**VARUN BHARGAVA – 241010282**

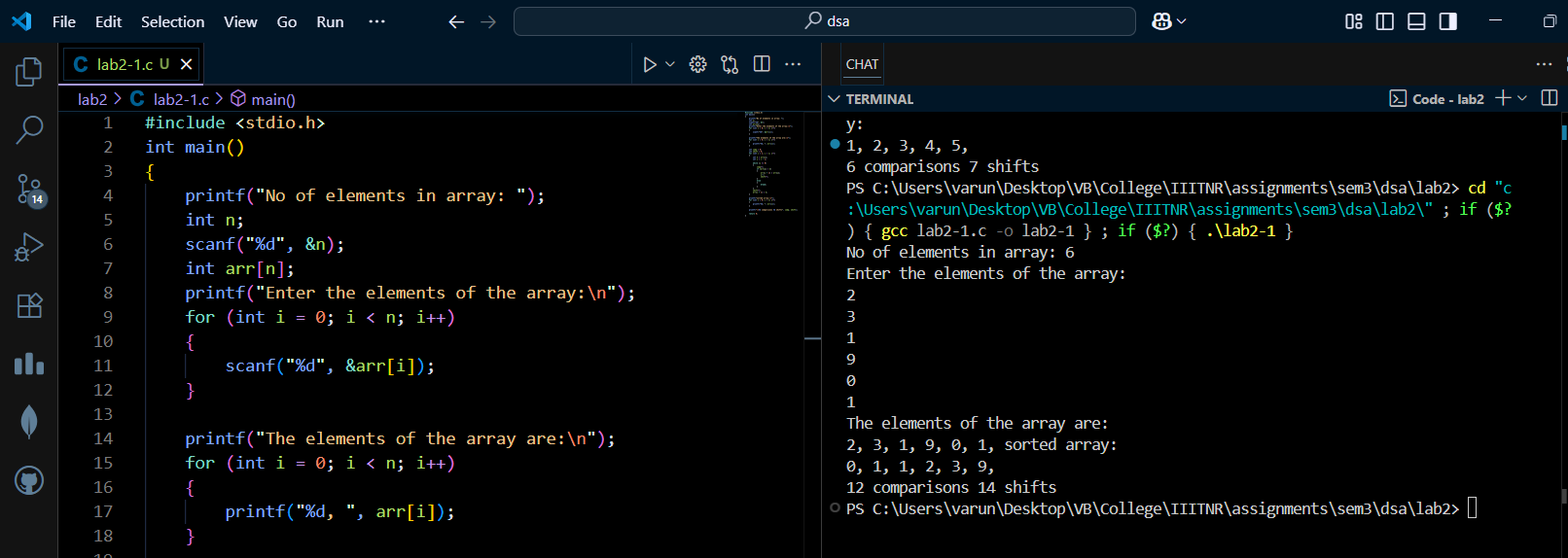
**DATA STRUCTURES TASK-2**

**Task 1: Insertion Sort:**

( https://github.com/varunnnb/dsa-sem3-iiitnr/blob/main/lab2/lab2-1.c )

Write a program to perform the following operations using Insertion Sort:

• Take user input to create an array of integers.

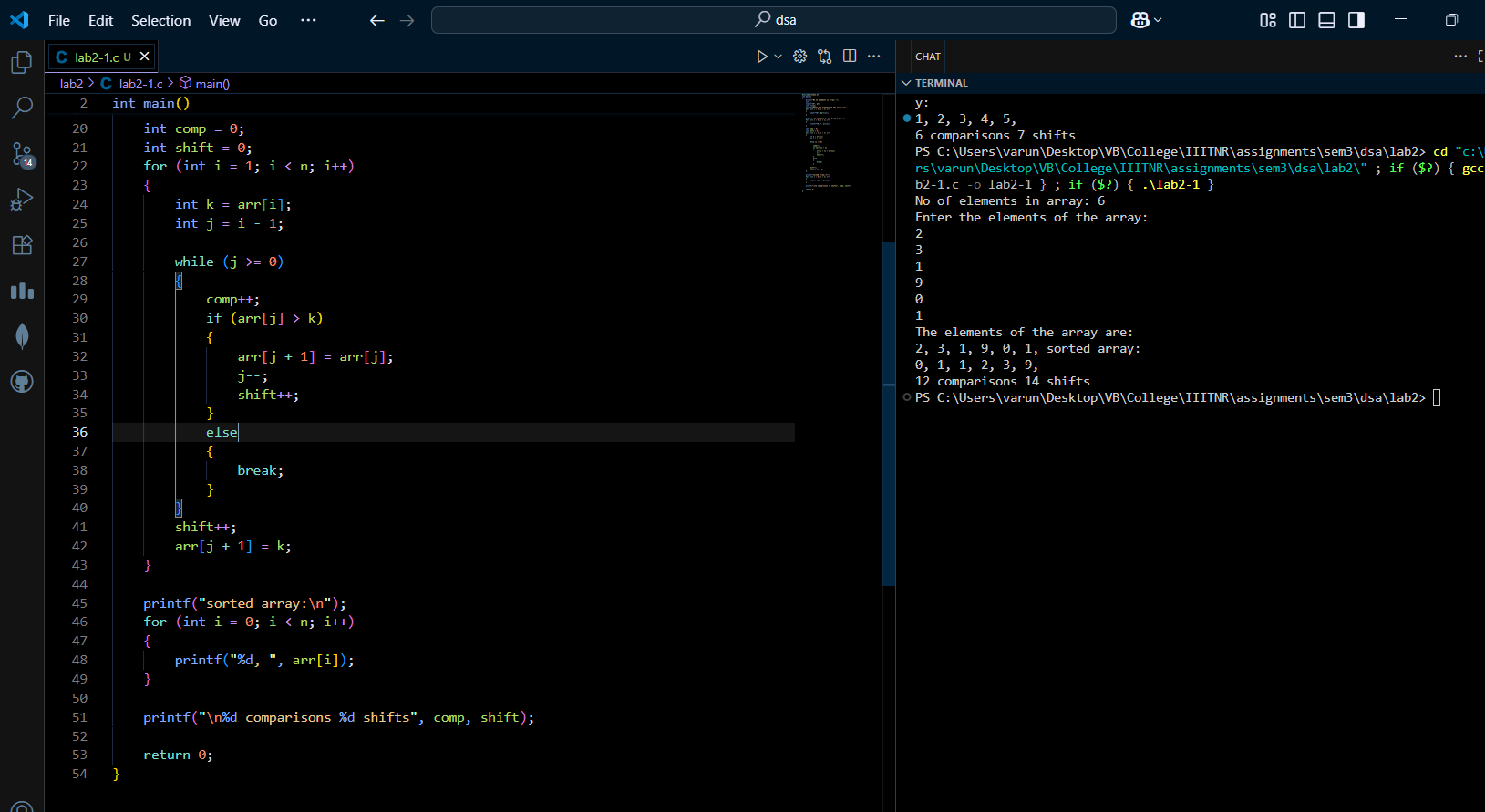


• Sort the array using Insertion Sort in ascending order.

