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# CSE2004

# Database Management System

**Slot: L15+L16**

**Week -I**

**Venue: AB1-605B**

**SQL-Introduction**

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# Course Contents:

- What is SQL?
- What Can SQL do?
- Relational databases
- SQL Commands
  - SELECT
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# What is SQL?

- SQL stands for Structured Query Language
- SQL lets you access and manipulate databases
- SQL became a standard of the American National Standards Institute (ANSI) in 1986, and of the International Organization for Standardization (ISO) in 1987

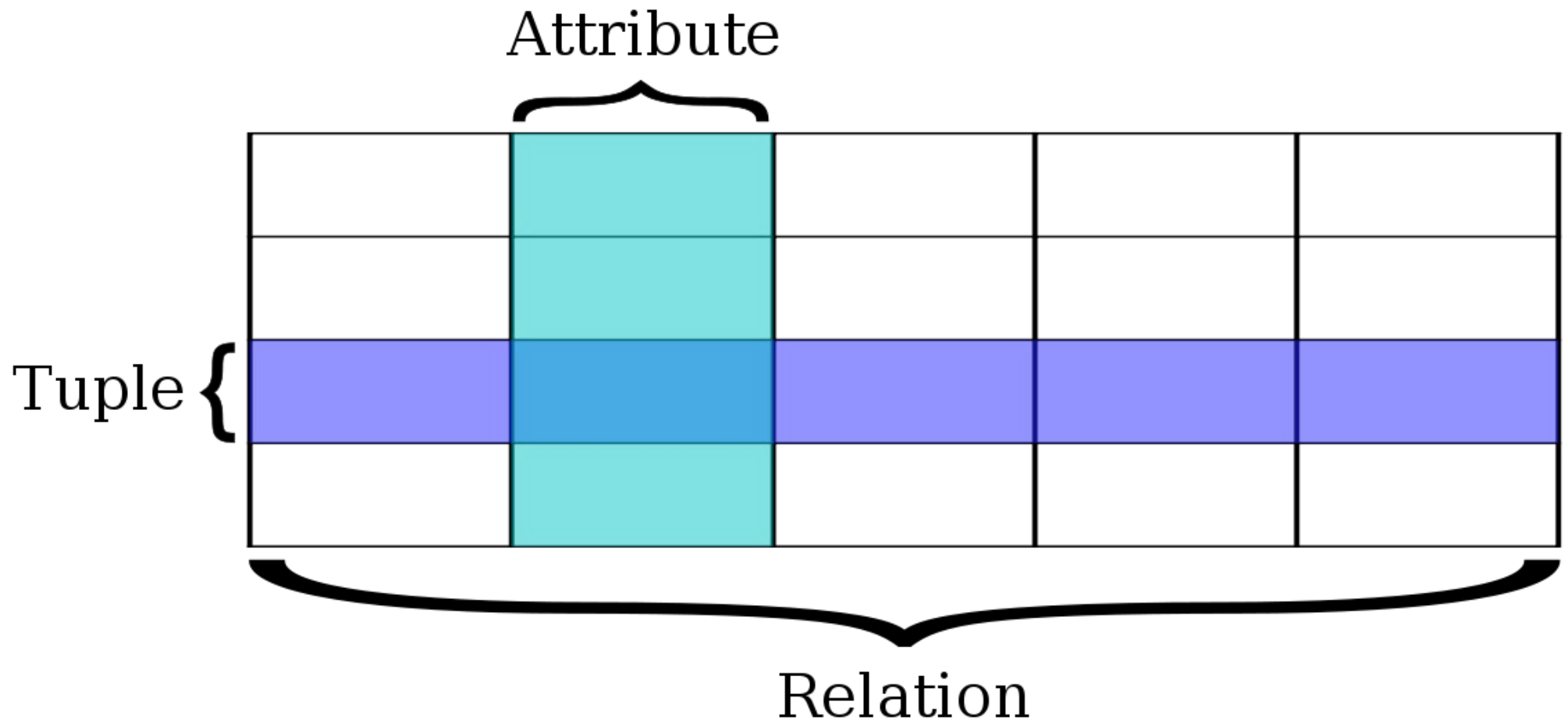
# What Can SQL do?

