DAY -4

CSA0465 – OPERATING SYSTEMS FOR HANDLING DEADLOCKS

LAB EXPERIMENTS – Slot B

Name :- Aswini .P

Reg no :- 192011399

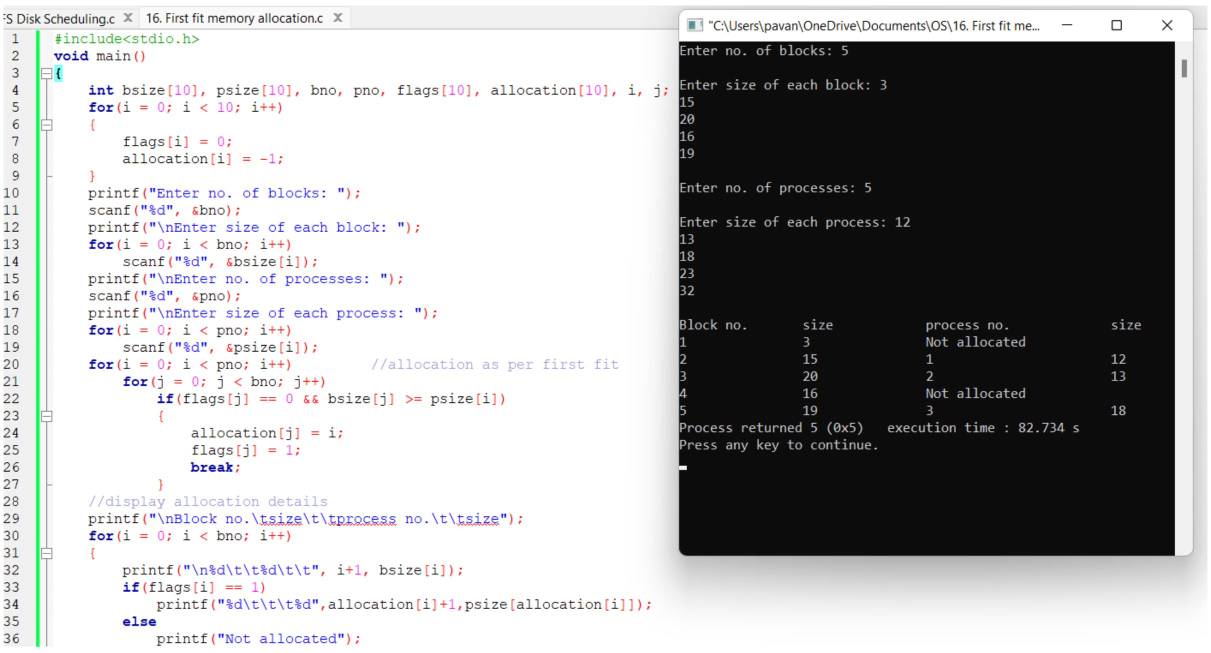
16. First Fit Memory Allocation :-

Program :-

```
#include<stdio.h>
void main()
{
	int bsize[10], psize[10], bno, pno, flags[10], allocation[10], i, j;
	for(i = 0; i < 10; i++)
	{
		flags[i] = 0;
		allocation[i] = -1;
	}
	printf("Enter no. of blocks: ");
	scanf("%d", &bno);
	printf("\nEnter size of each block: ");
	for(i = 0; i < bno; i++)
		scanf("%d", &bsize[i]);
	printf("\nEnter no. of processes: ");
	scanf("%d", &pno);
	printf("\nEnter size of each process: ");
	for(i = 0; i < pno; i++)
		scanf("%d", &psize[i]);
	for(i = 0; i < pno; i++)		//allocation as per first fit
		for(j = 0; j < bno; j++)
			if(flags[j] == 0 && bsize[j] >= psize[i])
			{
```

```
                    allocation[j] = i;
                    flags[j] = 1;
                    break;
                }
    //display allocation details
    printf("\nBlock no.\tsize\t\tprocess no.\t\tsize");
    for(i = 0; i < bno; i++)
    {
        printf("\n%d\t\t%d\t\t", i+1, bsize[i]);
        if(flags[i] == 1)
            printf("%d\t\t\t%d",allocation[i]+1,psize[allocation[i]]);
        else
            printf("Not allocated");
    }
}
```

