



COSC1436 – FA LAB6

TITLE:

Array one Dimension – Driver License Test

TIME TO COMPLETE

2 Weeks for class 16 weeks – 1 week for class 8 weeks

LAB 6 - PART 1 REQUIREMENT

Use the word document to write the answers of the following questions and store it with the name as FA2021_LAB6PART1_YourLastName.docx

Question1: What is the output of the following program?

```
#include <iostream>
using namespace std;
int main()
{
    int alpha[7];
    alpha[0] = 5;
    for (int i = 1; i < 7; i++)
    {
        alpha[i] = 4 * i + 10;
        alpha[i - 1] = alpha[i] - 8;
    }
    cout << "List elements: ";
    for (int i = 0; i < 7; i++)
        cout << alpha[i] << " ";
    cout << endl;
    return 0;
}
```

Question2: Suppose that you have the following program with a user-defined function name sum. In the program the function sum is called 4 times at locations marked as A, B, C, D Which one is valid call? And what is the output of each call?

```
#include <iostream>

using namespace std;

void sum(int& x, int y, int &z)
{
    x = x + 1;
    z = x + y;
    y = z;
}

int main()
{
    int list1[5], list2[5];
    int a = 3, b = 5, c = 2;

    for (int i = 0; i < 5; i++)
    {
        list1[i] = i + 2;
        list2[i] = i + 1;
    }
    //A
    sum(a, b, c);
```

```

    cout << "a = " << a << " - b = " << b << " - c = " << c << endl;

    //B
    a = list1[4];
    b = list2[3];
    sum(a, b, c);
    cout << "a = " << a << " - b = " << b << " - c = " << c << endl;

    //C
    sum(list1, list2, c);
    cout << "list1 = " << list1 << " - list2 = " << list2 << " - c = " << c << endl;

    //D
    a = list1[2];
    b = list2[1];
    sum(a, b, c);
    cout << "a = " << a << " - b = " << b << " - c = " << c << endl;
    return 0;
}

```

Question3:

The following program declares 3 arrays of char named as aString1, aString2, aString3
 There are 6 following cases (A, B, C, D, E, F) to access them.
 Which cases are valid access? If there are any invalid cases, how to correct them?

```

#include <iostream>

using namespace std;

int main()
{
    char aString1[] = "HELLO";
    char aString2[] = { 'H', 'E', 'L', 'L', 'O', '\0' };
    char aString3[6];
    char aString4[6];

    //A.
    cout << "aString1: " << aString1 << endl;

    //B.
    strcpy_s(aString3, aString2); cout << "aString3: " << aString3 << endl;

    //C.
    cout << "Enter a string: ";
    cin.getline(aString4, 80); //Users type "This is the test"
    cout << "aString4: " << aString4 << endl;

    //D.
    aString2[1] = 'e'; cout << "aString2: " << aString2 << endl;

    //E.
    //aString4 = aString2; cout << "aString4: " << aString4 << endl;

    return 0;
}

```

HOW TO DO PART 2

Remember to do the lab with the following:

*If you need help about the C++ syntax to write the code, read the instruction in the folder "Skills Required"

*From now and on yourLastName will be changed to your last name

*Your program should change Martinez to your last name

*Change JAMES SMITH to your full name

*write the file name as the first comment line at the top of program

*After running your program, take the picture of the output window as below from your program with **your name** on and paste the picture at the bottom of the document having pseudo-code to turn in

Step1:

Read the requirement; **write in English the pseudo-code** in a word document by listing the step by step what you suppose to do in main() and then save it with the name as **Lab6_pseudoCode_yourLastName** (store pseudo-code and output pictures of both part 1 and part 2)

Step2:

Start Virtual Studio C++, create the project → write the project name

For Part 2: FA2021_LAB6PART2_yourLastName

Add .cpp file

For Part 2: FA2021_ComputerTestForDriverLicense_yourLastName.cpp

After adding the cpp file, you have an empty window coming up, type the following template of a C++ program in:

```
//File name should be written here as comment line
#include <iostream>
using namespace std;
int main()
{
    //add the code here below this line
    .....
    system("pause"); //This will pause the output to read
    return 0;
}
```

Step3:

Then follow the step by step in the pseudo-code, type the C++ code in after the line “//add the code here below this line”

Step4:

Compile and run the program

Step5:

Debug if there are any errors until compile successfully

LAB 6 - PART2 REQUIREMENT

Provide a C++ application to allow Driver candidate to do the Driver License Test online.

