Faculty of Engineering, Architecture and Science

Department of Electrical and Computer Engineering

Course Number	848
Course Title	Fundamentals of Data Engineering
Semester/Year	W2023

Instructor	Dr. Faezeh Ensan

Lab No.	5

Lab Title	Database Programming

Submission Date	March 26th, 2023
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*By signing above you attest that you have contributed to this written lab report and confirm that all work you have contributed to this lab report is your own work.

Database Dump:

```
sqlite> .dump
PRAGMA foreign_keys=OFF;
BEGIN TRANSACTION;
CREATE TABLE player (
  playerID INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
  name VARCHAR(255),
  role VARCHAR(25),
  gamesPlayed INTEGER,
  avgKDA DOUBLE,
  avgCSR DOUBLE
);
INSERT INTO player VALUES(1,'Jerry','Top',35,2.7000000000000001776,8.4000000000000003552);
INSERT INTO player VALUES(2,'Barry','Jungle',42,3.5,7.7999999999999998223);
INSERT INTO player VALUES(3,'Mike','Mid',38,4.0999999999999996447,9.1999999999999992894);
INSERT INTO player VALUES(4,'Tyson','ADC',29,3.7999999999999998223,8.5999999999999996447);
INSERT INTO player VALUES(5,'Nicolas','Support',33,2.8999999999999999111,9.0999999999999996447);
INSERT INTO player VALUES(6,'Rachel','Top',41,3.2999999999999998223,8.8000000000000007105);
INSERT INTO player VALUES(7,'Chris','Jungle',37,2.7999999999999998223,7.5);
INSERT INTO player VALUES(8,'Jennifer','Mid',28,3.8999999999999999111,9.5);
INSERT INTO player VALUES(9,'Tate','ADC',31,4.2000000000000001776,8.9000000000000003552);
INSERT INTO player VALUES(10,'Jessica','Support',30,2.5,9.3000000000000007105);
```

```
CREATE TABLE champion (
championID INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
name VARCHAR(255),
skin VARCHAR(255),
winrate DOUBLE,
banrate DOUBLE,
pickrate DOUBLE,
lossrate DOUBLE
);
INSERT INTO champion VALUES(1,'Ashe','Classic',0.52000000000000001776,0.08000000000000001665,0.14999999999999999444,0.34999999999999997779);
INSERT INTO champion VALUES(2,'Akali','KDA',0.47999999999999998223,0.23000000000000000999,0.20000000000000000111,0.27000000000000001776);
INSERT INTO champion VALUES(3,'Caitlyn','Pulsefire',0.48999999999999999111,0.07000000000000000666,0.17999999999999999333,0.32000000000000000666);
INSERT INTO champion VALUES(4,'Darius','God-King',0.51000000000000000888,0.14000000000000001332,0.11999999999999999555,0.36999999999999999555);
INSERT INTO champion VALUES(5,'Ezreal','Arcade',0.54000000000000003552,0.10000000000000000555,0.25,0.29999999999999998889);
INSERT INTO champion VALUES(6,'Fiora','Royal Guard',0.46999999999999997335,0.11999999999999999555,0.11000000000000000055,0.39000000000000001332);
INSERT INTO champion VALUES(7,'Garen','Steel Legion',0.55000000000000000444,0.17999999999999999333,0.16000000000000000333,0.28999999999999998001);
INSERT INTO champion VALUES(8,'Jinx','Firecracker',0.5,0.11000000000000000055,0.20000000000000000111,0.29999999999999998889);
INSERT INTO champion VALUES(9,'Katarina','Battle Academia',0.46000000000000001998,0.22000000000000000111,0.17000000000000001221,0.34999999999999997779);
INSERT INTO champion VALUES(10,'Lee Sin','Dragon Fist',0.53000000000000002664,0.08999999999999999669,0.22000000000000000111,0.28000000000000002664);
```

```
CREATE TABLE game (
  gameID INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
  teamsInvolved VARCHAR(255),
  duration DOUBLE,
  totalKills INTEGER,
  totalDeaths INTEGER);
INSERT INTO game VALUES(1,'Ace and TSM',3.2400000000000002131,23,32);
INSERT INTO game VALUES(2,'Immortals and GenG',5.2300000000000004263,83,92);
INSERT INTO game VALUES(3,'Akafr and Ace',1.8400000000000000799,4,43);
INSERT INTO game VALUES(4,'Clutch and Clouds',7.2099999999999999644,7,12);
INSERT INTO game VALUES(5,'Clouds and Never',5.4299999999999997157,57,7);
INSERT INTO game VALUES(6,'Fathomable and Never',1.7299999999999999822,93,82);
INSERT INTO game VALUES(7,'Akafr and Clutch',7.2099999999999999644,43,91);
INSERT INTO game VALUES(8,'Invictus and Immortals',6.4299999999999997157,63,17);
INSERT INTO game VALUES(9,'Never and Clutch',1.6499999999999999111,33,82);
INSERT INTO game VALUES(10,'TSM and Clouds',4.3200000000000002842,27,13);
```

```
CREATE TABLE team (
  teamID INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
  name VARCHAR(255) NOT NULL,
  region VARCHAR(255) NOT NULL,
  gamesPlayed INTEGER,