Output :-


S Disk Scheduling.c ✕ 16. First fit memory allocation.c ✕

```
#include<stdio.h>
void main()
{
    int bsize[10], psize[10], bno, pno, flags[10], allocation[10], i, j;
    for(i = 0; i < 10; i++)
    {
        flags[i] = 0;
        allocation[i] = -1;
    }
    printf("Enter no. of blocks: ");
    scanf("%d", &bno);
    printf("\nEnter size of each block: ");
    for(i = 0; i < bno; i++)
        scanf("%d", &bsize[i]);
    printf("\nEnter no. of processes: ");
    scanf("%d", &pno);
    printf("\nEnter size of each process: ");
    for(i = 0; i < pno; i++)
        scanf("%d", &psize[i]);
    for(i = 0; i < pno; i++)         //allocation as per first fit
        for(j = 0; j < bno; j++)
            if(flags[j] == 0 && bsize[j] >= psize[i])
            {
                allocation[j] = i;
                flags[j] = 1;
                break;
            }
    //display allocation details
    printf("\nBlock no.\tsize\t\tprocess no.\t\tsize");
    for(i = 0; i < bno; i++)
    {
        printf("\n%d\t\t%d\t\t", i+1, bsize[i]);
        if(flags[i] == 1)
            printf("%d\t\t\t%d",allocation[i]+1,psize[allocation[i]]);
        else
            printf("Not allocated");
```

"C:\Users\pavan\OneDrive\Documents\OS\16. First fit me...

```
Enter no. of blocks: 5

Enter size of each block: 3
15
20
16
19

Enter no. of processes: 5

Enter size of each process: 12
13
18
23
32

Block no.       size            process no.             size
1               3               Not allocated
2               15              1                       12
3               20              2                       13
4               16              Not allocated
5               19              3                       18
Process returned 5 (0x5)   execution time : 82.734 s
Press any key to continue.
```

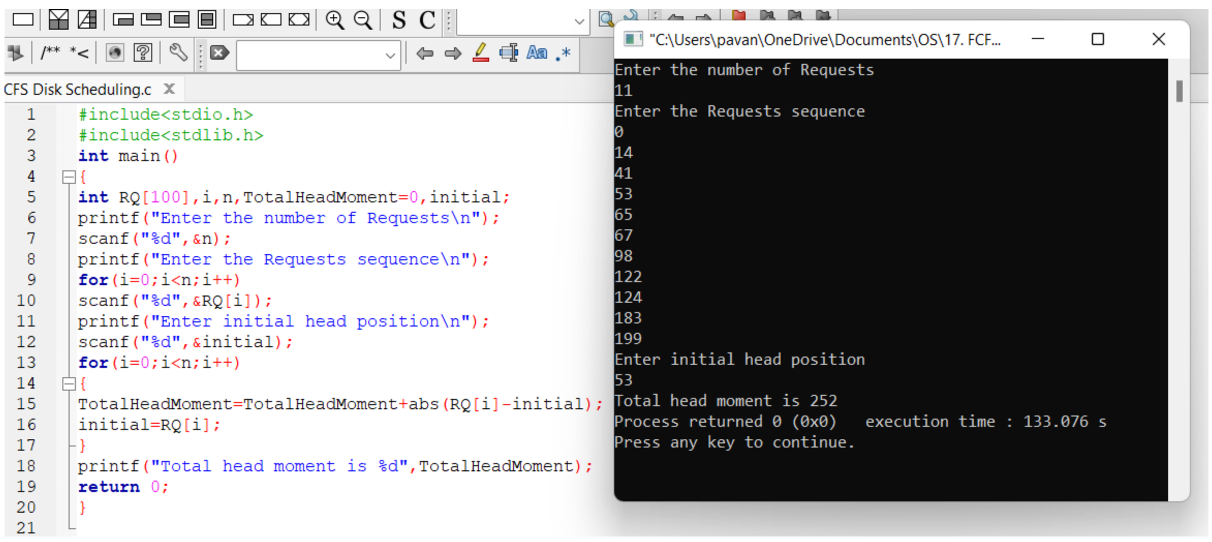
17. FCFS Disk Scheduling :-

Program :-

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

```
#include<stdlib.h>
int main()
{
int RQ[100],i,n,TotalHeadMoment=0,initial;
printf("Enter the number of Requests\n");
scanf("%d",&n);
printf("Enter the Requests sequence\n");
for(i=0;i<n;i++)
scanf("%d",&RQ[i]);
printf("Enter initial head position\n");
scanf("%d",&initial);
for(i=0;i<n;i++)
{
TotalHeadMoment=TotalHeadMoment+abs(RQ[i]-initial);
initial=RQ[i];
}
printf("Total head moment is %d",TotalHeadMoment);
return 0;
}
```

