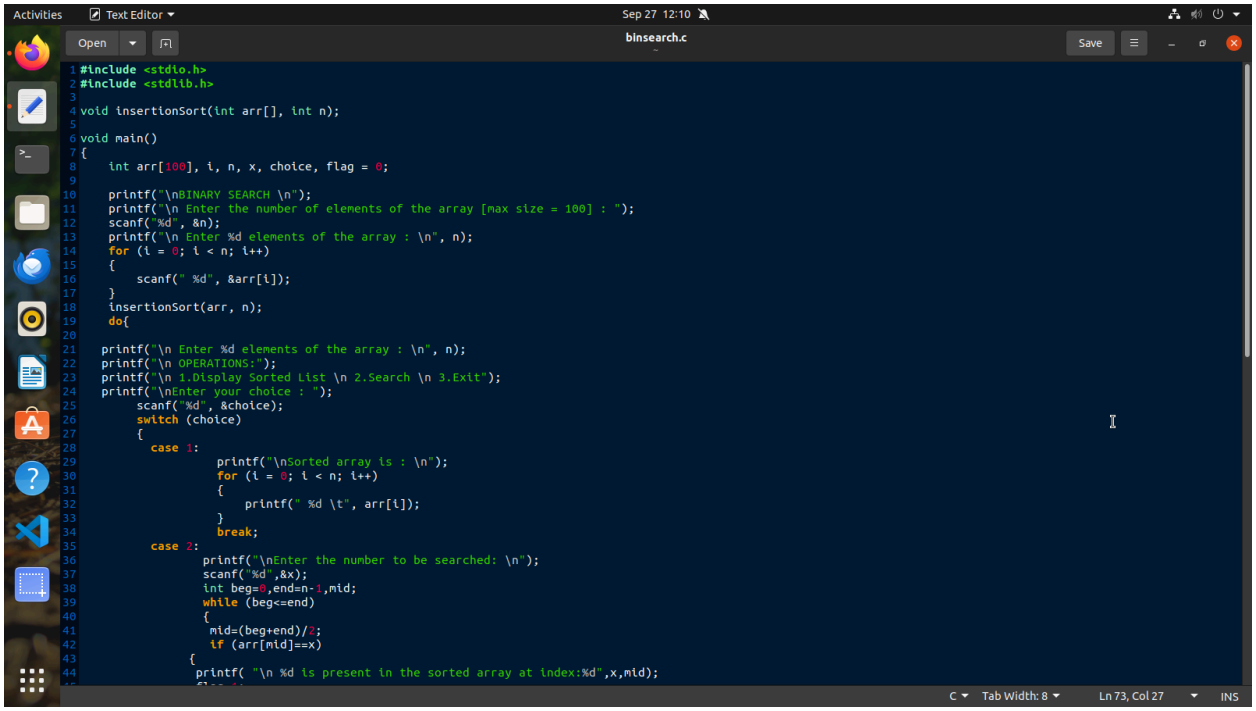
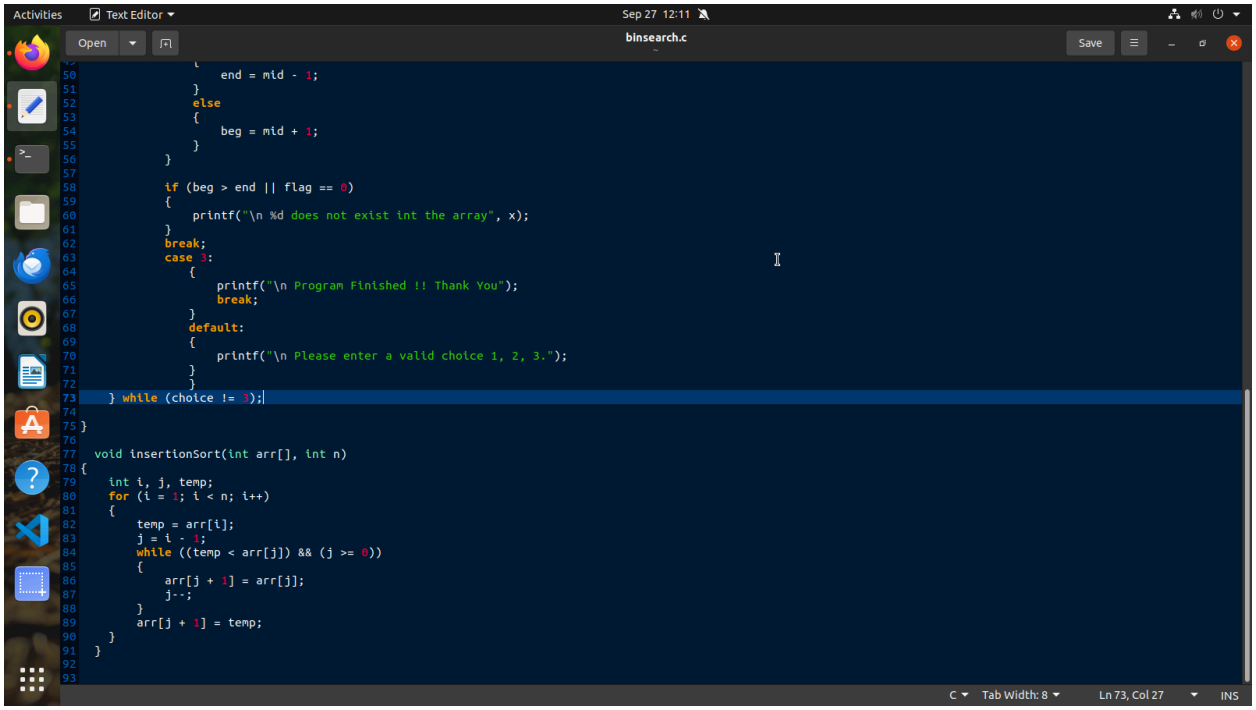
EXPERIMENT NO.09

