University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: 4

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Group Number: 83

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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

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Description:

Our project is a site that can be used by administrators for an MMO RPG game. The available tasks are broken into three major categories: managing servers, managing worlds, and managing players. It provides an interface that they can use so that they need not be fluent in SQL, and also have more limited access than a terminal would give.

On the player page, players can be created, deleted, and renamed, and their attributes and inventories can be looked at.

On the world page, the KDR's of the mobs in a given dungeon can be found, as well as finding the lowest KDR overall. They can also update a mob's qualities, add new items, list items sold in every town, and search for entries in Mob, Item, Rarity, Player, or Level Stats according to the user's criteria.

On the server page, the active servers can be displayed that have over a certain number of players in which the user can specify. As well, they can also view the usernames of all players on a specified server, given that they provide a server region and a server number.

<u>CHANGE LOG</u>

Added some more entries into the database to give more interesting results
Added ON CASCADE DELETE to all children of Player so that players could be safely deleted

QUERIES:

Insertion:
Create a new item in the game

Deletion:
Delete a player in the game

Update:
Change the properties of a mob

Selection:
Search Function

Projection:
See one or multiple chosen properties of a given player

Join:
See the items in a player's inventory

Aggregation with Group by:
Get kdr of all mobs in a given dungeon

Aggregation with Having:
Get all servers that have at least X amount of connected, online players

Nested Aggregation with Group by
Get the lowest average kdr of dungeons

Division
Get a list of items that are sold by someone in every town

Tables:

```
CREATE TABLE admin (
a_id int PRIMARY KEY,
a_name char(30) NOT NULL UNIQUE
);

CREATE TABLE region (
r_name char(30) PRIMARY KEY
);

CREATE TABLE server (
r_name char(30) REFERENCES region(r_name) ON DELETE CASCADE,
s_num int,
a_id int NOT NULL REFERENCES admin(a_id),
PRIMARY KEY (r_name, s_num));

CREATE TABLE location (
l_name char(30) PRIMARY KEY
);

CREATE TABLE town (
l_name char(30) PRIMARY KEY,
architecture_style char(30),
FOREIGN KEY (l_name) REFERENCES location (l_name) ON DELETE CASCADE
);

CREATE TABLE dungeon (
l_name char(30) PRIMARY KEY,
enemy_difficulty char(30),
FOREIGN KEY (l_name) REFERENCES location (l_name) ON DELETE CASCADE
);

CREATE TABLE connected_to (
l_name1 char(30),
l_name2 char(30),
PRIMARY KEY (l_name1, l_name2),
FOREIGN KEY (l_name1) REFERENCES location (l_name),
FOREIGN KEY (l_name2) REFERENCES location (l_name)
);

CREATE TABLE rv (
rarity char(30) PRIMARY KEY,
value int
);
```

```
CREATE TABLE item (
i_name char(30) PRIMARY KEY,
rarity char(30) REFERENCES rv(rarity)
);

CREATE TABLE npc (
n_id int PRIMARY KEY,
n_name char(30) NOT NULL
);

CREATE TABLE villager(
n_id int PRIMARY KEY REFERENCES npc(n_id) ON DELETE CASCADE,
job char(30),
l_name char(30) REFERENCES town(l_name)
);

CREATE TABLE mob (
n_id int PRIMARY KEY REFERENCES npc(n_id) ON DELETE CASCADE,
health int NOT NULL,
damage int NOT NULL,
kills int,
deaths int
);

CREATE TABLE sells (
n_id int REFERENCES villager(n_id),
i_name char(30) REFERENCES item(i_name),
PRIMARY KEY (n_id,i_name)
);

CREATE TABLE drops (
n_id int REFERENCES mob(n_id),
i_name char(30) REFERENCES item(i_name),
PRIMARY KEY (n_id,i_name)
);

CREATE TABLE spawns(
l_name char(30) REFERENCES dungeon(l_name),
n_id int REFERENCES mob(n_id),
spawn_rate int,
PRIMARY KEY (l_name, n_id)
);

CREATE TABLE lvl_stats(
lvl int PRIMARY KEY,
strength int,
```

```
health int
);

CREATE TABLE player (
p_id int PRIMARY KEY,
p_name char(30) NOT NULL UNIQUE,
join_date date,
money int,
lvl int NOT NULL REFERENCES lvl_stats(lvl),
l_name char(30) NOT NULL REFERENCES location(l_name)
);

CREATE TABLE friends_with(
p_id1 int,
p_id2 int,
PRIMARY KEY (p_id1, p_id2),
FOREIGN KEY (p_id1) REFERENCES player(p_id) ON DELETE CASCADE,
FOREIGN KEY (p_id2) REFERENCES player(p_id) ON DELETE CASCADE
);

CREATE TABLE guild (
g_name char(30) PRIMARY KEY,
logo char(500)
);

CREATE TABLE member_of(
p_id int,
g_name char(30),
role char(30),
PRIMARY KEY (p_id, g_name),
FOREIGN KEY (p_id) REFERENCES player(p_id) ON DELETE CASCADE,
FOREIGN KEY (g_name) REFERENCES guild(g_name)
);


CREATE TABLE owns(
p_id int REFERENCES player(p_id) ON DELETE CASCADE,
i_name char(30) REFERENCES item(i_name),
PRIMARY KEY (p_id, i_name)
);


CREATE TABLE is_on(
p_id int REFERENCES player(p_id) ON DELETE CASCADE,
r_name char(30),
s_num int,
```

```
con_status char(30),
PRIMARY KEY (p_id, r_name, s_num),
FOREIGN KEY (r_name, s_num) REFERENCES server(r_name, s_num)
);

CREATE TABLE has(
r_name char(30),
s_num int,
l_name char(30) REFERENCES location(l_name),
PRIMARY KEY (r_name, s_num, l_name),
FOREIGN KEY (r_name,s_num) REFERENCES server(r_name, s_num)
);
```

