Cng 352
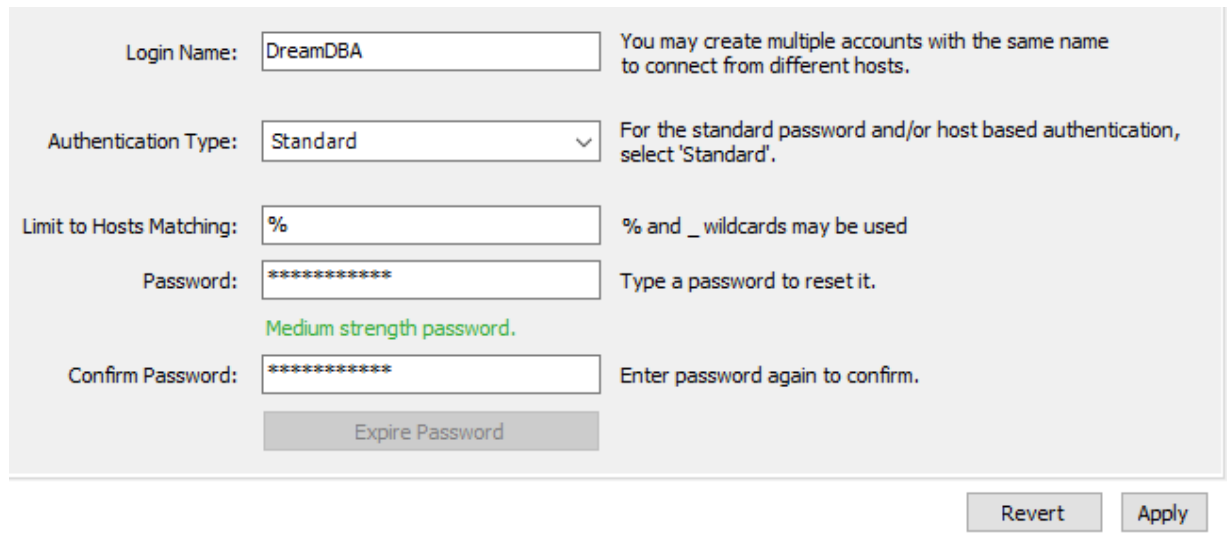
Assignment 2

Raed Alsheikh Amin 2528271

1) Create an account called DreamDBA and create the Staff relation and the views specified above with this account. In your report, you need to include the relevant SQL queries, explain your response and you need to also include screenshots to demonstrate that you run the relevant queries.

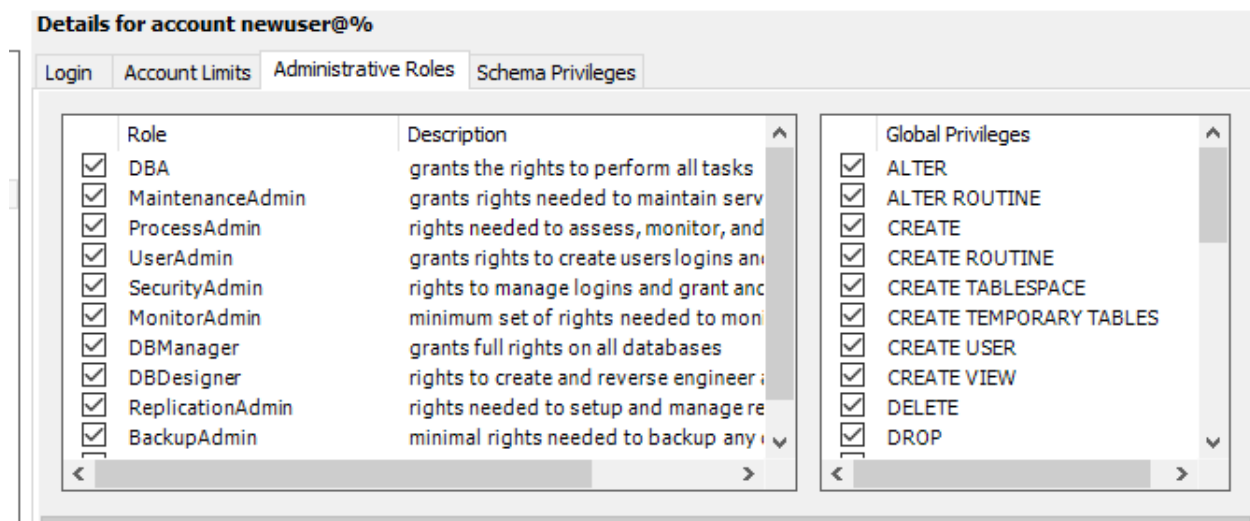|	
Login Name:	DreamDBA
	You may create multiple accounts with the same name to connect from different hosts.
Authentication Type:	Standard
	For the standard password and/or host based authentication, select 'Standard'.
Limit to Hosts Matching:	%
	% and _ wildcards may be used
Password:	***********
	Type a password to reset it.
	Medium strength password.
Confirm Password:	***********
	Enter password again to confirm.
	Expire Password