• Display the sorted array.

• Track and display the number of comparisons and shifts performed during the sorting

process.

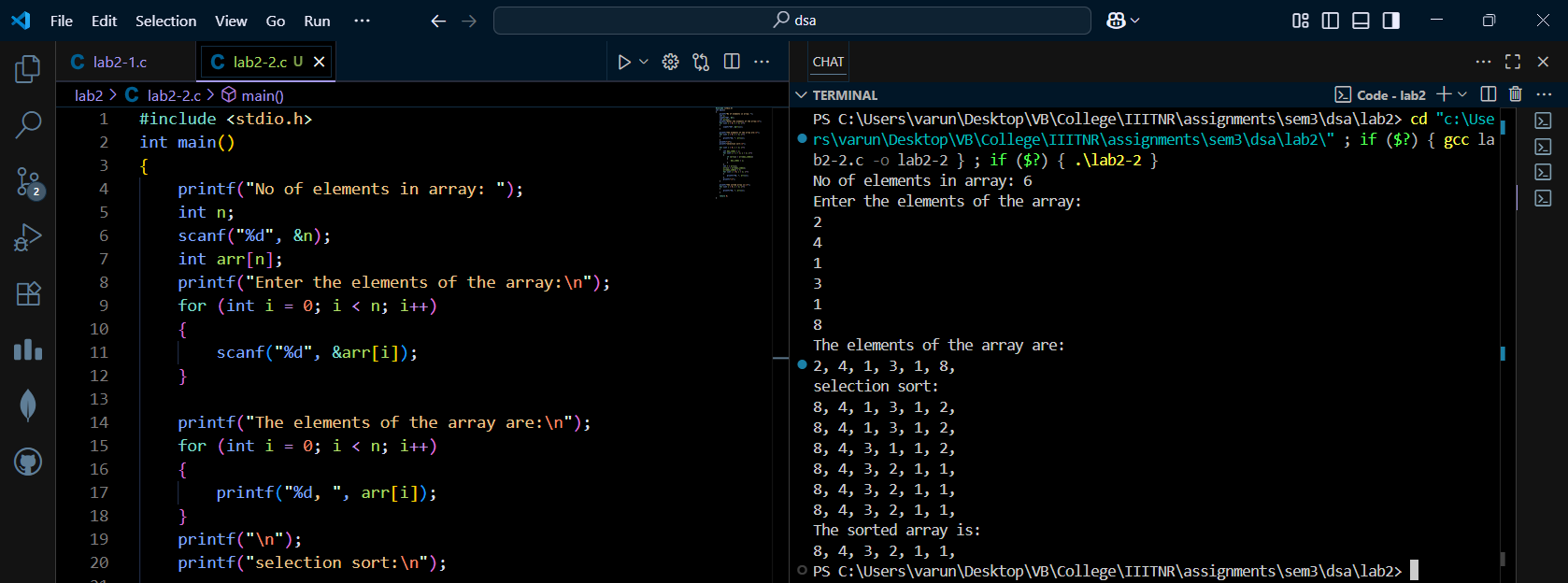


**Task 2: Selection Sort:**

( https://github.com/varunnnb/dsa-sem3-iiitnr/blob/main/lab2/lab2-2.c )

Write a program to perform the following operations using Selection Sort:

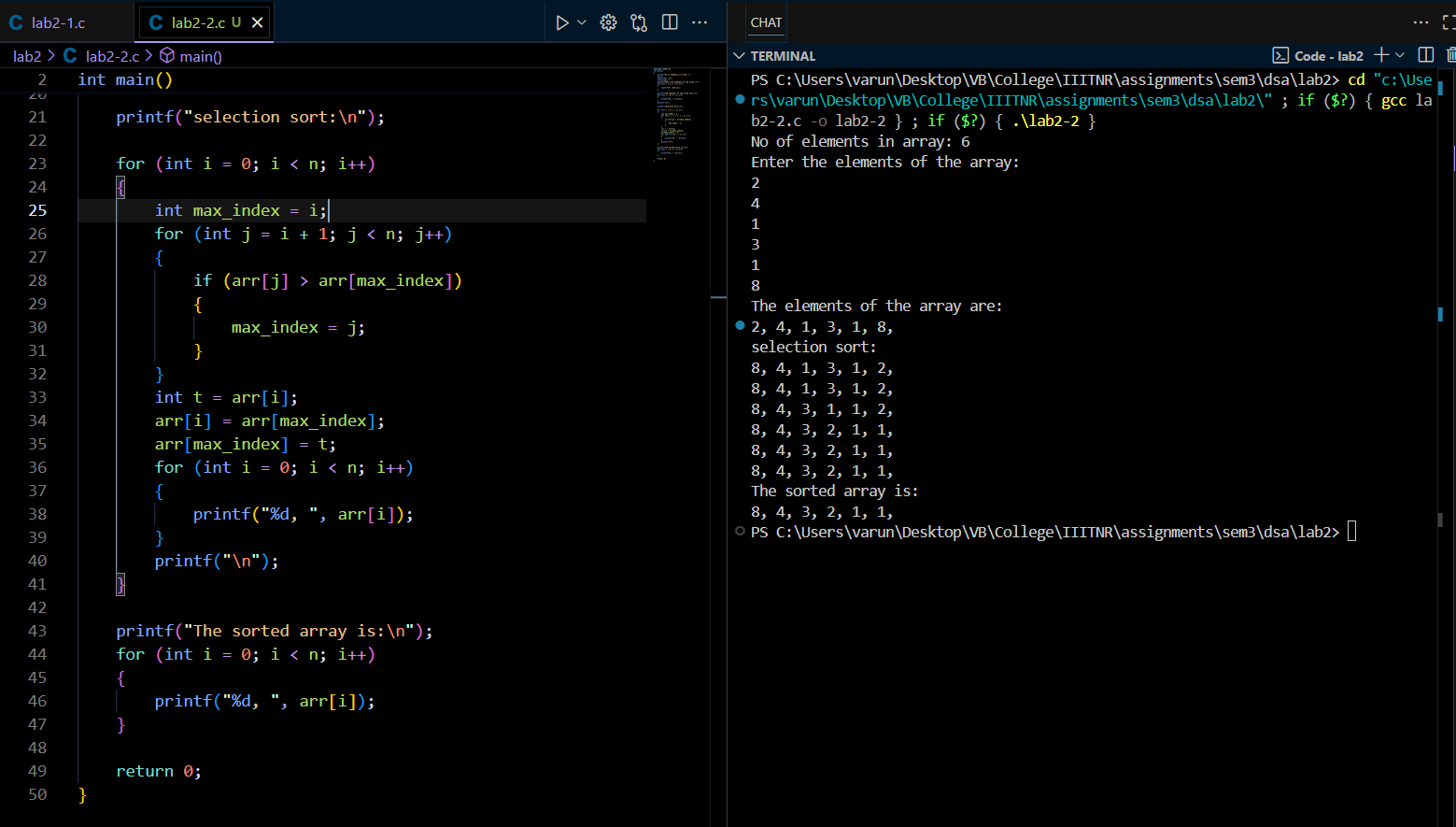
• Take user input to create an array of integers.