Values:

```
INSERT INTO admin VALUES (5214, 'bob');
INSERT INTO admin VALUES (4042332452, 'thomas');
INSERT INTO admin VALUES (5125, 'tom');
INSERT INTO admin VALUES (5892341, 'suzie');
INSERT INTO admin VALUES (123321, 'billy');

INSERT INTO region VALUES ('NA');
INSERT INTO region VALUES ('EU');
INSERT INTO region VALUES ('CHN');
INSERT INTO region VALUES ('SEA');
INSERT INTO region VALUES ('SA');

INSERT INTO server VALUES ('NA',3,5214);
INSERT INTO server VALUES ('NA',1,5125);
INSERT INTO server VALUES ('EU',2,4042332452);
INSERT INTO server VALUES ('CHN',5,123321);
INSERT INTO server VALUES ('NA',5,5892341);

INSERT INTO location VALUES ('Christmas Land');
INSERT INTO location VALUES ('Cool Town');
INSERT INTO location VALUES ('Spooky Dungeon');
INSERT INTO location VALUES ('Gingerbread Village');
INSERT INTO location VALUES ('Scary Land');
INSERT INTO location VALUES ('Firefly Treehouse');
INSERT INTO location VALUES ('Red Garden');
INSERT INTO location VALUES ('Big bad house');
INSERT INTO location VALUES ('Small bad house');
INSERT INTO location VALUES ('Dungeon #5');

INSERT INTO town VALUES ('Christmas Land', 'Candy');
INSERT INTO town VALUES ('Cool Town', 'Brutalism');
INSERT INTO town VALUES ('Gingerbread Village', 'Candy');
INSERT INTO town VALUES ('Firefly Treehouse', 'Nature');
INSERT INTO town VALUES ('Red Garden', 'Nature');


INSERT INTO dungeon VALUES ('Spooky Dungeon', 'Hard');
INSERT INTO dungeon VALUES ('Scary Land', 'Easy');
INSERT INTO dungeon VALUES ('Big bad house', 'Hard');
INSERT INTO dungeon VALUES ('Small bad house', 'Easy');
INSERT INTO dungeon VALUES ('Dungeon #5', 'Normal');

INSERT INTO connected_to VALUES ('Cool Town','Christmas Land');
INSERT INTO connected_to VALUES ('Christmas Land','Gingerbread Village');
```

