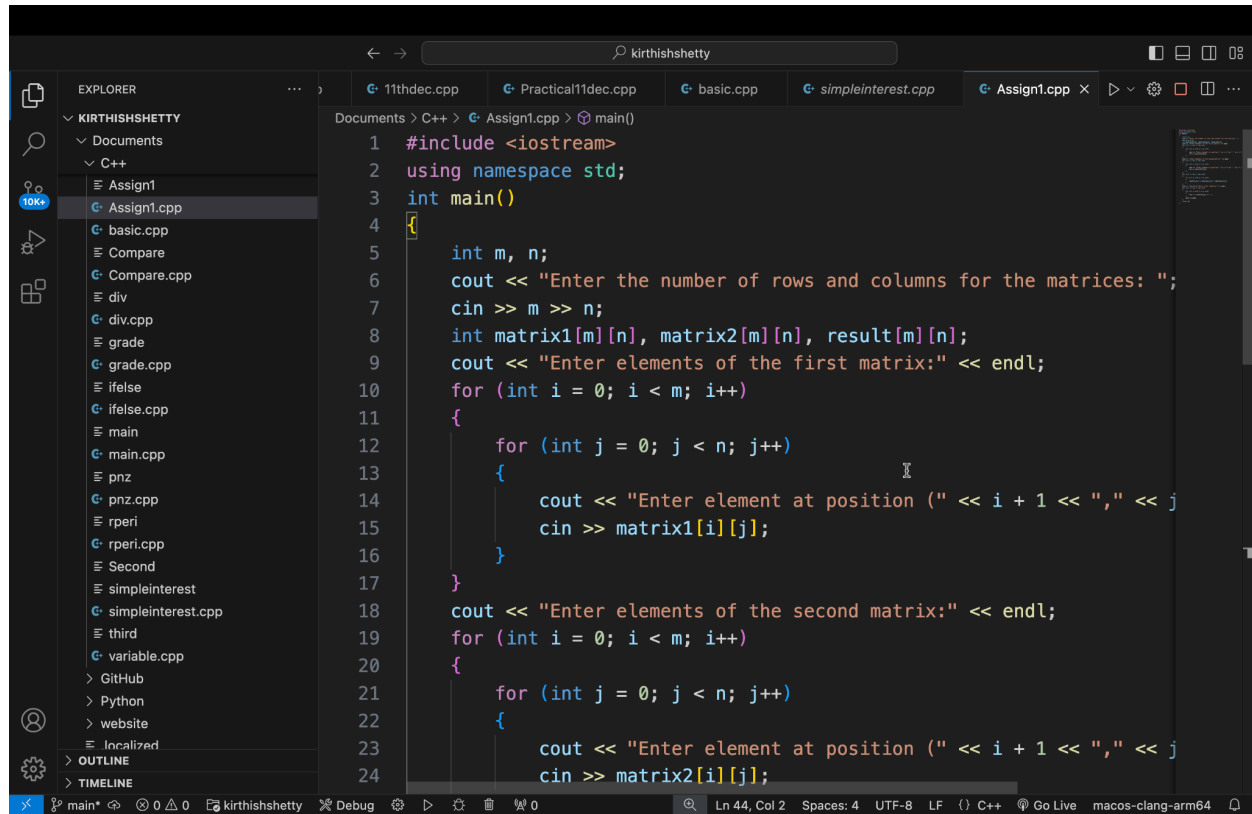


# Assignment 1

