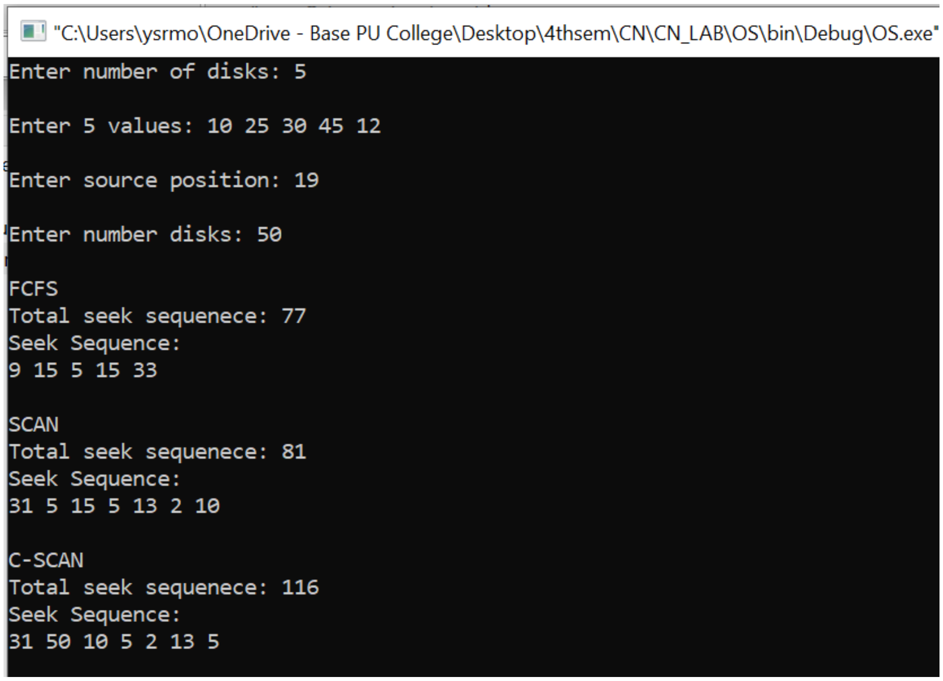
WEEK 12

Write a C program to simulate disk scheduling algorithms
a) FCFS
b) SCAN
c) C-SCAN

CODE:

```
#include<stdio.h>
#include<stdlib.h>

int disks;

void quicksort(int number[25], int first, int last)
{
    int i, j, pivot, temp;
    if (first < last)
    {
        pivot = first;

        i = first;
        j = last;
        while (i < j)
        {
            while (number[i] <= number[pivot] && i < last)
                i++;
            while (number[j] > number[pivot])
                j--;
            if (i < j)
            {
                temp = number[i];
                number[i] = number[j];
                number[j] = temp;
            }
        }
        temp = number[pivot];
        number[pivot] = number[j];
        number[j] = temp;
        quicksort(number, first, j - 1);
        quicksort(number, j + 1, last);
    }
}
void fcfs(int arr[],int src, int n)
{
    int sseq[20],i;

    sseq[0]=abs(arr[0]-src);
    for(i=1;i<n;i++)
    sseq[i]=abs(arr[i]-arr[i-1]);

    int sum=0;
    for(i=0;i<n;i++)
    sum+=sseq[i];

    printf("\nFCFS \nTotal seek sequenece: %d \nSeek Sequence: \n",sum);
    for(i=0;i<n;i++)
    printf("%d ",sseq[i]);
    printf("\n");
}

void cscan(int arr[], int src, int n)
{
    int i,sum=0,j,sseq[20];
    quicksort(arr, 0, n-1);
    int index;
    for (index = 0; index < n; index++) {
        if (arr[index] == src) {
            break;
        }
    }
    i=index+1;
    j=0;
    while(i<=n)
    {
        sseq[j]=abs(arr[i]-arr[i-1]);
        i++;
        j++;
    }
    sseq[j++]=abs(disks-arr[i-1]);
    i=0;
    sseq[j++]=abs(disks);
    sseq[j++]=abs(arr[0]);
    while(i<index)
    {
        sseq[j++]=abs(arr[i]-arr[i-1]);
        i++;
    }
    for(i=0;i<(n+2);i++)
    sum+=sseq[i];

      printf("\nC-SCAN \nTotal seek sequenece: %d \nSeek Sequence: \n",sum);
    for(i=0;i<n+2;i++)
    printf("%d ",sseq[i]);
    printf("\n");

}
void scan(int arr[], int src, int n)
{
    int i,sum=0,j,sseq[20];
    quicksort(arr, 0, n-1);
    int index;
    for (index = 0; index < n; index++) {
        if (arr[index] == src) {
            break;
        }
    }
    i=index+1;
    j=0;
    while(i<=n)
    {
        sseq[j]=abs(arr[i]-arr[i-1]);
        i++;
        j++;
    }
    sseq[j++]=abs(disks-arr[i-1]);

    i=index-1;
    sseq[j++]=abs(arr[i]-disks);
    while(i>=0)
    {
        sseq[j++]=abs(arr[i]-arr[i-1]);
       i--
    }
    for(i=0;i<(n+2);i++)
    sum+=sseq[i];

    printf("\nSCAN \nTotal seek sequenece: %d \nSeek Sequence: \n",sum);
    for(i=0;i<n+2;i++)
    printf("%d ",sseq[i]);
    printf("\n");
}
void main()
{
    int source, arr[20],i,n,copy[20];
    printf("Enter number of disks: ");
    scanf("%d",&n);

    printf("\nEnter %d values: ",n);
    for(i=0;i<n;i++)
    scanf("%d",&arr[i]);

    printf("\nEnter source position: ");
    scanf("%d",&source);

    printf("\nEnter number disks: ");
    scanf("%d",&disks);

    for(i=0;i<n;i++)
    copy[i]=arr[i];

    arr[n]=source;
    copy[n]=arr[n];

    fcfs(copy , source , n);
    scan(copy , source , n);
    cscan(arr , source , n);

}
```

OUTPUT:


"C:\Users\ysrmo\OneDrive - Base PU College\Desktop\4thsem\CN\CN_LAB\OS\bin\Debug\OS.exe"

```
Enter number of disks: 5

Enter 5 values: 10 25 30 45 12

Enter source position: 19

Enter number disks: 50

FCFS
Total seek sequenece: 77
Seek Sequence:
9 15 5 15 33

SCAN
Total seek sequenece: 81
Seek Sequence:
31 5 15 5 13 2 10

C-SCAN
Total seek sequenece: 116
Seek Sequence:
31 50 10 5 2 13 5
```