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Keys – Part 2

Relational Databases Basics

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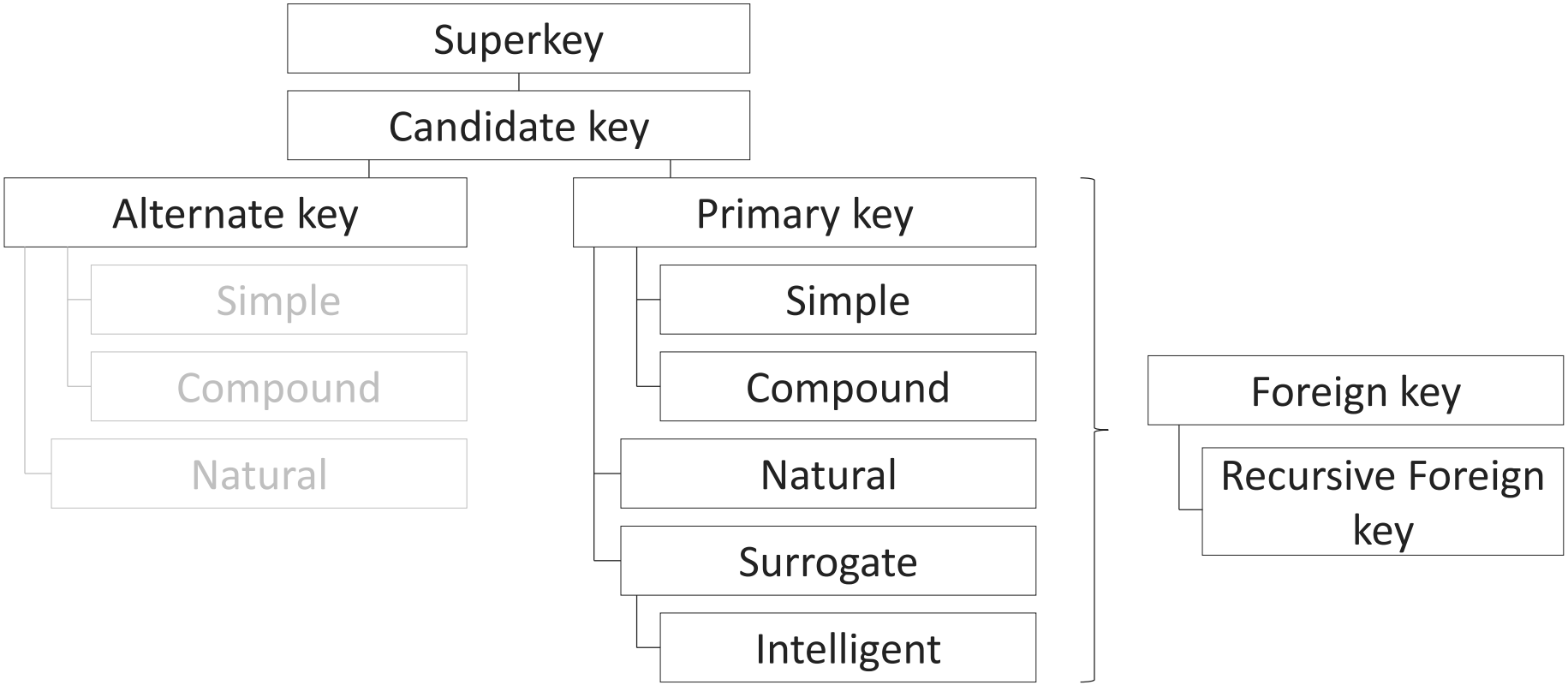
Keys hierarchy