• Sort the array using Selection Sort in descending order.

• Print the array after each pass to show the intermediate steps of sorting.

• Display the final sorted array.

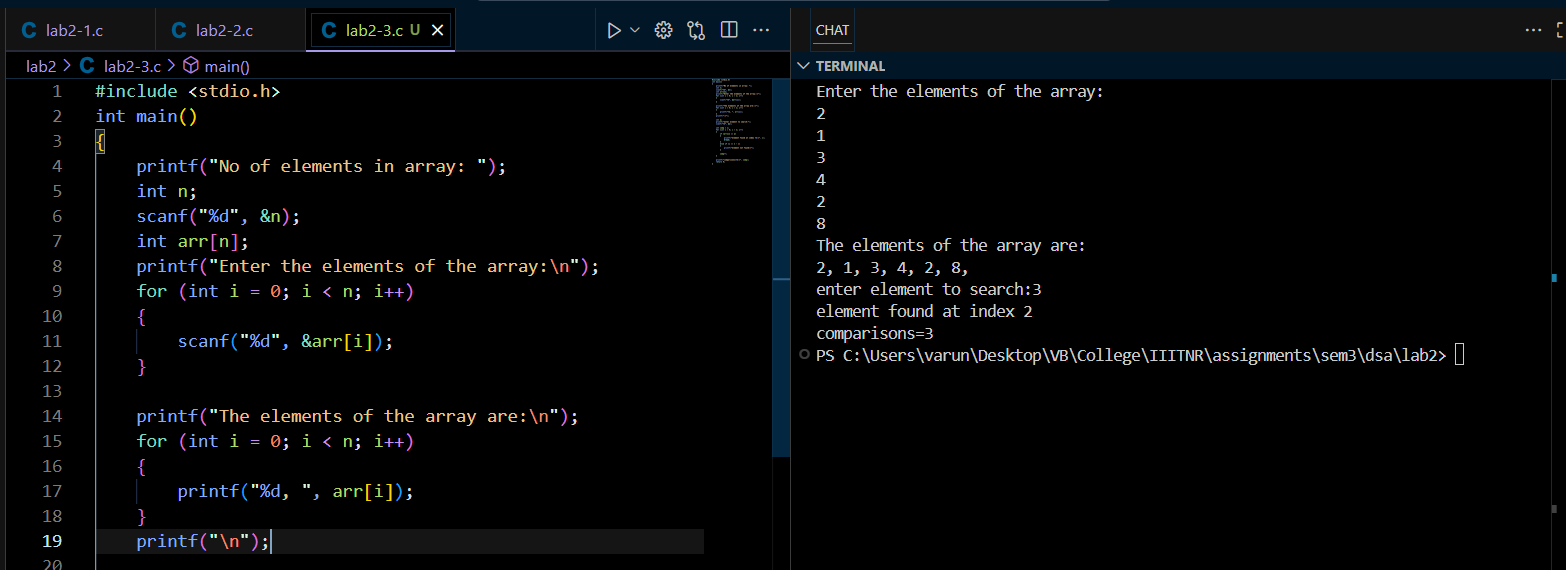


**Task 3: Linear Search:**

( https://github.com/varunnnb/dsa-sem3-iiitnr/blob/main/lab2/lab2-3.c)

Write a program to perform the following operations using Linear Search:

