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Connecting to our MariaDB Server

See handout ...
Declaring Tables in SQL (From last time)

Defining the Accounts table:

- Accounts(number, owner, balance, type)

```sql
CREATE TABLE account (
    number INT,
    owner VARCHAR(50),
    balance DECIMAL(8,2),
    type CHAR(8),
    PRIMARY KEY (number)
);
```

Defining the Checks table:

- Checks(account, number, amount, date)

```sql
CREATE TABLE check (
    account INT,
    check_number INT,
    date VARCHAR(10),
    amount DECIMAL(8,2),
    PRIMARY KEY (account, check_number),
    FOREIGN KEY (account) REFERENCES accounts (number)
);
```
Adding constraints “after the fact”

```
ALTER TABLE check ADD
    FOREIGN KEY (account) REFERENCES account (number);
```

Naming your constraints

```
CREATE TABLE check (  
    account INT,  
    check_number INT,  
    date VARCHAR(10),  
    amount DECIMAL(8,2),  
    PRIMARY KEY (account, check_number),  
    CONSTRAINT account_fk FOREIGN KEY (account)  
        REFERENCES account (number)  
);  
```

Remove constraints “after the fact” (by name)

```
ALTER TABLE check DROP FOREIGN KEY account_fk;
```

Note on MariaDB/MySQL and FKs

- the default database engine in MySQL is MyISAM (more later)
- which doesn’t support FKs
- instead use ENGINE=INNODB:

```
CREATE TABLE mytable ( ... ) ENGINE = InnoDB;
```
Prohibiting NULL values

- NULL is a special value in SQL
- using NULL values can be very tricky!!!(more later)
- you can constrain attributes to be not null

```sql
CREATE TABLE check (  
    account INT NOT NULL, -- primary keys are always not null  
    check_number INT NOT NULL,  
    date VARCHAR(8),  
    amount DECIMAL(8,2) NOT NULL,  
    ...  
);  
```

- e.g., OK for the date field to have NULL values (i.e., might not be known)
- every other value must not be NULL
Inserting Values

\( \text{INSERT INTO table VALUES (v1, v2, ...);} \)
\( \text{INSERT INTO table VALUES (v1, v2, ...), (v3, v4, ...), ...;} \)
\( \text{INSERT INTO table(a1, a2) VALUES (v1, v2);} \)
\( \text{INSERT INTO table SET a1 = v1, a2 = v2, ...;} \)

For example:

\( \text{INSERT INTO account VALUES (101, 'J. Smith', 1000.00, 'checking');} \)

Default Values

\( \text{CREATE TABLE account (} \)
  \hline
  \text{number INT},
  \text{owner VARCHAR(50) NOT NULL},
  \text{balance DECIMAL(8,2) DEFAULT 5.00},
  \text{type CHAR(8) DEFAULT 'checking'},
  \text{PRIMARY KEY (number)}
  \hline
\)

For example:

\( \text{INSERT INTO account(number, owner) VALUES (102, 'W. Wei');} \)

Produces the row:

```
+-----+----------------+---+----------+
| 102 | W. Wei          | 5 | checking |
+-----+----------------+---+----------+
```

We’ll talk about additional constraints later, as we go ...
Removing tables (DROP TABLE)

    DROP TABLE check;

• Note: this removes the entire table!

    DROP TABLE IF EXISTS check;

• only removes table if it has already been created
• good for avoiding errors in a script
More on MariaDB

To change your password:

```sql
mysql> SET PASSWORD FOR 'login'@'localhost' = password('newpass');
mysql> SET PASSWORD FOR 'login'@'%' = password('newpass');
```

- note the second one only works for how we’re connecting to the server

Use `describe tablename` to get information about a table’s schema

```sql
mysql> describe test;
+-------+------------+------+-----+---------+-------+
| Field | Type       | Null | Key | Default | Extra |
+-------+------------+------+-----+---------+-------+
| id    | int(11)    | NO   | PRI | 0       |       |
| val   | varchar(3) | YES  |     | NULL    |       |
+-------+------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

- Note this is just another table!

MariaDB Strict Mode

By default, MariaDB doesn’t enforce all constraints

- it does enforce Primary Keys
- and Foreign Keys if InnoDB is used

To tell MariaDB to enforce constraints (like ENUMs), use:

```sql
SET sql_mode = STRICT_ALL_TABLES;
```
More Examples in MariaDB ...