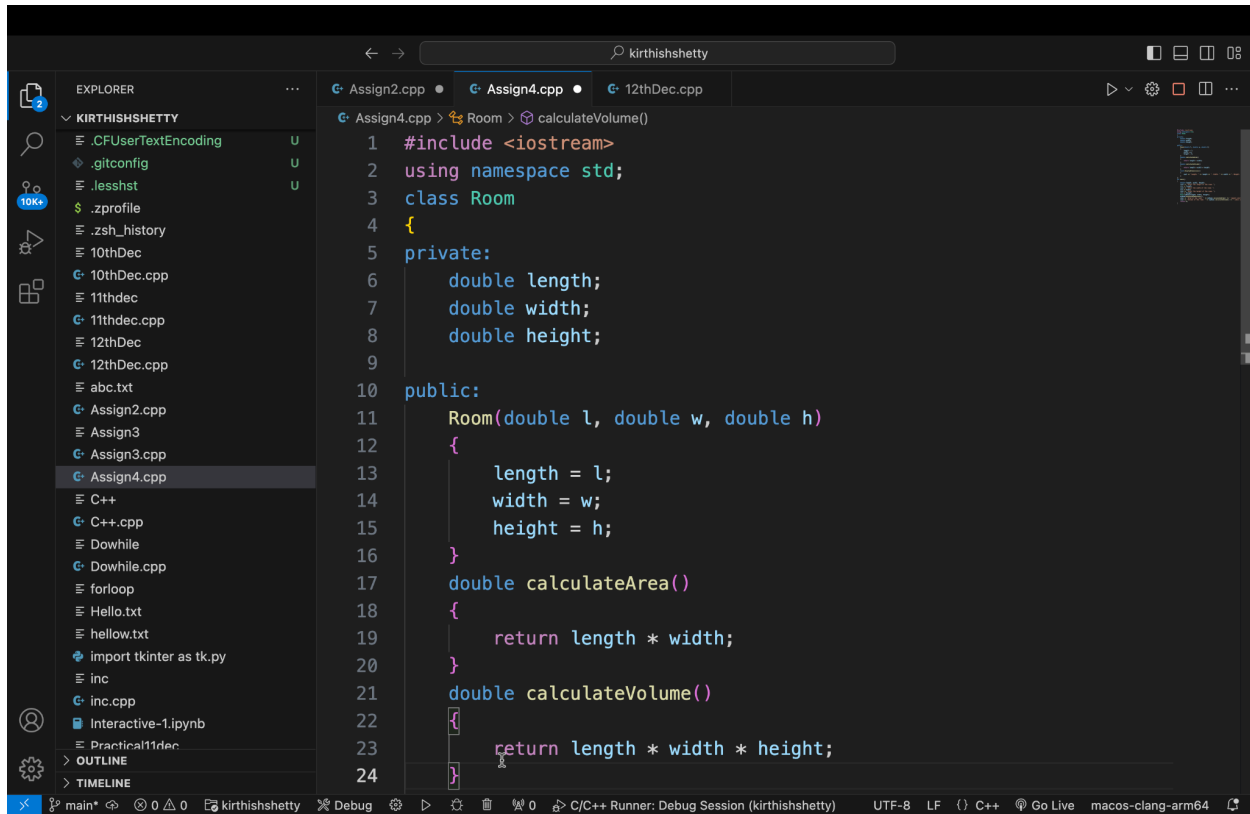


# Assignment 4

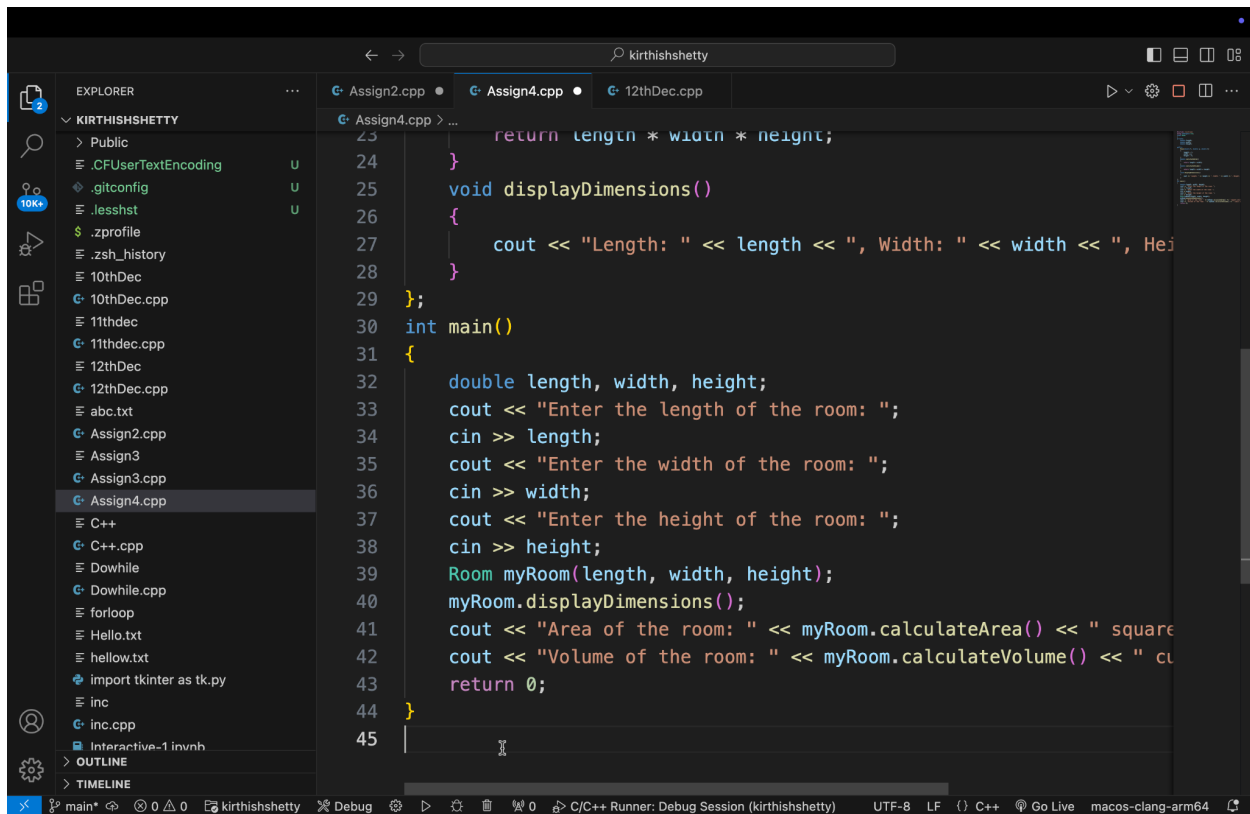
1.WAP in C++ using class and object to calculate the area and volume of the room



The screenshot shows a C++ IDE with the following code in `Assign4.cpp`:

```
1 #include <iostream>
2 using namespace std;
3 class Room
4 {
5 private:
6     double length;
7     double width;
8     double height;
9
10 public:
11     Room(double l, double w, double h)
12     {
13         length = l;
14         width = w;
15         height = h;
16     }
17     double calculateArea()
18     {
19         return length * width;
20     }
21     double calculateVolume()
22     {
23         return length * width * height;
24     }
```

The IDE interface includes an Explorer panel on the left showing the project structure, a central editor window with the code, and a status bar at the bottom indicating the current file and compiler settings.