Revert   Apply

Details for account newuser@%

Login   Account Limits   Administrative Roles   Schema Privileges

	Role	Description		Global Privileges
☑	DBA	grants the rights to perform all tasks	☑	ALTER
☑	MaintenanceAdmin	grants rights needed to maintain serv	☑	ALTER ROUTINE
☑	ProcessAdmin	rights needed to assess, monitor, and	☑	CREATE
☑	UserAdmin	grants rights to create users logins an	☑	CREATE ROUTINE
☑	SecurityAdmin	rights to manage logins and grant and	☑	CREATE TABLESPACE
☑	MonitorAdmin	minimum set of rights needed to moni	☑	CREATE TEMPORARY TABLES
☑	DBManager	grants full rights on all databases	☑	CREATE USER
☑	DBDesigner	rights to create and reverse engineer	☑	CREATE VIEW
☑	ReplicationAdmin	rights needed to setup and manage re	☑	DELETE
☑	BackupAdmin	minimal rights needed to backup any	☑	DROP

all privileges are given.

Jser	From Host
DreamDBA	%
mysql.infoschema	localhost
mysql.session	localhost
mysql.sys	localhost
root	localhost

Login | Account Limits | Administrative Roles | **Schema Privileges**

Schema	Privileges
cng352_assignment2	ALTER, ALTER ROUTINE, CREATE, CREATE ROUTINE, CREATE TEMPORARY TABLES, CREATE VIE

Schema and Host fields may use % and _ wildcards.
The server will match specific entries before wildcarded ones.

Revoke All Privileges | Delete Entry | Add Entry...

The user 'DreamDBA'@'%' will have the following access rights to schemas matching 'cng352_assignment2':

Object Rights
- ☑ SELECT
- ☑ INSERT
- ☑ UPDATE
- ☑ DELETE
- ☑ EXECUTE
- ☑ SHOW VIEW

DDL Rights
- ☑ CREATE
- ☑ ALTER
- ☑ REFERENCES
- ☑ INDEX
- ☑ CREATE VIEW
- ☑ CREATE ROUTINE
- ☑ ALTER ROUTINE
- ☑ EVENT
- ☑ DROP
- ☑ TRIGGER

Other Rights
- ☑ GRANT OPTION
- ☑ CREATE TEMPORARY TABLES
- ☑ LOCK TABLES

Setup New Connection — □ ✕

Connection Name: CNG352_ASSIGNMENT2   Type a name for the connection

Connection Method: Standard (TCP/IP)   Method to use to connect to the RDBMS

Parameters | SSL | Advanced

Hostname: 127.0.0.1

Username: DreamDBA

Password: Store in Vault

Default Schema: cng352_assignm

MySQL Workbench

ⓘ **Successfully made the MySQL connection**

Information related to this connection:

Host: 127.0.0.1
Port: 3306
User: DreamDBA
SSL: enabled with TLS_AES_128_GCM_SHA256

A successful MySQL connection was made with
the parameters defined for this connection.