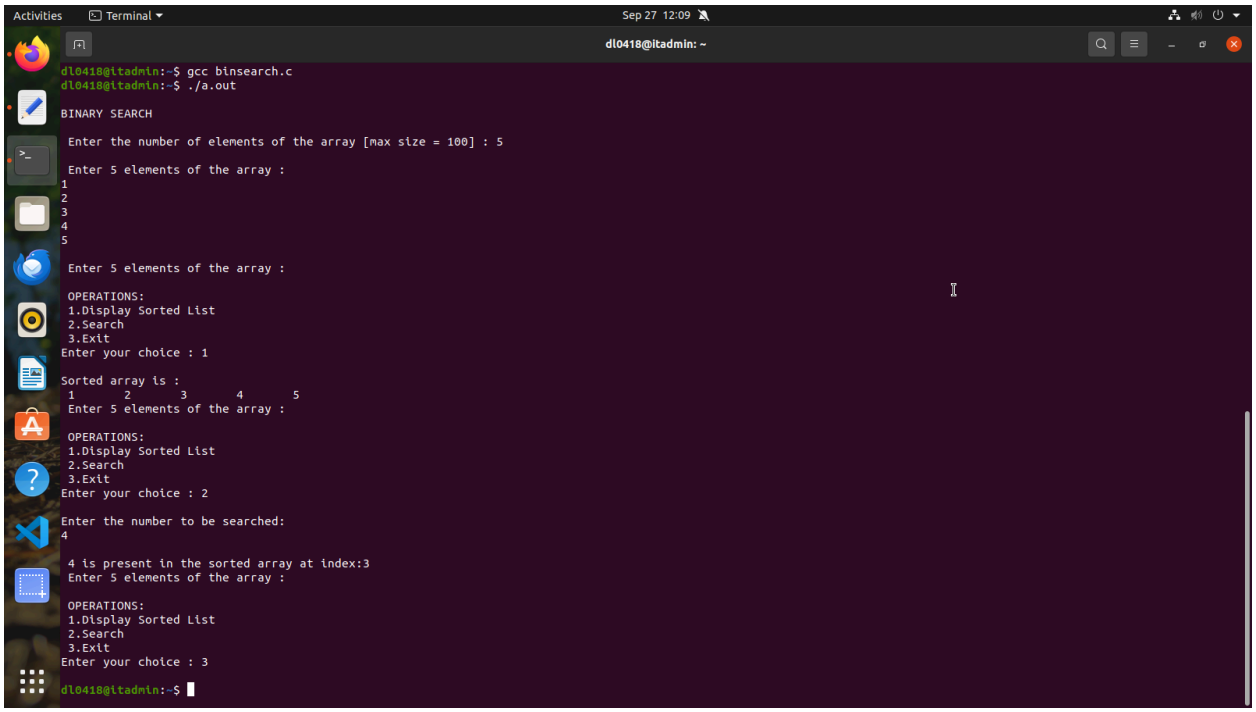
CODE:




```c
#include <stdio.h>
#include <stdlib.h>

void insertionSort(int arr[], int n);

void main()
{
   int arr[100], i, n, x, choice, flag = 0;

   printf("\nBINARY SEARCH \n");
   printf("\n Enter the number of elements of the array [max size = 100] : ");
   scanf("%d", &n);
   printf("\n Enter %d elements of the array : \n", n);
   for (i = 0; i < n; i++)
   {
       scanf(" %d", &arr[i]);
   }
   insertionSort(arr, n);
   do{

  printf("\n Enter %d elements of the array : \n", n);
  printf("\n OPERATIONS:");
  printf("\n 1.Display Sorted List \n 2.Search \n 3.Exit");
  printf("\nEnter your choice : ");
       scanf("%d", &choice);
       switch (choice)
       {
         case 1:
                  printf("\nSorted array is : \n");
                  for (i = 0; i < n; i++)
                  {
                      printf(" %d \t", arr[i]);
                  }
                  break;
         case 2:
                 printf("\nEnter the number to be searched: \n");
                 scanf("%d",&x);
                 int beg=0,end=n-1,mid;
                 while (beg<=end)
                 {
                  mid=(beg+end)/2;
                  if (arr[mid]==x)
                {
                 printf( "\n %d is present in the sorted array at index:%d",x,mid);
                 flag=1;
                 break;
                }
                 else if (arr[mid] > x)
                 {
                     end = mid - 1;
                 }
                 else
                 {
                     beg = mid + 1;
                 }
           }

           if (beg > end || flag == 0)
           {
               printf("\n %d does not exist int the array", x);
           }
           break;
           case 3:
               {
                   printf("\n Program Finished !! Thank You");
                   break;
               }
              default:
              {
                  printf("\n Please enter a valid choice 1, 2, 3.");
              }
              }
    } while (choice != 3);

}

 void insertionSort(int arr[], int n)
{
   int i, j, temp;
   for (i = 1; i < n; i++)
   {
       temp = arr[i];
```



OUTPUT:



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