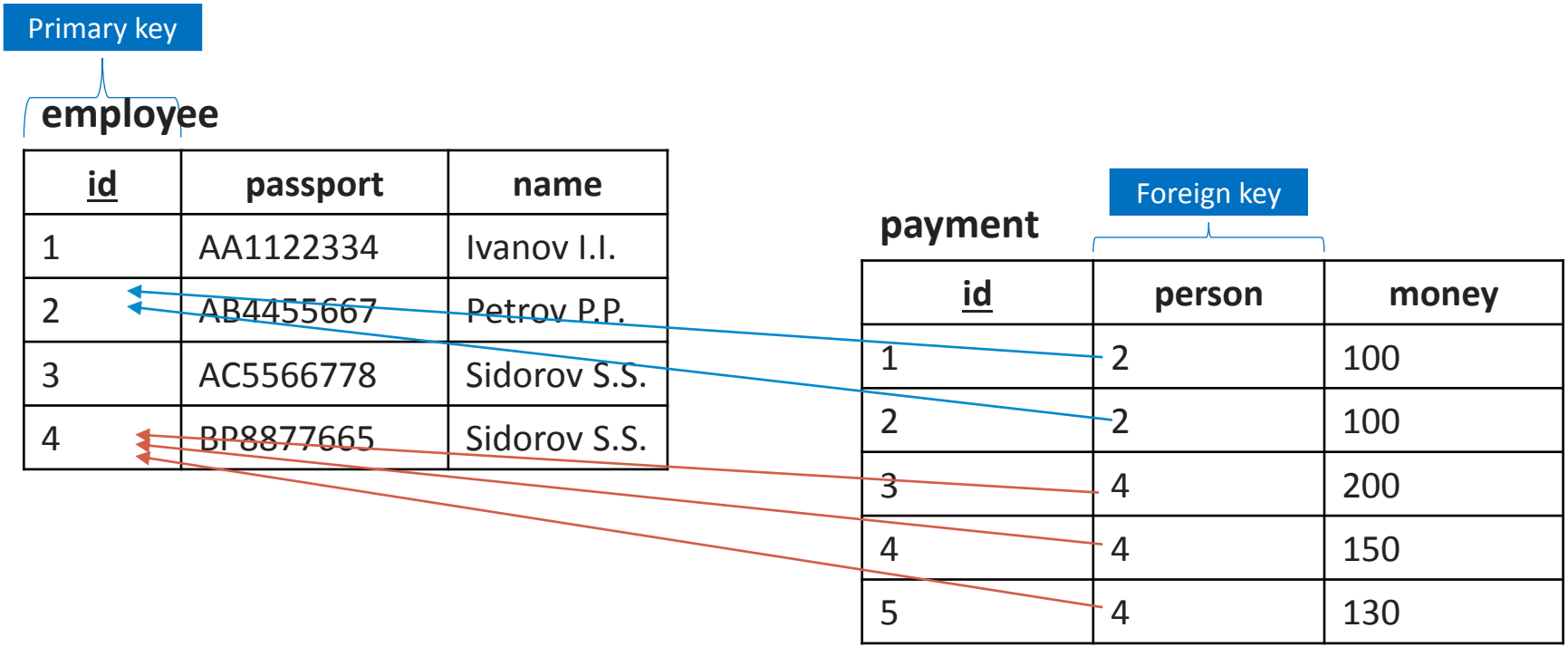
Foreign key and recursive foreign key

Read and remember!

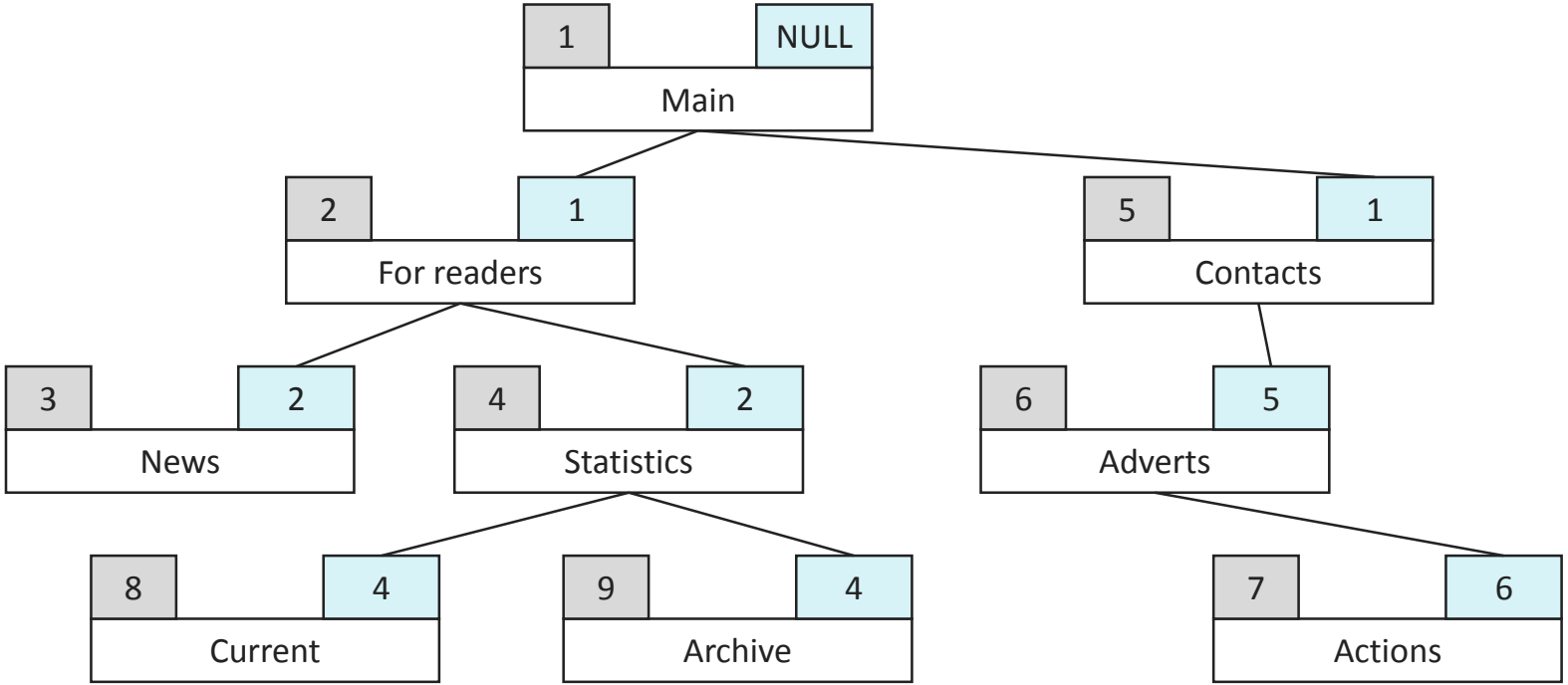
Foreign key – in a relation, one or a group of attributes that corresponds to a primary key in another relation.