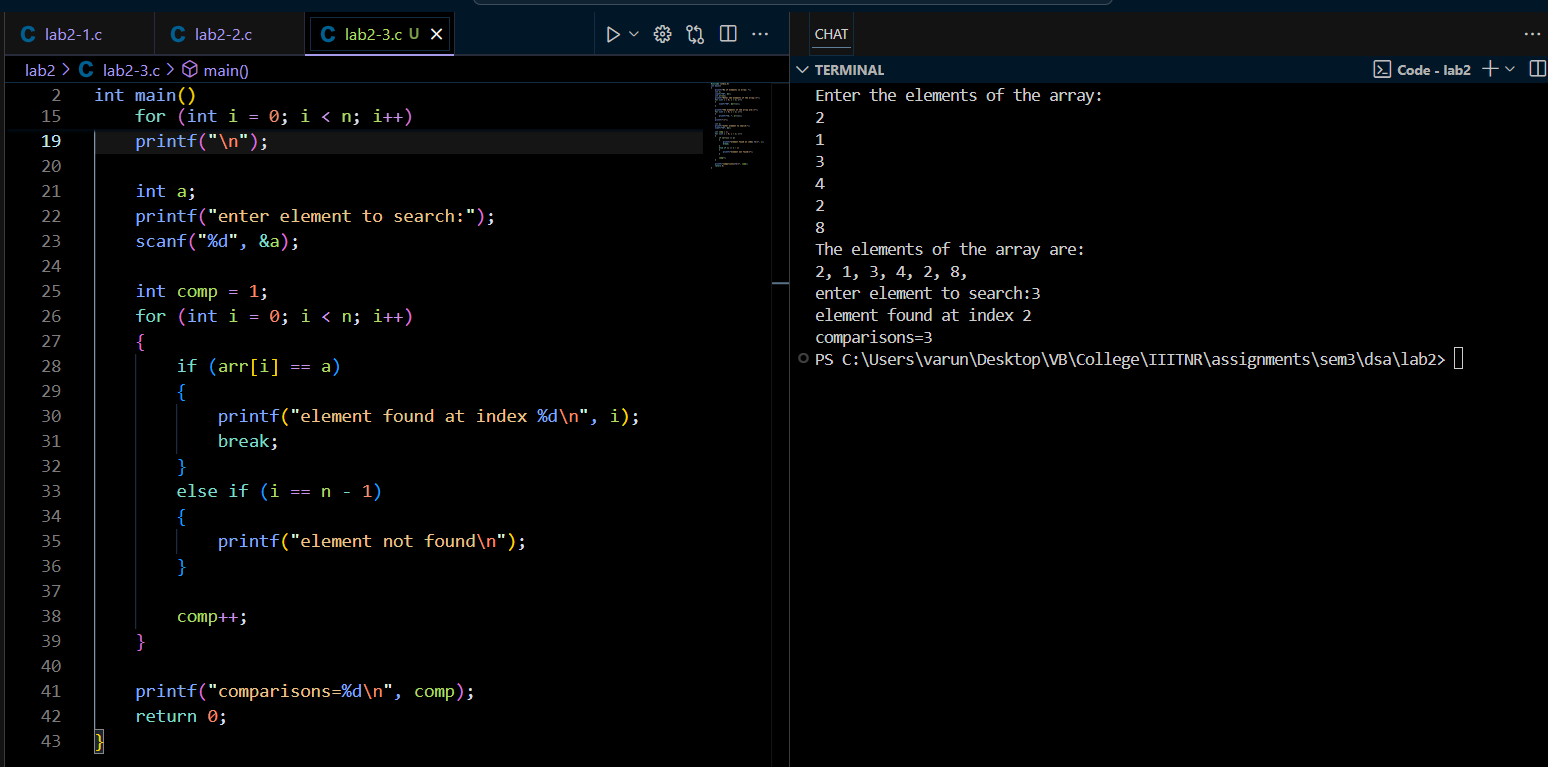
• Take user input to create an array of integers.



• Take input for the element to be searched in the array.

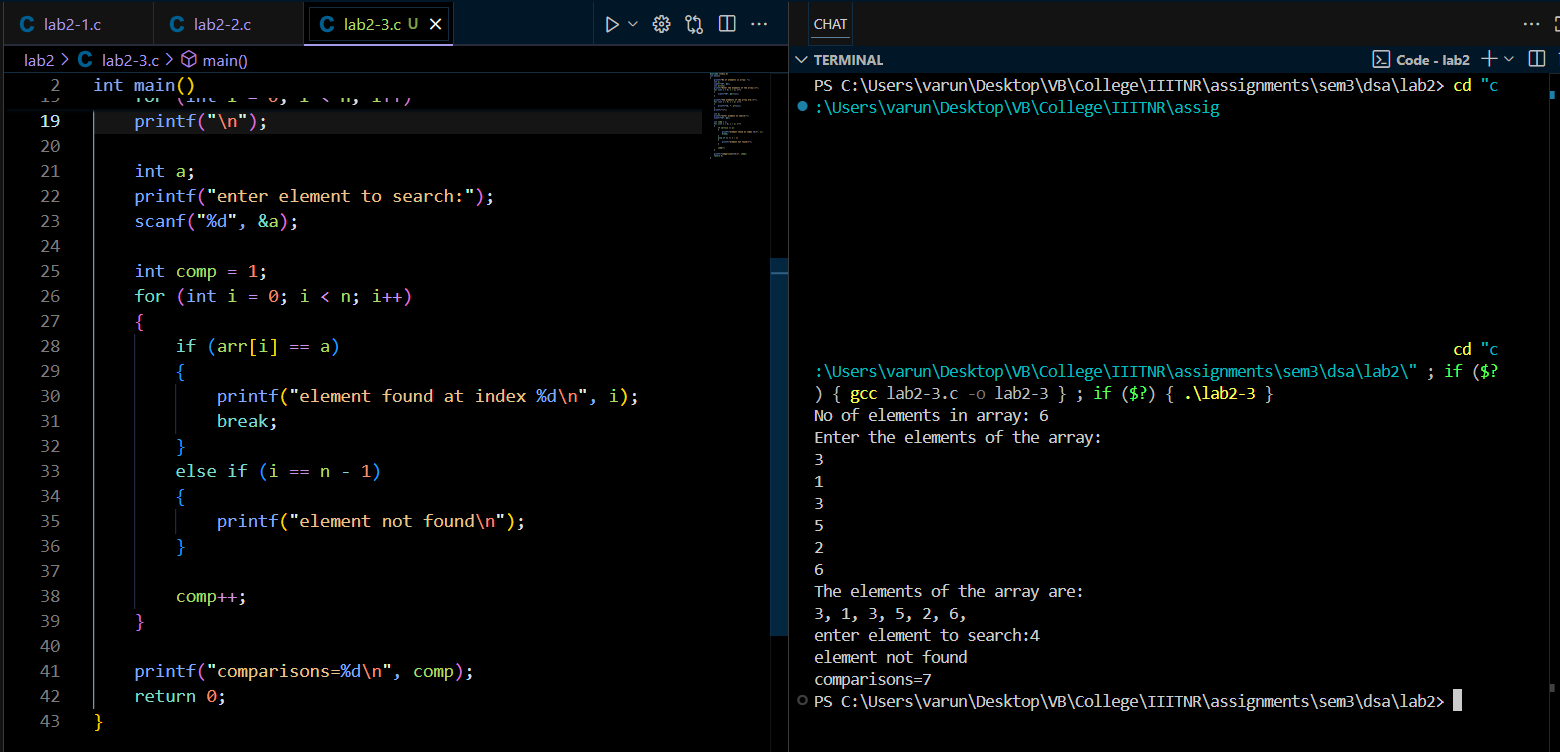
• Perform Linear Search:

– Display the index of the element if found.



