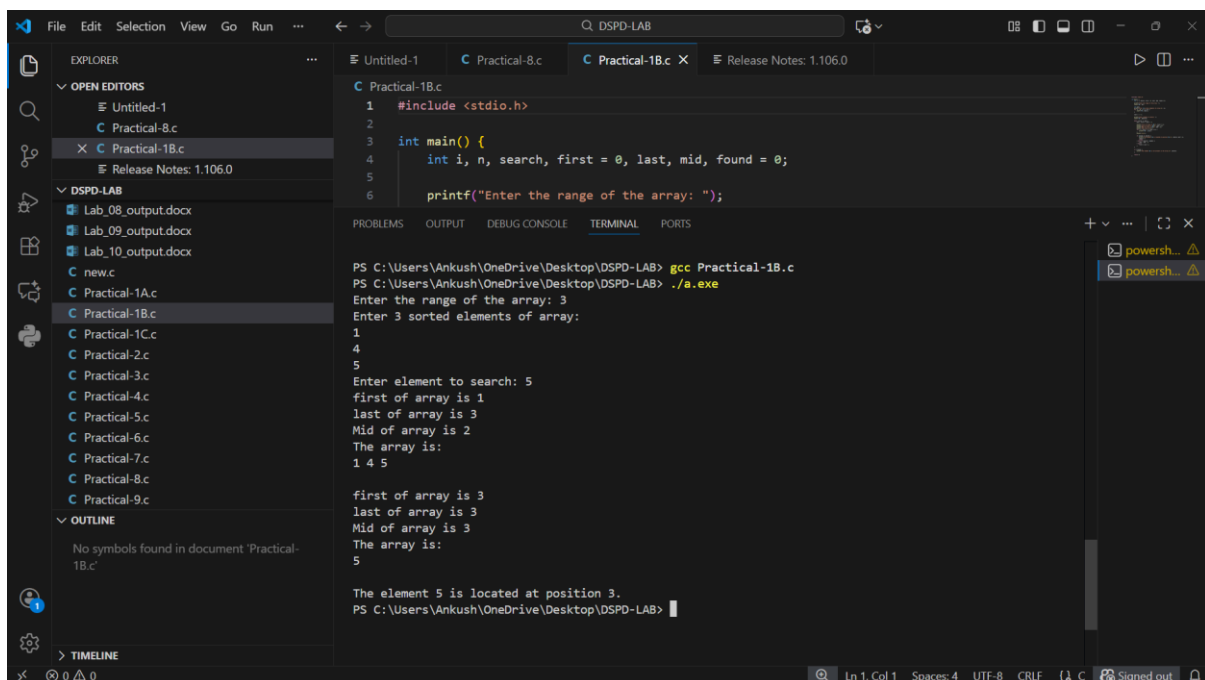


DATA STRUCTURE AND PROGRAM DESIGN LAB – 01B

1B. Write a program to implement a Binary Search algorithm. Write a search function which takes a SearchList as its first parameter and a Comparable as its second. If either parameter is null, or if the SearchList is empty, you should return NULL. implement the following algorithm:

- Examine the value in the middle of the current array and print it.
- If the midpoint value is the value that we are looking for, return true
- If the value that we are looking for is greater than the midpoint value, adjust the current array to start at the midpoint and print the index.
- if the value that we are looking for is less than the midpoint value, adjust the current array to end at the midpoint and print the index.
- Continue until you find the value, or until the start reaches the end,

SAMPLE OUTPUT:



```
File Edit Selection View Go Run ... Q DSPD-LAB
EXPLORER
  OPEN EDITORS
    Untitled-1
    Practical-8.c
    Practical-18.c
    Release Notes: 1.106.0
  DSPD-LAB
    Lab_08_output.docx
    Lab_09_output.docx
    Lab_10_output.docx
    new.c
    Practical-1A.c
    Practical-1B.c
    Practical-1C.c
    Practical-2.c
    Practical-3.c
    Practical-4.c
    Practical-5.c
    Practical-6.c
    Practical-7.c
    Practical-8.c
    Practical-9.c
  OUTLINE
    No symbols found in document 'Practical-1B.c'
  TIMELINE
    0 0 0

C Practical-18.c
1 #include <stdio.h>
2
3 int main() {
4     int i, n, search, first = 0, last, mid, found = 0;
5
6     printf("Enter the range of the array: ");
7
8     scanf("%d", &n);
9     printf("Enter %d sorted elements of array:\n", n);
10    for(i = 0; i < n; i++)
11        scanf("%d", &arr[i]);
12
13    printf("Enter element to search: ");
14    scanf("%d", &search);
15
16    first = 0;
17    last = n - 1;
18    mid = (first + last) / 2;
19
20    while (first <= last)
21    {
22        if (arr[mid] == search)
23        {
24            printf("The element %d is located at position %d.\n", search, mid + 1);
25            return 0;
26        }
27        else if (arr[mid] < search)
28            first = mid + 1;
29        else
30            last = mid - 1;
31        mid = (first + last) / 2;
32    }
33    printf("The element %d is not found.\n", search);
34    return 0;
35}
```

```
PS C:\Users\Ankush\OneDrive\Desktop\DSPD-LAB> gcc Practical-18.c
PS C:\Users\Ankush\OneDrive\Desktop\DSPD-LAB> ./a.exe
Enter the range of the array: 3
Enter 3 sorted elements of array:
1
4
5
Enter element to search: 5
first of array is 1
last of array is 3
Mid of array is 2
The array is:
1 4 5
first of array is 3
last of array is 3
Mid of array is 3
The array is:
5
The element 5 is located at position 3.
PS C:\Users\Ankush\OneDrive\Desktop\DSPD-LAB>
```