OK

Configure Server Management...   Test Connection | Cancel | OK

create table

```
1 •      use cng352_assignment2;
2 •      DROP Table Staff;
3 • ⊖   CREATE TABLE Staff (
4             staff_name VARCHAR(100) NOT NULL,
5             department VARCHAR(100) NOT NULL,
6             salary Int NOT NULL
7        );
```

```
INSERT INTO Staff (staff_name, department, salary) VALUES
('Raed ', 'CNG', 60000.00),
('Farnaz', 'CNG', 80000.00),
('Ahmed', 'Mech', 50000.00),
('muhammed', 'Chme', 80000.00),
('Furkan', 'Mech', 50000.00);
```

-> select * from staff;

staff_name	department	salary
Raed	CNG	60000
Farnaz	CNG	80000
Ahmed	Mech	50000
muhammed	Chme	80000
Furkan	Mech	50000

```
-- Create the StaffNames view
CREATE VIEW StaffNames AS
SELECT staff_name
FROM Staff;
```

->SELECT * FROM StaffNames;

staff_name
Raed
Farnaz
Ahmed
muhammed
Furkan

```
-- Create the DepartmentInfo view
CREATE VIEW DepartmentInfo AS
SELECT department, AVG(salary) AS averagesalary
FROM Staff
GROUP BY department;
```

29

30 ● `SELECT * FROM DepartmentInfo;`

31

Result Grid | Filter Rows: | Export

department	averagesalary
CNG	70000.0000
Mech	50000.0000
Chme	80000.0000

2)Create another account called passiveUser such that he can only see the average department salaries.

```
#QUESTION 2
CREATE USER  'passiveUser'@'localhost' IDENTIFIED BY 'DreamDBA123';
#To make sure that the user doesn't have any privileges
REVOKE ALL PRIVILEGES, GRANT OPTION FROM 'passiveUser'@'localhost';
GRANT SELECT ON cng352_assignment2.DepartmentInfo TO 'passiveUser'@'localhost';
```

To check what the user has access to.

```
SHOW GRANTS FOR 'passiveUser'@'localhost';
```

Navigate: |◀◀ ◀   ▷   ▷▷| |

GRANT SELECT ON `cng352_assignment2`.`departmentinfo` TO `passiveUser`@`localhost`

User	From Host
DreamDBA	%
mysql.infoschema	localhost
mysql.session	localhost
mysql.sys	localhost
passiveUser	localhost
root	localhost

We can see that passiveUser is created

passiveUserTEST
Users and Privileges

The account you are currently using does not have sufficient privileges to view the client connections.

Now we can test it in (passiveuser connection)

->SELECT * FROM DepartmentInfo;

department	averagesalary
CNG	70000.0000
Mech	50000.0000
Chme	80000.0000

SELECT * FROM Staff;

	13	18:38:55	SELECT * FROM Staff LIMIT 0, 1000	Error Code: 1142. SELECT command denied to user 'passiveUser'@'localhost' for table 'staff'	0.000 sec

we can see it got denied.

3)Imagine that in your database you have information about two departments called CNG and MECH. What privileges should be granted to passiveUser if he needs to know only average department salaries for the CNG and MECH departments?

NOTE: CNG and MECH are other departments, but the idea is the same

```
CREATE VIEW DepartmentInfoMECHCNG AS
SELECT department, AVG(salary) AS averagesalary
FROM Staff
WHERE department IN ('CNG', 'Mech')
GROUP BY department;
```

we create a view that has only the info we need for passiveuser to access

-> select * from DepartmentInfoMECHCNG;

department	averagesalary
▶ CNG	70000.0000
Mech	50000.0000

We test it in DREAMDBA to check if this is exactly what we will give to passive user

```
GRANT SELECT ON cng352_assignment2.DepartmentInfoMECHCNG TO 'passiveUser'@'localhost';
```

we make sure that passiveUser is now granted the privileges

Let's test it in passiveUser account

```
8 ● select *from DepartmentInfoMECHCNG;
```

Result Grid | 🔁 Filter Rows: | Export: | v

department	averagesalary
▸ CNG	70000.0000
Mech	50000.0000

we can see that the privilege is garnted to passive user

4) You want to authorize your assistant (DreamAssistant) to five people (you will probably tell him who to fire, but you want to be able to delegate this task), to check on who is an employee, and to check on average department salaries. What privileges should you grant?

```
CREATE USER 'DreamAssistant'@'localhost' IDENTIFIED BY 'DreamDBA123';
```

we create a DreamAssistant account

```
#To make sure that the user doesn't have any privileges
REVOKE ALL PRIVILEGES, GRANT OPTION FROM 'DreamAssistant'@'localhost';
```

```
GRANT SELECT ON cng352_assignment2.Staff TO 'DreamAssistant'@'localhost';
GRANT SELECT ON cng352_assignment2.DepartmentInfo TO 'DreamAssistant'@'localhost';
GRANT UPDATE, INSERT, DELETE ON cng352_assignment2.Staff TO 'DreamAssistant'@'localhost';
```

We make sure it gets the right to see staff, to see avg salaries and to be able to delete an employee or update things.

