CSC343 Worksheet 7 Solution

June 22, 2020

1. **Notes:**

   - EXEC SQL
     - Allows to use SQL statements within a host-language program
   - The DECLARE Section
     - is used to declare shared variables
     - **Syntax:**
       EXEC SQL BEGIN DECLARE SECTION;
       ... // Variable declarations in any language
       EXEC SQL END DECLARE SECTION;

       Example:

```
1    void getStudio() {
2        EXEC SQL BEGIN DECLARE SECTION;
3            char studioName[50], studioAddr[256]; // <- c
   variables
4            char SQLSTATE[6];
5        EXEC SQL END DECLARE SECTION;
6
7        EXEC SQL INSERT INTO Studio(name, address)
8                 VALUES (:studioName, :studioAddr);
9    }
10
```

   - Cursors
     - Is the most versatile way to connect SQL queries
     - **Syntax:**
       EXEC SQL DECLARE < cursor name > CURSOR FOR < query >

       EXEC SQL OPEN < cursor name >;
       ...

EXEC SQL CLOSE < cursor name >;

Example:

```
    void getStudio() {
        EXEC SQL BEGIN DECLARE SECTION;
            char studioName[50], studioAddr[256]; // <- c
    variables
            char SQLSTATE[6];
        EXEC SQL END DECLARE SECTION;

        EXEC SQL INSERT INTO Studio(name, address)
                    VALUES (:studioName, :studioAddr);
    }

```

Example in Python:

```
    import sqlite3
    connection = sqlite3.connect("company.db")

    cursor = connection.cursor()

    staff_data = [ ("William", "Shakespeare", "m", "1961-10-25")
    ,
                   ("Frank", "Schiller", "m", "1955-08-17"),
                   ("Jane", "Wall", "f", "1989-03-14") ]

    for p in staff_data:
        format_str = """INSERT INTO employee (staff_number,
    fname, lname, gender, birth_date)
        VALUES (NULL, "{first}", "{last}", "{gender}", "{
    birthdate}");"""

        sql_command = format_str.format(first=p[0], last=p[1],
    gender=p[2], birthdate = p[3])
        cursor.execute(sql_command)

```

- Fetch Statement
  - fetch data from the result table one row at a time
  - **Syntax:**
    EXEC SQL FETCH FROM < cursor name > INTO < list of variables >

    Example:

```
    void worthRanges() {
        int i, digits, counts[15];
        EXEC SQL BEGIN DECLARE SECTION;
            int worth;
```

```
5           char SQLSTATE[6];
6       EXEC SQL END DECLARE SECTION;
7       EXEC SQL DECLARE execCursor CURSOR FOR
8           SELECT netWorth FROM MovieExec;
9
10      EXEC SQL OPEN execCursor;
11      for (i=1; i < 15; i++) counts[i] = 0;
12      while(1) {
13          EXEC SQL FETCH FROM execCursor INTO :worth; //
    fetches a row of value from movieExec and stores in worth
14          if (NO_MORE_TUPLES) break;
15
16          ...
17      }
18   }
19
```