

# Security

- Security is the prevention of unauthorised access to the database or data contained within the database.
- Security could be enforced by
  - **Views** furnish only a certain amount of security
    - User can see data in a view
    - User can not access data not included in the view
  - **DBA (database administrator) determines/grants** the types of access
    - **Group 1:** update and retrieve anything in the database
    - **Group 2:** no update but retrieve anything
    - **Group 3:** update and retrieve only a portion of the database
    - **Group 4:** no update but retrieve only a portion of the database
- **Security Mechanism – Grant / Revoke**
  - Different types of privileges can be granted to different users
  - Privileges include: Select, insert, update, delete, ...
  - Access can be revoked when necessary

# Create Users

- Able to create users and give them specific access rights
- To see the list of users:  
`SELECT user, host FROM mysql.user;`
- To create a user:  
`CREATE USER 'user1'@'localhost' IDENTIFIED BY 'mypass';`
- Now, see users again  
`SELECT user, host FROM mysql.user;`
- To remove the user:  
`DROP USER 'user1'@'localhost';`
- Now, if you see users again you will see 'user1' has been removed!

user	host
root	127.0.0.1
root	:::1
	localhost
pma	localhost
root	localhost

user	host
root	127.0.0.1
root	:::1
	localhost
pma	localhost
root	localhost
user1	localhost

## ■ Syntax

GRANT <operation> ON <tablename> TO user

## ■ For example:

GRANT ALL ON db\_week8.\* TO 'user1'@'localhost';

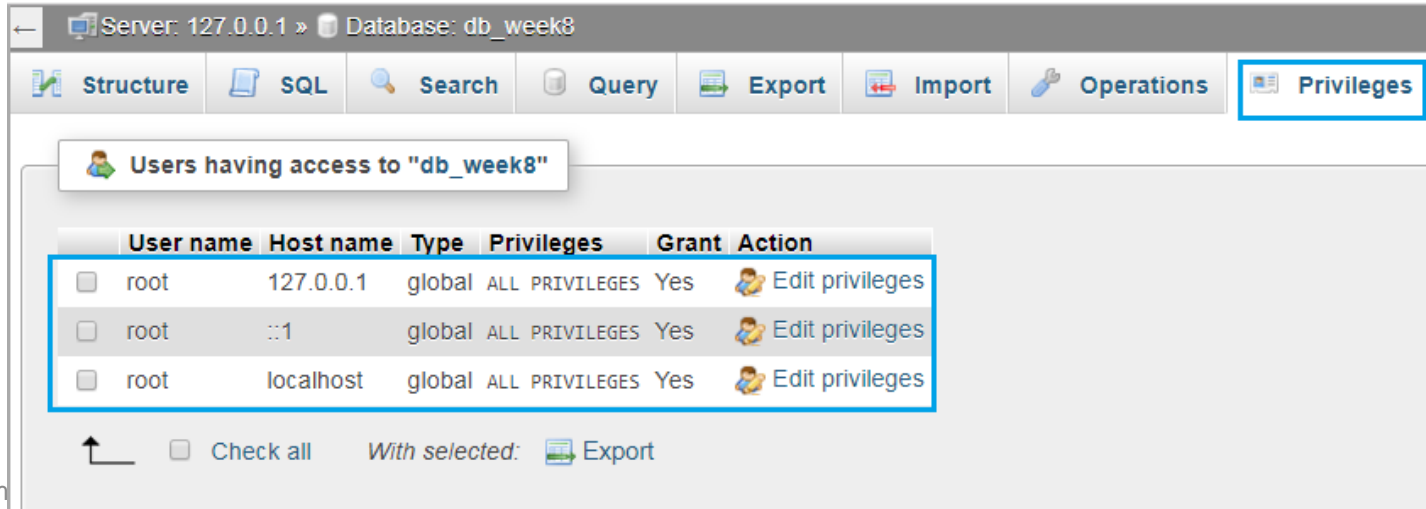
[We only use this as an example in the next slide!]




GRANT SELECT ON Staff TO user2


GRANT INSERT ON Staff TO user2

GRANT DELETE ON Staff TO user3

- To see current users of a database, select database on your right hand side list and then click on **Privileges** tab, for example you see for **db\_week8**:

