SANGOLA COLLEGE, SANGOLA
Class-B.Sc(ECS)-II, SEM-IV 2024-25
Practical Assignments
Sub- Data Structure using C++-II

Assignment No- 2

1) Write a program to implement linear search method for unsorted data.

```
#include<iostream.h>
#include<conio.h>
void Unsorted_Linear();

void main()
{
   clrscr();
   Unsorted_Linear();
   getch();
}

void Unsorted_Linear()
{
   int x[50];
   int n, i, s, c = 0;

   cout<<"\nHow many number you want to sort: ";
   cin>>n;

   cout<<"\nEnter elements: ";
   for(i = 0; i <= n-1; i++)
   {
      cin>>x[i];
   }

   cout<<"\nEnter search element: ";
   cin>>s;
   for(i = 0; i <= n-1; i++)
   {
      if(s == x[i])
      {
         c = 1;
         break;
```

```
      }
   }

   if(c == 1)
   {
      cout<<"\nElement is found at position " << i + 1 << ".";
   }
   else
   {
      cout<<"\nElement is NOT found.";
   }
}
```

o/p=>
How many numbers you want to sort: 4

Enter elements: 11 22 33 44

Enter search element: 99

Element is NOT found.

2) Write a program to implement linear search method for sorted data.

```
#include<iostream.h>
#include<conio.h>
void Sorted_Linear();

void main()
{
   clrscr();
   Sorted_Linear();
   getch();
}

void Sorted_Linear()
{
   int x[50];
   int n, i, j, s, t, c = 0;

   cout<<"\nHow many number you want to sort: ";
   cin>>n;

   cout<<"\nEnter elements: ";
   for(i = 0; i <= n-1; i++)
```

```
    {
        cin>>x[i];
    }

    cout<<"\nEnter search element: ";
    cin>>s;

    for(i = 0; i <= n-1; i++)
    {
        for(j = 0; j <= n-2; j++)
        {
            if(x[j] > x[j+1])
            {
                t = x[j];
                x[j] = x[j+1];
                x[j+1] = t;
            }
        }
    }

    cout<<"\nSorted array: ";
    for(i = 0; i <= n-1; i++)
    {
        cout<<"\t"<<x[i];
    }

    for(i = 0; i <= n-1; i++)
    {
        if(s == x[i])
        {
            c = 1;
            break;
        }
    }
    if(c == 1)
    {
        cout<<"\nElement is found at position " << i + 1 << ".";
    }
    else
    {
        cout<<"\nElement is NOT found.";
    }
}
```

o/p=>
How many numbers you want to sort: 5
Enter elements: 33 11 77 55 44
Enter search element: 77
Sorted array: 11 33 44 55 77
Element is found at position 5.

3) Write a program to implement binary search method.

```
#include<iostream.h>
#include<conio.h>
void Binary_Search();

void main()
{
   clrscr();
   Binary_Search();
   getch();
}

void Binary_Search()
{
   int x[50];
   int n, i, j, s, t, down, up, mid, c = 0;

   cout<<"\nHow many number you want to sort: ";
   cin>>n;

   cout<<"\nEnter element: ";
   for(i = 0; i <= n-1; i++)
   {
      cin>>x[i];
   }

   cout<<"\nEnter search element: ";
   cin>>s;

   for(i = 0; i <= n-1; i++)
   {
      for(j = 0; j <= n-2; j++)
      {
         if(x[j] > x[j+1])
         {
            t = x[j];
            x[j] = x[j+1];
            x[j+1] = t;
         }
      }
   }

   cout<<"\nSorted array: ";
   for(i = 0; i <= n-1; i++)
```

```
  {
    cout<<"\t"<<x[i];
  }

  down = 0;
  up = n-1;

  while(down <= up)
  {
    mid = (down + up) / 2;
    if(x[mid] == s)
    {
      c = 1;
      break;
    }
    else if(s > x[mid])
    {
      down = mid + 1;
    }
    else if(s < x[mid])
    {
      up = mid - 1;
    }
  }

  if(c == 1)
  {
    cout<<"\nElement is found at position " << mid + 1 << ".";
  }
  else
  {
    cout<<"\nElement is NOT found.";
  }
}
```

o/p=>

```
How many numbers you want to sort: 6
Enter elements: 45 12 78 3 66 23
Enter search element: 23

Sorted array: 3    12    23    45    66    78
Element is found at position 3.
```
