

## Module 12: Working with External Data in C++

The screenshot shows the Online C++ 17 Compiler IDE. The code defines a `Passenger` class with attributes `name`, `age`, `sex`, `pclass`, and `embarked`. It includes a `printInfo()` method. In the `main()` function, a small hardcoded array of 3 `Passenger` objects is used to simulate data from a CSV file. The output displays the information for each passenger.

```
1 #include <iostream>
2 #include <string>
3 using namespace std;
4
5 class Passenger {
6 public:
7     string name;
8     int age;
9     string sex;
10    int pclass;
11    string embarked;
12
13    void printInfo() {
14        cout << "Name: " << name
15            << ", Age: " << age
16            << ", Sex: " << sex
17            << ", Class: " << pclass
18            << ", Embarked: " << embarked << endl;
19    }
20
21 };
22
23 int main() {
24     // Small hardcoded sample instead of full CSV
25     Passenger passengers[3];
26
27     passengers[0] = {"John Smith", 22, "male", 3, "S"};
28     passengers[1] = {"Jane Doe", 28, "female", 1, "C"};
29     passengers[2] = {"Alice Brown", 35, "female", 2, "Q"};
30
31     cout << "Displaying passenger info:\n";
32     for (int i = 0; i < 3; i++) {
33         passengers[i].printInfo();
34     }
35
36     return 0;
37 }
```

Output:

```
Displaying passenger info:
Name: John Smith, Age: 22, Sex: male, Class: 3, Embarked: S
Name: Jane Doe, Age: 28, Sex: female, Class: 1, Embarked: C
Name: Alice Brown, Age: 35, Sex: female, Class: 2, Embarked: Q
```

The screenshot shows the Online C++ 17 Compiler IDE. The code defines a `Passenger` class with attributes `name`, `age`, `sex`, `pclass`, and `embarked`. It includes a `printInfo()` method. In the `main()` function, a `vector` of `Passenger` objects is used to store data, simulating reading from a CSV file. The output displays the information for each passenger in a formatted table.

```
1 #include <iostream>
2 #include <string>
3 #include <vector>
4 using namespace std;
5
6 // Passenger class stores info about each passenger
7 class Passenger {
8 public:
9     string name;
10    int age;
11    string sex;
12    int pclass;
13    string embarked;
14
15    // Constructor to initialize passenger data
16    Passenger(string n, int a, string s, int pc, string e) {
17        name = n;
18        age = a;
19        sex = s;
20        pclass = pc;
21        embarked = e;
22    }
23
24    // Function to display passenger info in readable format
25    void printInfo() {
26        cout.width(15); cout << left << name;
27        cout.width(5); cout << age;
28        cout.width(8); cout << sex;
29        cout.width(7); cout << pclass;
30        cout.width(10); cout << embarked << endl;
31    }
32 };
33
34 int main() {
35     // Create a vector to store passengers (simulating reading from CSV)
36     vector<Passenger> passengers;
37
38 }
```

Output:

Name	Age	Sex	Class	Embarked
John Doe	22	male	3	S
Jane Smith	28	female	1	C
Alice Brown	35	female	2	Q
Bob White	19	male	3	S
Charlie Black	40	male	1	C
Diana Green	31	female	2	Q
Ethan Blue	50	male	1	S
Fiona Gray	18	female	3	S
George Red	27	male	2	C
Hannah Gold	33	female	1	C

The screenshot shows the Online C++ 17 Compiler IDE. The code defines a `Passenger` class with attributes `name`, `age`, `sex`, `pclass`, and `embarked`. It includes a `printInfo()` method. In the `main()` function, a `vector` of `Passenger` objects is used to store data, simulating reading from a CSV file. The output displays the information for each passenger in a formatted table.

```
29     cout.width(8); cout << sex;
30     cout.width(7); cout << pclass;
31     cout.width(10); cout << embarked << endl;
32 }
33
34 int main() {
35     // Create a vector to store passengers (simulating reading from CSV)
36     vector<Passenger> passengers;
37
38     // Adding 10 sample entries manually (replace this with CSV reading if needed)
39     passengers.push_back(Passenger("John Doe", 22, "male", 3, "S"));
40     passengers.push_back(Passenger("Jane Smith", 28, "female", 1, "C"));
41     passengers.push_back(Passenger("Alice Brown", 35, "female", 2, "Q"));
42     passengers.push_back(Passenger("Bob White", 19, "male", 3, "S"));
43     passengers.push_back(Passenger("Charlie Black", 40, "male", 1, "C"));
44     passengers.push_back(Passenger("Diana Green", 31, "female", 2, "Q"));
45     passengers.push_back(Passenger("Ethan Blue", 50, "male", 1, "S"));
46     passengers.push_back(Passenger("Fiona Gray", 18, "female", 3, "S"));
47     passengers.push_back(Passenger("George Red", 27, "male", 2, "C"));
48     passengers.push_back(Passenger("Hannah Gold", 33, "female", 1, "C"));
49
50     // Print header
51     cout.width(15); cout << left << "Name";
52     cout.width(5); cout << "Age";
53     cout.width(8); cout << "Sex";
54     cout.width(7); cout << "Class";
55     cout.width(10); cout << "Embarked" << endl;
56     cout << "-----" << endl;
57
58     // Loop through passengers and display info
59     for (int i = 0; i < passengers.size(); i++) {
60         passengers[i].printInfo();
61     }
62
63     return 0;
64 }
65 }
```

Output:

Name	Age	Sex	Class	Embarked
John Doe	22	male	3	S
Jane Smith	28	female	1	C
Alice Brown	35	female	2	Q
Bob White	19	male	3	S
Charlie Black	40	male	1	C
Diana Green	31	female	2	Q
Ethan Blue	50	male	1	S
Fiona Gray	18	female	3	S
George Red	27	male	2	C
Hannah Gold	33	female	1	C