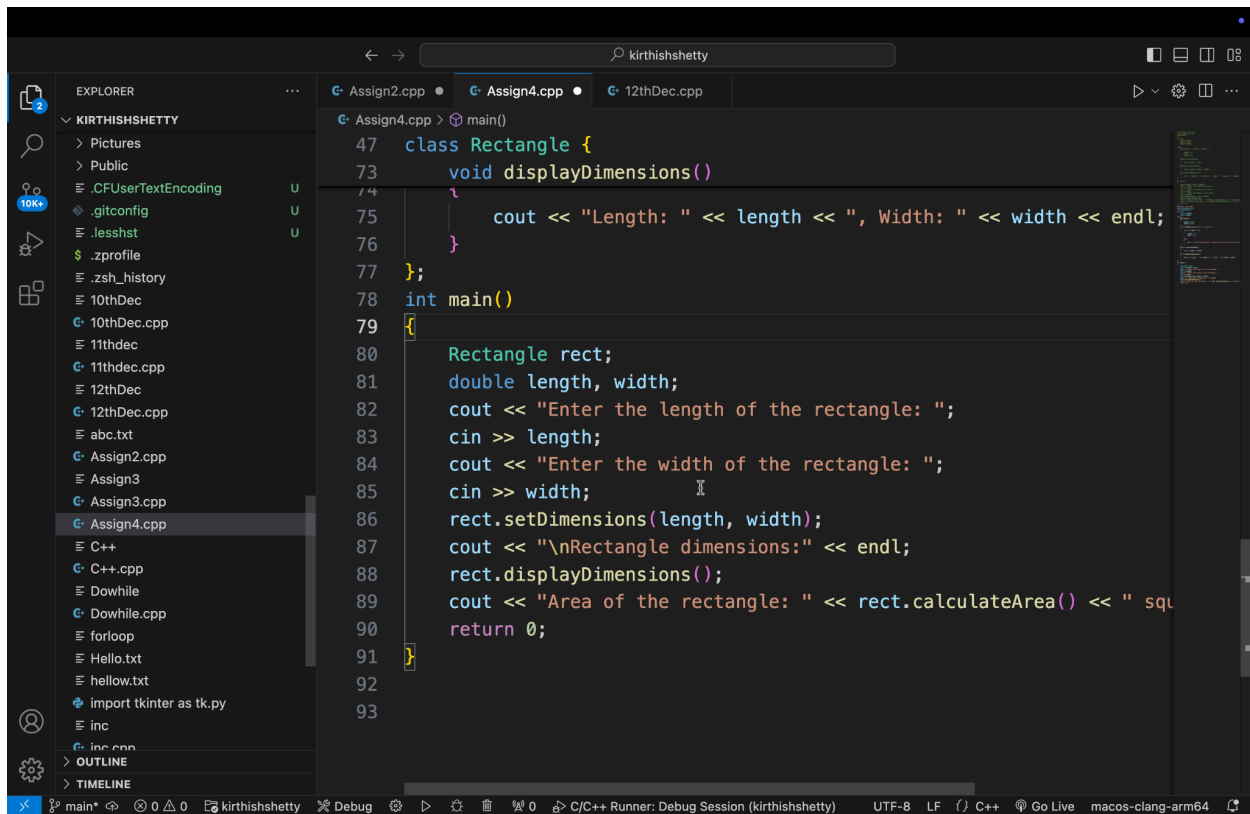
The screenshot shows a C++ IDE with a project named 'KIRTHISHSHETTY'. The file explorer on the left lists various files, including 'Assign4.cpp' which is currently selected. The main editor displays the code for 'Assign4.cpp', which includes a 'Room' class and a 'main' function. The 'Room' class has attributes 'length', 'width', and 'height', and methods 'displayDimensions()', 'calculateArea()', and 'calculateVolume()'. The 'main' function prompts the user to enter the dimensions of a room and then displays the calculated area and volume.

```
23     return length * width * height;
24 }
25 void displayDimensions()
26 {
27     cout << "Length: " << length << ", Width: " << width << ", Height: " << height << endl;
28 }
29 };
30 int main()
31 {
32     double length, width, height;
33     cout << "Enter the length of the room: ";
34     cin >> length;
35     cout << "Enter the width of the room: ";
36     cin >> width;
37     cout << "Enter the height of the room: ";
38     cin >> height;
39     Room myRoom(length, width, height);
40     myRoom.displayDimensions();
41     cout << "Area of the room: " << myRoom.calculateArea() << " square units\n";
42     cout << "Volume of the room: " << myRoom.calculateVolume() << " cubic units\n";
43     return 0;
44 }
45
```

