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executive Server-Version: 10.1.38-MariaDB

Strings

```
SELECT * FROM products;                                                      /* show all entries from products */
SELECT DISTINCT Spiele FROM products;                                        /* show all unique entries from products */
SELECT * FROM products WHERE Preis > 40;                                     /* show all entries from products, if Preis bigger than 40 € */
                                                                             /* show all entries from products, if Preis bigger than 40 € and
SELECT * FROM products WHERE Preis > 40 AND Preis < 100;                     Preis smaller than 100 € */

CREATE TABLE veranstaltungen AS SELECT Fach, Raumnummer FROM dozenten;       /* create Veranstaltungen take all data of column Fach and
                                                                             Raumnummer from table dozenten */
SELECT * FROM exercise_5.nobelist WHERE nobelist_name LIKE 'Louis%';         /* Select all with Surname Louis */
SELECT * FROM exercise_5.nobelist WHERE nobelist_name LIKE '%s%';            /* Select all which contain small s in their names */
```

Change attributes

```
ALTER TABLE exercise_1.dozenten ADD Raumnummer INTEGER;       /* set INTEGER Value to DOUBLE with 6 digits before comma and 2 digits after
                                                              comma */
ALTER TABLE exercise_1.dozenten MODIFY Age DOUBLE(6,2);       /* set INTEGER Value to Float with 5 digits before comma and 2 digits after
                                                              comma */
ALTER TABLE exercise_1.dozenten MODIFY Age FLOAT(5,2);        /* set Foreign Key to Column Studio from Table studio of Studio */

ALTER TABLE exercise_2.products ADD CONSTRAINT Studio FOREIGN KEY (Studio) REFERENCES studio(Studio);

ALTER TABLE exercise_4.customers AUTO_INCREMENT=100;

ALTER TABLE exercise_4.customers MODIFY COLUMN id PRIMARY KEY NOT NULL AUTO_INCREMENT=100;

ALTER TABLE exercise_4.customers ADD FOREIGN KEY (salesmen_ID) REFERENCES exercise_4.staff(staff_ID);
                                                              /*
                                                               The FOREIGN KEY constraint is used
                                                                - to prevent actions that would destroy links between tables.
                                                                - prevents invalid data from being inserted into the foreign key column,
                                                                  because it has to be one of the values contained in the table it points to.
                                                              */
```

Codd's 12 rules

Rule 0: The foundation rule
Rule 1: The information rule
Rule 2: The guaranteed access rule
Rule 3: Systematic treatment of null values
Rule 4: Dynamic online catalog based on the relational model
Rule 5: The comprehensive data sublanguage rule
Rule 6: The view updating rule
Rule 7: Possible for high-level insert, update, and delete
Rule 8: Physical data independence
Rule 9: Logical data independence
Rule 10: Integrity independence
Rule 11: Distribution independence
Rule 12: The nonsubversion rule

INSERT

```
INSERT INTO Dozenten VALUES('Baller','Programmieren',29);
INSERT INTO Dozenten VALUES('Zanker','Programmieren',22);
```

MULTIPLE INSERT

```
INSERT INTO Dozenten (Name,Fach,Age) VALUES
('Baller','Programmieren',29),
('Zanker','Programmieren',22);
```

Check changes

```
SELECT products.Spiele, products.Preis, studio.Studio, studio.Mitarbeiterzahl FROM products LEFT JOIN studio ON products.Studio = studio.Studio   /* checks Foreign Key */
```

DELETE / DROP

```
DELETE FROM veranstaltungen WHERE Raumnummer='120';          /* delete all rows which contain
                                                             raumnummer with value 120 */
ALTER TABLE veranstaltungen DROP COLUMN Raumnummer;          /* delete COLUMN raumnummer */
DROP DATABASE excersie2;                                     /* delete whole database */
ALTER TABLE exercise_2.products DROP FOREIGN KEY studio;     /* removes Foreign Key */
```

CREATE

```
CREATE DATABASE exercise_1;                  /* creates related database  */
SET NAMES utf8 ;                             /* use for the names charset utf8 */
SET CHARACTER_SET_CLIENT = utf8mb4 ;         /* use for communication with the client utf8, utf8mb4 = MySQL UTF-8 */
CREATE TABLE Dozenten (                      /* builds a table, named Dozenten */
  Name VARCHAR(20) PRIMARY KEY,              /* Name, Fach, Age =  variable names */
  Fach VARCHAR(50) NOT NULL,                 /* VARCHAR, INT = data typ, VARCHAR(20) String with 20 digits */
  Age INT(2) CHECK(Age>18)                   /* PRIMARY KEY allows access to row */
);
```

Data types

```
BIT                                          /* short numbers like 0 or 1 in range of 1 to 64 */
INT or INTEGER                               /* numbers in range of  -2.147.483.648 to 2.147.483.647 */
FLOAT                                        /* floating point number 32 bit, 7 digits e.g. 4.2 */
DOUBLE                                       /* normal size floating point number 64 bit, 15-16 digits*/
DECIMAL                                      /* exact fixed-point number 128 bit, 28-29 significant digits */

CHAR(10) or CHARACTER(10)                    /* strings  with fixed length, in this case 10 digits */
VARCHAR(20) or CHARACTER VARYING (20)        /* strings  with variable length, in this case 20 digits */
FLOAT(2)                                     /* 54321.1 */
FLOAT(3,2)                                   /* 1.12 */
DOUBLE(5,2)                                  /* 312.12 */
DECIMAL(4,2)                                 /* 21 */
DECIMAL(4,2)                                 /* 21.12 */

constraint                                   /* used to specify rules for the data in a table */
NOT NULL                                     /* must be defined */
```

General Information

```
CREATE TABLE Dozenten (                      /* single enumerations are separated by a comma , */
  Name VARCHAR(20) PRIMARY KEY,              /* commands are separated by a semicolon ; */
  Fach VARCHAR(50),
  Age INT(2)
);
```