



Academic Year: 2023-24
Sub: Operating Systems Laboratory

Sem: III
SAP ID: 60003220131

EXPERIMENT NO. 07 & 8

NAME: Ayush Vinod Upadhyay
ROLL NO: I025
SAP ID: 60003220131
BRANCH: Information Technology
BATCH: 1

Aim: Implement Sequential File allocation techniques

Code:

```
#include <stdio.h>
#include <stdlib.h>
int flag[100];
void main()
{
    int f[50], n, i, st, len, j, c, k, count = 0;
    for (i = 0; i < 50; i++)
        f[i] = 0;
    printf("Enter no. of files:");
    scanf("%d", &n);
    count = 0;
    printf("Enter memory req :");
    int mem[n];
    for (int i = 0; i < n; i++)
    {
        scanf("%d", &mem[i]);
    }
    for (int i = 0; i < n; i++)
    {
        count = 0;
        int index = rand() % 100;
        int copy = index;
        if (flag[index] == 1)
        {
            i--;
            continue;
        }
        for (int j = 0; j < mem[i]; j++)
        {
            flag[index] = 1;
            index++;
            count++;
        }
        printf("\nfile:%d,length%d block allocated are:", i + 1, count);
        for (int j = index; j < index + count; j++)
            printf("%d ", j);
    }
}
```



Academic Year: 2023-24

Sem: III

Sub: Operating Systems Laboratory

SAP ID: 60003220131

```
}  
}
```

Output:

```
Enter no. of files: 5  
5  
Enter memory req : 4 5 6 4 5  
4 5 6 4 5  
  
file:1,length4 block allocated are:87 88 89 90  
file:2,length5 block allocated are:82 83 84 85 86  
file:3,length6 block allocated are:21 22 23 24 25 26  
file:4,length4 block allocated are:97 98 99 100  
file:5,length5 block allocated are:40 41 42 43 44 |
```



Academic Year: 2023-24
Sub: Operating Systems Laboratory

Sem: III
SAP ID: 60003220131

EXPERIMENT 8

Aim: Implement FCFS, SSTF, SCAN, CSCAN disk scheduling algorithm.(Any 2)

1)FCFS

Code:

```
import java.util.*;
public class OS1 {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int queue[]={98, 183, 40, 122, 10, 124, 65};
        int head=sc.nextInt();
        int temp=head;
        int FCFS=0;
        int min=Integer.MAX_VALUE;
        System.out.println("The order of the pointer movement in FCFS is:");
        for(int i=0;i<queue.length;i++){
            System.out.print(queue[i]+"-> ");
            FCFS=FCFS+Math.abs(temp-queue[i]);
            temp=queue[i];
        }
        System.out.println("\n total seek time with FCFS algorithm is:"+FCFS);
    }
}
```

Output:

```
PS D:\College assignments\OS> java OS1
53
The order of the pointer movement in FCFS is:
98-> 183-> 40-> 122-> 10-> 124-> 65->
total seek time with FCFS algorithm is:640
```



Academic Year: 2023-24

Sem: III

Sub: Operating Systems Laboratory

SAP ID: 60003220131

2) SSTF

Code:

```
import java.util.*;
public class SSTF {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int head=sc.nextInt();
        int temp=head;
        int SSTF=0;
        int min=Integer.MAX_VALUE;
        int minIndex=-1;
        System.out.println("input values for SSTF:");
        Vector<Integer> v=new Vector<Integer>();
        for(int j=0;j<7;j++){
            v.add(sc.nextInt());
        }
        System.out.println("The order of the pointer movement in SSTF is:");
        temp=head;
        for(int x=0;x<7;x++){
            for(int y=0;y<v.size();y++){
                if(Math.abs(v.elementAt(y)-temp)<min){
                    min=Math.abs(v.elementAt(y)-temp);
                    minIndex=y;
                }
            }
            System.out.print(v.elementAt(minIndex)+"-> ");
            SSTF=SSTF+min;
            temp=v.elementAt(minIndex);
            v.removeElement(v.elementAt(minIndex));
            min=Integer.MAX_VALUE;
        }
        System.out.println("\n total seek time with SSTF algorithm is:"+SSTF);
    }
}
```

Output:

```
PS D:\College assignments\OS> java SSTF
50
input values for SSTF:
98 183 40 122 10 124 65
The order of the pointer movement in SSTF is:
40-> 65-> 98-> 122-> 124-> 183-> 10->
total seek time with SSTF algorithm is:326
```