2. Create a Rectangle class with attributes for length and width. Include methods to set dimensions, calculate the area, and display the dimensions.

```
45 #include <iostream>
46 using namespace std;
47 class Rectangle {
48 private:
49     double length;
50     double width;
51 public:
52     Rectangle()
53     {
54         length = 0.0;
55         width = 0.0;
56     }
57     void setDimensions(double l, double w)
58     {
59         if (l > 0 && w > 0)
60         {
61             length = l;
62             width = w;
63         }
64         else
65         {
66             cout << "Invalid dimensions! Length and width must be posi
67         }
68     }
```

```
68     }
69     double calculateArea()
70     {
71         return length * width;
72     }
73     void displayDimensions()
74     {
75         cout << "Length: " << length << ", Width: " << width << endl;
76     }
77 };
78 int main()
79 {
80     Rectangle rect;
81     double length, width;
82     cout << "Enter the length of the rectangle: ";
83     cin >> length;
84     cout << "Enter the width of the rectangle: ";
85     cin >> width;
86     rect.setDimensions(length, width);
87     cout << "\nRectangle dimensions:" << endl;
88     rect.displayDimensions();
89     cout << "Area of the rectangle: " << rect.calculateArea() << " sq
```



The screenshot shows a C++ IDE with a file explorer on the left, a code editor in the center, and a status bar at the bottom. The file explorer shows a project named 'KIRTHISHSHETTY' with various files and folders. The code editor displays the following C++ code:

```
47 class Rectangle {
73     void displayDimensions()
74     {
75         cout << "Length: " << length << ", Width: " << width << endl;
76     }
77 };
78 int main()
79 {
80     Rectangle rect;
81     double length, width;
82     cout << "Enter the length of the rectangle: ";
83     cin >> length;
84     cout << "Enter the width of the rectangle: ";
85     cin >> width;
86     rect.setDimensions(length, width);
87     cout << "\nRectangle dimensions:" << endl;
88     rect.displayDimensions();
89     cout << "Area of the rectangle: " << rect.calculateArea() << " sq
90     return 0;
91 }
92
93
```

The status bar at the bottom indicates the current file is 'main.cpp', the encoding is 'UTF-8', the line ending is 'LF', the language is 'C++', and the compiler is 'macos-clang-arm64'.

3. Create a class called Student, and create 2 member function setData and printData, take 3 data members name, roll\_no and marks.