  winrate DOUBLE,
  lossrate DOUBLE,
  avgGameDuration DOUBLE,
  avgDragonsSlaughtered INTEGER);
INSERT INTO team VALUES(1,'Ace','NA',421,50.770000000000003125,49.219999999999998864,2.450000000000001776,2);
INSERT INTO team VALUES(2,'TSM','KR',213,48.979999999999996873,51.009999999999998008,4.450000000000001776,3);
INSERT INTO team VALUES(3,'Immortals','EU',483,50.770000000000003125,49.219999999999998864,3.529999999999998046,4);
INSERT INTO team VALUES(4,'GenG','RU',123,61.0,39.0,5.089999999999998578,5);
INSERT INTO team VALUES(5,'Invictus','TR',832,75.549999999999997157,24.440000000000001278,3.450000000000001776,3);
INSERT INTO team VALUES(6,'Akafr','NA',165,67.769999999999999602,32.219999999999998862,3.430000000000001598,4);
INSERT INTO team VALUES(7,'Fathomable','NA',547,55.0,45.0,1.919999999999999289,2);
INSERT INTO team VALUES(8,'Never','TR',90,45.119999999999997443,54.869999999999997442,4.780000000000002486,2);
INSERT INTO team VALUES(9,'Clutch','RU',571,55.710000000000000851,44.280000000000001138,2.939999999999999467,4);
INSERT INTO team VALUES(10,'Clouds','KR',145,60.0,40.0,2.149999999999999111,5);
```

```
CREATE TABLE maker (
makerID INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
name VARCHAR(255)
);
INSERT INTO maker VALUES(1,'Ichigo Kurosaki');
INSERT INTO maker VALUES(2,'Retsu Unohana');
INSERT INTO maker VALUES(3,'Lebron Games');
INSERT INTO maker VALUES(4,'Daryl Bills');
INSERT INTO maker VALUES(5,'Mike Tyson');
INSERT INTO maker VALUES(6,'Naruto Uzumaki');
INSERT INTO maker VALUES(7,'Jerry Springer');
INSERT INTO maker VALUES(8,'Guts Thorfinn');
INSERT INTO maker VALUES(9,'Creed Aventus');
INSERT INTO maker VALUES(10,'Obito Uchiha');
```

```
CREATE TABLE contest (
 contestID INTEGER PRIMARY KEY AUTOINCREMENT NOT NULL,
 name VARCHAR(255),
 region VARCHAR(255),
 numberOfGames INTEGER,
 purse INTEGER
);
INSERT INTO contest VALUES(1,'SoulSociety','NA',40,500000);
INSERT INTO contest VALUES(2,'LeafVillage','KR',31,100000);
INSERT INTO contest VALUES(3,'CloudVillage','EU',84,1000000);
INSERT INTO contest VALUES(4,'Vinland','RU',93,5000000);
INSERT INTO contest VALUES(5,'Stella','TR',103,10000000);
INSERT INTO contest VALUES(6,'Eden','NA',23,500000);
INSERT INTO contest VALUES(7,'Ragnarok','NA',18,25000);
INSERT INTO contest VALUES(8,'GoldenTime','TR',91,5000000);
INSERT INTO contest VALUES(9,'Jujutsu','RU',34,50000);
INSERT INTO contest VALUES(10,'Pain','KR',76,500000);
```

```
DELETE FROM sqlite_sequence;
INSERT INTO sqlite_sequence VALUES('player',10);
INSERT INTO sqlite_sequence VALUES('champion',10);
INSERT INTO sqlite_sequence VALUES('maker',10);
INSERT INTO sqlite_sequence VALUES('team',10);
INSERT INTO sqlite_sequence VALUES('contest',10);
INSERT INTO sqlite_sequence VALUES('game',10);
COMMIT;
```

```
sqlite> SELECT * FROM player
[WHERE avgKDA > 2;
1|Jerry|Top|35|2.7|8.4
2|Barry|Jungle|42|3.5|7.8
3|Mike|Mid|38|4.1|9.2
4|Tyson|ADC|29|3.8|8.6
5|Nicolas|Support|33|2.9|9.1
6|Rachel|Top|41|3.3|8.8
7|Chris|Jungle|37|2.8|7.5
8|Jennifer|Mid|28|3.9|9.5
9|Tate|ADC|31|4.2|8.9
10|Jessica|Support|30|2.5|9.3
```

```
[sqlite> SELECT MAX(gamesPlayed) FROM player;
42
```

```
[sqlite> SELECT MIN(avgGameDuration) FROM team;
1.92
```

```
sqlite> SELECT * FROM player
WHERE avgCSR > 5;
1|Jerry|Top|35|2.7|8.4
2|Barry|Jungle|42|3.5|7.8
3|Mike|Mid|38|4.1|9.2
4|Tyson|ADC|29|3.8|8.6
5|Nicolas|Support|33|2.9|9.1
6|Rachel|Top|41|3.3|8.8
7|Chris|Jungle|37|2.8|7.5
8|Jennifer|Mid|28|3.9|9.5
9|Tate|ADC|31|4.2|8.9
10|Jessica|Support|30|2.5|9.3
```

```
sqlite> SELECT MAX(pickrate) FROM champion;
0.25
```

```
sqlite> UPDATE team SET name = 'Akafrf'
WHERE name = 'Akafr';
```

```
sqlite> SELECT MIN(banrate) FROM champion;
0.07
```

```
sqlite> SELECT name FROM team
WHERE avgDragonsSlaughtered > 2;
TSM
Immortals
GenG
Invictus
Akafr
Clutch
Clouds
```

```
error here
sqlite> SELECT MAX(purse) FROM contest;
10000000
```

```
sqlite> SELECT teamsInvolved FROM game
WHERE totalKills > 50;
Immortals and GenG
Clouds and Never
Fathomable and Never
Invictus and Immortals
```

```
sqlite> SELECT COUNT(name) AS numberOfTRContests FROM contest
WHERE region = 'TR';
2
```

```
sqlite> SELECT MAX(lossrate)FROM team;
54.87
```

```
sqlite> SELECT teamsInvolved FROM game
WHERE totalDeaths > 30
;
Ace and TSM
Immortals and GenG
Akafr and Ace
Fathomable and Never
Akafr and Clutch
Never and Clutch
```

