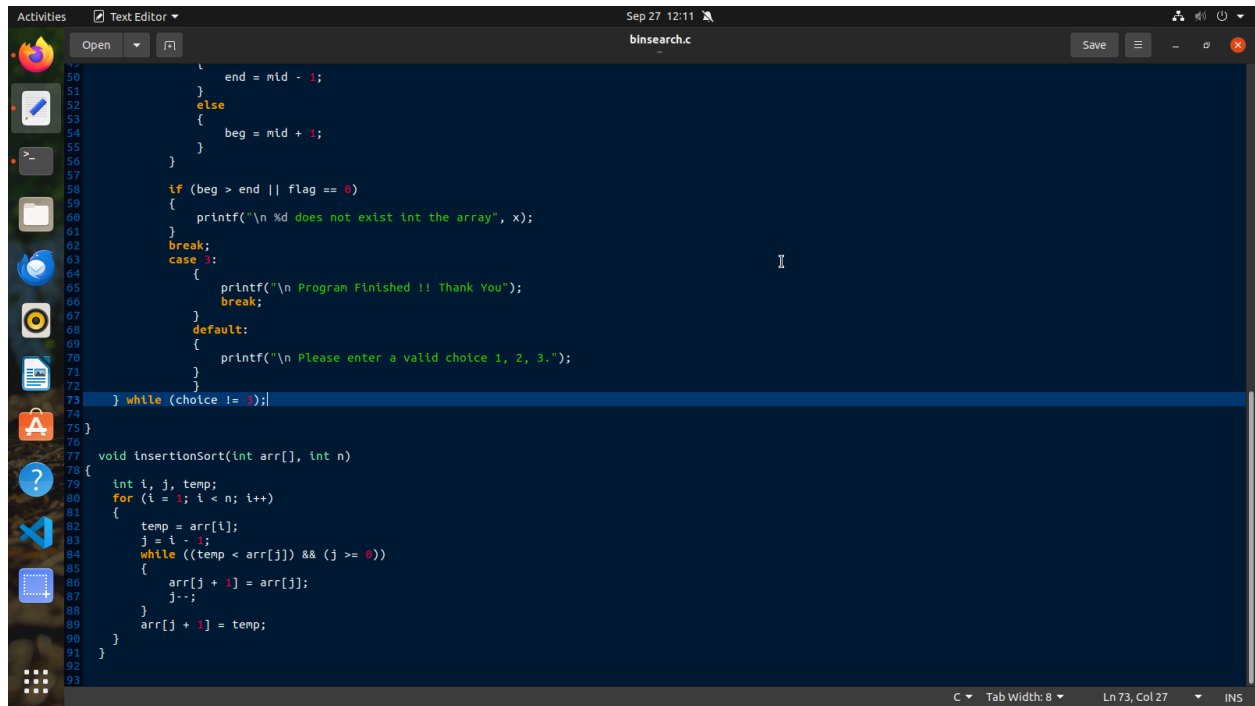


EXPERIMENT NO.09

CODE:

