# SQL Basics

## Data, Databases, and SQL

### Organizing Data with Databases

SQL: Structured Query Language

Two important components:

1. Data: divided into sections called tables
2. Schema: how data is organized

### Types of Data

Several common types of data:

* Text:
  + Store names and descriptions
  + Examples: text, varchar, nvarchar
* Numeric:
  + Store prices, ages, and quantities
  + Examples: iInt, integer
* Date:
  + Store temporal information
  + Examples: datetime, date, timestamp

#### Quiz

* Database: a computerized system for the storage and retrieval of organized information
* SQL: language used to talk to database
* Databases organize info. into structures called tables.
* Row: entry in table

## Getting Data from a Database

### Your First SQL Statement

Syntax: vocabulary and grammatical structure of a programming language.

Keywords: vocabulary words of a programming language; commands issued to computer.

Statement/Query: lines of SQL code (sentence/question).

Get all data:

SELECT \* FROM *<tablename>*

### Retrieving Specific Columns of Information

Format:

SELECT *<col1>, <col2>...<coln>* FROM *<tablename>*

### Categorizing Output with AS

Format:

SELECT

*<col1>* AS *<alias1>,*

*<col2>* AS *<alias2>...*

*<coln>* AS *<aliasn>*

FROM

*<tablename>*

## Finding the Data You Want

### Searching Tables with Where

Format:

SELECT \* FROM *<tablename>* WHERE *<conditions>*

Equal:

SELECT \* FROM *<tablename>* WHERE *<column>* = *<value>*

Not equal:

SELECT \* FROM *<tablename>* WHERE *<column> !*= *<value>*

### Filtering by Comparing Values

Operators:

* =
* !=
* <
* <=
* >
* >=

### Filtering by More than One Condition

Format (AND):

SELECT \* FROM *<tablename>* WHERE *<cond1>* AND *<cond2>*

Format (OR):

SELECT \* FROM *<tablename>* WHERE *<cond1>* OR *<cond2>*

### Searching Within a Set of Values

Format:

SELECT \* FROM *<tablename>*

WHERE *<column>* IN (*<val1>*, *<val2>*...*<valn>*)

### Searching Within a Range of Values

Format:

SELECT \* FROM *<tablename>*

WHERE *<column>* BETWEEN *<min>* AND *<max>*

### Finding Data that Matches a Pattern

Format:

LIKE ‘*<string>*%’

LIKE ‘%*<string>*%’

Unlke exact matches, pattern matches do not need to match case.

### Filtering Out or Finding Missing Information

Find missing values:

IS NULL

Filter out missing values:

IS NOT NULL

### Review

Querying multiple tables:

SELECT \* FROM *<table1>, <table2>*

WHERE *<table1>.<column1>* = *<table2>.<column2>*