CSC343 Worksheet 7 Solution

June 22, 2020

```
1   void askUserForPrice() {
2       EXEC SQL BEGIN DECLARE SECTION;
3           int model;
4           float speed;
5           int ram;
6           int hd;
7           float price;
8           char maker;
9       EXEC SQL END DECLARE SECTION;
10
11      EXEC SQL DECLARE execCursor CURSOR FOR
12          SELECT * FROM Product NATURAL JOIN PC
13
14
15      printf("maker=%c, model=%d, speed=%.2f\n", maker, model, speed);
16
17  }
18
```

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:

```
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
```

    Example in Python:

```
1    import sqlite3
2    connection = sqlite3.connect("company.db")
3
4    cursor = connection.cursor()
5
6    staff_data = [ ("William", "Shakespeare", "m", "1961-10-25")
    ,
7                    ("Frank", "Schiller", "m", "1955-08-17"),
8                    ("Jane", "Wall", "f", "1989-03-14") ]
9
10   for p in staff_data:
11       format_str = """INSERT INTO employee (staff_number,
    fname, lname, gender, birth_date)
```

```
12          VALUES (NULL, "{first}", "{last}", "{gender}", "{
       birthdate}");"""
13
14          sql_command = format_str.format(first=p[0], last=p[1],
       gender=p[2], birthdate = p[3])
15          cursor.execute(sql_command)
16
```

- 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:

```
1      void worthRanges() {
2          int i, digits, counts[15];
3          EXEC SQL BEGIN DECLARE SECTION;
4              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
```