INSERT INTO connected_to VALUES ('Gingerbread Village','Dungeon #5');
INSERT INTO connected_to VALUES ('Red Garden','Scary Land');
INSERT INTO connected_to VALUES ('Small bad house','Big bad house');

INSERT INTO rv VALUES ('NULL',0);
INSERT INTO rv VALUES ('Common', 1);
INSERT INTO rv VALUES ('Rare',20);
INSERT INTO rv VALUES ('Epic',100);
INSERT INTO rv VALUES ('Legendary', 10000);

INSERT INTO item VALUES ('Broadsword','Common');
INSERT INTO item VALUES ('Big bad Club','Legendary');
INSERT INTO item VALUES ('Sunglasses','Epic');
INSERT INTO item VALUES ('Stick','Common');
INSERT INTO item VALUES ('Wood Slab','NULL');

INSERT INTO npc VALUES (123512,'Ogre');
INSERT INTO npc VALUES (1257854,'Arnolda');
INSERT INTO npc VALUES (95434,'Billington');
INSERT INTO npc VALUES (5234,'Anchovy Jones');
INSERT INTO npc VALUES (65858,'Green Slime');
INSERT INTO npc VALUES (23454,'Sneaky Joe');
INSERT INTO npc VALUES (999,'Big Bad');
INSERT INTO npc VALUES (45435,'Small Bad');
INSERT INTO npc VALUES (5794,'Arlington The Great');
INSERT INTO npc VALUES (34535,'Billiard Bobby');
INSERT INTO npc VALUES (45745,'Friendly Caterpillar');

INSERT INTO villager VALUES (95434,'Smith','Cool Town');
INSERT INTO villager VALUES (1257854,'Milk Maid','Gingerbread Village');
INSERT INTO villager VALUES (23454,'Thief','Cool Town');
INSERT INTO villager VALUES (34535,'Mayor','Firefly Treehouse');
INSERT INTO villager VALUES (5794,'General','Christmas Land');
INSERT INTO villager VALUES (45745,'Mayor','Red Garden');

INSERT INTO mob VALUES (65858,10,1,0,1000);
INSERT INTO mob VALUES (123512,1000,20,8,891);
INSERT INTO mob VALUES (999,5000,120,1837,8);
INSERT INTO mob VALUES (45435,250,55,346,432);
INSERT INTO mob VALUES (5234,50,999999,7948283,1);

INSERT INTO sells VALUES (95434,'Broadsword');
INSERT INTO sells VALUES (1257854,'Wood Slab');
INSERT INTO sells VALUES (23454,'Stick');
INSERT INTO sells VALUES (34535,'Sunglasses');
INSERT INTO sells VALUES (5794,'Big bad Club');

```
INSERT INTO sells VALUES (45745,'Stick');
INSERT INTO sells VALUES (1257854,'Stick');
INSERT INTO sells VALUES (34535,'Stick');
INSERT INTO sells VALUES (5794,'Stick');
INSERT INTO sells VALUES (95434,'Sunglasses');
INSERT INTO sells VALUES (45745,'Sunglasses');
INSERT INTO sells VALUES (5794,'Sunglasses');
INSERT INTO sells VALUES (1257854,'Sunglasses');

INSERT INTO drops VALUES (65858,'Stick');
INSERT INTO drops VALUES (123512,'Big bad Club');
INSERT INTO drops VALUES (999,'Big bad Club');
INSERT INTO drops VALUES (45435,'Sunglasses');
INSERT INTO drops VALUES (5234,'Wood Slab');

INSERT INTO spawns VALUES ('Scary Land',65858,5);
INSERT INTO spawns VALUES ('Spooky Dungeon',123512,25);
INSERT INTO spawns VALUES ('Big bad house',999,1000);
INSERT INTO spawns VALUES ('Small bad house',45435,500);
INSERT INTO spawns VALUES ('Dungeon #5',5234,9999);
INSERT INTO spawns VALUES ('Scary Land',123512,100);
INSERT INTO spawns VALUES ('Spooky Dungeon',999,800);
INSERT INTO spawns VALUES ('Big bad house',45435,300);
INSERT INTO spawns VALUES ('Small bad house',123512,20);
INSERT INTO spawns VALUES ('Dungeon #5',999,1);

INSERT INTO lvl_stats VALUES (1,2,3);
INSERT INTO lvl_stats VALUES (2,3,4);
INSERT INTO lvl_stats VALUES (3,4,5);
INSERT INTO lvl_stats VALUES (4,5,6);
INSERT INTO lvl_stats VALUES (5,6,7);

INSERT INTO player VALUES (27,'TheLegend27',TO_DATE('2001-03-27','YYYY-MM-DD'),2700000,5,'Dungeon #5');
INSERT INTO player VALUES (123,'Wong',TO_DATE('2022-12-12','YYYY-MM-DD'),0,1,'Cool Town');
INSERT INTO player VALUES (35634,'Cheggman',TO_DATE('2021-12-12','YYYY-MM-DD'),27,4,'Cool Town');
INSERT INTO player VALUES (465456,'Aph',TO_DATE('2010-09-12','YYYY-MM-DD'),3447,3,'Christmas Land');
INSERT INTO player VALUES (3463,'xXN00bPwn3rXx',TO_DATE('2007-03-04','YYYY-MM-DD'),3,2,'Small bad house');
INSERT INTO player VALUES (6346,'some_guy',TO_DATE('2021-05-05','YYYY-MM-DD'),50,1,'Dungeon #5');
INSERT INTO player VALUES (8547,'some_other_guy',TO_DATE('2017-11-21','YYYY-MM-DD'),80,1,'Red Garden');
```

