

CS3DB3/SE4DB3/SE6M03 TUTORIAL

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Outline

- ◆ Basic Embedded SQL in C/C++
- ◆ Precompile, compile, and bind
- ◆ Example



Basic Embedded SQL in C/C++

- ◆ Define the SQL Communications Area
 - EXEC SQL INCLUDE SQLCA;**
 - ◆ Includes DB2's SQL error reporting facility
 - ◆ Returns a return code in both **SQLCODE** & **SQLSTATE**
 - ◆ **SQLCODE** **!=** 0 means error or warning
- ◆ Connect/Disconnect to a database
 - EXEC SQL CONNECT TO CS3DB3;**
 - EXEC SQL CONNECT RESET;**

Basic Embedded SQL in C/C++

- ◆ Declare the datatype

```
EXEC SQL BEGIN DECLARE SECTION;
```

```
char firstname[11];
```

```
char middlename[11];
```

```
short middlename_ind;
```

```
char lastname[21];
```

```
EXEC SQL END DECLARE SECTION;
```

Basic Embedded SQL in C/C++

◆ SQL data types V.S C/C++ data types

SQL Data Types	C/C++ Data Types
SMALLINT	short
INTEGER	sqlint32
DOUBLE	double
CHAR(n), VARCHAR(n)	char[n+1]
DATE	char[11]

SQL

S E L E N A

C/C++

S E L E N A \0

Basic Embedded SQL in C/C++

- ◆ Use cursor to retrieve rows from the query

```
EXEC SQL DECLARE cur CURSOR FOR
```

```
EXEC SQL OPEN cur;
```

```
EXEC SQL FETCH cur INTO :sid, :sname;
```

```
EXEC SQL CLOSE cur;
```

- ◆ Note:

- ◆ The **declare cursor** statement is used to write a relational query
- ◆ Must use the **open** and **fetch** commands to obtain the result tuples.
- ◆ A single **fetch** request returns only one tuple, so the program must contain a loop to obtain all tuples of the result.
- ◆ Must use the **close** statement to tell the database to delete the temporary relation.

Precompile, Compile, and Bind

- ◆ Step1:

- ◆ Precompile sage.sqc to translate it to sage.c and to produce sage.bnd

- ◆ Step2:

- ◆ Compile sage.c to produce the executable sage

- ◆ Step3:

- ◆ Bind sage using sage.bnd to bind it to the database

Precompile, Compile, and Bind

- ◆ Way One:

- ◆ <http://www.cas.mcmaster.ca/~fchiang/courses/db3/help/db2progs.html>

- ◆ Way Two:

- ◆ Use Makefile

Makefile

db2pre
comp

db2co
mp

db2bin
d

sage.sq
c

```
chmod u+x db2precomp
chmod u+x db2comp
chmod u+x db2bind
make
./sage 44
make clean
```