Databases

Introduction to databases

What is a database?

What is a database?

An **organized** collection of data that is **saved** and can be **retrieved** from a database management system

Microsoft SQL Server

Microsoft SQL Server Management Studio

Microsoft SQL Database

Why a database?

Why not simple textfile?

MyCustomers.txt

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- 2, Håkon Johansen, Fiskevei 12, Oslo
- 3, Tiril Olsen, Vegagate 5, Bergen

Solidity

Security

Performance

Standard

SQL

SQL

What can you do?

SQL

A standard

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

int decimal varchar(50) datetime

```
Here is an example of a SQL-command which get all rows in the Customer-table:
  SELECT * from Customers
Another example which only get two columns:
  SELECT CustomerName, City
  FROM Customers;
Only get the rows for customers living in Mexico:
  SELECT * FROM Customers
  WHERE Country='Mexico';
```

```
Get customers who lives in another country than Germany and USA:
  SELECT * FROM Customers
 WHERE NOT Country='Germany' AND NOT Country='USA';
First sort the customer by country. Then sort by name:
  SELECT * FROM Customers
 ORDER BY Country, CustomerName;
There are also command for inserting a single row in a table:
  INSERT INTO Customers (CustomerName, ContactName, Address, City,
  PostalCode, Country)
  VALUES ('Cardinal', 'Tom B. Erichsen', 'Skagen 21', 'Stavanger',
  '4006', 'Norway');
```

```
...and update:

UPDATE Customers
SET ContactName = 'Alfred Schmidt', City= 'Frankfurt'
WHERE CustomerID = 1;

...and removing:

DELETE FROM Customers
WHERE CustomerName='Alfreds Futterkiste';
```

```
You can even create a whole new table with SQL:

CREATE TABLE Persons (
PersonID int,
LastName varchar(255),
FirstName varchar(255),
Address varchar(255),
City varchar(255)
);
```

Data **Definition** Language

Data **Manipulation** Language

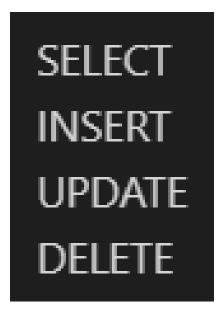
Transaction Control Language

Data **Control** Language

Data Definition Language

```
Create a table
  CREATE TABLE employees (
      id
                    INTEGER
                                   PRIMARY KEY,
      first name
                    VARCHAR(50) not null,
                    VARCHAR(75) not null,
      last_name
      fname
                    VARCHAR(50) not null,
      dateofbirth
                                   not null
                    DATE
Remove a table
  DROP TABLE employees;
Change a table
  ALTER TABLE sink ADD bubbles INTEGER;
Delete all data in a table (faster than DELETE)
  TRUNCATE TABLE Employees;
  RENAME
```

Data Manipulation Language



Transaction Control Language



Data Control Language



Data **Definition** Language

Data **Manipulation** Language

Transaction Control Language

Data **Control** Language