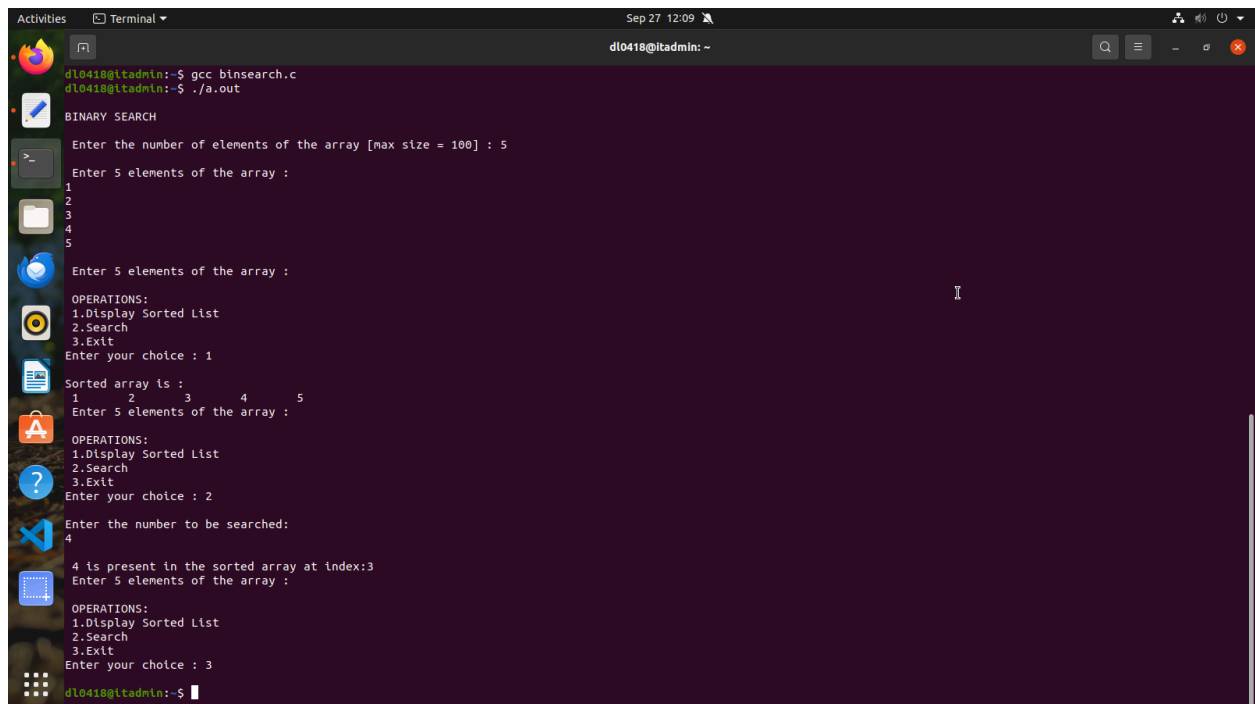
```
Activities Text Editor Sep 27 12:10 binsearch.c Save
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 void insertionSort(int arr[], int n);
5
6 void main()
7 {
8     int arr[100], i, n, x, choice, flag = 0;
9
10    printf("\nBINARY SEARCH\n");
11    printf("\n Enter the number of elements of the array [max size = 100] : ");
12    scanf("%d", &n);
13    printf("\n Enter %d elements of the array : \n", n);
14    for (i = 0; i < n; i++)
15    {
16        scanf("%d", &arr[i]);
17    }
18    insertionSort(arr, n);
19    do{
20
21        printf("\n Enter %d elements of the array : \n", n);
22        printf("\n OPERATIONS:");
23        printf("\n 1.Display Sorted List \n 2.Search \n 3.Exit");
24        printf("\nEnter your choice : ");
25        scanf("%d", &choice);
26        switch (choice)
27        {
28            case 1:
29                printf("\nSorted array is : \n");
30                for (i = 0; i < n; i++)
31                {
32                    printf("%d\t", arr[i]);
33                }
34                break;
35            case 2:
36                printf("\nEnter the number to be searched: \n");
37                scanf("%d", &x);
38                int beg=0, end=n-1, mid;
39                while (beg<=end)
40                {
41                    mid=(beg+end)/2;
42                    if (arr[mid]==x)
43                    {
44                        printf("\n %d is present in the sorted array at index:%d", x, mid);
45                    }
46                }
47            case 3:
48                break;
49        }
50    } while (choice != 3);
51 }
```

```
Activities Text Editor Sep 27 12:10 binsearch.c Save
39         while (beg<=end)
40         {
41             mid=(beg+end)/2;
42             if (arr[mid]==x)
43             {
44                 printf("\n %d is present in the sorted array at index:%d", x, mid);
45                 flag=1;
46                 break;
47             }
48             else if (arr[mid] > x)
49             {
50                 end = mid - 1;
51             }
52             else
53             {
54                 beg = mid + 1;
55             }
56         }
57         if (beg > end || flag == 0)
58         {
59             printf("\n %d does not exist in the array", x);
60         }
61         break;
62     case 3:
63     {
64         printf("\n Program Finished !! Thank You");
65         break;
66     }
67     default:
68     {
69         printf("\n Please enter a valid choice 1, 2, 3.");
70     }
71 } while (choice != 3);
72 }
73 }
74 }
75 }
76
77 void insertionSort(int arr[], int n)
78 {
79     int i, j, temp;
80     for (i = 1; i < n; i++)
81     {
82         temp = arr[i];
83         j = i - 1;
84         while (j > 0 && arr[j] > temp)
85         {
86             arr[j+1] = arr[j];
87             j--;
88         }
89         arr[j+1] = temp;
90     }
91 }
```



```
50         end = mid - 1;
51     }
52     else
53     {
54         beg = mid + 1;
55     }
56 }
57
58 if (beg > end || flag == 0)
59 {
60     printf("\n %d does not exist int the array", x);
61 }
62 break;
63 case 3:
64 {
65     printf("\n Program Finished !! Thank You");
66     break;
67 }
68 default:
69 {
70     printf("\n Please enter a valid choice 1, 2, 3.");
71 }
72 }
73 } while (choice != 3);
74
75 }
76
77 void insertionSort(int arr[], int n)
78 {
79     int i, j, temp;
80     for (i = 1; i < n; i++)
81     {
82         temp = arr[i];
83         j = i - 1;
84         while ((temp < arr[j]) && (j >= 0))
85         {
86             arr[j + 1] = arr[j];
87             j--;
88         }
89         arr[j + 1] = temp;
90     }
91 }
92
93 }
```

OUTPUT:



```
d10418@ltadmin:~$ gcc binsearch.c
d10418@ltadmin:~$ ./a.out

BINARY SEARCH

Enter the number of elements of the array [max size = 100] : 5
Enter 5 elements of the array :
1
2
3
4
5

Enter 5 elements of the array :

OPERATIONS:
1.Display Sorted List
2.Search
3.Exit
Enter your choice : 1

Sorted array is :
1 2 3 4 5
Enter 5 elements of the array :

OPERATIONS:
1.Display Sorted List
2.Search
3.Exit
Enter your choice : 2

Enter the number to be searched:
4

4 is present in the sorted array at index:3
Enter 5 elements of the array :

OPERATIONS:
1.Display Sorted List
2.Search
3.Exit
Enter your choice : 3

d10418@ltadmin:~$
```

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