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/// Comp 200 -- Fall 2023

/// Pointers and Structs Lab

#include <iostream>

using namespace std;

/\* Define a structure Student with a first name,

\* last name, and course grade (A, B, C, D, or F).

\* Write a program that reads input in which each line

\* has the first and last name and course grade, separated by spaces.

\* Upon reading the input, your program should print all students with grade A,

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

// Define a struct Students with the properties firstName, lastName, and courseGrade

struct Student {

string firstName;

string lastName;

char courseGrade;

};

// Determine if a grade is inputted correctly

bool isValidGrade(char grade) {

bool isValid = false;

if (grade == 'A' || grade == 'B' || grade == 'C' ||

grade == 'D' || grade == 'F') {

isValid = true;

}

return isValid;

}

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

cout << "Enter each student's first name, last name, and letter grade (Capital!): " << endl;

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

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

cin >> students[i].firstName;

cin >> students[i].lastName;

while (!isValidGrade(students[i].courseGrade)) {

cin >> students[i].courseGrade;

if (!isValidGrade(students[i].courseGrade)) {

cout << "Enter a valid capital letter grade: ";

cin >> students[i].courseGrade;

}

}

}

// 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;

}

