

Aug 25

Today - talk about how to access a database
from within a C or Java program

Embedded SQL — The C Solⁿ

Basic Idea: extend syntax of C to allow for
directives that we send to the database

New commands all begin with

EXEC SQL.

Ex

EXEC SQL

INSERT INTO Sailors VALUES (name, sid, age),

C variable
↓

To ~~get the~~ compile the Embedded SQL
program one first runs a preprocessor
such as pro*C on it.

~~pro*C~~

this takes the original program adds
#include directives to it for the
database specific headers containing
the prototypes of the database specific
fⁿ calls.

the preprocessor then replaces each
EXEC SQL statement by database
specific fⁿ calls.

Syntax checking is done on the SQL.
One advantage of embedded approach

After running the preprocessor. One compiles and links the program with a usual compiler `cl` or `gcc`.

More on syntax of Embedded SQL

Declaration

We need to be able to declare SQL data types (`REAL`, etc) in C.

```
EXEC SQL BEGIN DECLARE SECTION
```

```
    char name[10]
```

```
    float tmp;
```

```
EXEC SQL END DECLARE SECTION
```

map
to
struct
after
preprocessor

corresponds to
`REAL`

Two special variables `SQLCODE` and `SQLSTATE` are used for error handling.

~~SQLERROR~~ `SQLSTATE` long char[6]

~~NOTE~~
To make an exception handler could write

```
EXEC SQL WHENEVER SQLERROR  
GOTO stmt;
```