DATA STRUCTURE AND ANALYSIS OF ALGORITHM

KCA 253 : Session 2020-21

EXPERIMENT 11

PROGRAM TO IMPLEMENT LINEAR SEARCH :

```c
#include<stdio.h>
int main()
{
        int item,arr[20],size,loc,i;
        printf("enter the size of an array");
        scanf("%d",&size);
        printf("\nenter the item of an array\n");
        for (i=0;i<size;i++)
        {
                scanf("%d",&arr[i]);
        }
        printf("\nenter item to search");\
        scanf("%d",&item);
        for(i=0;i<size;i++)
        {
                if(arr[i]==item)
                {
                 loc=i+1;
                 break;
             }
        }

        if(i==size)
        {
```

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```
        printf("\nitem not found");

    }

    else

    {

        printf("\nitem found at location %d",loc);

    }

    return 0;

}
```

OUTPUT :

PROGRAM TO IMPLEMENT BINARY SEARCH

```
#include<stdio.h>

int main()

{

        int arr[20],size , i,item ,beg,end,mid;

        printf("enter the size of an ARRAY\n");

        scanf("%d",&size);

        printf("enter the elements\n");

        for (i=0;i<size;i++)
```

```c
{
        scanf("%d",&arr[i]);
}
printf("elements in a list are \n");
for(i=0;i<size;i++)
{
        printf("%d",arr[i]);
        printf("\t");
}
printf("\nenter element to search \n");
scanf("%d",&item);

beg=0;
end=size-1;
mid=(beg+end)/2;
while(arr[mid]!=item && beg<=end)
{
        if(item < arr[mid])
        {
                end = mid - 1 ;
        }
        else
        {
                beg = mid + 1 ;
        }
        mid = (beg + end)/2;
}
if(arr[mid] == item)
```

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```c
        {

                printf("\n item found at location %d",mid+1);

        }

        else

        {

                printf("\nitem not found");

        }



                return 0;

}
```

OUTPUT :


```
enter the size of an ARRAY
4
enter the elements
1
2
3
4
elements in a list are
1       2       3       4
enter element to search
3

 item found at location 3
```