– If not found, display Element not found in the array.

• Display the number of comparisons made during the search.

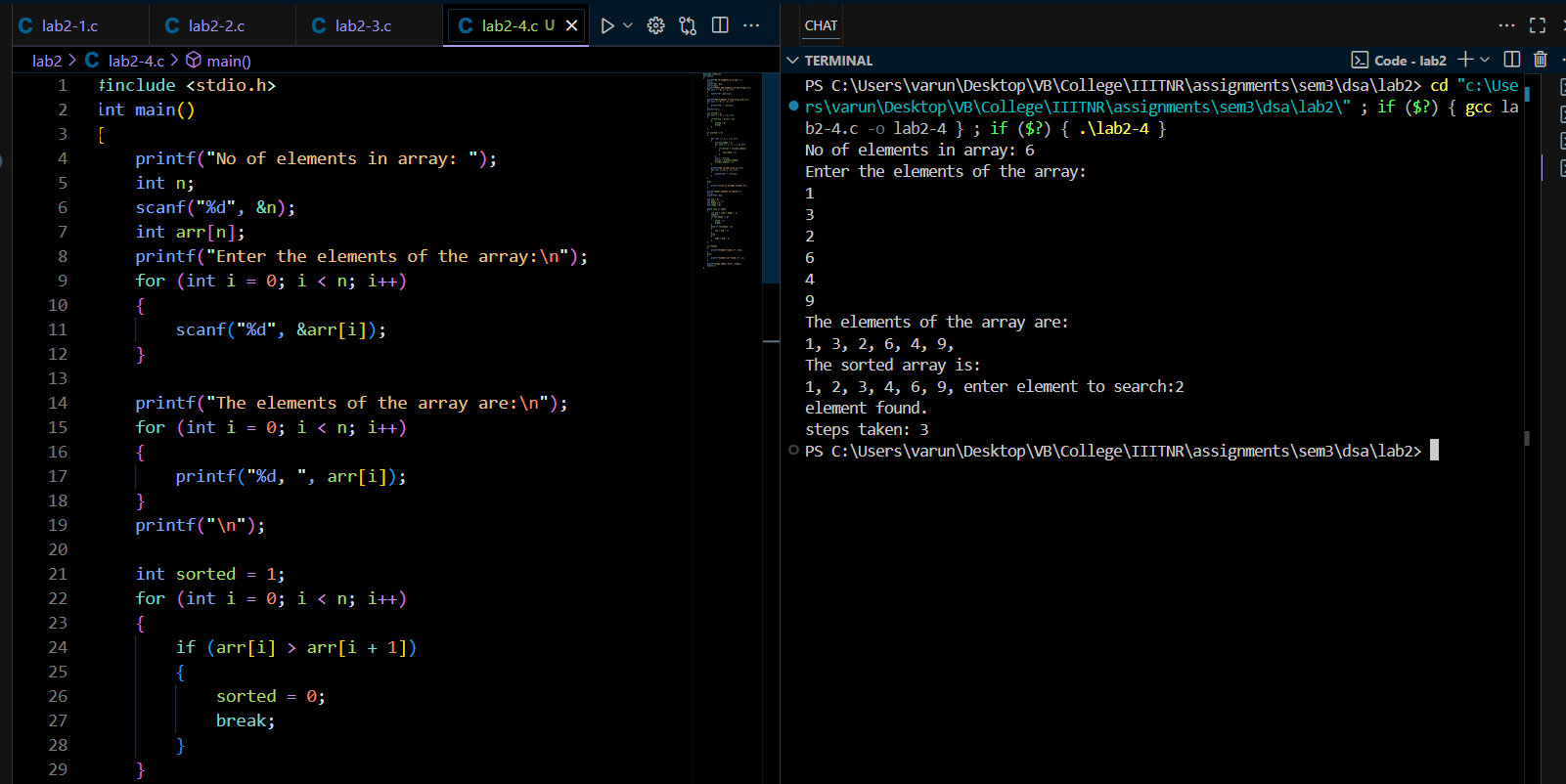


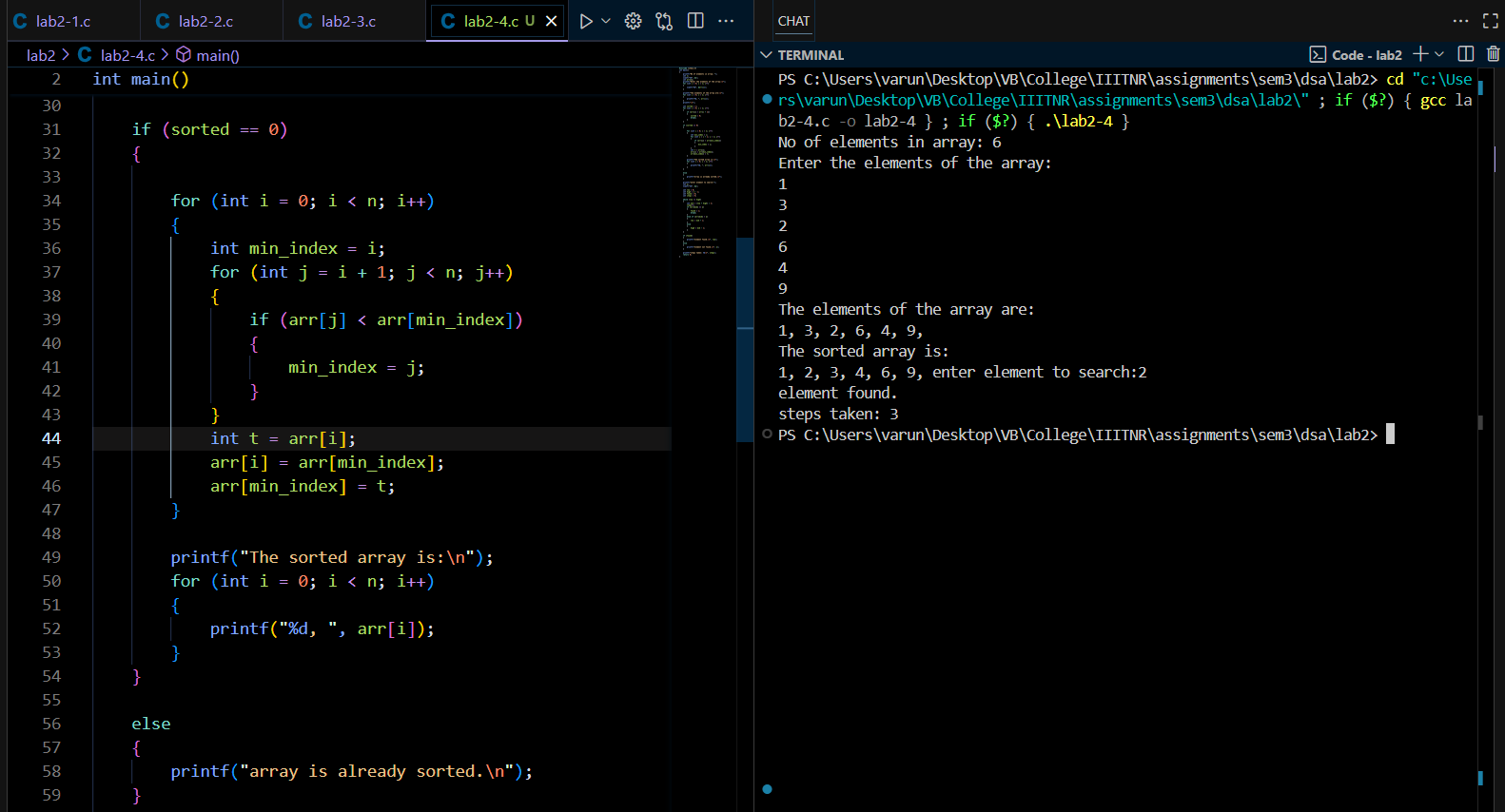
**Task 4: Binary Search:**

( https://github.com/varunnnb/dsa-sem3-iiitnr/blob/main/lab2/lab2-4.c)