NOTE : Since I have 15 queries, I arbitrarily chose 10 queries for the purpose of this lab from the 15 queries I have.

Terminal Message:

```
League of Legends (LoL) database:
From one of the following options, choose via
entering a number from 0-10 (where 0 will exit the application):
(1) Locate all players who have KDAs greater than 2
(2) Locate the role that has the highest Creep-Score-Ratio (CSR)
(3) Locate the skin of a champion that offers the maximum win rate
(4) Locate the champion with the highest pick rate
(5) Locate the champion with the minimum ban rate
(6) Locate all teams that have slaughtered over 2 average dragons per game
(7) Locate the region with the shortest game duration
(8) Alter the name of Akafr to Akafrf
(9) Locate the contest that offers the maximum purse available
(10) Count the number of tournament(s) held in the TR region
Query Number:
```

Query Number 1:

```
Query Number: 1
Jerry|KDA: 2.7
Barry|KDA: 3.5
Mike|KDA: 4.1
Tyson|KDA: 3.8
Nicolas|KDA: 2.9
Rachel|KDA: 3.3
Chris|KDA: 2.8
Jennifer|KDA: 3.9
java.sql.SQLException: database in auto-commit mode
Tate|KDA: 4.2
Jessica|KDA: 2.5
```

Query Number 2:

```
Query Number: 2
Top|CSR: 8.4
Jungle|CSR: 7.8
Mid|CSR: 9.2
ADC|CSR: 8.6
Support|CSR: 9.1
Top|CSR: 8.8
Jungle|CSR: 7.5
Mid|CSR: 9.5
ADC|CSR: 8.9
java.sql.SQLException: database in auto-commit mode
Support|CSR: 9.3
```

Query Number 3:

```
Query Number: 3
Steel Legion|Max Win Rate: 0.55
```

Query Number 4:

```
Query Number: 4
Ezreal|Max Pick Rate: 0.25
```

Query Number 5:

```
Query Number: 5
Caitlyn|Minimum Ban Rate: 0.07
```

Query Number 6:

```
Query Number: 6
TSM|Average Dragons Slaughtered per Game: 3
Immortals|Average Dragons Slaughtered per Game: 4
GenG|Average Dragons Slaughtered per Game: 5
Invictus|Average Dragons Slaughtered per Game: 3
java.sql.SQLException: database in auto-commit mode
Akafr|Average Dragons Slaughtered per Game: 4
Clutch|Average Dragons Slaughtered per Game: 4
Clouds|Average Dragons Slaughtered per Game: 5
```

Query Number 7:

```
Query Number: 7
NA|Length of Game: 1.92
```

Query Number 8:

```
Query Number: 8
Akafr has been updated to Akafrf
```

Query Number 9:

```
Query Number: 9
|Maximum Purse Available: $10000000
```

Query Number 10:

```
Query Number: 10
tournament(s) held in the TR region:2
```