Design and Analysis of Algorithm
RCA 352: Session 2020-21
DAA Lab
Experiment-No.

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

Scheduled Date:	Compiled Date:	Submitted Date:
09-10-20	09-10-20	09-10-20

Shell Sort Algorithm

Shell Sort

Input

for each element in input

{

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

{

  Temp = a[i]

For(j = i; j >= gap and a[j-gap] > temp; j -= gap)

{

   a[j] = a[j-gap]

}

  a[j] = temp;

}

}

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Program of Linear Search

```c
#include<stdio.h>

#include<conio.h>

int count=0;

void shellsort(int arr[],int n)

{

        int gap,i,j,temp;

        count++;

        for( gap= n/2 ;gap > 0;gap /= 2)

   {

         count++;

       for(int i = gap; i < n; i +=1)

       {

          count++;

         temp=arr[i];

         count++;

         for(j=i; j>=gap && arr[j-gap]>temp;j -=gap)

       {

             count++;

          arr[j]=arr[j-gap];

          count++;

       }

         count++;
```

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```c
            arr[j]=temp;

            count++;

        }

        count++;

}


}


int main()

{

  int a[100],i,n;

   printf("enter size of the array");

   scanf("%d",&n);


  printf("enter the elements of array:\n");

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

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


 shellsort(a,n);

 printf("\n this array after applying shell sort:\n");

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

    printf("%d", a[i]);

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

 getch();

 return 0;
```

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}

Linear Search graph

Input size	Best case	Average case	Worst case
5	33	43	41
10	95	121	121
15	143	193	197
20	257	321	329

Shell Sort Graph