Academic Year: 2023-24

Sem: III

Sub: Operating Systems Laboratory

SAP ID: 60003220131

3) SCAN

Code:

```
import java.util.*;
public class SCAN {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int queue[]={98, 183, 40, 122, 10, 124, 65};
        int head=sc.nextInt();
        int temp=-1,temp2=head;
        int SCAN=0;
        Arrays.sort(queue);
        for(int j=0;j<queue.length;j++){
            if(queue[j]>head){
                temp=j;
                break;
            }
        }
        System.out.println("The order of the pointer movement in SCAN is:");
        for(int i=temp-1;i>=0;i--){
            System.out.print(queue[i]+"-> ");
            SCAN=SCAN+(temp2-queue[i]);
            temp2=queue[i];
        }
        SCAN=SCAN+temp2;
        temp2=0;
        for(int k=temp;k<7;k++){
            System.out.print(queue[k]+"-> ");
            SCAN=SCAN+(Math.abs(temp2-queue[k]));
            temp2=queue[k];
        }
        System.out.println("\n total seek time with SCAN algorithm is:"+SCAN);
    }
}
```

Output:

```
PS D:\College assignments\OS> java SCAN
50
The order of the pointer movement in SCAN is:
40-> 10-> 65-> 98-> 122-> 124-> 183->
total seek time with SCAN algorithm is:233
```



Academic Year: 2023-24

Sem: III

Sub: Operating Systems Laboratory

SAP ID: 60003220131

4) C-SCAN

Code:

```
import java.util.*;
public class CSCAN {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int queue[]={98, 183, 40, 122, 10, 124, 65};
        int head=sc.nextInt();
        int temp=-1,temp2=head;
        int SCAN=0;
        Arrays.sort(queue);
        for(int j=0;j<queue.length;j++){
            if(queue[j]>head){
                temp=j;
                break;
            }
        }
        System.out.println("The order of the pointer movement in C-SCAN is:");
        for(int i=temp-1;i>=0;i--){
            System.out.print(queue[i]+"-> ");
            SCAN=SCAN+(temp2-queue[i]);
            temp2=queue[i];
        }
        for(int k=temp;k<7;k++){
            System.out.print(queue[k]+"-> ");
            SCAN=SCAN+(Math.abs(temp2-queue[k]));
            temp2=queue[k];
        }
        System.out.println("\n total seek time with C-SCAN algorithm
is:"+SCAN);
    }
}
```

Output:

```
PS D:\College assignments\OS> java CSCAN
50
The order of the pointer movement in C-SCAN is:
40-> 10-> 65-> 98-> 122-> 124-> 183->
total seek time with C-SCAN algorithm is:213
```



Academic Year: 2023-24

Sem: III

Sub: Operating Systems Laboratory

SAP ID: 60003220131

5) LOOK

Code:

```
import java.util.*;
public class LOOK {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int queue[]={98, 183, 40, 122, 10, 124, 65};
        int head=sc.nextInt();
        int temp=-1,temp2=head;
        int LOOK=0;
        Arrays.sort(queue);
        for(int j=0;j<queue.length;j++){
            if(queue[j]>head){
                temp=j;
                break;
            }
        }
        System.out.println("The order of the pointer movement in LOOK is:");
        for(int i=temp-1;i>=0;i--){
            System.out.print(queue[i]+"-> ");
            LOOK=LOOK+(temp2-queue[i]);
            temp2=queue[i];
        }
        System.out.print("0 ->");
        LOOK=LOOK+temp2+199;
        temp2=199;
        System.out.print("199 ->");
        for(int k=6;k>=temp;k--){
            System.out.print(queue[k]+"-> ");
            LOOK=LOOK+(Math.abs(temp2-queue[k]));
            temp2=queue[k];
        }
        System.out.println("\n total seek time with LOOK algorithm is:"+LOOK);
    }
}
```

Output:

```
PS D:\College assignments\OS> java LOOK
50
The order of the pointer movement in LOOK is:
40-> 10-> 0 ->199 ->183-> 124-> 122-> 98-> 65->
total seek time with LOOK algorithm is:383
```



Academic Year: 2023-24

Sem: III

Sub: Operating Systems Laboratory

SAP ID: 60003220131

6) C-LOOK

Code:

```
import java.util.*;
public class CLOOK {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int queue[]={98, 183, 40, 122, 10, 124, 65};
        int head=sc.nextInt();
        int temp=-1,temp2=head;
        int LOOK=0;
        Arrays.sort(queue);
        for(int j=0;j<queue.length;j++){
            if(queue[j]>head){
                temp=j;
                break;
            }
        }
        System.out.println("The order of the pointer movement in C-LOOK is:");
        for(int i=temp-1;i>=0;i--){
            System.out.print(queue[i]+"-> ");
            LOOK=LOOK+(temp2-queue[i]);
            temp2=queue[i];
        }
        LOOK=LOOK+queue[6]-temp2;
        temp2=199;
        for(int k=6;k>=temp;k--){
            System.out.print(queue[k]+"-> ");
            LOOK=LOOK+(Math.abs(temp2-queue[k]));
            temp2=queue[k];
        }
        System.out.println("\n total seek time with C-LOOK algorithm
is:"+LOOK);
    }
}
```

Output:

```
PS D:\College assignments\OS> java CLOOK
50
The order of the pointer movement in C-LOOK is:
40-> 10-> 183-> 124-> 122-> 98-> 65->
total seek time with C-LOOK algorithm is:347
```