**Q # 10.7**

**Consider the database shown in Figure 1.2, whose schema is shown in Figure 2.1. Write a program segment to read a student’s name and print his or her grade point average, assuming that A = 4, B = 3, C = 2, and D = 1 points. Use embedded SQL with C as the host language.**

**SOL:**

varchar sname[16];

int total = 0;

int count = 0;

double avg;

char grade;

prompt("Enter a student’s name: ", sname);

EXEC SQL DECLARE GRADES CURSOR FOR SELECT Grade FROM Student, Grade\_Report WHERE WHERE Student.Student\_number = Grade\_Report.Student\_number AND Student.Name = : sname;

EXEC SQL OPEN GRADES;

EXEC SQL FETCH FROM GRADES INTO: grade;

while (SQLCODE == 0) {

    if (grade == "A") { total = total + 4; }

    else if (grade == "B") { total = total + 3; }

    else if (grade == "C") { total = total + 2; }

    else if (grade == "D") { total = total + 1; }

    count = count + 1;

EXEC SQL FETCH FROM GRADES INTO: grade;

}

EXEC SQL CLOSE GRADES;

avg = total / count;

printf(“% .2f”, total / count);

**Explanation:**

It is possible for a student to have several grades, so \texttt{CURSOR}CURSOR is used here. Cursor values are entered into grade variables and checked on \texttt{if}if statements. We are also getting the total grade of the student with /texttt{total}total while getting the number of grades with /texttt{count}count. In order to calculate the average, we divide /texttt{total}total by \texttt{count}count. With /texttt{.2f}.2f, you get a precise result of two numbers after a comma.

**Result:**

In order to get all the grades, use \textbf{CURSOR}CURSOR and while \textbf{FETCH}FETCHing each grade \textit{count}count the number of grades and sum them for the \textit{total grade}total grade. For the result, just divide the \textit{total grade}total grade to \textit{count}count.

**Q#10.8**

**Repeat Exercise 10.7, but use SQLJ with Java as the host language.**

**SOL:**

String name;

int count = 0, total = 0;

#sql iterator GRADES(char grade) ;

GRADES g = null;

sname = readEntry("Enter the student’s name: ") ;

#sql g = { SELECT Grade FROM Student, Grade\_Report WHERE WHERE Student.Student\_number = Grade\_Report.Student\_number AND Student.Name = :sname; }

while (g.next())

 { if (g.grade=="A") { total=total+4; }

else if (g.grade=="B") { total=total+3; }

else if (g.grade=="C") { total=total+2; }

else if (g.grade=="D") { total=total+1; }

count=count+1; } ;

g.close() ; System.out.println(total/count);

**Explanation:**

The same logic is used as in 7th exercise. There are some differences due to the programming language syntaxes.

**Result:**

In order to get all the grades, use \textbf{iterator}iterator and while \textbf{iterating}iterating the grades with .next() \textit{count}count the number of grades and sum them for the \textit{total grade}total grade. For the result, just divide the \textit{total grade}total grade to \textit{count}count.