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EXPERIMENT 3

Question 1 : Program to perform Binary Search on an array.

```
#include <stdio.h>
void main()
{
   int arr[100],beg,mid,end,loc,n,ele;

   //take the size of array
   printf("\n\nEnter the size of the array : ");
   scanf("%d",&n);

   //take input the elements of the array
   printf("\nEnter the array : \n");
   for(int i=0;i<n;i++)
   {
      scanf("%d",&arr[i]);
   }

   //taking input the element to be searched in the array
   printf("\nEnter the element to be searched : ");
   scanf("%d",&ele);

   beg=0;
```

```
    end=n-1;
    loc=-1;

    mid=(beg+end)/2;

    //searching till beg doesn't cross ending or data is found
    while(beg<=end && arr[mid]!=ele)
    {
        mid=(beg+end)/2;
        if(ele<arr[mid])
            end=mid-1;
        else if(ele>arr[mid])
            beg=mid+1;
        else
        {
            //storing the data's idx in loc
            loc=mid;
        }
    }

    if(loc!=-1)
        printf("Element found at idx : %d\n\n",loc);
    else
        printf("Element not found.\n\n");
}
```

OUTPUT

```
Enter the size of the array : 10

Enter the array :
5
6
7
8
9
10
1
2
3
4

Enter the element to be searched : 7
Element found at idx : 2
```

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Question 2 : Program to Sort a 1D array in Ascending order.

```
#include <stdio.h>


void main()
{
   int arr[100],n,temp;


   //take the size of array as input in n
   printf("\nEnter the size of the array : ");
   scanf("%d",&n);


   //take the elements of the array from the user
   printf("\nEnter the array : \n");
   for(int i=0;i<n;i++)
   {
      scanf("%d",&arr[i]);
   }


   printf("\n\nOriginal Array : \n");
   for(int i=0;i<n;i++)
   {
      printf("%d\t",arr[i]);
   }
```

```
    printf("\n\n");

    for(int i=0;i<n;i++)
    {
        for(int j=i+1;j<n;j++)
        {
            if(arr[i]>arr[j])
            {
                //swaping the ith pos ele if it is greater than the jth pos ele.
                temp=arr[i];
                arr[i]=arr[j];
                arr[j]=temp;
            }
        }
    }

    //printing the sorted array
    printf("\n\nElements after sorting : \n");
    for(int i=0;i<n;i++)
    {
        printf("%d\t",arr[i]);
    }

    printf("\n\n");
}
```

OUTPUT

```
Enter the size of the array : 7

Enter the array :
77
15
89
7
14
35
64


Original Array :
77      15      89      7       14      35      64



Elements after sorting :
7       14      15      35      64      77      89
```