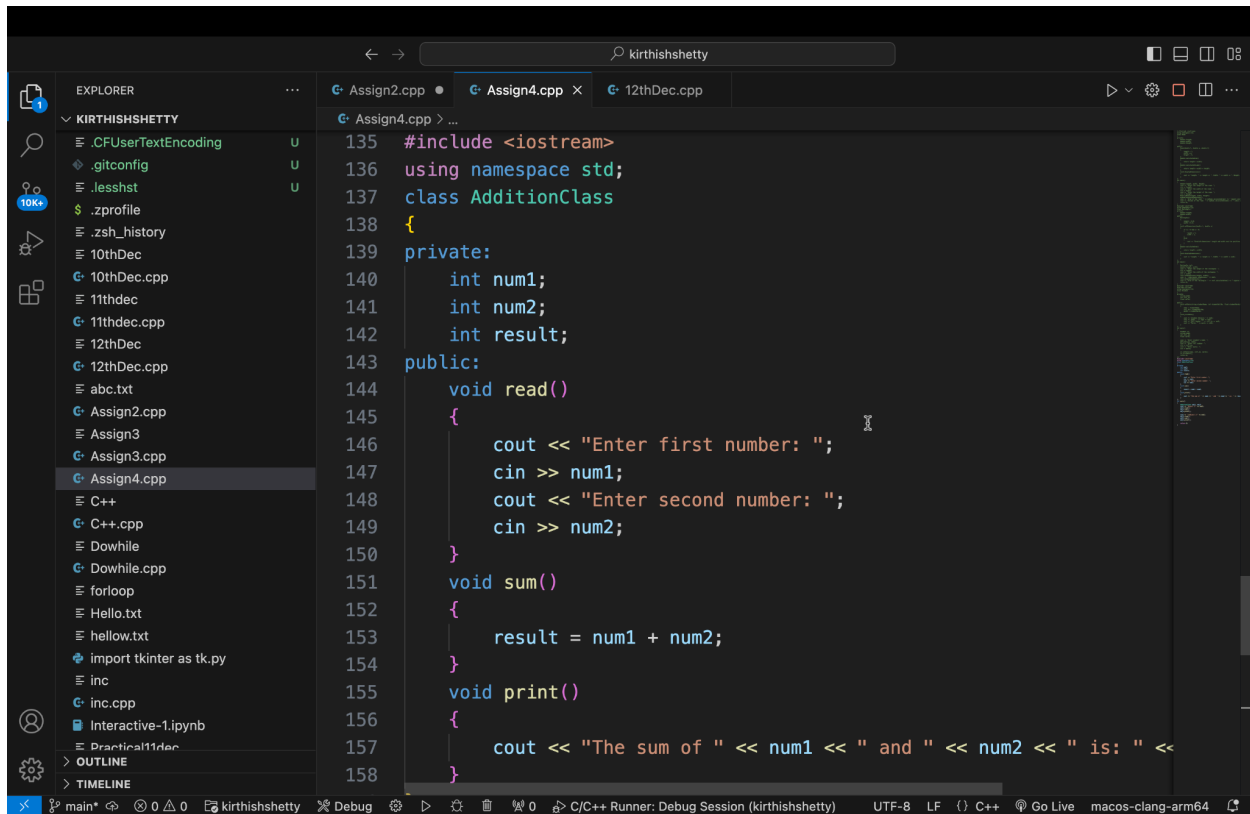
This screenshot shows the Visual Studio Code editor with the file `Assign4.cpp` open. The code defines a `Student` class with private attributes `name`, `roll_no`, and `marks`. It includes public methods `setData` and `printData`. The `main` function is partially visible at the bottom of the editor.

```
1  /* #include <iostream>
92 #include <iostream>
93 #include <string>
94 using namespace std;
95 class Student
96 {
97 private:
98     string name;
99     int roll_no;
100    float marks;
101
102 public:
103    void setData(string studentName, int studentRollNo, float studentMarks)
104    {
105        name = studentName;
106        roll_no = studentRollNo;
107        marks = studentMarks;
108    }
109    void printData()
110    {
111        cout << "Student Details:" << endl;
112        cout << "Name: " << name << endl;
113        cout << "Roll Number: " << roll_no << endl;
114        cout << "Marks: " << marks << endl;
```

This screenshot shows the continuation of the `Assign4.cpp` file. The `Student` class is closed, and the `main` function is fully implemented. It creates a `Student` object `s1`, prompts the user for name, roll number, and marks, and then calls `setData` and `printData` on the object.

```
95 class Student
109 void printData()
114     cout << "Marks: " << marks << endl;
115 }
116 };
117 int main()
118 {
119     Student s1;
120     string name;
121     int roll_no;
122     float marks;
123
124     cout << "Enter student's name: ";
125     getline(cin, name);
126     cout << "Enter roll number: ";
127     cin >> roll_no;
128     cout << "Enter marks: ";
129     cin >> marks;
130
131     s1.setData(name, roll_no, marks);
132     s1.printData();
133     return 0;
134 }
```

4. Create a class called AdditionClass, define data members num1, num2 and result, define member functions void read(), void sum(), void print() respectively. Create object obj1 and obj2 in main method and show the execution.



The screenshot shows a C++ IDE with a file explorer on the left and a code editor in the center. The file explorer lists various files, including 'Assign4.cpp' which is currently selected. The code editor displays the implementation of the 'AdditionClass' in 'Assign4.cpp'. The code includes the necessary headers, defines the class with private data members and public member functions, and shows the beginning of the 'main' function.

```
135 #include <iostream>
136 using namespace std;
137 class AdditionClass
138 {
139 private:
140     int num1;
141     int num2;
142     int result;
143 public:
144     void read()
145     {
146         cout << "Enter first number: ";
147         cin >> num1;
148         cout << "Enter second number: ";
149         cin >> num2;
150     }
151     void sum()
152     {
153         result = num1 + num2;
154     }
155     void print()
156     {
157         cout << "The sum of " << num1 << " and " << num2 << " is: " <<
158     }
```

