

## **Actividad 2.2: Funciones con apuntadores del tipo arreglo**

### **CECS2222 Computer Programming II**

Nombre: Group 6 Sec: \_22

#### **Instrucciones para el estudiante:**

1. Funciones con apuntadores del tipo arreglo como parámetros de entrada.
2. Funciones que retornen un arreglo del tipo apuntador.
3. Salida de programa con los datos originales del problema.
4. Envíe su solución en formato PDF.

#### **Descripción de los problemas:**

1. (Gaddis) Programming Challenges 10. Driver's License Exam, pág. 451, Cap 7.
  - El programa le preguntara al usuario de cuantas preguntas es el examen.
  - Implemente una función para inicializar las respuestas del examen, la función estará definida con dos parámetros de entrada, el nombre del arreglo y la dimensión.
  - Implemente una función que entre las respuestas del estudiante, la función estará definida con dos parámetros de entrada, el nombre del arreglo y la dimensión,
  - Implemente una función que mediante un arreglo definido como booleano, coloque true si el estudiante acertó a la pregunta y false si no. La función debe de contener cuatro parámetros de entrada, el arreglo de las respuestas correctas, el arreglo de las respuestas incorrectas, el arreglo que identifica cuales son índices del arreglo en donde la respuesta es correcta o incorrecta, y la dimensión del arreglo. Retorne por referencia la cantidad de contestaciones correctas e incorrectas.
  - Implemente una función que entre como parámetro el arreglo de las respuestas correctas, el arreglo de las respuestas incorrectas, el arreglo booleano y su dimensión e imprima las preguntas que contesto erróneamente el estudiante y cuál sería la respuesta correcta. Use el arreglo del tipo booleano para efectuar esta tarea.
  - Implemente una función que determine si el estudiante aprobó o no el examen, usando los acumuladores que almacenaron las contestaciones correctas e incorrectas.
  - Todos los parámetros de las funciones tienen que ser tipo apuntado a variable o del tipo arreglo.
  - No defina variables globales en su programa.

Valor Total = 100 pts.

## Main.cpp

```
#include <iostream>
#include <string>

using namespace::std;

void setArraySize(int&);
void setStudentsAnswers(char*&, int);
void setCorrectAnswers(char*&, int);
void displayStudentAnswers(char*, int);
void displayCorrectAnswers(char*, int);
void compareAnswers(char*, char*, bool*&, int);
void wrongAnswers(char*, char*, bool*, int);
void finalGrade(bool*, int);

int main() {
    char* correctAnswers = nullptr;
    char* studentAnswers = nullptr;
    bool* comparedArray = nullptr;
    int aSize;

    setArraySize(aSize);
    setCorrectAnswers(correctAnswers, aSize);
    setStudentsAnswers(studentAnswers, aSize);
    compareAnswers(correctAnswers, studentAnswers, comparedArray, aSize);
    displayCorrectAnswers(correctAnswers, aSize);
    displayStudentAnswers(studentAnswers, aSize);
    wrongAnswers(correctAnswers, studentAnswers, comparedArray, aSize);
    finalGrade(comparedArray, aSize);

    delete[] correctAnswers;
    delete[] studentAnswers;
    delete[] comparedArray;
    correctAnswers = nullptr;
    studentAnswers = nullptr;
    comparedArray = nullptr;

    return 0;
}

// funcion que pregunta al usuario cuantas preguntas tiene el examen
void setArraySize(int& aSize) {
    cout << "Enter the amount of questions: " << endl;
    cin >> aSize;
}

//funcion que inicializa las respuestas del examen
void setCorrectAnswers(char*& correctAnswers, int aSize) {
    correctAnswers = new char[]{ 'A', 'D', 'B', 'B', 'C',
                                  'B', 'A', 'B', 'C', 'D',
                                  'A', 'C', 'D', 'B', 'D',
                                  'C', 'C', 'A', 'D', 'B' };
}

//funcion que entre las respuestas del estudiante
void setStudentsAnswers(char*& studentAnswers, int aSize) {
    studentAnswers = new char[aSize];
    cout << "Chose between A, B, C o D." << endl;
    for (int i = 0; i < aSize; i++) {
```

```

        cout << "Your answer for question " << i + 1 << ": ";
        cin >> *(studentAnswers + i);
        while (*(studentAnswers + i) != 'A' && *(studentAnswers + i) != 'B' &&
*(studentAnswers + i) != 'C' && *(studentAnswers + i) != 'D') {
            cout << "Invalid entry please try again." << endl;
            cin >> *(studentAnswers + i);
        } //end while
    } //end for
}

//funcion que compara las constestaciones
void compareAnswers(char* correctAnswers, char* studentAnswers, bool*&
comparedArray, int aSize) {
    comparedArray = new bool[aSize];
    for (int i = 0; i < aSize; i++) {
        if (*(correctAnswers + i) == *(studentAnswers + i)) {
            comparedArray[i] = true;
        }
        else
            comparedArray[i] = false;
    }
}

//funcion que imprime si las respuestas del estudiante estan correctas
void wrongAnswers(char* correctAnswers, char* studentsAnswers, bool* comparedArray,
int aSize) {
    for (int i = 0; i < aSize; i++) {
        if (*(comparedArray + i) == 0) {
            cout << "The Student answer " << *(studentsAnswers + i) << " is
incorrect for question " << i + 1
                << ". The correct answer is: " << * (correctAnswers + i)
<< endl;
        } //end if
    } //end for
}

//funcion que revisa si el estudiante paso el examen e imprime si paso o no
void finalGrade(bool* comparedArray, int aSize) {
    int total = 0;
    for (int i = 0; i < aSize; i++) {
        if (*(comparedArray + i) == 1) {
            total ++;
        } //end if
    } //end for
    cout << "total: " << total << endl;
    if (double(total / aSize) >= 0.75 || total >= 15) {
        cout << "Congratulations you passed the exam!" << endl;
    } //end if
    else
        cout << "You did not pass the exam, please try again." << endl;
}

//funcion que imprime las respuestas correctas
void displayCorrectAnswers(char* correctAnswers, int aSize) {
    cout << "The correct answers are:" << endl;
    for (int i = 0; i < aSize; i++) {
        cout << *(correctAnswers + i) << " ";
    } //end for
    cout << endl;
}

//funcion que imprime las respuestas del estudiante
void displayStudentAnswers(char* studentAnswers, int aSize) {


