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1  /*
2     Zach Hofmeister      2/4/19
3     Lab 1 - Grade Book   Grade book application to keep track of 3 exam scores  ↗
4                           for three students using 2D arrays.
5  */
6  #include "pch.h"
7  #include <iostream>
8
9  using namespace std;
10
11 void enterScores(); //Asks for each score per student and exam number
12 void printScores(); //Prints out the scores of each student
13 void printAve(); //Prints out the average score for each student
14 void updateScore(); //Asks user if they would like to change any scores, and  ↗
15                       changes a score referenced by student and exam number
16
17 int arr[3][3]; //Stores all scores
18
19 int main() {
20     cout << "====Grade Book Application====" << endl;
21     enterScores();
22     updateScore();
23     printAve();
24
25     return 0;
26 }
27
28 void enterScores() { //Asks for each score per student and exam number
29     for (int i = 0; i < 3; i++) {
30         for (int j = 0; j < 3; j++) { //Nested for loop for each score
31             cout << "Enter Student " << i + 1 << "'s Exam " << j + 1 << "  ↗
32                 score: ";
33             cin >> arr[i][j];
34         }
35     }
36     cout << endl;
37     printScores(); //Prints scores that were just entered
38 }
39
40 void printScores() { //Prints out the scores of each student
41     for (int i = 0; i < 3; i++) {
42         for (int j = 0; j < 3; j++) { //Nested for loop for each score
43             cout << "Student " << i + 1 << "'s Exam " << j + 1 << " score is:  ↗
44                 " << arr[i][j] << endl;
45         }
46     }
47     cout << endl;
48 }
49
50 void printAve() { //Prints the averages of each score
```

```
46 }
47
48 void printAve() { //Prints out the average score for each student
49     for (int i = 0; i < 3; i++) {
50         cout << "The Average Score for Student " << i + 1 << " is " << (arr[i]
           [0] + arr[i][1] + arr[i][2]) / 3.0 << endl;
51     }
52     cout << endl;
53 }
54
55 void updateScore() { //Asks user if they would like to change any scores, and
           changes a score referenced by student and exam number
56     char response;
57     cout << "Would you like to update an exam score? Y/N: ";
58     cin >> response;
59
60     if (response == 'Y') {
61         int student, exam, score; //The student and exam indexes, and the score
           to replace the old one with.
62         cout << "Enter a student's number (1-3): ";
63         cin >> student;
64         cout << "Enter a exam number (1-3): ";
65         cin >> exam;
66         cout << "Enter a score: ";
67         cin >> score;
68         arr[student-1][exam-1] = score; //Updates the array.
69         cout << "Student " << student << "'s Exam " << exam << " score is: "
           << arr[student-1][exam-1] << endl;
70         updateScore(); //Recursive when an exam score is updated.
71     }
72 }
73
74 /*
75 ====Grade Book Application====
76 Enter Student 1's Exam 1 score: 10
77 Enter Student 1's Exam 2 score: 10
78 Enter Student 1's Exam 3 score: 10
79 Enter Student 2's Exam 1 score: 10
80 Enter Student 2's Exam 2 score: 10
81 Enter Student 2's Exam 3 score: 10
82 Enter Student 3's Exam 1 score: 10
83 Enter Student 3's Exam 2 score: 10
84 Enter Student 3's Exam 3 score: 10
85
86 Student 1's Exam 1 score is: 10
87 Student 1's Exam 2 score is: 10
88 Student 1's Exam 3 score is: 10
89
90 Student 2's Exam 1 score is: 10
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```
91 Student 2's Exam 2 score is: 10
92 Student 2's Exam 3 score is: 10
93
94 Student 3's Exam 1 score is: 10
95 Student 3's Exam 2 score is: 10
96 Student 3's Exam 3 score is: 10
97
98 The Average Score for Student 1 is 10
99 The Average Score for Student 2 is 10
100 The Average Score for Student 3 is 10
101
102 Would you like to update an exam score? Y/N: Y
103 Enter a student's number (1-3): 2
104 Enter a exam number (1-3): 2
105 Enter a score: 100
106 Student 2's Exam 2 score is: 100
107 Would you like to update an exam score? Y/N: N
108 The Average Score for Student 1 is 10
109 The Average Score for Student 2 is 40
110 The Average Score for Student 3 is 10
111
112
113 C:\Users\zachh\Documents\GitHub\Lab1GradeBook\Debug\Lab1GradeBook.exe (process 12544) exited with code 0.
114 Press any key to close this window . . .
115 */
```