INSERT INTO player VALUES (35745,'a_third_guy',TO_DATE('2012-07-01','YYYY-MM-DD'),658,4,'Spooky Dungeon');
INSERT INTO player VALUES (4754,'who?',TO_DATE('2019-03-30','YYYY-MM-DD'),3,2,'Scary Land');
INSERT INTO player VALUES (92352,'her',TO_DATE('2003-05-05','YYYY-MM-DD'),5000,5,'Big bad house');

INSERT INTO friends_with VALUES (3463,465456);
INSERT INTO friends_with VALUES (123,35634);
INSERT INTO friends_with VALUES (123,465456);
INSERT INTO friends_with VALUES (35634,3463);
INSERT INTO friends_with VALUES (465456,35634);

INSERT INTO guild VALUES ('Nerds','

      _
 (.v.)
//-=-\\
(_=_/)
 ^^ ^^
');
INSERT INTO guild VALUES ('Smiley Friends','(｡◕‿◕｡)');
INSERT INTO guild VALUES ('34567890','o.O');
INSERT INTO guild VALUES ('UBC eSports',';)');
INSERT INTO guild VALUES ('Sad Lads',':((');

INSERT INTO member_of VALUES (27,'Sad Lads','Leader');
INSERT INTO member_of VALUES (3463,'Nerds','Co-Leader');
INSERT INTO member_of VALUES (123,'34567890','Member');
INSERT INTO member_of VALUES (35634,'UBC eSports','Janitor');
INSERT INTO member_of VALUES (465456,'Smiley Friends','Friend');

INSERT INTO owns VALUES (27,'Wood Slab');
INSERT INTO owns VALUES (123,'Sunglasses');
INSERT INTO owns VALUES (35634,'Stick');
INSERT INTO owns VALUES (465456,'Broadsword');
INSERT INTO owns VALUES (465456,'Stick');

INSERT INTO is_on VALUES (123,'NA',3,'Online');
INSERT INTO is_on VALUES (27,'EU',2,'Online');
INSERT INTO is_on VALUES (35634,'EU',2,'Offline');
INSERT INTO is_on VALUES (465456,'NA',5,'Online');
INSERT INTO is_on VALUES (3463,'NA',5,'Online');
INSERT INTO is_on VALUES (4754,'NA',1,'Online');
INSERT INTO is_on VALUES (6346,'EU',2,'Online');
INSERT INTO is_on VALUES (8547,'EU',2,'Offline');

```
INSERT INTO is_on VALUES (35745,'NA',5,'Online');
INSERT INTO is_on VALUES (92352,'NA',5,'Online');

INSERT INTO has VALUES ('NA',1,'Dungeon #5');
INSERT INTO has VALUES ('EU',2,'Cool Town');
INSERT INTO has VALUES ('EU',2,'Red Garden');
INSERT INTO has VALUES ('NA',5,'Christmas Land');
INSERT INTO has VALUES ('NA',5,'Small bad house');
```