Let's test it using DreamAssistant account

DreamAssistant
Users and Privileges

The account you are currently using does not have sufficient privileges to view the client connections.

```
3      #question 4
4 •    select * from StaffNames;

5

6 •    SELECT * FROM DepartmentInfo;

7

8 •    DELETE FROM Staff WHERE staff name =
```

Result Grid | Filter Rows: | Export:

staff_name
Raed
Ahmed
muhammed
Furkan

```
5

6 •    SELECT * FROM DepartmentInfo;
```

Result Grid | Filter Rows: | Expor

department	averagesalary
CNG	70000.0000
Mech	50000.0000
Chme	80000.0000

```
7

8 •    DELETE FROM StaffNames WHERE staff_name = 'Muhammed';

9      |
```

35   19:39:20   DELETE FROM StaffNames WHERE staff_name = 'Muhammed'   1 row(s) affected   0.000 sec

We can see that the dreamassistant can fire an employee

Note: SET SQL_SAFE_UPDATES=0; has been used to be able to delete

5) Continuing with the preceding scenario, you want your assistant to be able to look at the salaries of individuals. Does your answer to the previous question ensure this? Be specific: Can your assistant possibly find out salaries of some individuals (depending on the actual set of tuples), or can your assistant always find out the salary of any individual that he wants to?

```sql
select staff_name,salary
from Staff
where staff_name='Ahmed';
```

❌ 41 19:41:06 select staff_name,salary from Staff where staff_name='Ahmed' LIMIT 0, 1000   Error Code: 1142. SELECT command denied to user 'DreamAssistant'@'localhost' for table 'st... 0.000 sec

#we can see that the DreamAssistant doesn't have access to staff table, instead he can actually access

#the views that we created => he won't be able to see the salaries of individuales.

6)You want to give your assistant the authority to allow other people to read the StaffNames view. Show the appropriate commands

```
#question 6
GRANT SELECT ON cng352_assignment2.StaffNames TO DreamAssistant@localhost WITH GRANT OPTION;
```
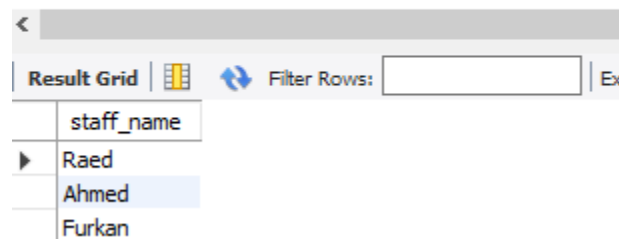
Now let's check if the dreamassistant can allow passiveuser to access the view

```
#question 6
GRANT SELECT ON cng352_assignment2.StaffNames TO passiveUser@localhost;
```

dreamassistant gives the privilege to passiveUser

Now let's check if passive user can access staffNames view

```
10      #question 6
11 •    select * from StaffNames;
```

staff_name
Raed
Ahmed
Furkan

that means passive User could get the privilege from DreamAssistant

7) Your assistant defines two new views using the StaffNames view. The first is called AtoRNames and simply selects names that begin with a letter in the range A to R. The second view is called HowManyNames and counts the number of names. You are so pleased with this achievement that you decide to give your assistant the right to insert tuples into the StaffNames view. Show the appropriate command, and describe what privileges your assistant has after this command is executed

```
GRANT CREATE VIEW, INSERT ON cng352_assignment2.StaffNames TO DreamAssistant@localhost;
```