Write a program to perform the following operations using Binary Search:

• Take user input to create a sorted array of integers.

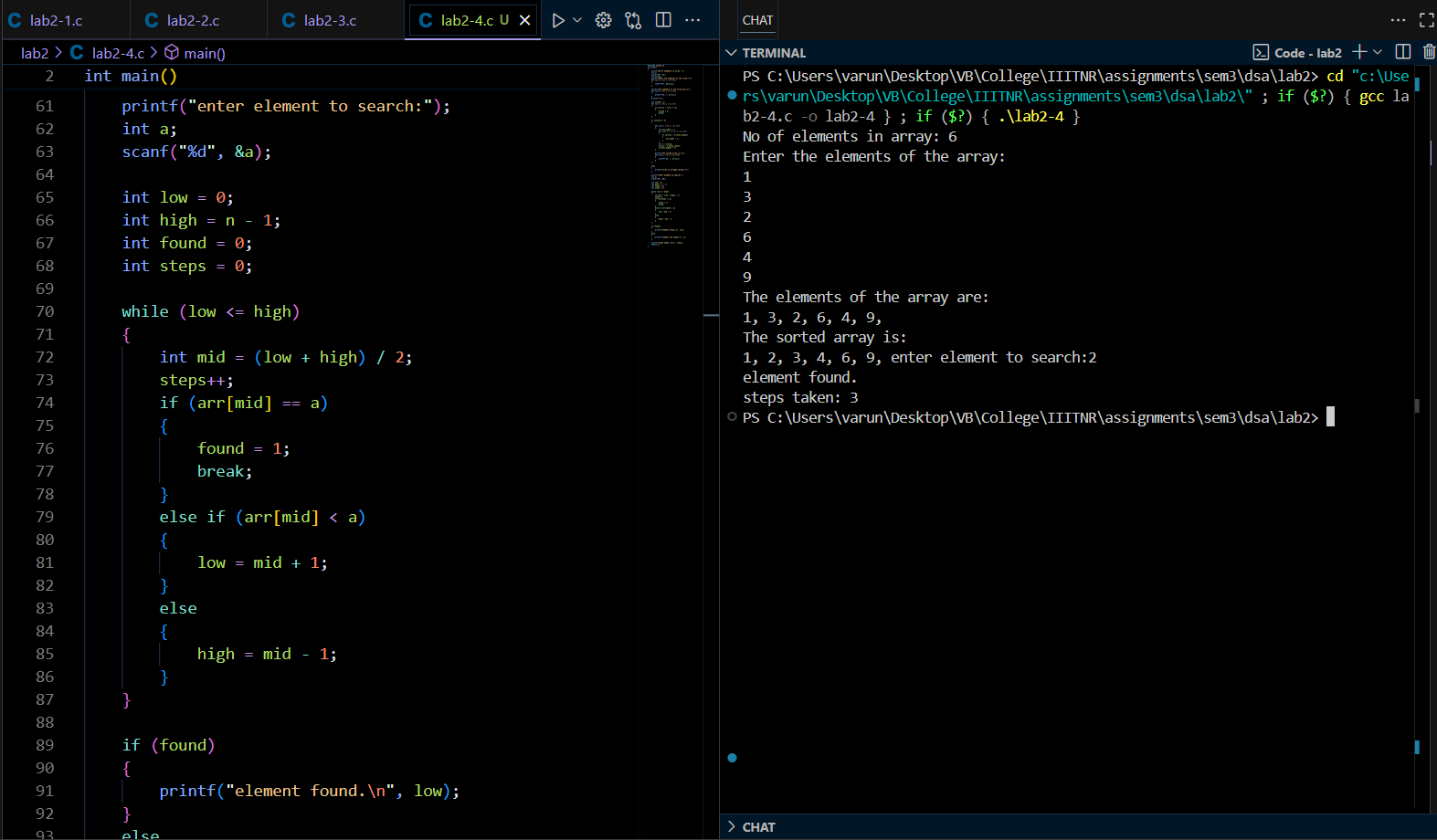




• Take input for the element to be searched in the array.

