kate	Archer	80	3600	150	400	240	60
Jerry	Scout	30	900	130	90	40	50

PetSpecies

NAME	SPECIES
Bob	Cat
Larry	Dog
Tabby	Cat
Edwin	Bird
Stacy	Horse

PetOwner

NAME	OWNER
Bob	Јау
Larry	Elle
Tabby	Simon
Edwin	Alice
Stacy	Steven

PetAbility

SPECIES	ABILITY
C-±	1
Cat	Heal
Dog	Bite
Snake	Stun
Bird	Fly
Horse	Gallop

PetLevel

SPECIES	ABILITYCOOLDOWN	PLEVEL
Cat	8	3
Dog	3	8
Cat	6	5
Bird	10	6
Dog	5	6

Fights

PLAYABLECH	MONSTER
Alice Elle Jay Simon Steven	Mountain Goat Tree Sprite Timid Zombie Clam Clay Dummy

Monster

NAME	TYPE	MONSLEVEL	HEALTH	ATTACK	DEFENSE	DEFENDS
Timid Zombie	Undead	1	50	5	0	
Clam	Water	20	800	30	10	
Tree Sprite	Earth	5	300	10	2	The Bleak Tunnels
Mountain Goat	Ice	30	1700	50	30	
Clay Dummy	Earth	20	1200	40	100	The Raging Catacombs
Angry Chicken	Normal	3	100	8	5	The Abandoned Farm
Grumpy Sheep	Normal	5	250	5	15	The Abandoned Farm
The Bull	Normal	10	900	20	10	The Abandoned Farm
Skulls of Fear	Undead	40	2500	125	180	The Raging Catacombs
The Prison Guard	Undead	35	2000	5	0	The Eternal Cells
The Tree of Evil	Earth	25	1800	100	100	The Bleak Tunnels
NAME	TYPE	MONSLEVEL	HEALTH	ATTACK	DEFENSE	DEFENDS
Enchanted Leaf Swarm	Earth	15	1100	80	30	The Bleak Tunnels
The Frost Dragon	Ice	75	5000	250	400	Lair of the Perished Mountain
Ice Witch	Ice	60	3500	200	200	Lair of the Perished Mountain
Sleepy Spider	Earth	10	700	20	5	The Bleak Tunnels
Beach Crab	Water	30	1200	50	30	
Mountain Bear	Ice	30	1200	50	30	
Transcended Nightmare	Spirit	100	75000	900	400	Dimension of Paranoia

Boss

NAME	ABILITY
The Bull Clam Skulls of Fear The Prison Guard The Tree of Evil The Frost Dragon Tree Sprite Transcended Nightmare	Unstoppable Charge Water Gun Death Bite Bat Strike Roots of Doom Frozen Roar Vine Whip Doomsday Void

Neutral

NAME	TRIGGEREDBY
Sleepy Spider Timid Zombie Clay Dummy Beach Crab Mountain Bear	Loud noise Proximity Proximity Damage Damage

SQL Queries and Locations

INSERT

- File: addDeleteEntry.php

- Line Number: 188

DELETE

- File: addDeleteEntry.php

- Line Number: 205

UPDATE

- File: editEntry.php

- Line Number: 124-129, 134-138

Selection

- File: index.php

- Line Number: 446

Projection

- File: index.php

- Line Number: 306

Join

- File: index.php

- Line Number: 284-286

Aggregation with GROUP BY

- File: index.php

- Line Number: 331

Aggregation with HAVING

- File: aggregatinHaving.php

- Line Number: 95

Nested aggregation with GROUP BY

- File: nestedAggregation.php

- Line Number: 94-97

Division

- File: index.php

- Line Number: 351

GUI Functionality

INSERT

Before

misert values mito	MOHPLE	
Name:		
Type:		
Level:		
Health:		Count
Attack:		
Defense:		Count
Defends:		
Add Monster		back The num

Count the Tuples in Monster							
Count							
back The number of tuples in Monster: 18							