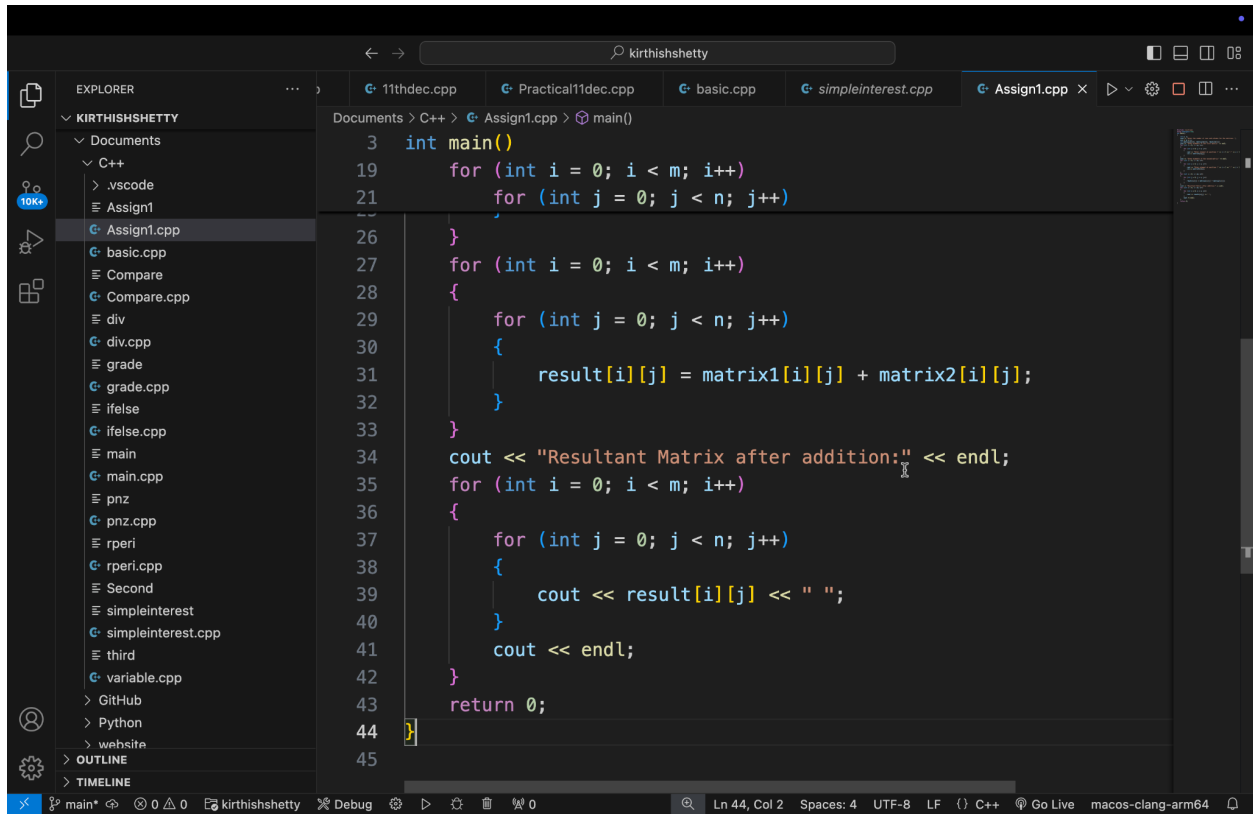
## 1. Create a program for matrix operations(addition)