Recursive foreign key – a foreign key that references some key of relation itself.

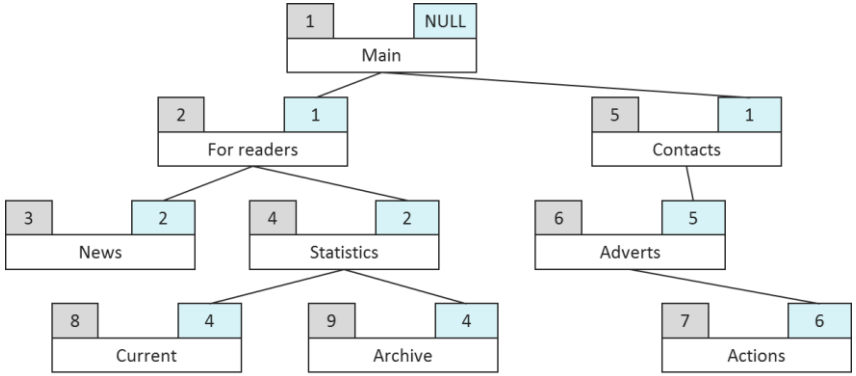
Foreign key


Primary key
employee
id
passport
name
1
AA1122334
Ivanov I.I.
2
AB4455667
Petrov P.P.
3
AC5566778
Sidorov S.S.
4
BP8877665
Sidorov S.S.
Foreign key
payment
id
person
money
1
2
100
2
2
100
3
4
200
4
4
150
5
4
130