Insert: Create Item

Add item

Item Name: Grape

Rarity: Rare ∨

Insert

```
SQL> SELECT * FROM item;

I_NAME                        RARITY
-------------------------     -------------------------------
Broadsword                    Common
Big bad Club                  Legendary
Sunglasses                    Epic
Stick                         Common
Wood Slab                     NULL

SQL> SELECT * FROM item;

I_NAME                        RARITY
-------------------------     -------------------------------
Broadsword                    Common
Big bad Club                  Legendary
Sunglasses                    Epic
Stick                         Common
Wood Slab                     NULL
Grape                         Rare

6 rows selected.

SQL>
```

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Delete Player

Player Management

Create Player

user id: [ ] username: [ ]
[create]

Administer Player

[Aph ▼]

[change] new username: [ ]

[delete]

View Player Attributes

[-- Select -- ▼] ☐ID ☐Username ☐Join Date ☐Money ☐Level ☐Location

[view]

View Player Inventory

User: [-- Select -- ▼] [view]

View Players: [view]

ID	Name	JoinDate
60	Apple	29-NOV-21
27	TheLegend27	27-MAR-01
123	Wong	12-DEC-22
35634	Cheggman	12-DEC-21
465456	Aph	12-SEP-10
3463	xXN00bPwn3rXx	04-MAR-07
6346	some_guy	05-MAY-21
8547	some_other_guy	21-NOV-17
35745	a_third_guy	01-JUL-12
4754	who?	30-MAR-19
92352	her	05-MAY-03
23	Guy	29-NOV-21

```
SQL> SELECT p_id, p_name FROM player;

     P_ID P_NAME
---------- ------------------------------
       60 Apple
       27 TheLegend27
      123 Wong
    35634 Cheggman
   465456 Aph
     3463 xXN00bPwn3rXx
     6346 some_guy
     8547 some_other_guy
    35745 a_third_guy
     4754 who?
    92352 her

     P_ID P_NAME
---------- ------------------------------
       23 Guy

12 rows selected.

SQL> SELECT * FROM friends_with;

     P_ID1      P_ID2
---------- ----------
       123      35634
       123     465456
      3463     465456
     35634       3463
    465456      35634

SQL> SELECT * FROM owns WHERE p_id = 465456;

     P_ID I_NAME
---------- ------------------------------
   465456 Broadsword
   465456 Stick

SQL> SELECT * FROM is_on WHERE p_id = 465456;

     P_ID R_NAME                              S_NUM
---------- ------------------------------ ----------
CON_STATUS
------------------------------
   465456 NA                                      5
Online

SQL>
```

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Go Home

Player Management

Create Player

user id: [   ]   username: [   ]
[create]

Administer Player

[-- Select -- ▾]
[change] new username: [   ]
[delete]

View Player Attributes

[-- Select -- ▾] ☐ID ☐Username ☐Join Date ☐Money ☐Level ☐Location
[view]

View Player Inventory

User: [-- Select -- ▾] [view]

View Players: [view]

ID	Name	JoinDate
60	Apple	29-NOV-21
27	TheLegend27	27-MAR-01
123	Wong	12-DEC-22
35634	Cheggman	12-DEC-21
3463	xXN00bPwn3rXx	04-MAR-07
6346	some_guy	05-MAY-21
8547	some_other_guy	21-NOV-17
35745	a_third_guy	01-JUL-12
4754	who?	30-MAR-19
92352	her	05-MAY-03
23	Guy	29-NOV-21

Update: Change Mob Attributes

[Submit Query]

Get lowest average KDR of dungeons

[Submit Query]

Update mob attribute

[Green Slime ▾]

○ Health
○ Damage
● Kills
○ Deaths
New Value: [5]
[Update]

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```
SQL> SELECT n_name, health, damage, kills, deaths FROM npc n, mob m WHERE n.n_id=m.n_id;