that the dreamassistant can create view

```
7      #creating 2 views based on Staffnames
3      -- Create the AtoRNames view
3 ●    CREATE VIEW AtoRNames AS
3      SELECT staff_name
L      FROM StaffNames
2      WHERE staff_name REGEXP '^[A-R]';
3
1      -- Create the HowManyNames view
5 ●    CREATE VIEW HowManyNames AS
5      SELECT COUNT(*) AS number_of_names
7      FROM StaffNames;
```

it didn't get the access to create view for some reason

8) Your assistant allows DreamTodd to read the StaffNames relation and later quits. You then revoke the assistant's privileges. What happens to DreamTodd's privileges?
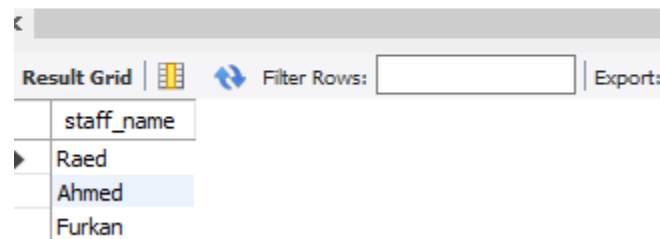
```
-- let's create DreamTodd
CREATE USER  'DreamTodd '@'localhost' IDENTIFIED BY 'DreamDBA123';
```

In DreamAssistant we give the privilege to dreamtodd

```
#we give DreamTodd the privilege to read staffnames.
GRANT SELECT ON cng352_assignment2.StaffNames TO 'DreamTodd@localhost';
```

Let's check dreamTodd account

```
3      #question 8
4  ●   select * from StaffNames;
```

staff_name
Raed
Ahmed
Furkan

that means it can access staffNames view

=>
let's revoke it from DreamAssistant

```
#we revoke the privileges from dreamAssistants
REVOKE ALL PRIVILEGES, GRANT OPTION FROM 'DreamAssistant'@'localhost';
```

but still DreamTodd can access the stafnames view

```
3      #question 8
4 •    select * from StaffNames;
```

staff_name
Raed
Ahmed
Furkan

after revoking

9) You decide to go on an extended vacation, and to make sure that emergencies can be handled, you want to authorize your boss DreamBoss to read and modify the Staff relation and the StaffName relation (and DreamBoss must be able to delegate authority, of course, since he is too far up the management hierarchy to actually do any work). Show the appropriate SQL statements. Can DreamBoss read DepartmentInfo view?

We create the dreamboss

```
#lets create the dreamboss
CREATE USER 'DreamBoss'@'localhost' IDENTIFIED BY 'password';
```

We give DreamBoss the required privileges

```
-- Grant SELECT, INSERT, UPDATE, DELETE privileges on the Staff table to DreamBoss
GRANT SELECT, INSERT, UPDATE, DELETE ON cng352_assignment2.Staff TO 'DreamBoss'@'localhost' WITH GRANT OPTION;

-- Grant SELECT, INSERT, UPDATE, DELETE privileges on the StaffNames view to DreamBoss
GRANT SELECT, INSERT, UPDATE, DELETE ON cng352_assignment2.StaffNames TO 'DreamBoss'@'localhost' WITH GRANT OPTION;
```

Let's check DreamBoss account

```
4 •    select * from staff;
```

Result Grid | Filter Rows:

staff_name	department	salary
Raed	CNG	60000
Ahmed	Mech	50000
Furkan	Mech	50000

```
3      #question 9
4 ●    select * from staffnames;
```

Result Grid | Filter Rows: [   ] | Expor

staff_name
Raed
Ahmed
Furkan

```
4 ●    select * from staff;
5 ●    select * from staffnames;
6
7 ●    update staff
8      set salary= 10000
9      where staff_name='Ahmed';
10
```

Result Grid | Filter Rows: [   ] | Export: | Wrap Cell

staff_name	department	salary
Raed	CNG	60000
Ahmed	Mech	10000
Furkan	Mech	50000

we can see that Dreamboss can do update => he can do all other stuff related to the privileges granted

```
select * from DepartmentInfo;
```

And we can see that DreamBoss can't get the table of DepartmentInfo because he didn't get the privilege to do so.

