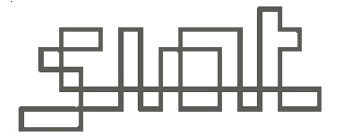


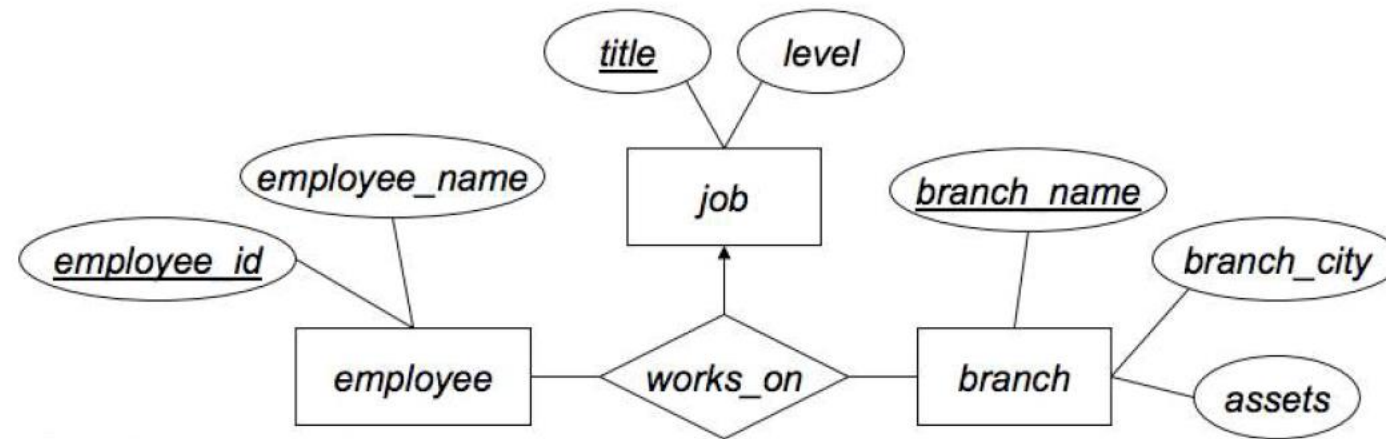


From ER to Schemas to Tables

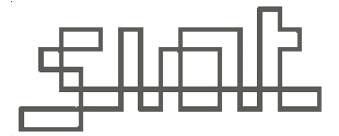


Practice 1

- Many-to-many: R(key1, key2)
- One-to-many: R(key1, key2)
- One-to-one: R(key1, key2) or R(key1, key2)



- Write all schemas



Practice 1: Result

job(title, level)

employee(employee_id, employee_name)

branch(branch_name, branch_city, assets)

works_in(employee_id, branch_name, title)

Remember that 'title' in works_in is a primary key in job. Hence, we have employee_id and branch_name TOGETHER as a primary key for works_in, but ALL THREE are foreign keys on their own.



phpMyAdmin



phpMyAdmin



Welcome to XAMPP for OS X 7.3.7

You have successfully installed XAMPP on this system! Now you can start using Apache, MariaDB,

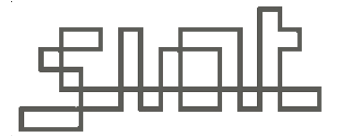


phpMyAdmin

The screenshot displays the phpMyAdmin interface for a local MySQL/MariaDB server. The left sidebar shows a list of databases: canvas_access, classicmodels, information_schema, insight, mysql, performance_schema, phpmyadmin, practice1, and test. The main content area is divided into several panels:

- General settings:** Shows the server connection collation set to 'utf8mb4_unicode_ci'.
- Appearance settings:** Shows the language set to 'English', the theme set to 'pmahomme', and the font size set to '82%'. A link for 'More settings' is also present.
- Database server:** A list of server details:
 - Server: Localhost via UNIX socket
 - Server type: MariaDB
 - Server connection: SSL is not being used
 - Server version: 10.3.16-MariaDB - Source distribution
 - Protocol version: 10
 - User: root@localhost
 - Server charset: cp1252 West European (latin1)
- Web server:** A list of web server details:
 - Apache/2.4.39 (Unix) OpenSSL/1.0.2s PHP/7.3.7 mod_perl/2.0.8-dev Perl/v5.16.3
 - Database client version: libmysql - mysqlnd 5.0.12-dev - 20150407 - \$Id: 7cc7cc96e675f6d72e5cf0f267f48e1\$
 - PHP extension: mysqli, curl, mbstring
 - PHP version: 7.3.7
- phpMyAdmin:** A section at the bottom, currently empty.