N_NAME                           HEALTH     DAMAGE       KILLS      DEATHS
------------------------------ ---------- ---------- ---------- ----------
Ogre                               1000         20          8         891
Anchovy Jones                        50     999999    7948283           1
Green Slime                          10          1          0        1000
Big Bad                            5000        120       1837           8
Small Bad                           250         55        346         432

SQL> SELECT n_name, health, damage, kills, deaths FROM npc n, mob m WHERE n.n_id=m.n_id;

N_NAME                           HEALTH     DAMAGE       KILLS      DEATHS
------------------------------ ---------- ---------- ---------- ----------
Ogre                               1000         20          8         891
Anchovy Jones                        50     999999    7948283           1
Green Slime                          10          1          5        1000
Big Bad                            5000        120       1837           8
Small Bad                           250         55        346         432

SQL> █
```

Selection: Search

Search

| Player ▾ |

[Submit Query]

Search

| -- Select -- ▾ | | -- Select -- ▾ | | |

[Submit Query]

Search

| Level ▾ | | > ▾ | | 3 |

[Submit Query]

Search

-- Select -- ⌄

[Submit Query]

Player Name	Player ID	Join Date	Money	Level	Location
27	TheLegend27	27-MAR-01	2700000	5	Dungeon #5
35634	Cheggman	12-DEC-21	27	4	Cool Town
35745	a_third_guy	01-JUL-12	658	4	Spooky Dungeon
92352	her	05-MAY-03	5000	5	Big bad house

Projection: View Player Attributes

View Player Attributes

Wong ⌄ ☑ID ☐Username ☑Join Date ☐Money ☑Level ☑Location

[view]

View Player Attributes

-- Select -- ⌄ ☐ID ☐Username ☐Join Date ☐Money ☐Level ☐Location

[view]

View Player Inventory

User: -- Select -- ⌄ [view]

View Players: [view]

P_ID	JOIN_DATE	LVL	L_NAME
123	12-DEC-22	1	Cool Town

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View Player Inventory

User: [Aph ▾] [view]

View Players: [view]

View Player Inventory

User: [-- Select -- ▾] [view]

View Players: [view]

Inventory:
Aph has Broadsword
Aph has Stick

Agg w. group by: Avg KDR in a dungeon

Get average KDR in a dungeon

[Scary Land ▾]

[Submit Query]

World Management

Get average KDR in a dungeon

-- Select -- ▾

[Submit Query]

Get lowest average KDR of dungeons

[Submit Query]

Update mob attribute

-- Select -- ▾

○ Health

○ Damage

○ Kills

○ Deaths

New Value: [_____]

[Update]

Add item

Item Name: [_____]

Rarity: [_____]

[Insert]

Show items sold in every town

[Submit Query]

Search

-- Select -- ▾

[Submit Query]

Kills	Deaths
4	945.5
0.0042305658381809	

List Active Servers over a certain number of Players

Number of Players: 2

Display

List Active Servers over a certain number of Players

Number of Players:

Display

Region	Number	# Users
NA	5	4

Nest Agg w/ Group By: Get lowest average KDR of dungeons

Get lowest average KDR of dungeons

[Submit Query]

Update mob attribute

[-- Select -- ▾]

○ Health

○ Damage

○ Kills

○ Deaths

New Value: [   ]

[Update]

Add item

Item Name: [   ]

Rarity: [   ]

[Insert]

Show items sold in every town

[Submit Query]

Search

[-- Select -- ▾]

[Submit Query]

Get lowest average KDR of dungeons

Submit Query

Update mob attribute

-- Select -- ▾

○ Health

○ Damage

○ Kills

○ Deaths

New Value: [   ]

Update

Add item

Item Name: [   ]

Rarity: [   ]

Insert

Show items sold in every town

Submit Query

Search

-- Select -- ▾
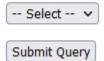
Submit Query

.0042305658381808566895822316234796440401904

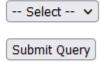**Division: Show items sold in every town**

Show items sold in every town

Submit Query

Search

-- Select -- ▾

Submit Query

Show items sold in every town

Submit Query

Search

-- Select -- ▾

Submit Query

Stick
Sunglasses