Chris Bechter

CIS 2107

12/03/18

Assignment 6

**Why learn and use C?**

The C language still plays a very large part in today’s programming needs, with being able to manage memory more efficiently then high-level programming languages such as Python. C is also quicker at compiling executing then most high-level programming languages, and with embedded systems, speed and managing memory is crucial. Many Linux, Unix, and windows kernels that help run operating systems are also written in C, along with a lot of drivers, and databases. Learning C would benefit most programmers, due to so many systems running something written in C, it pays to know how to program in C.

**The Problem**

Create a database, populate said database with many tables linking to each other, find the permissions of each tuID that they have access too.

**Designing a Solution**

The first thing I wanted to attack was creating the database, I used sqlite3 which is an embedded database that comes with nearly all current operating systems. I then will populate the database with the given information provided by the teacher. Having knowledge of data basing helps me create the necessary primary keys, and the foreign keys that will link all the tables together in order to get the permissions needed. Then I will create the SELECT statement, using multiple JOINS in order to link the tables together with their primary and foreign keys. Then, the C programming will begin, as I will utilize the sqlite3 API. I will use the prepare statement to input my SELECT statement, as if I was in terminal and finding the information in the database. I will then need to create a way to step through the entire database, going first from column to column, then moving down a row, ultimately collecting all the data needed from the select statement. I will then finalize the prepare statement, close it, close the database, and print all the information to a file and onto the screen.

(also see UML diagram for the database)

**Pseudocode**

This is difficult because I heavily commented my code which contains my pseudocode and design, I had to explain the problem and then figure out the way to execute it.

Open the DB -> point to the db with sqlite\_open

Create a prepare statement, same as a command you’d use in sqlite3 using sqlite\_prepare\_v2

Step through the code after finding how many columns the table has

Step through each column until finish

Step to next row, repeat column stepping

Print the specific data type

Finalize the prepare statement (close it)

Close db

Close file

End program.

**Implementing the Solution**

Attachted files (.c .db)

**Testing your solution**

**Demoing your solution**

Explained both in lab