10) After returning from your (wonderful) vacation, you see a note from DreamBoss, indicating that he authorized his assistant DreamBossAsist to read the Staff relation. You want to revoke DreamBossAsisst's SELECT privilege on Staff, but you don't want to revoke the rights that you gave to DreamBoss, even temporarily. Can you do this in SQL

First we create dreambossAsist

```
#lets create the dreambossAssistant
CREATE USER 'DreamBossAsist'@'localhost' IDENTIFIED BY 'DreamDBA123';
```

we give the privileges to dreambossAsist in DreamBoss

```
#give privileges to dreambossAsist
GRANT SELECT ON cng352_assignment2.Staff TO 'DreamBossAsist'@'localhost' ;
```

Let's check DreamBossAsist

```
4 ●    select * from Staff;
```

Result Grid | Filter Rows:

staff_name	department	salary
Raed	CNG	60000
Ahmed	Mech	10000
Furkan	Mech	50000

we can see that it can access the Staff table

Now let's revoke it directly from the DREAMDBA

```
#let's revoke the privileges given to DreamBossAsist
REVOKE SELECT ON cng352_assignment2.staff FROM 'DreamBossAsist'@'localhost';
```

Now let's check DreamBoss and then DreamBossAsist

```
4 •    select * from staff;
5 •    select * from staffnames;
6
7 •    update staff
```

staff_name	department	salary
Raed	CNG	60000
Ahmed	Mech	10000
Furkan	Mech	50000

we can see that DreamBoss can access Staff

```
4 •    select * from Staff;
```

#	Time	Action	Message	Du
1	21:25:28	USE cng352_assignment2	0 row(s) affected	0.0
2	21:26:34	select * from Staff LIMIT 0, 1000	3 row(s) returned	0.0
3	21:32:54	select * from Staff LIMIT 0, 1000	Error Code: 1142. SELECT command denied to user 'DreamBossAsist'@'localhost' for table 'staff'	0.0

while DreamBossAsist access is denied.

⇨ It is possible to revoke from grandchild without affecting the child

11) Later you realize that DreamBoss has been quite busy. He has defined a view called AllNames using the view StaffNames, defined another relation called EmployeeNames that he has access to (but that you cannot access), and given his assistant DreamBossAssist the right to read from the AllNames view. DreamBossAssist has passed this right on to his friend Susan. You decide that even at the cost of annoying DreamBoss by revoking some of his privileges, you simply have to take away DreamBossAsisst and Susan's rights to see your data. What REVOKE statement would you execute? What rights does DreamBoss have on Staff after this statement is executed? What views are dropped as a consequence?

I grant the privilege to create View to dreamBoss

```
#let's make DreamBoss able to create view
Grant CREATE VIEW ON cng352_assignment2.StaffNames TO 'DreamBoss'@'localhost';
```

DreamBoss creates a view

```
-- Create the AllNames view
CREATE VIEW AllNames AS
SELECT staff_name
FROM StaffNames;
```

DreamBoss create a table

```
-- Create the EmployeeNames table (relation)
CREATE TABLE EmployeeNames (
    employee_id INT PRIMARY KEY,
    employee_name VARCHAR(100) NOT NULL
);
```

```
#give the access to DreamBossAsist
GRANT SELECT ON cng352_assignment2.AllNames TO 'DreamBossAssist'@'localhost';
```

```
#question 11
#let's assume he gives the grant option to read from view to his friend susan
```

GRANT SELECT ON cng352_assignment2.AllNames TO 'Susan'@'localhost';

- ⇨ Now we have to revoke privileges from susan and DreamBossAsist
- ⇨ REVOKE SELECT ON cng352_assignment2.AllNames FROM 'DreamBossAssist'@'localhost';
- ⇨ REVOKE SELECT ON cng352_assignment2.Staff FROM 'DreamBossAssist'@'localhost';
- ⇨ REVOKE SELECT ON cng352_assignment2.AllNames FROM 'Susan'@'localhost';
- ⇨ REVOKE SELECT ON cng352_assignment2.Staff FROM 'Susan'@'localhost';

By executing the above **REVOKE** statements, I ensure that DreamBossAssist and Susan no longer have access to the **AllNames** view and the **Staff** table. DreamBoss retains his privileges on these objects. This method does not drop any views but removes the specific access rights for DreamBossAssist and Susan.

Thanks so much for reading the report

it was good practice to discover MYSQL workbench

☺