Aug 25

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

**Embedded SQL – The C Solution**

Basic idea: extend syntax of C to allow for directives that can interact with the database.

New commands all begin with `EXEC SQL`.

```sql
EXEC SQL
INSERT INTO Sailors VALUES (:name, :id);
```

To **compile** the Embedded SQL program one first runs a preprocessor such as `protc` on it.

```c
#include
```

This takes the original program and adds directives to it for the database-specific headers containing prototypes of the database specific calls.

The preprocessor then replaces each `EXEC SQL` statement by database-specific `C` calls.

Syntax checking is done on the SQL.

(An advantage of embedded approach)
After running the preprocessors, our compiler and links the program with a usual compiler like 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

with preprocess corresponds to

REAL

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

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