The program must have at least 3 user-defined functions with reference parameters and use the char array to hold the answers of the driver candidate.

Also, after finishing the test, the program should display the message to ask users if users want to continue using the application. The program should **loop back for another candidate to use if receiving 'Y'**; otherwise terminating.

First, the application asks the candidate to enter his/her information about the SS number (string), last name (string), first name (string), address (string).

The test includes 25 questions. The application will pause on each question from 1 to 25 to allow the candidate to type in A, B, C, or D to answer each question.

The application should check to ensure if the candidate provides valid answer (A,B,C,D); otherwise display message “Invalid key” and allow the candidate to re-enter.

Evaluating the result of the test by comparing one by one answer from the array of answers to each element of the key set defined as a char array:

```
char key[] = { 'A', 'C', 'A', 'A', 'A', 'A', 'A', 'C', 'B', 'A', 'B', 'A', 'D', 'A', 'B', 'A', 'A', 'A', 'A', 'C', 'C', 'B', 'A', 'D', 'A' };
```

The driver candidate will be passed if the number of correct answers is greater or equal to 20. The result of the test should be displayed in the following format:

```

FA2021_DriverLicenseTest_Smith.cpp
DRIVER TEST RESULT - JAMES SMITH
-----
Driver's name:                Lane, Mary
SS Number:                   112233440
Address:                      123 Plano Rd Dallas TX 75243
Driver's License:             12345678
Test date:                   10/15/2021
Result:                       ASSED
Missed Questions:             5, 12, 15

```

HOW TO TURN IN

You should turn in the following files:

Part 1 :

FA2021_LAB6PART1_yourLastName.docx

Part 2:

Pseudo-code and output picture

FA2021_ComputerTestForDriverLicense_yourLastName.cpp

FA2021_LAB6PART2_yourLastName.exe

IF YOU GET ANY PROBLEM TO SUBMIT FILE .class, YOU CAN SUBMIT ALL PROJECT INTO ONE FILE .zip or .rar TO SEND

HOW TO GRADE THE LAB

| Topic | Score |
|--|-------|
| Turn in on time | 3 |
| PART1 | |
| Question1 correct output | 2 |
| Question2 correct | 2 |
| Question3: answers are correct | 2.5 |
| PART2: | |
| Submit all files requested | 1 |
| Pseudo-code and output pictures | 2.5 |
| Loop to allow users to continue using the program until they decide to terminate | 1 |

| Topic | Score |
|--|-------|
| At least 3 user-defined functions and some with reference parameters | 3 |
| Read information of candidate | 1 |
| Declare array and read answers | 1 |
| Evaluate the test correct | 3 |
| Keep the failed questions correct | 1 |
| Output in required format | 3 |
| Compiled successfully – qualified to the requirement | 3 |
| Write file name at top as comment and write the comment | 1 |

| ITEM GRADED | SCORE |
|--|-----------|
| Turn in on time | 3 |
| Part1: | |
| Question1 | 1 |
| Question2 | 1 |
| Question 3 | 2 |
| Question 4 | 2 |
| Part2: | |
| Name of the files and submit all requested files | 1 |
| Pseudo-code | 2 |
| Create the menu and handle the loop to allow user to continue until exit | 1 |
| Switch or IF statement to manage the selected tasks | 2 |
| 4 User-defined Function to convert distance | 4 |
| Calculate correct result | 4 |
| Display the result as required format with clear screen before display | 2 |
| Compile success with all requirement | 3 |
| Comment | 2 |
| Total | 30 points |