Output :-



```
#include<stdio.h>
#include<stdlib.h>
int main()
{
int RQ[100],i,n,TotalHeadMoment=0,initial;
printf("Enter the number of Requests\n");
scanf("%d",&n);
printf("Enter the Requests sequence\n");
for(i=0;i<n;i++)
scanf("%d",&RQ[i]);
printf("Enter initial head position\n");
scanf("%d",&initial);
for(i=0;i<n;i++)
{
TotalHeadMoment=TotalHeadMoment+abs(RQ[i]-initial);
initial=RQ[i];
}
printf("Total head moment is %d",TotalHeadMoment);
return 0;
}
```

```
Enter the number of Requests
11
Enter the Requests sequence
0
14
41
53
65
67
98
122
124
183
199
Enter initial head position
53
Total head moment is 252
Process returned 0 (0x0)   execution time : 133.076 s
Press any key to continue.
```

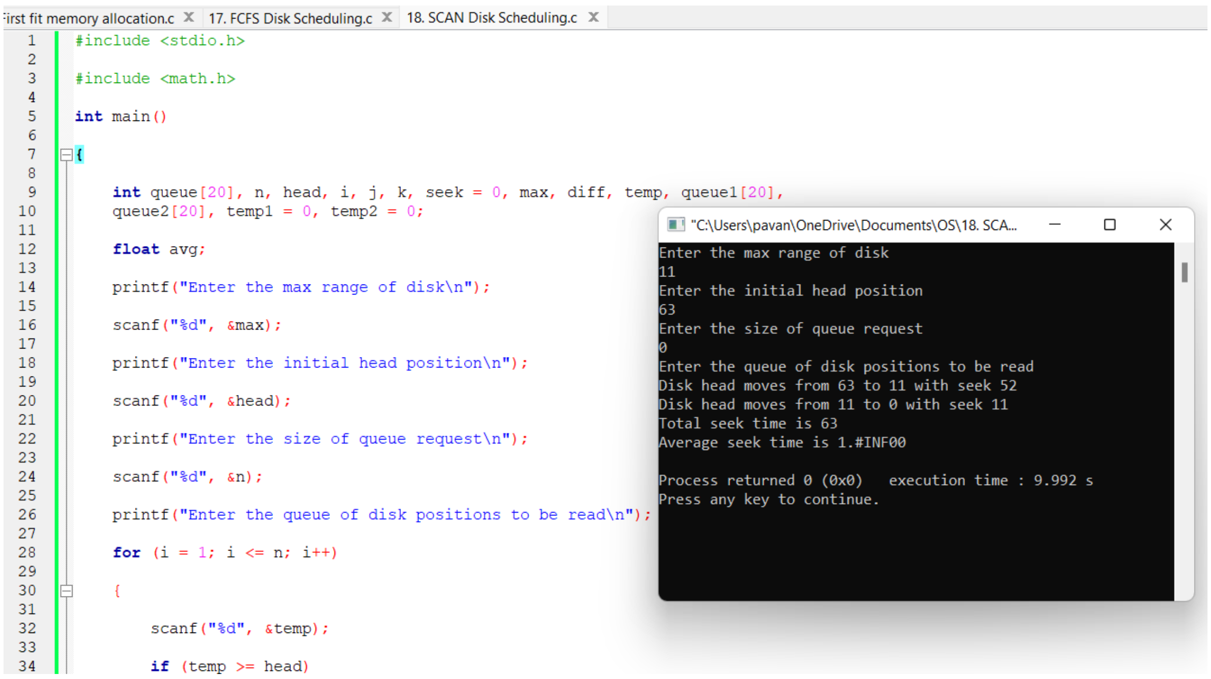
18. SCAN Disk Scheduling :-

Program :-

```
#include <stdio.h>

#include <math.h>

int main()

{

    int queue[20], n, head, i, j, k, seek = 0, max, diff, temp, queue1[20],
    queue2[20], temp1 = 0, temp2 = 0;

    float avg;

    printf("Enter the max range of disk\n");

    scanf("%d", &max);

    printf("Enter the initial head position\n");

    scanf("%d", &head);

    printf("Enter the size of queue request\n");

    scanf("%d", &n);

    printf("Enter the queue of disk positions to be read\n");

    for (i = 1; i <= n; i++)
```

```
{
    scanf("%d", &temp);
    if (temp >= head)
    {
        queue1[temp1] = temp;
        temp1++;
    }
    else
    {
        queue2[temp2] = temp;
        temp2++;
    }
}
for (i = 0; i < temp1 - 1; i++)
{
    for (j = i + 1; j < temp1; j++)
    {
        if (queue1[i] > queue1[j])
        {
            temp = queue1[i];
            queue1[i] = queue1[j];
            queue1[j] = temp;
        }
    }
}
for (i = 0; i < temp2 - 1; i++)
{
    for (j = i + 1; j < temp2; j++)
    {