```

```

    cout << "The user answers are:" << endl;
    for (int i = 0; i < aSize; i++) {
        cout << *(studentAnswers + i) << " ";
    } //end for
    cout << endl;
}

```

## Salida

 Microsoft Visual Studio Debug Console

```

Enter the amount of questions:
20
Chose between A, B, C o D.
Your answer for question 1: A
Your answer for question 2: D
Your answer for question 3: B
Your answer for question 4: B
Your answer for question 5: C
Your answer for question 6: B
Your answer for question 7: A
Your answer for question 8: B
Your answer for question 9: C
Your answer for question 10: D
Your answer for question 11: A
Your answer for question 12: C
Your answer for question 13: D
Your answer for question 14: B
Your answer for question 15: D
Your answer for question 16: A
Your answer for question 17: C
Your answer for question 18: A
Your answer for question 19: A
Your answer for question 20: f
Invalid entry please try again.
D
The correct answers are:
A D B B C B A B C D A C D B D C C A D B
The user answers are:
A D B B C B A B C D A C D B D A C A A D
The Student answer A is incorrect for question 16. The correct answer is: C
The Student answer A is incorrect for question 19. The correct answer is: D
The Student answer D is incorrect for question 20. The correct answer is: B
total: 17
Congratulations you passed the exam!

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Press any key to close this window . . .

```

```

Enter the amount of questions:
20
Chose between A, B, C o D.
Your answer for question 1: A
Your answer for question 2: D
Your answer for question 3: B
Your answer for question 4: C
Your answer for question 5: A
Your answer for question 6: D
Your answer for question 7: f
Invalid entry please try again.
E
Invalid entry please try again.
D
Your answer for question 8: A
Your answer for question 9: C
Your answer for question 10: D
Your answer for question 11: B
Your answer for question 12: A
Your answer for question 13: C
Your answer for question 14: D
Your answer for question 15: A
Your answer for question 16: B
Your answer for question 17: A
Your answer for question 18: D
Your answer for question 19: C
Your answer for question 20: B
The correct answers are:
A D B B C B A B C D A C D B D C C A D B
The user answers are:
A D B C A D D A C D B A C D A B A D C B
The Student answer C is incorrect for question 4. The correct answer is: B
The Student answer A is incorrect for question 5. The correct answer is: C
The Student answer D is incorrect for question 6. The correct answer is: B
The Student answer D is incorrect for question 7. The correct answer is: A
The Student answer A is incorrect for question 8. The correct answer is: B
The Student answer B is incorrect for question 11. The correct answer is: A
The Student answer A is incorrect for question 12. The correct answer is: C
The Student answer C is incorrect for question 13. The correct answer is: D
The Student answer D is incorrect for question 14. The correct answer is: B
The Student answer A is incorrect for question 15. The correct answer is: D
The Student answer B is incorrect for question 16. The correct answer is: C
The Student answer A is incorrect for question 17. The correct answer is: C
The Student answer D is incorrect for question 18. The correct answer is: A
The Student answer C is incorrect for question 19. The correct answer is: D
total: 6
You did not pass the exam, please try again.

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Press any key to close this window . . .

```