Introduction to SQL

Module 1. Introduction to relational databases

Overview

- What is a Relational Database (table, row)

- What is primary key?

- Why design databases?

- Normal form and normalization

- Joining tables in a logical way

- Brief overview of SQL

What is a Relational Database?

- Relational Database is a collection of two-dimensional tables consisting of rows and columns.

- The order of rows in the table is arbitrary.

What is primary key?

- Primary key is a field (column) or collection of fields (columns) that uniquely identifies each record in the table.

Why design databases?

- Avoid data redundancy.

- Reduce number of tables stored in database.

- Data normalization to simplify problems related to data update and deletion.

Normal form and normalization

- Normal form.

- Normalization.

Joining tables in a logical way

Employee	Manager	Phone
125	Ivanov	11111
138	Petrov	22222
195	Ivanov	22222
200	Ivanov	11111

Employee	Manager
125	Ivanov
138	Petrov
195	Petrov
200	Ivanov

Manager	Phone
Ivanov	11111
Petrov	22222

Brief overview of SQL

- Interactive

- Embedded

- Subdivisions of SQL (DML, DDL, DCL)

Interactive SQL

Embedded SQL

```
strcpy(strStmt, "SELECT * FROM table_result ORDER BY key");

EXEC SQL PREPARE S4 FROM :strStmt;

EMB_SQL_CHECK("PREPARE S4");

EXEC SQL DECLARE C4 CURSOR FOR S4;

EXEC SQL OPEN C4;

EMB_SQL_CHECK("OPEN CURSOR");

EXEC SQL FETCH C4 INTO :key, :value;

EMB_SQL_CHECK("FETCH CURSOR");

while (sqlca.sqlcode != SQL_RC_W100)

{

printf("%7d %5d\n", key, value);

EXEC SQL FETCH C4 INTO :key, :value;

EMB_SQL_CHECK("FETCH CURSOR");

}

EXEC SQL CLOSE C4;

EMB_SQL_CHECK("CLOSE CURSOR");
```

Subdivision of SQL

- DML

- DDL

- DCL