        if (queue2[i] < queue2[j])
        {
            temp = queue2[i];
            queue2[i] = queue2[j];
            queue2[j] = temp;
        }
    }
}

for (i = 1, j = 0; j < temp1; i++, j++)

    queue[i] = queue1[j];

queue[i] = max;

for (i = temp1 + 2, j = 0; j < temp2; i++, j++)

    queue[i] = queue2[j];

queue[i] = 0;

queue[0] = head;

for (j = 0; j <= n + 1; j++)

{

    diff = abs(queue[j + 1] - queue[j]);

    seek += diff;

    printf("Disk head moves from %d to %d with seek %d\n", queue[j],
    queue[j + 1], diff);
    }

    printf("Total seek time is %d\n", seek);

    avg = seek / (float)n;

    printf("Average seek time is %f\n", avg);

    return 0;
}
```

Output :-


irst fit memory allocation.c
17. FCFS Disk Scheduling.c
18. SCAN Disk Scheduling.c
"C:\Users\pavan\OneDrive\Documents\OS\18. SCA...

```
#include <stdio.h>

#include <math.h>

int main()

{

    int queue[20], n, head, i, j, k, seek = 0, max, diff, temp, queue1[20],
    queue2[20], temp1 = 0, temp2 = 0;

    float avg;

    printf("Enter the max range of disk\n");

    scanf("%d", &max);

    printf("Enter the initial head position\n");

    scanf("%d", &head);

    printf("Enter the size of queue request\n");

    scanf("%d", &n);

    printf("Enter the queue of disk positions to be read\n");

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

    {

        scanf("%d", &temp);

        if (temp >= head)
```

```
Enter the max range of disk
11
Enter the initial head position
63
Enter the size of queue request
0
Enter the queue of disk positions to be read
Disk head moves from 63 to 11 with seek 52
Disk head moves from 11 to 0 with seek 11
Total seek time is 63
Average seek time is 1.#INF00

Process returned 0 (0x0)   execution time : 9.992 s
Press any key to continue.
```