During

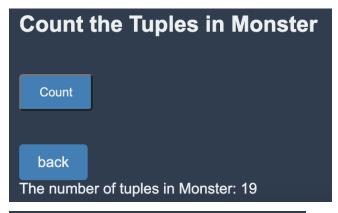


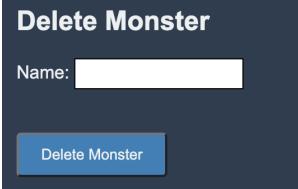
After



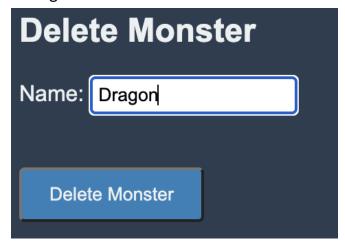
DELETE

Before



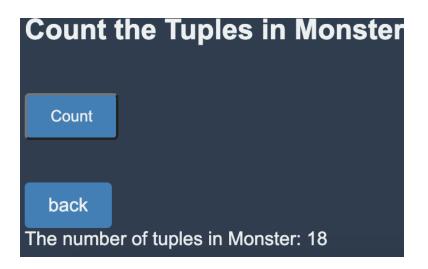


During



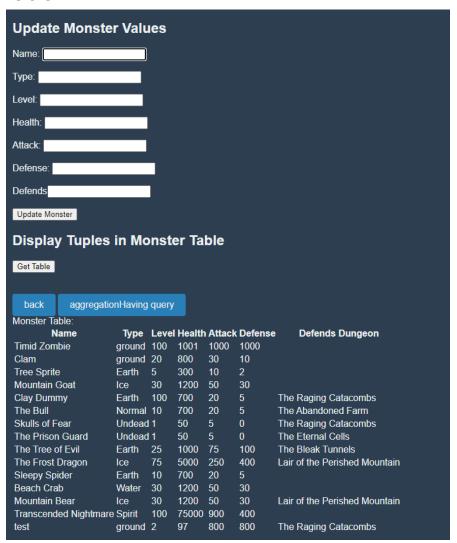
After

back monster successfully deleted



UPDATE

Before



During

Update Monster Values

Name: Timid Zombie

Type: Fire

Level: 25

Health: 500

Attack: 500

Defense: 500

Defends The Bleak Tunnels

Update Monster

Display Tuples in Monster Table

Get Table

back aggregationHaving query

Monster Table:						
Name	Type	Level	Health	Attack	Defense	Defends Dungeon
Timid Zombie	ground	100	1001	1000	1000	
Clam	ground	20	800	30	10	
Tree Sprite	Earth	5	300	10	2	
Mountain Goat	Ice	30	1200	50	30	
Clay Dummy	Earth	100	700	20	5	The Raging Catacombs
The Bull	Normal	10	700	20	5	The Abandoned Farm
Skulls of Fear	Undead	1	50	5	0	The Raging Catacombs
The Prison Guard	Undead	1	50	5	0	The Eternal Cells
The Tree of Evil	Earth	25	1000	75	100	The Bleak Tunnels
The Frost Dragon	Ice	75	5000	250	400	Lair of the Perished Mountain
Sleepy Spider	Earth	10	700	20	5	
Beach Crab	Water	30	1200	50	30	
Mountain Bear	Ice	30	1200	50	30	Lair of the Perished Mountain
Transcended Nightmare	Spirit	100	75000	900	400	
test	ground	2	97	800	800	The Raging Catacombs

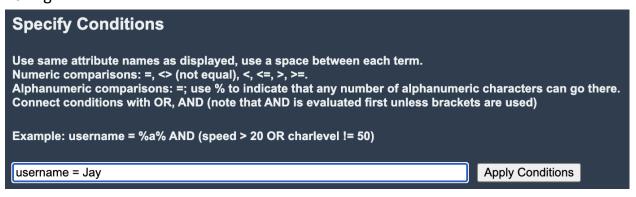
Update Monster Values							
Name:							
Type:							
Level:							
Health:							
Attack:							
Defense:	Defense:						
Defends							
Update Monster							
opulie monster							
Display Tuples	in Mo	nste	er Tal	ble			
Get Table							
back aggregatio	nHaving	query					
Monster Table:							
Name					Defense		
Timid Zombie	Fire	25	500	500	500	The Bleak Tunnels	
Clam	ground		800	30	10		
Tree Sprite	Earth	5	300	10	2		
Mountain Goat	Ice	30	1200	50	30		
Clay Dummy	Earth	100	700	20	5	The Raging Catacombs	
The Bull	Normal	10	700	20	5	The Abandoned Farm	
Skulls of Fear	Undead	1	50	5	0	The Raging Catacombs	
The Prison Guard	Undead	1	50	5	0	The Eternal Cells	
The Tree of Evil	Earth	25	1000	75	100	The Bleak Tunnels	
The Frost Dragon	Ice	75	5000	250	400	Lair of the Perished Mountain	
Sleepy Spider	Earth	10	700	20	5		
Beach Crab	Water	30	1200	50	30		
Mountain Bear	Ice	30	1200	50	30	Lair of the Perished Mountain	
Transcended Nightmare	Spirit	100	75000	900	400		
test	ground	2	97	800	800	The Raging Catacombs	

