**Experiment-No.2**

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

|  |  |  |
| --- | --- | --- |
| Scheduled Date: | Compiled Date: | Submitted Date: |
| 21/08/2020 | 25/08/2020 | 29/08/2020 |

**Algorithm:**

Insertion\_Sort(int a[],int n)

1 int i,j,key;

2. for(j=1;j <=n;j++)

3. key=a[j];

4. i=j-1;

5. while(i>=0 && a[i]>key)

6. a[i+1]=a[i];

7. i=i-1;

8. a[i+1]=key;

Program

#include<stdio.h>

#include<conio.h>

int count=0;

void main()

{

void getdata(int[50],int);

void putdata(int[50],int);

void insertion\_sort(int a[],int);

int i,a[50],n;

clrscr();

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

scanf("%d",&n);

getdata(a,n);

printf("\nbefore soring\n");

putdata(a,n);

insertion\_sort(a,n);

printf("\nafter sorting\n");

putdata(a,n);

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

getch();

}

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

{

int k;

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

for(k=1;k <= n;k++)

{

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

}

}

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

{

int k;

for(k=1;k <= n;k++)

{

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

}

printf("\n");

}

void insertion\_sort(int a[],int n)

{

int key,j,i,temp;

count++;

for( j=2;j <= n;j++)

{

count++;

key=a[j];

count++;

i=j-1;

count++;

while(i>0 && a[i]>key)

{

count++;

a[i+1]=a[i];

count++;

i=i-1;

count++;

}

a[i+1]=key;

count++;

count++;

}

}

**Output:**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Input Size | Best Case | Average Case | Worst Case |
| 5 | 15 | 19 | 25 |
| 10 | 30 | 40 | 75 |
| 15 | 45 | 82 | 150 |
| 20 | 60 | 106 | 250 |
| 25 | 75 | 198 | 375 |

**Graph:**