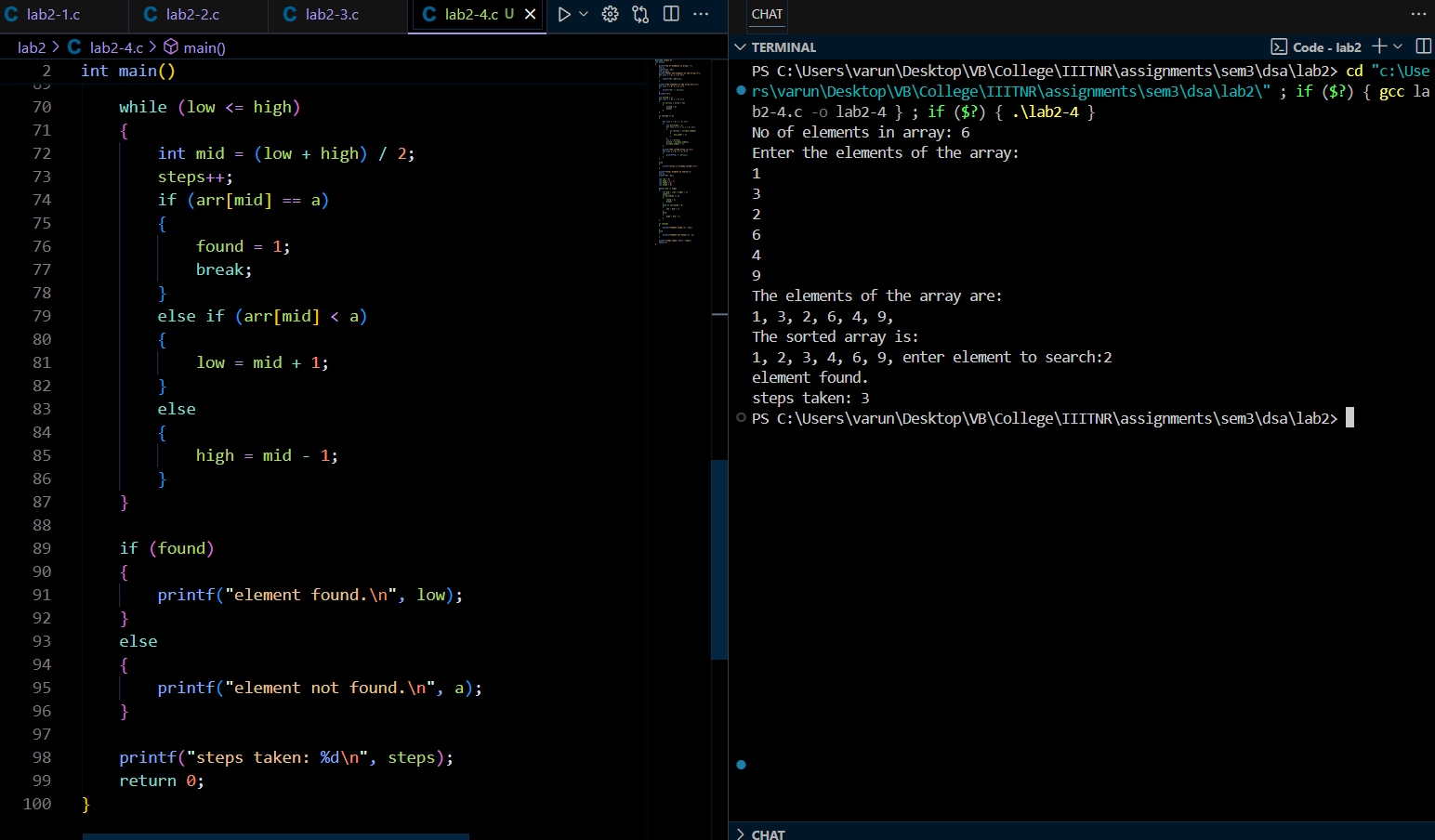
• Perform Binary Search:

– Display the index of the element if found.



– If not found, display an appropriate message.

• Display the number of steps/iterations taken to find the element.



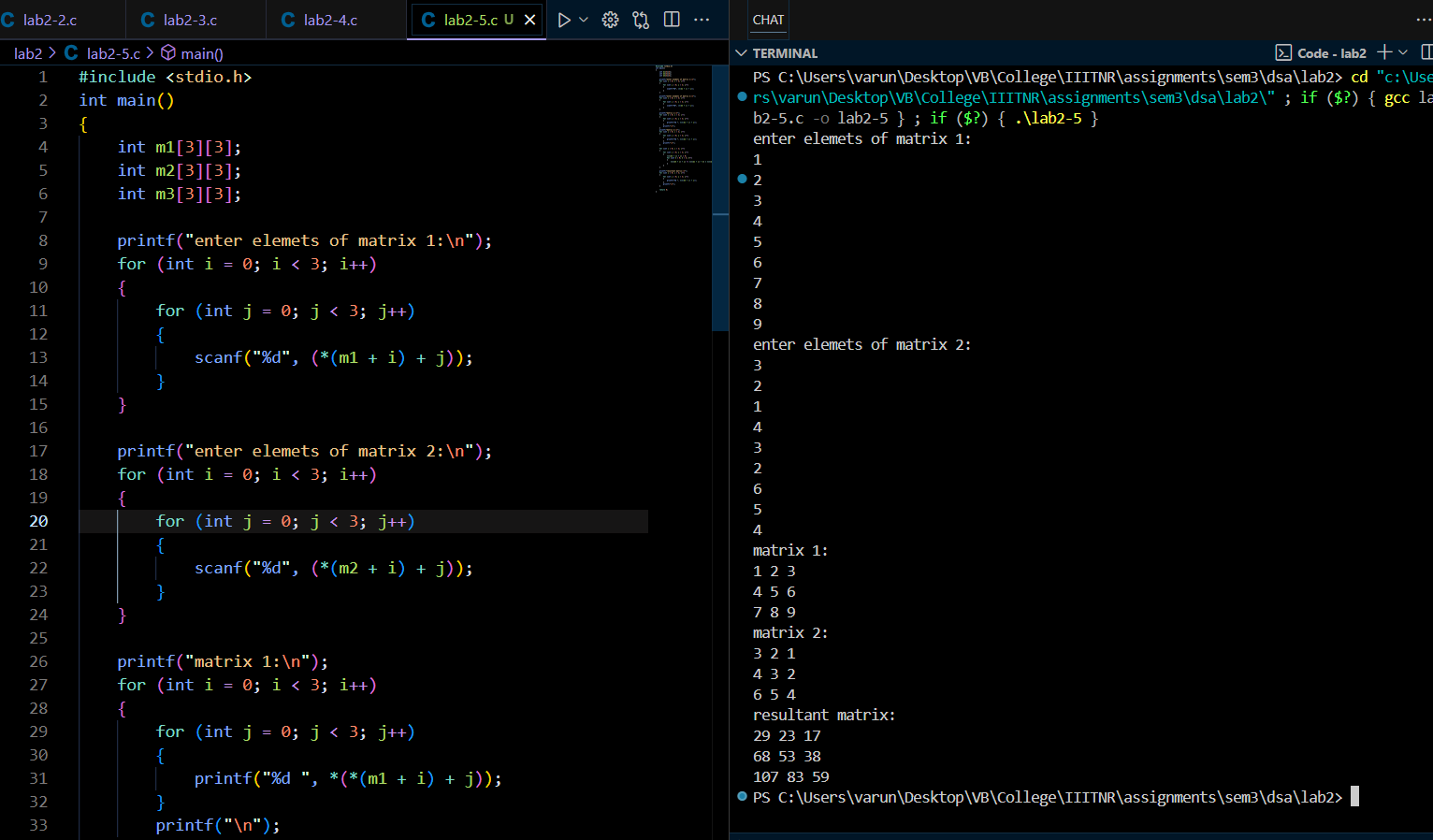
**Task 5: Matrix Multiplication Using Pointers:**

