

CS122 Using Relational Databases and SQL Updates

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Updates

- ◆ Create, modify, and delete a table
- ◆ Insert, update, and delete records

Create a Table

```
create table table_name (  
    field_name field_type,  
    field_name field_type,  
    ...  
    field_name field_type  
);  
  
create table Products (  
    prod_id      char(6),  
    description  text,  
    price        currency  
);
```

String Types

- ◆ A.k.a. text types or character types
- ◆ Common types
 - char(n)
 - Fix-length string
 - Max length n
 - varchar(n)
 - Variable-length string
 - Max length n
 - text
- ◆ MS Access types
 - text
 - memo (longtext)

Usage of String Types

- ◆ char(n)
 - Fixed-length strings
 - Short strings with variable length
- ◆ varchar(n)
 - Long strings with variable lengths
- ◆ text
 - Articles, essays, ...

char(6)
S U N
C H E N G Y

varchar(6)
S U N
C H E N G Y

Numeric Types

- ◆ Integer types
 - byte
 - 1-byte integer
 - short
 - 2-byte integer
 - int, integer
 - 4-byte integer
 - long
 - 8-byte integer
- ◆ Real number types
 - real, single
 - 4-byte single-precision floating point number
 - number, float, double
 - 8-byte double-precision floating point number

In MS Access, short, int, long are all 4-byte integers.

Special Numeric Types

- ◆ Decimal(precision, scale)
 - precision – total number of significant digits
 - scale – number of decimal digits in the fraction part
 - E.g. 1234.56
- ◆ AutoNumber
 - Automatically incremented
 - Unique
- ◆ Currency

In MS Access, decimal and autonumber can not be used in SQL View.

Other Field Types

- ◆ Date/time types
 - date, time, datetime
- ◆ Boolean types
 - bit, logical, yesno
 - Values are either 0 or -1
- ◆ Binary types
 - binary
 - longbinary, image

Insert Records

```
INSERT INTO table VALUES ( value1, value2, ... );  
INSERT INTO table ( field [, ...] ) VALUES ( value [, ...] );
```

- ◆ Make sure the order of the values matches the order of the fields

Insert Records from Another Table

```
INSERT INTO table select_query;  
INSERT INTO table ( field [, ...] ) select_query;
```

- ◆ Column compatibility

Update and Delete Records

```
UPDATE table SET field=value [, ...] WHERE condition(s);  
  
DELETE FROM table WHERE condition(s);
```

- ◆ Be ware of *where*

Date Format

- ◆ Input format
 - 'mm/dd/yy' e.g. '12/01/04'

- ◆ Display format

```
SELECT date_field, ...  
    ↓  
SELECT FORMAT( date_field, 'format_string' )
```

Modify and Delete a Table

◆ Add a column

- ALTER TABLE *table* ADD *column type*;

◆ Delete a column

- ALTER TABLE *table* DROP *column*;

◆ Change a column type

- ALTER TABLE *table* ALTER COLUMN *column type*;

◆ Delete a table

- DROP TABLE *table*;