Recursive foreign key



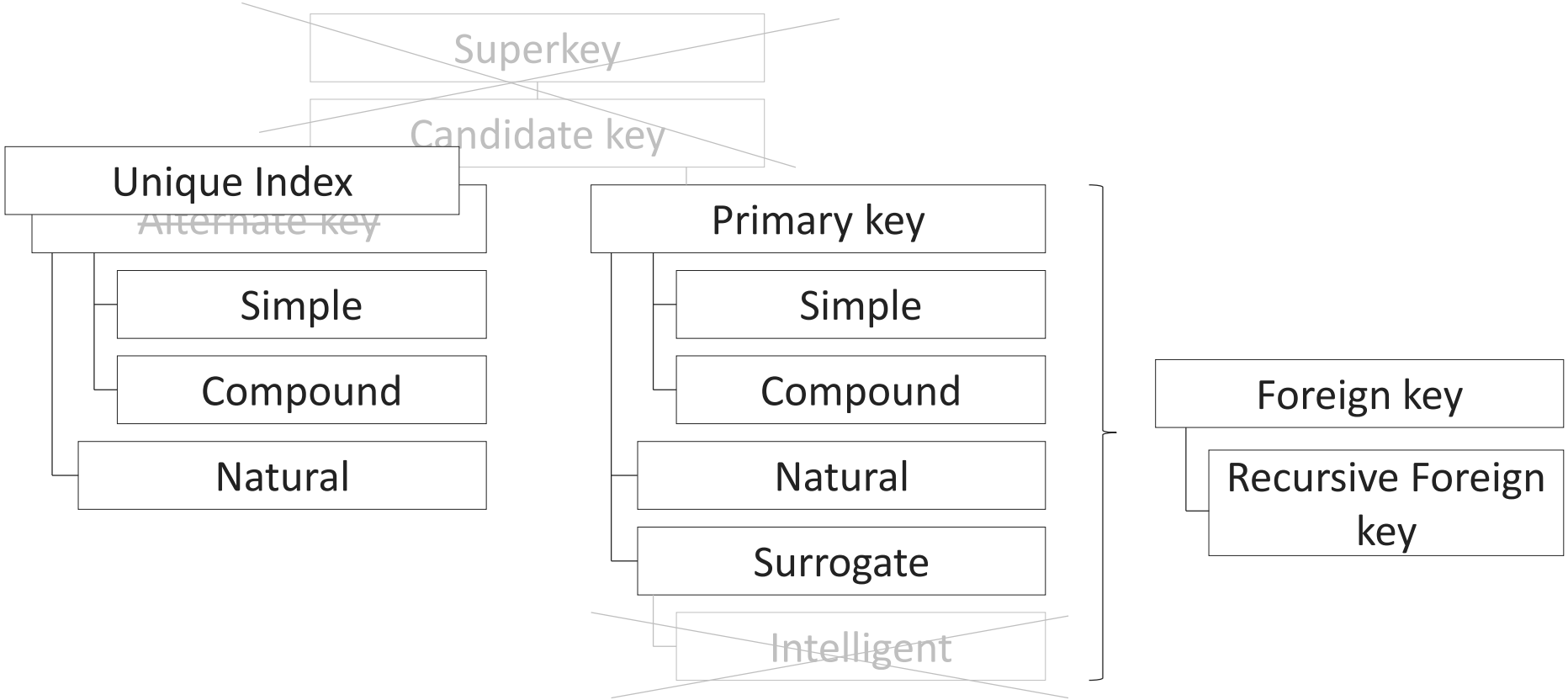
Recursive foreign key



page

id	parent	name
1	*NULL*	Main
2	1	For readers
3	2	News
4	2	Statistics
5	1	Contacts
6	5	Adverts
7	6	Actions
8	4	Current
9	4	Archive

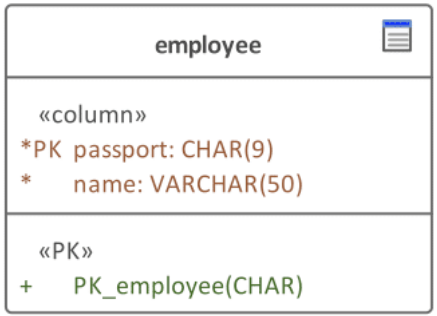
Keys hierarchy (in reality)



How to create a key?

With an SQL query

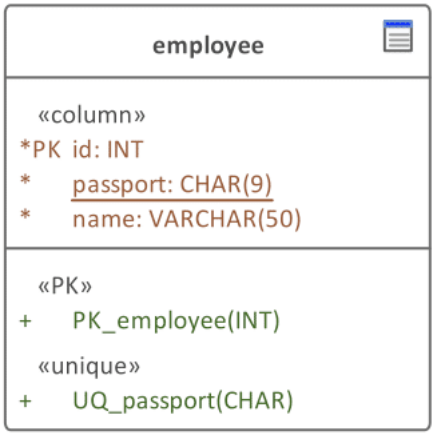
```
-- Simple natural PK
CREATE TABLE `employee`
(
 `passport` CHAR(9) NOT NULL,
 `name` VARCHAR(50) NOT NULL,
  CONSTRAINT `PK_employee`
  PRIMARY KEY (`passport`)
)
```



How to create a key?

With an SQL query

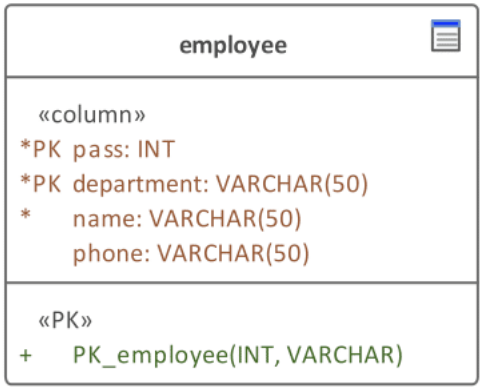
```
-- Surrogate PK (+ index on Alt. key)
CREATE TABLE `employee`
(
 `id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
 `passport` CHAR(9) NOT NULL,
 `name` VARCHAR(50) NOT NULL,
  CONSTRAINT `PK_employee`
  PRIMARY KEY (`id`)
);

ALTER TABLE `employee`
 ADD CONSTRAINT `UQ_passport`
  UNIQUE (`passport`);
```



How to create a key?