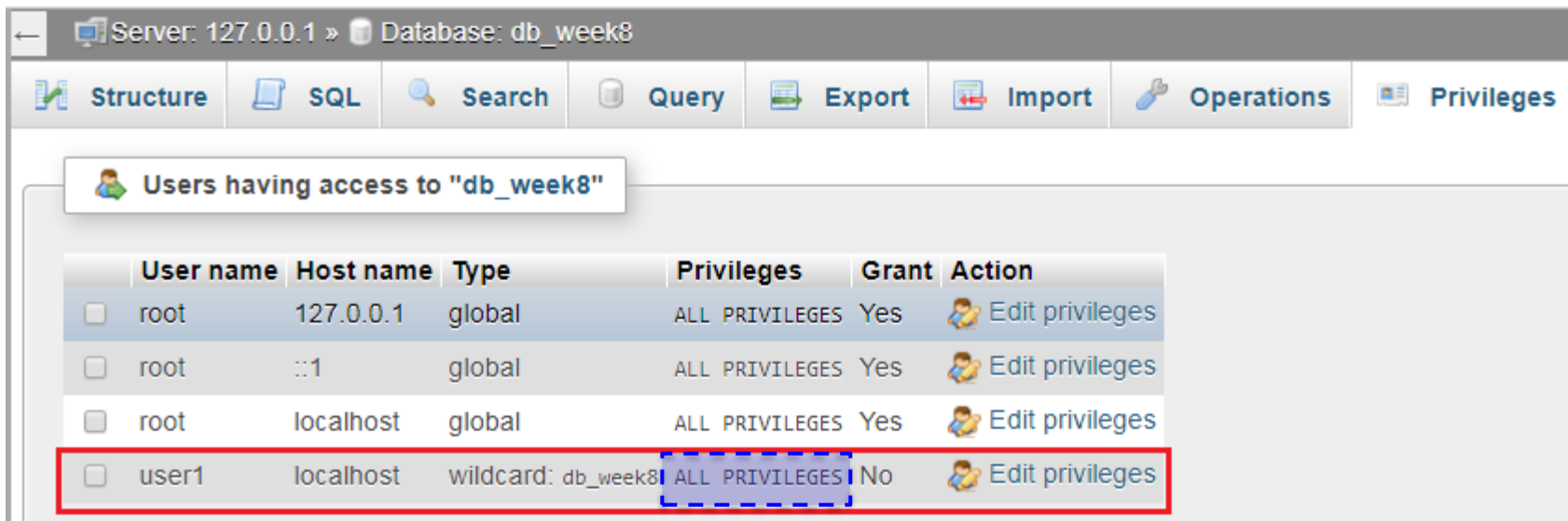


	User name	Host name	Type	Privileges	Grant	Action
<input type="checkbox"/>	root	127.0.0.1	global	ALL PRIVILEGES	Yes	 Edit privileges
<input type="checkbox"/>	root	:::1	global	ALL PRIVILEGES	Yes	 Edit privileges
<input type="checkbox"/>	root	localhost	global	ALL PRIVILEGES	Yes	 Edit privileges





☐ Check all    With selected:  Export

# GRANT access

- Now, execute  
`GRANT ALL ON db_week8.* TO 'user1'@'localhost';`
- To see updated users of **db\_week8**, select **db\_week8** on your right hand side list and then click on **Privileges** tab:



The screenshot shows the MySQL Workbench interface with the 'Privileges' tab selected for the database 'db\_week8'. The 'Users having access to "db\_week8"' section displays a table of users and their privileges. The user 'user1' is highlighted with a red rectangle, and the 'ALL PRIVILEGES' column for this user is also highlighted with a blue dashed rectangle.

	User name	Host name	Type	Privileges	Grant	Action
<input type="checkbox"/>	root	127.0.0.1	global	ALL PRIVILEGES	Yes	 Edit privileges
<input type="checkbox"/>	root	:::1	global	ALL PRIVILEGES	Yes	 Edit privileges
<input type="checkbox"/>	root	localhost	global	ALL PRIVILEGES	Yes	 Edit privileges
<input type="checkbox"/>	user1	localhost	wildcard: db_week8	ALL PRIVILEGES	No	 Edit privileges

- **Syntax**

REVOKE <operation> ON <tablename> FROM user

- For example:

REVOKE INSERT ON db\_week8.\* FROM 'user1'@'localhost';  
REVOKE SELECT ON Staff FROM user2  
REVOKE DELETE ON Staff FROM user3

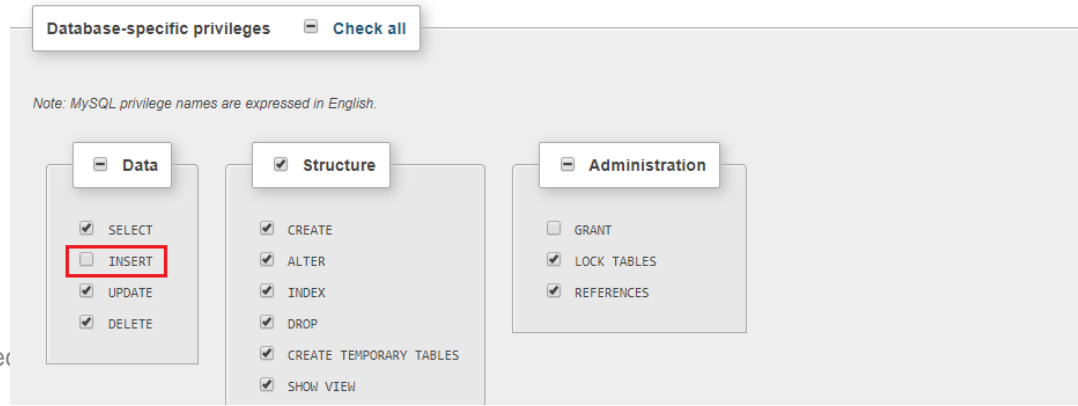
[We only use this as an example below!]

- After we execute

REVOKE INSERT ON db\_week8.\* FROM 'user1'@'localhost';

- Go to Privileges tab of **db\_week8**, and then click on **Edit Privileges**

Edit privileges: User account **'user1'@'localhost'** - Databases db\_week8



Database-specific privileges ☐ Check all

Note: MySQL privilege names are expressed in English.

<input type="checkbox"/> Data	<input checked="" type="checkbox"/> Structure	<input type="checkbox"/> Administration
<input checked="" type="checkbox"/> SELECT	<input checked="" type="checkbox"/> CREATE	<input type="checkbox"/> GRANT
<input type="checkbox"/> INSERT	<input checked="" type="checkbox"/> ALTER	<input checked="" type="checkbox"/> LOCK TABLES
<input checked="" type="checkbox"/> UPDATE	<input checked="" type="checkbox"/> INDEX	<input checked="" type="checkbox"/> REFERENCES
<input checked="" type="checkbox"/> DELETE	<input checked="" type="checkbox"/> DROP	
	<input checked="" type="checkbox"/> CREATE TEMPORARY TABLES	
	<input checked="" type="checkbox"/> SHOW VIEW	

Thank you