- SQL can execute queries against a database
- SQL can retrieve data from a database
- SQL can insert records in a database
- SQL can update records in a database
- SQL can delete records from a database
- SQL can create new databases
- SQL can create new tables in a database
- SQL can create stored procedures in a database
- SQL can create views in a database
- SQL can set permissions on tables, procedures, and views

# RDBMS

- RDBMS stands for Relational Database Management System.
- RDBMS is the basis for SQL, and for all modern database systems such as MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.
- The data in RDBMS is stored in database objects called tables.
- A table is a collection of related data entries and it consists of columns and rows.

# RDBMS



# SQL commands

## Some of The Most used SQL Commands

- **SELECT** - extracts data from a database
- **UPDATE** - updates data in a database
- **DELETE** - deletes data from a database
- **INSERT INTO** - inserts new data into a database
- **CREATE DATABASE** - creates a new database
- **ALTER DATABASE** - modifies a database
- **CREATE TABLE** - creates a new table
- **ALTER TABLE** - modifies a table
- **DROP TABLE** - deletes a table
- **CREATE INDEX** - creates an index (search key)
- **DROP INDEX** - deletes an index

# Points to remember

- SQL keywords are NOT case sensitive: select is the same as SELECT
- Semicolon after SQL Statements?
- Some database systems require a semicolon at the end of each SQL statement.
- Semicolon is the standard way to separate each SQL statement in database systems that allow more than one SQL statement to be executed in the same call to the server.



# The SQL SELECT Statement

- The **SELECT** statement is used to select data from a database.
- The data returned is stored in a result table, called the result-set.
- **SELECT Syntax**
  - `SELECT * FROM table_name;`
  - `SELECT column1, column2, ...  
FROM table_name;`

# The SQL SELECT Statement

- **SQL SELECT DISTINCT Statement**

- The SELECT DISTINCT statement is used to return only distinct (different) values.
- Inside a table, a column often contains many duplicate values; and sometimes you only want to list the different (distinct) values.

- **SELECT DISTINCT Syntax**

```
SELECT DISTINCT column1, column2, ...  
FROM table_name;
```

# The SQL SELECT Statement

- **The SQL WHERE Clause**

- The WHERE clause is used to filter records.
- The WHERE clause is used to extract only those records that fulfill a specified condition.

- **WHERE Syntax**

```
SELECT column1, column2, ...
```

```
FROM table_name
```

```
WHERE condition;
```

# The SQL SELECT Statement

- **Text Fields vs. Numeric Fields**
  - SQL requires single quotes around text values (most database systems will also allow double quotes).
  - However, numeric fields should not be enclosed in quotes.

# Operators in The WHERE Clause

= Equal

> Greater than

< Less than

>= Greater than or equal

<= Less than or equal

<> Not equal

**BETWEEN** Between a certain range

**LIKE** Search for a pattern

**IN** To specify multiple possible values for a column

# The SQL AND, OR and NOT Operators

- The WHERE clause can be combined with AND, OR, and NOT operators.
  - The AND and OR operators are used to filter records based on more than one condition:
  - The AND operator displays a record if all the conditions separated by AND are TRUE.
  - The OR operator displays a record if any of the conditions separated by OR is TRUE.
  - The NOT operator displays a record if the condition(s) is NOT TRUE.

# The SQL AND, OR and NOT Operators

- **AND Syntax**

```
SELECT column1, column2, ...  
FROM table_name  
WHERE condition1 AND condition2 AND condition3 ...;
```

- **OR Syntax**

```
SELECT column1, column2, ...  
FROM table_name  
WHERE condition1 OR condition2 OR condition3 ...;
```

- **NOT Syntax**

```
SELECT column1, column2, ...  
FROM table_name  
WHERE NOT condition;
```

# The SQL ORDER BY Keyword

- The ORDER BY keyword is used to sort the result-set in ascending or descending order.
- The ORDER BY keyword sorts the records in ascending order by default. To sort the records in descending order, use the DESC keyword.
- **ORDER BY Syntax**

```
SELECT column1, column2, ...
```

```
FROM table_name
```

```
ORDER BY column1, column2, ... ASC|DESC;
```



# SQL CREATE TABLE Statement

- The **CREATE TABLE** statement is used to create a new table in a database.
- **Syntax**

```
CREATE TABLE table_name (  
column1 datatype,  
    column2 datatype,  
    column3 datatype,  
....);
```



**Thank You!**