

C++ Lab Exam - Second Semester 2024-25

Please complete all questions. Write your code solutions in the provided spaces.

Student Name: _____

Student Number: _____

Question 1: Age-based Discount Program

Write a C++ program that asks the user to enter their age. If the age is greater than 18, display "Sorry, you have to pay the full amount". If the age is 18 or below, display "Congrats, you have 20% discount". Use if-else statements to determine the appropriate message to display.

Question 2: Convert While Loop to For Loop

Convert the following while loop to a for loop:

```
1 #include <iostream>
2 using namespace std;
3 int main() {
4     int i = 0;
5     while (i < 10) {
6         cout << i << " ";
7         i++;
8     }
9
10    cout << endl;
11
12    return 0;
13 }
```

Question 3: Logical AND Function

Write a C++ function called `logicalAnd` that takes two boolean parameters and returns the result of the logical AND operation between them.

Function signature:

```
1 bool logicalAnd(bool a, bool b);
```

Requirements:

- The function should accept two boolean values as input
- It should return true only if both input values are true
- Otherwise, it should return false

Example usage:

```
1 logicalAnd(true, true);    // returns true
2 logicalAnd(true, false);   // returns false
3 logicalAnd(false, true);   // returns false
4 logicalAnd(false, false);  // returns false
```

Question 4: C++ Array Modification Exercise

You are given an integer array with 4 values. Your task is to:

1. Access the first element of the array and change it to 0
2. Access the last element of the array and change it to 0
3. Print all elements of the array after making these changes

Starter Code:

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     // Given array with 4 values
6     int arr[4] = {12, 34, 56, 78};
7
8     // TODO: Change the first element to 0
9
10    // TODO: Change the last element to 0
11
12    // Print the modified array
13    cout << "Modified array: ";
14    for (int i = 0; i < 4; i++) {
15        cout << arr[i] << " ";
16    }
17    cout << endl;
18
19    return 0;
20 }
```

Expected Output:

```
1 Modified array: 0 34 56 0
```

Submission Guidelines

To complete this lab, you need to:

1. visit the following link:
https://docs.google.com/forms/d/e/1FAIpQLSfyU9l_GolU_v94v3ecmN5DiScol4ap246VLAfPbH2bLJRFfw/viewform?usp=dialog