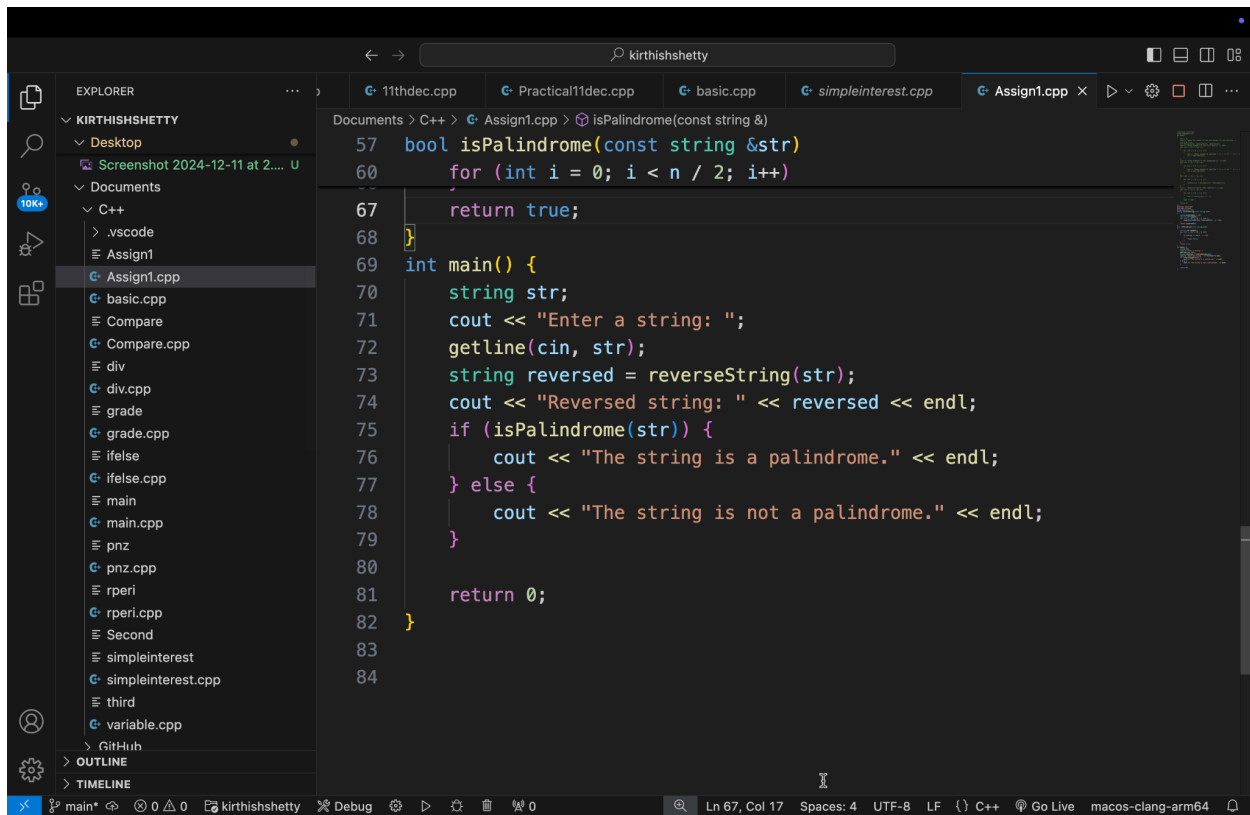
The screenshot shows a C++ IDE with a file explorer on the left and a code editor in the center. The file explorer shows a project named 'KIRTHISHSHETTY' with a subdirectory 'Documents' containing a 'C++' folder. Inside 'C++', there is a file 'Assign1.cpp' which is selected. The code editor displays the following C++ code:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int m, n;
6     cout << "Enter the number of rows and columns for the matrices: ";
7     cin >> m >> n;
8     int matrix1[m][n], matrix2[m][n], result[m][n];
9     cout << "Enter elements of the first matrix:" << endl;
10    for (int i = 0; i < m; i++)
11    {
12        for (int j = 0; j < n; j++)
13        {
14            cout << "Enter element at position (" << i + 1 << ", " << j + 1 << ": ";
15            cin >> matrix1[i][j];
16        }
17    }
18    cout << "Enter elements of the second matrix:" << endl;
19    for (int i = 0; i < m; i++)
20    {
21        for (int j = 0; j < n; j++)
22        {
23            cout << "Enter element at position (" << i + 1 << ", " << j + 1 << ": ";
24            cin >> matrix2[i][j];
```

The status bar at the bottom indicates the current line is 44, column 2, with 4 spaces, UTF-8 encoding, LF line endings, C++ language, and macOS-clang-arm64 compiler.



## 2. Implement a program for string manipulation(reverse , palindrome check)



The screenshot shows a Visual Studio Code editor with a C++ project named 'KIRTHISHSHETTY'. The file explorer on the left lists various source files, including 'Assign1.cpp' which is currently open. The code in 'Assign1.cpp' defines a function 'isPalindrome' and a 'main' function. The 'isPalindrome' function takes a string by reference and returns a boolean. The 'main' function prompts the user to enter a string, reverses it using 'reverseString', and then checks if the original string is a palindrome using the 'isPalindrome' function. The status bar at the bottom indicates the current cursor position is at line 67, column 17.

```
57 bool isPalindrome(const string &str)
58 {
59     for (int i = 0; i < n / 2; i++)
60     {
61         if (str[i] != str[n - i - 1])
62             return false;
63     }
64     return true;
65 }
66
67 int main() {
68     string str;
69     cout << "Enter a string: ";
70     getline(cin, str);
71     string reversed = reverseString(str);
72     cout << "Reversed string: " << reversed << endl;
73     if (isPalindrome(str)) {
74         cout << "The string is a palindrome." << endl;
75     } else {
76         cout << "The string is not a palindrome." << endl;
77     }
78     return 0;
79 }
```

The screenshot shows the Visual Studio Code editor interface. The Explorer panel on the left displays a file tree for a user named 'KIRTHISHSHETTY'. The file 'Assign1.cpp' is selected and open in the main editor. The code in the editor is a C++ program that defines a function `isPalindrome` and a `main` function. The `isPalindrome` function takes a constant string reference and returns a boolean. The `main` function prompts the user to enter a string, reverses it, and then checks if it is a palindrome using the `isPalindrome` function. The status bar at the bottom indicates the current line is 67, column 17, and the file is encoded in UTF-8.