The top navigation bar includes links for Databases, SQL, Status, User accounts, Export, and More. The status bar at the bottom indicates the server is 'localhost'.



Create new database 'practice1'

Server: localhost

Databases SQL Status User accounts Export More

Databases

Create database

practice1 latin1_swedish_ci Create

Database	Collation	Action
<input type="checkbox"/> canvas_access	latin1_swedish_ci	Check privileges
<input type="checkbox"/> classicmodels	latin1_swedish_ci	Check privileges
<input type="checkbox"/> information_schema	utf8_general_ci	Check privileges
<input type="checkbox"/> insight	latin1_swedish_ci	Check privileges
<input type="checkbox"/> mysql	latin1_swedish_ci	Check privileges
<input type="checkbox"/> performance_schema	utf8_general_ci	Check privileges
<input type="checkbox"/> phpmyadmin	utf8_bin	Check privileges
<input type="checkbox"/> test	latin1_swedish_ci	Check privileges
Total: 8	latin1_swedish_ci	

☐ Check all With selected: [Drop](#)

Note: Enabling the database statistics here might cause heavy traffic between the web server and the MySQL server.

• **Enable statistics**

Console



Add new table 'job' to the database

phpMyAdmin

Server: localhost » Database: practice1 » Table: job

Browse Structure SQL Search Insert Export More

Table name: job Add 1 column(s) Go

Name	Type	Length/Values	Default	Collation
<u>title</u>	<u>VARCHAR</u>	<u>100</u>	None	
<u>level</u>	<u>INT</u>	<u>10</u>	None	

Pick from Central Columns

Table comments: Collation: Storage Engine: InnoDB

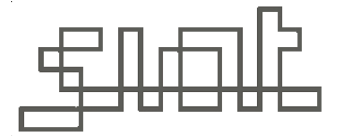
PARTITION definition:

Partition by: (Expression or column)

Partitions:

Preview SQL Save

Console



Specify primary key for 'job' table

The screenshot shows the phpMyAdmin interface for a database named 'practice1'. The 'Table: job' is selected. The 'Table structure' tab is active, showing the table's columns: 'title' (varchar(100)) and 'level' (int(10)). The 'title' column is selected. In the 'With selected:' menu, the 'Primary' button is highlighted. Below the table structure, the 'Indexes' section shows 'No index defined!'. The 'Partitions' section shows 'No partitioning defined!'. The 'Console' tab is visible at the bottom.

Server: localhost Database: practice1 Table: job

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input checked="" type="checkbox"/>	1 title	varchar(100)	latin1_swedish_ci		No	None			Change Drop More
<input type="checkbox"/>	2 level	int(10)			No	None			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Add to central columns Remove from central columns

Print Propose table structure Track table Move columns Normalize

Add 1 column(s) after level Go

Indexes

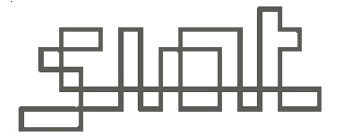
No index defined!

Create an index on 1 columns Go

Partitions

No partitioning defined!

Console Partition table



Primary key from 2 fields for 'table works_in'

phpMyAdmin

Server: localhost » Database: practice1 » Table: works_in

Browse Structure SQL Search Insert Export Import Privileges More

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input checked="" type="checkbox"/>	1	eid	int(10)		No	None			Change Drop More
<input checked="" type="checkbox"/>	2	b_name	varchar(50) latin1_swedish_ci		No	None			Change Drop More
<input type="checkbox"/>	3	title	varchar(100) latin1_swedish_ci		No	None			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Fulltext

Add to central columns Remove from central columns

Print Propose table structure Track table Move columns Normalize

Add 1 column(s) after title Go

Indexes

No index defined!

Create an index on 1 columns Go

Partitions

No partitioning defined!