Selection

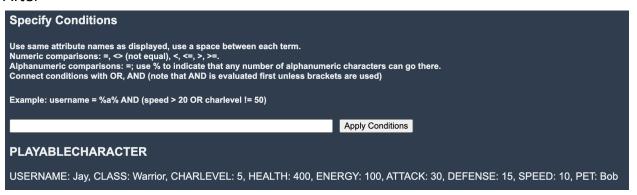
Before

Specify Conditions Use same attribute names as displayed, use a space between each term. Numeric comparisons: =, <> (not equal), <, <=, >, >=. Alphanumeric comparisons: =; use % to indicate that any number of alphanumeric characters can go there. Connect conditions with OR, AND (note that AND is evaluated first unless brackets are used) Example: username = %a% AND (speed > 20 OR charlevel != 50) Apply Conditions

During



After



Projection

Before



During



After

PLAYABLECHARACTER

USERNAME: Jay, CLASS: Warrior

USERNAME: Elle, CLASS: Mage

USERNAME: Simon, CLASS: Archer

USERNAME: Alice, CLASS: Warrior

USERNAME: Steven, CLASS: Assassin

USERNAME: Felix, CLASS: Scout

USERNAME: Edward, CLASS: Assassin

USERNAME: Lockhart, CLASS: Mage

USERNAME: Keanu, CLASS: Warrior

USERNAME: Kate, CLASS: Archer

USERNAME: Jerry, CLASS: Scout

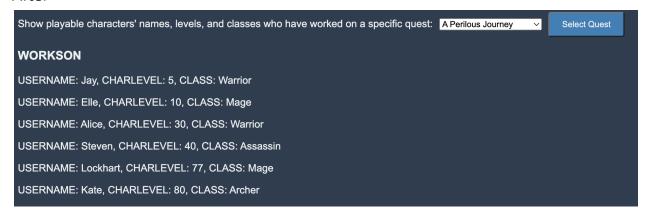
Join

Before



Show playable characters' names, levels, and classes who have worked on a specific quest: A Perilous Journey Select Quest

After



Aggregation with GROUP BY

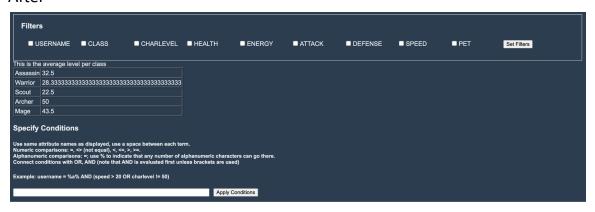
Before



During

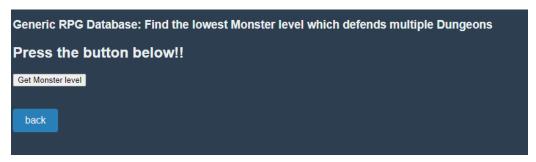


After

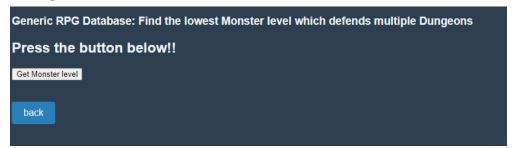


Aggregation with HAVING

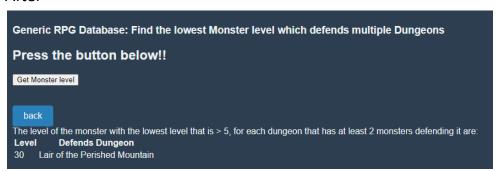
Before



During



After



Nested aggregation with GROUP BY

Before



During

Generic RPG Database: Find all quest lengths that have an average reward higher than the average reward of all quests

Press the button below!!

Get Quest Lengths

Dack

After

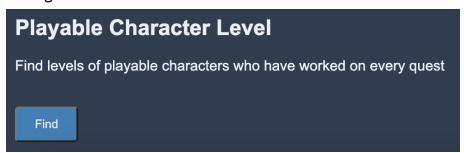


Division

Before



During



After