With an SQL query

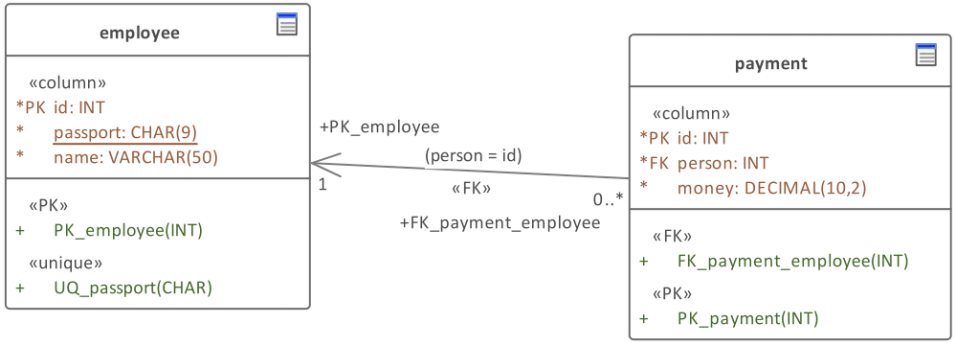
```
-- Compound natural PK
CREATE TABLE `employee`
(
 `pass` INT UNSIGNED NOT NULL AUTO_INCREMENT,
 `department` VARCHAR(50) NOT NULL,
 `name` VARCHAR(50) NOT NULL,
 `phone` VARCHAR(50) NULL,
  CONSTRAINT `PK_employee`
  PRIMARY KEY (`pass`,`department`)
)
```



How to create a key?

With an SQL query

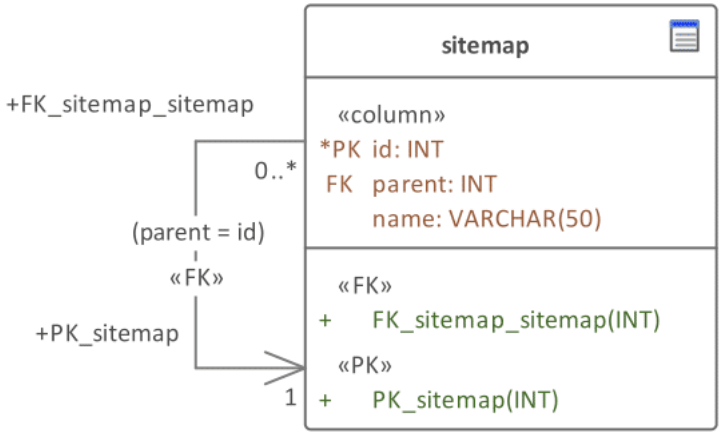
```
-- Foreign key and corresponding relationship
CREATE TABLE `employee`
(
`id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
`passport` CHAR(9) NOT NULL,
`name` VARCHAR(50) NOT NULL,
CONSTRAINT `PK_employee` PRIMARY KEY (`id`)
);

CREATE TABLE `payment`
(
`id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
`person` INT UNSIGNED NOT NULL,
`money` DECIMAL(10,2) NOT NULL,
CONSTRAINT `PK_payment` PRIMARY KEY (`id`)
);

ALTER TABLE `employee`
 ADD CONSTRAINT `UQ_passport` UNIQUE (`passport`);

ALTER TABLE `payment`
 ADD CONSTRAINT `FK_payment_employee`
  FOREIGN KEY (`person`) REFERENCES `employee` (`id`)
   ON DELETE CASCADE ON UPDATE RESTRICT;
```



How to create a key?

With an SQL query

```
-- Recursive foreign key
-- and corresponding relationship
CREATE TABLE `sitemap`
(
 `id` INT UNSIGNED
      NOT NULL AUTO_INCREMENT,
 `parent` INT UNSIGNED NULL,
 `name` VARCHAR(50) NULL,
  CONSTRAINT `PK_sitemap`
  PRIMARY KEY (`id`)
);

ALTER TABLE `sitemap`
 ADD CONSTRAINT
 `FK_sitemap_sitemap`
  FOREIGN KEY (`parent`)
  REFERENCES `sitemap` (`id`)
  ON DELETE CASCADE
  ON UPDATE RESTRICT;
```



How to create a key?

Using some special tool

```
-- Here goes live demo :)
```

Live demo in Sparx Enterprise Architect

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