Console



2-field primary key - result

phpMyAdmin

Recent Favorites

- New
- canvas_access
- classicmodels
- information_schema
- insight
- mysql
- performance_schema
- phpmyadmin
- practice1
 - New
 - branch
 - employee
 - job
 - works_in
- test

Server: localhost » Database: practice1 » Table: works_in

Browse Structure SQL Search Insert Export Import Privileges More

✓ Your SQL query has been executed successfully.

```
ALTER TABLE `works_in` ADD PRIMARY KEY( `eid`, `b_name`);
```

[Edit inline] [Edit] [Create PHP code]

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	eid	int(10)			No	None			Change Drop More
2	b_name	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
3	title	varchar(100)	latin1_swedish_ci		No	None			Change Drop More

☐ Check all With selected: [Browse](#) [Change](#) [Drop](#) [Primary](#) [Unique](#) [Index](#) [Fulltext](#)

[Add to central columns](#) [Remove from central columns](#)

[Print](#) [Propose table structure](#) [Track table](#) [Move columns](#) [Normalize](#)

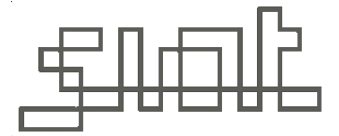
[Add](#) 1 column(s) after title [Go](#)

Indexes

Action	Keyname	Type	Unique	Indexed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	eid b_name	0 0	A A	No No	

Create an index on 1 columns [Go](#)

Console



Adding Foreign Key Constraints to 'works_in'

phpMyAdmin

Recent Favorites

- New
- canvas_access
- classicmodels
- information_schema
- insight
- mysql
- performance_schema
- phpmyadmin
- practice1
 - New
 - branch
 - employee
 - job
 - works_in
- test

Server: localhost » Database: practice1 » Table: works_in

Browse Structure SQL Search Insert Export Import Privileges More

Table structure Relation view

Foreign key constraints

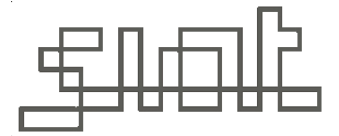
Actions	Constraint properties	Column	Foreign key constraint (INNODB)		
			Database	Table	Column
	Constraint name	b_name	practice1	branch	branch_name
	ON DELETE RESTRICT				
	ON UPDATE RESTRICT				
	Constraint name	eid	practice1	employee	employee_id
	ON DELETE RESTRICT				
	ON UPDATE RESTRICT				
	Constraint name	title	practice1	job	title
	ON DELETE RESTRICT				
	ON UPDATE CASCADE				

+ Add constraint

+ Internal relationships

Choose column to display: ---

Console



Foreign key outcome

phpMyAdmin

Recent Favorites

- New
- canvas_access
- classicmodels
- information_schema
- insight
- mysql
- performance_schema
- phpmyadmin
- practice1
 - New
 - branch
 - employee
 - job
 - works_in
- test

Server: localhost » Database: practice1 » Table: works_in

Browse Structure SQL Search Insert Export Import Privileges More

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	eid	int(10)			No	None			Change Drop More
2	b_name	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
3	title	varchar(100)	latin1_swedish_ci		No	None			Change Drop More

☐ Check all With selected: [Browse](#) [Change](#) [Drop](#) [Primary](#) [Unique](#) [Index](#) [Fulltext](#)

[Add to central columns](#) [Remove from central columns](#)

[Print](#) [Propose table structure](#) [Track table](#) [Move columns](#) [Normalize](#)

[Add](#) 1 column(s) after title [Go](#)

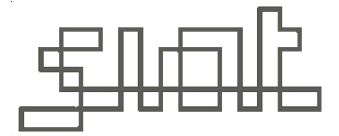
Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Drop	PRIMARY	BTREE	Yes	No	eid	0	A	No	
Edit Drop	b_name	BTREE	No	No	b_name	0	A	No	
Edit Drop	title	BTREE	No	No	title	0	A	No	

Create an index on 1 columns [Go](#)

Partitions

Console partitioning defined!



Resource

- This video can help: <https://www.youtube.com/watch?v=7HTAX0dfJqg>
 - Pay attention to setting parameters for the foreign key constrain: RESTRICT vs CASCADE