( https://github.com/varunnnb/dsa-sem3-iiitnr/blob/main/lab2/lab2-4.c)

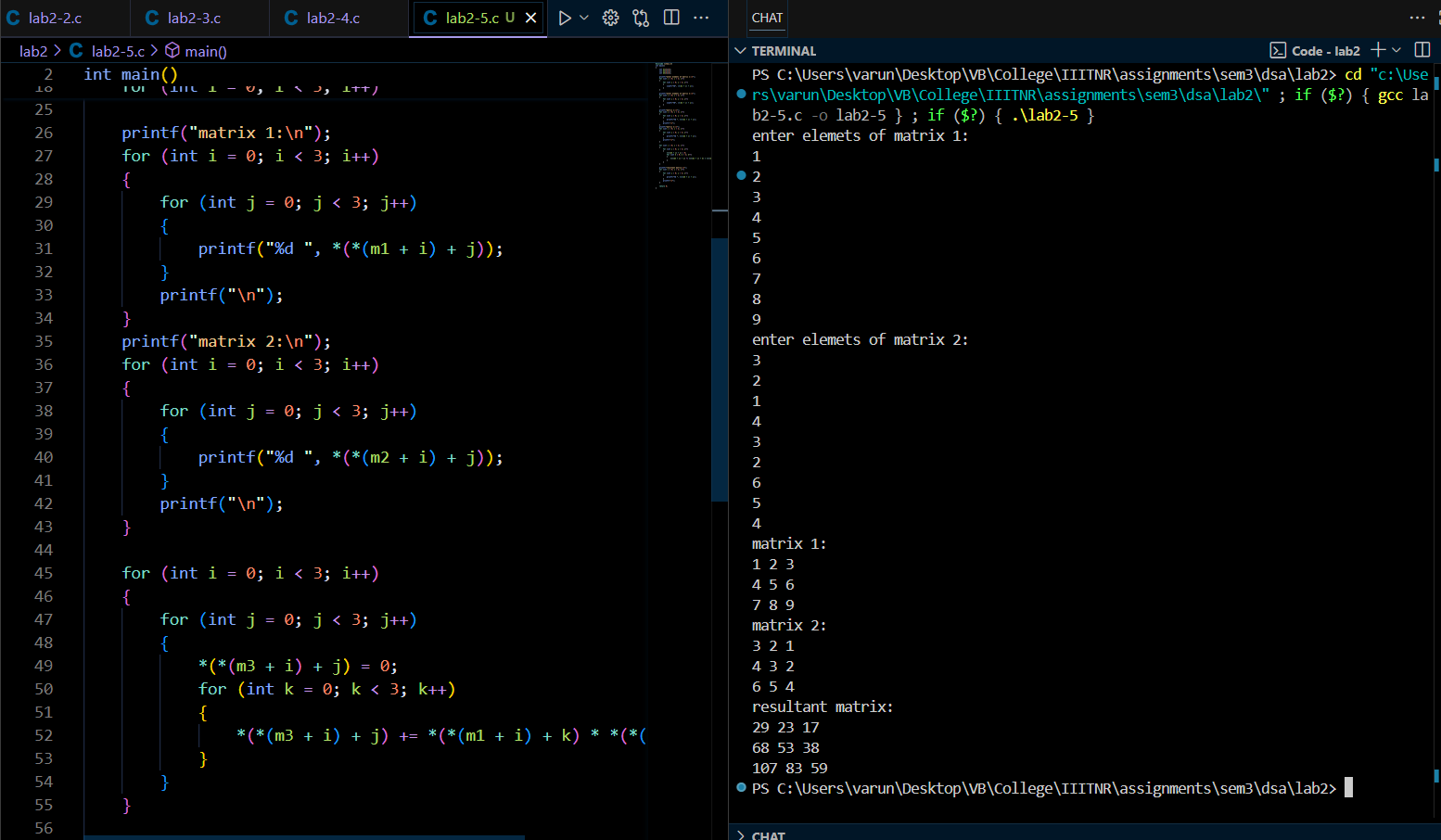
Write a program to perform the following operations related to matrix multiplication:

• Declare three 2D matrices A[3][3], B[3][3], and C[3][3].

• Take user input to enter all elements of Matrix A and Matrix B using pointers.



• Display both input matrices in matrix format.



• Perform matrix multiplication using pointer arithmetic and store the result in Matrix C.

• Display the resultant matrix C in matrix format.

