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/// Comp 200 -- Fall 2023

/// Pointers & Structs Assignment -- Part 1

#include <iostream>

using namespace std;

/\* Enhance the program in The Lab so that each student has ten quiz scores.

\* The input contains the student names and quiz scores but no course grades.

\* The program should compute the course grade.

\* If the sum of the quiz scores is at least 90, the grade is an A.

\* If the sum is at least 80, the grade is a B, and so on.

\* Then print all students with grade A together with their individual quiz scores,

\* followed by all students with grade B, and so on. \*/

// Define a struct Students with the properties firstName, lastName, an array of 10 quiz grades, and courseGrade

struct Student {

string firstName;

string lastName;

int quizGrades[10];

char courseGrade;

};

// Add up the scores from each quiz to determine the course grade

char getCourseGrade(int\* quizGrades) {

char courseGrade;

int courseScore = 0;

for (int i = 0; i < 10; i++) {

courseScore += \*(quizGrades + i);

}

if (courseScore >= 90) {

courseGrade = 'A';

} else if (courseScore >= 80) {

courseGrade = 'B';

} else if (courseScore >= 70) {

courseGrade = 'C';

} else if (courseScore >= 60) {

courseGrade = 'D';

} else {

courseGrade = 'F';

}

return courseGrade;

}

int main() {

// Determine the number of students in the class

int size = -1;

char tempGrade = 'A';

while (size < 1) {

cout << "Enter a number of students: " << endl;

cin >> size;

}

// Dynamically allocate a Student array of students

Student\* students = new Student[size];

// Fill array with names and grades of students

for (int i = 0; i < size; i++) {

cout << "Enter your student's first and last name: " << endl;

cout << i + 1 << ") ";

cin >> students[i].firstName;

cin >> students[i].lastName;

cout << "Enter grades for each quiz: " << endl;

for (int j = 0; j < 10; j++) {

cout << j + 1 << ") ";

cin >> students[i].quizGrades[j];

if (students[i].quizGrades[j] > 10) {

students[i].quizGrades[j] = 10;

} else if (students[i].quizGrades[j] < 0) {

students[i].quizGrades[j] = 0;

}

}

students[i].courseGrade = getCourseGrade(students[i].quizGrades);

}

// Print out buffer between input and output

cout << " \*---------------------------\* " << endl;

for (int i = 0; i < 4; i++) {

cout << " ------------------ " << endl;

}

cout << " \*---------------------------\* " << endl;

// Print out students in order of grades

while (tempGrade <= 'F') {

int numStudentsTemp = 0;

cout << tempGrade << " students: ";

for (int i = 0; i < size; i++) {

if (students[i].courseGrade == tempGrade) {

cout << students[i].firstName << " ";

cout << students[i].lastName;

cout << ", ";

}

}

cout << endl;

if (tempGrade == 'D') {

tempGrade += 2;

} else {

tempGrade++;

}

cout << endl;

}

// Deallocate Students array from memory

delete[] students;

return 0;

}



