**Experiment-No.1**

**Objective**: Implement the **linear search** algorithm to sort the given list of N numbers and plot graph

|  |  |  |
| --- | --- | --- |
| Scheduled Date: | Compiled Date: | Submitted Date: |
| 17/08/2020 | 23/08/2020 | 27/08/2020 |

**Algorithm:**

Linear\_search( Input: Array A, Size N,item)

N: Number of values to be sort

A: Array of Size N

Program file linear\_search.c :

#include<stdio.h>

#include<conio.h>

#include<process.h>

int count=0;

void main()

{

void getdata(int[50],int);

void putdata(int[50],int);

int linear\_search(int a[],int,int);

int i,a[100],n,loc,item;

clrscr();

printf("enter the value of n\n");

scanf("%d",&n);

getdata(a,n);

printf("\nbefore soring\n");

putdata(a,n);

printf("search element");

scanf("%d",item);

loc=linear\_search(a,n,item);

if(loc==-1)

printf("not found");

else

printf("found ");

printf("\n value of count is %d",count);

getch();

}

void getdata(int x[50],int n)

{

int k;

printf("enter the value for sorting\n");

for(k=0;k<n;k++)

{

scanf("%d",&x[k]);

}

}

void putdata(int x[50], int n)

{

int k;

for(k=0;k<n;k++)

{

printf("%d\t",x[k]);

}

printf("\n");

}

int linear\_search(int a[],int n,int item)

{

int i;

count++;

for(i=0;i<n;i++)

{

count++;

if (a[i]==item)

count++;

return i;

}

count++;

return -1;

}

**Output:**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Input Size | Best Case | Average Case | Worst Case |
| 5 | 2 | 4 | 5 |
| 10 | 2 | 6 | 7 |
| 15 | 2 | 7 | 9 |
| 20 | 2 | 9 | 12 |
| 25 | 2 | 11 | 15 |

**Graph:**

**Conclusion**

|  |  |  |
| --- | --- | --- |
| Case | Running Time : Growth of Function mathematically | Running Time : Growth of Function after observing graph |
| Best Case | O(1) | O(1) |
| Average Case | O(n) | O(n) |
| Worst Case | O(n) | O(n) |