Contents

C++ Structs 1
Tutorial 1: Person struct 1
Explanation 3
Assignment 1: Students 3
Assignment Submission 4

Time required: 90 Minutes

C++ Structs

A struct is a user-defined data type that groups together variables under a single name. It's similar to a class, but with default public access. This tutorial will guide you through the basics of using structs in C++.

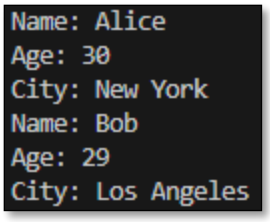
A struct is defined using the `struct` keyword followed by the struct's name. Inside the struct, you can declare variables, which are called members.

Tutorial 1: Person struct

Here's an example of a C++ program using structs named **struct_people.cpp**

```cpp
#include <iostream>

// Define a struct named Person
struct Person
{
    std::string name;
    int age;
    std::string city;
};

CodiumAI: Options | Test this function
int main()
{
    // Create an instance 'person1' of the struct 'Person'
    Person person1;

    // Assign values to the members of 'person1'
    person1.name = "Alice";
    person1.age = 30;
    person1.city = "New York";

    // Create struct and assign values
    Person person2{"Bob", 29, "Los Angeles"};

    // Access and print the values assigned to the members of 'person1'
    std::cout << "Name: " << person1.name << std::endl;
    std::cout << "Age: " << person1.age << std::endl;
    std::cout << "City: " << person1.city << std::endl;

    // Access and print the values assigned to the members of 'person2'
    std::cout << "Name: " << person2.name << std::endl;
    std::cout << "Age: " << person2.age << std::endl;
    std::cout << "City: " << person2.city << std::endl;

    return 0;
}
```

Example run:



Explanation

1. Define a struct named "Person" with three members: "name", "age", and "city".
2. In the "main()" function, create an instance of the "Person" struct named "person1".
3. Assign values to its members using the dot operator.
4. Create an instance of the "Person" struct named "person2". Add values at the time of creation.
5. Access and display the values of both structs.

Assignment 1: Students

Develop a C++ program to manage student information using structs. Allow the user to input data for multiple students and display their details.

1. Define a struct named Student with the following members:
    a. name (string) for student's name.
    b. age (int) for student's age.
    c. grade (char) for student's grade.
2. Creat an array of Student structs called students.
    a. Student students[MAX_STUDENTS];
    b. MAX_STUDENTS = 3;
3. Input Student Information:
    a. Prompt the user to input information for multiple students (e.g., name, age, grade).
    b. Use a loop to allow the user to input data for multiple students.

c. Use the following line to get the students name. The rest can use the standard cin();
   std::getline(std::cin >> std::ws, students[i].name);

4. Store Student Information:

   a. Store each student's information in an array of Student structs.

5. Display Student Details:

   a. Iterate through the array and display the details of each student.

Example run:

```
Enter information for 3 students:
Student 1:
Name: Bill
Age: 19
Grade: B
Student 2:
Name: Fred Flinstone
Age: 45
Grade: C
Student 3:
Name: Wilma
Age: 46
Grade: A

Student Details:
Student 1:
Name: Bill
Age: 19
Grade: B

Student 2:
Name: Fred Flinstone
Age: 45
Grade: C

Student 3:
Name: Wilma
Age: 46
Grade: A
```

Assignment Submission

1. Attach the program files.

2. Attach screenshots showing the successful operation of the program.
3. Submit in Blackboard.