```
57 bool isPalindrome(const string &str)
60     for (int i = 0; i < n / 2; i++)
67         return true;
68 }
69 int main() {
70     string str;
71     cout << "Enter a string: ";
72     getline(cin, str);
73     string reversed = reverseString(str);
74     cout << "Reversed string: " << reversed << endl;
75     if (isPalindrome(str)) {
76         cout << "The string is a palindrome." << endl;
77     } else {
78         cout << "The string is not a palindrome." << endl;
79     }
80
81     return 0;
82 }
83
84
```

3. Develop a program to swap two numbers using pointers

The screenshot shows the Visual Studio Code editor interface. The Explorer sidebar on the left displays a file tree for a user named 'KIRTHISHSHETTY'. The file 'Assign1.cpp' is selected and open in the main editor. The code in the editor is a C++ program that swaps two numbers using reference variables. The code is as follows:

```
1  /*#include <iostream>
83 #include <iostream>
84 using namespace std;
85 void swapNumbers(int* a, int* b)
86 {
87     int temp = *a;
88     *a = *b;
89     *b = temp;
90 }
91 int main()
92 {
93     int num1, num2;
94     cout << "Enter the first number: ";
95     cin >> num1;
96     cout << "Enter the second number: ";
97     cin >> num2;
98     cout << "Before swapping:" << endl;
99     cout << "Number 1: " << num1 << ", Number 2: " << num2 << endl;
100    swapNumbers(&num1, &num2);
101    cout << "After swapping:" << endl;
102    cout << "Number 1: " << num1 << ", Number 2: " << num2 << endl;
103    return 0;
104 }
105
```

The status bar at the bottom indicates the current file is 'main\*', the editor is in 'Debug' mode, and the compiler is 'macos-clang-arm64'. The cursor is positioned at line 104, column 2.

## 4.Swap number using reference variables

The screenshot shows the Visual Studio Code interface with a C++ file named `Assign1.cpp` open. The Explorer sidebar on the left shows a project structure under the name `KIRTHISHSHETTY`, with a `Documents` folder containing several C++ files. The main editor window displays the following code:

```
1  /*#include <iostream>
104 */
105 #include <iostream>
106 using namespace std;
107 void swapNumbers(int& a, int& b) {
108     int temp = a;
109     a = b;
110     b = temp;
111 }
112 int main() {
113     int num1, num2;
114     cout << "Enter the first number: ";
115     cin >> num1;
116     cout << "Enter the second number: ";
117     cin >> num2;
118     cout << "Before swapping:" << endl;
119     cout << "Number 1: " << num1 << ", Number 2: " << num2 << endl;
120     swapNumbers(num1, num2);
121     cout << "After swapping:" << endl;
122     cout << "Number 1: " << num1 << ", Number 2: " << num2 << endl;
123     return 0;
124 }
125
126
```

The status bar at the bottom indicates the current file is `main*`, the user is `kirthishshetty`, and the active toolchain is `macos-clang-arm64`.

5. Create a dynamic array for storing name of student

The screenshot shows a Visual Studio Code editor window with the following components:

- Explorer Panel:** Displays a file tree for the user 'KIRTHISHSHETTY'. The 'Documents' folder is expanded, showing a 'C++' subfolder. Inside 'C++', the file 'Assign1.cpp' is selected and highlighted.
- Editor Panel:** Shows the code for 'Assign1.cpp'. The code is as follows:

```
1  /*#include <iostream>
124 */
125 #include <iostream>
126 #include <string>
127 using namespace std;
128 int main() {
129     int n;
130     cout << "Enter the number of students: ";
131     cin >> n;
132     string* studentNames = new string[n];
133     cout << "Enter the names of " << n << " students:" << endl;
134     cin.ignore();
135     for (int i = 0; i < n; i++) {
136         cout << "Enter name of student " << i + 1 << ": ";
137         getline(cin, studentNames[i]);
138     }
139     cout << "\nList of student names:" << endl;
140     for (int i = 0; i < n; i++) {
141         cout << "Student " << i + 1 << ": " << studentNames[i] << endl;
142     }
143     delete[] studentNames;
144     return 0;
145 }
```
- Terminal Panel:** At the bottom, it shows the output of the program. The first line is 'Enter the number of students: ', followed by a blank line. The next line is 'Enter the names of 1 students: ', followed by a blank line. The final output is 'List of student names: ', followed by a blank line.