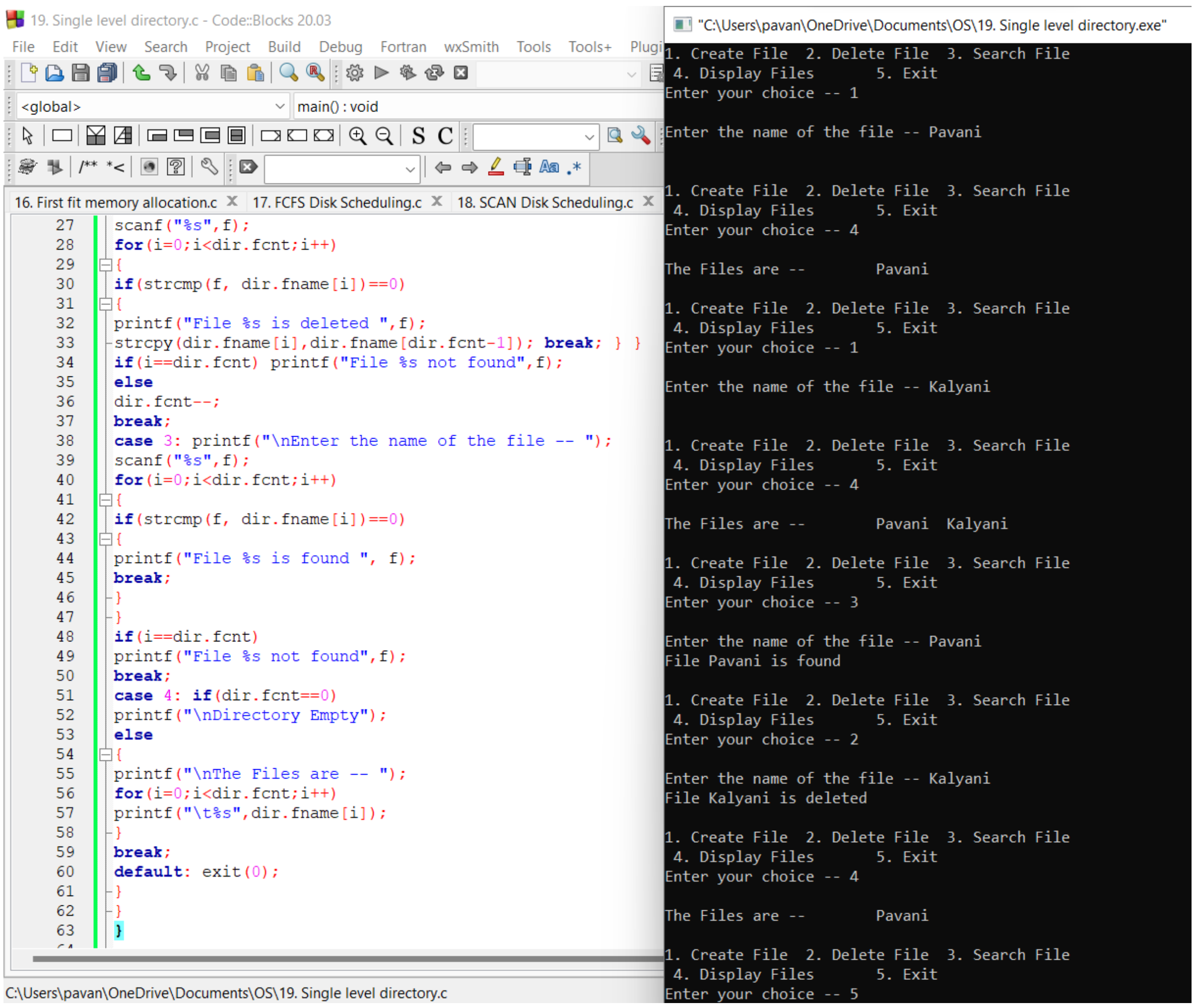
19. Single level directory :-

Program :-

```
#include<stdlib.h>

#include<string.h>

#include<stdio.h>

struct

{

char dname[10],fname[10][10];
```

```
int fcnt;
}dir;
void main()
{
int i,ch;
char f[30];
dir.fcnt = 0;
printf("\nEnter name of directory -- ");
scanf("%s", dir.dname);
while(1)
{
printf("\n\n1. Create File\t2. Delete File\t3. Search File \n 4. Display Files\t5. Exit\nEnter
your choice -- ");
scanf("%d",&ch);
switch(ch)
{
case 1: printf("\nEnter the name of the file -- ");
scanf("%s",dir.fname[dir.fcnt]);
dir.fcnt++;
break;
case 2: printf("\nEnter the name of the file -- ");
scanf("%s",f);
for(i=0;i<dir.fcnt;i++)
{
if(strcmp(f, dir.fname[i])==0)
{
printf("File %s is deleted ",f);
strcpy(dir.fname[i],dir.fname[dir.fcnt-1]); break; } }
if(i==dir.fcnt) printf("File %s not found",f);
else
dir.fcnt--;
break;
case 3: printf("\nEnter the name of the file -- ");
scanf("%s",f);
for(i=0;i<dir.fcnt;i++)
{
if(strcmp(f, dir.fname[i])==0)
{
printf("File %s is found ", f);
break;
}
}
if(i==dir.fcnt)
printf("File %s not found",f);
break;
case 4: if(dir.fcnt==0)
printf("\nDirectory Empty");
else
{
printf("\nThe Files are -- ");
for(i=0;i<dir.fcnt;i++)
printf("\t%s",dir.fname[i]);
}
break;
default: exit(0);
}
}
}
```

Output :-


19. Single level directory.c - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugi
<global>
main() : void
16. First fit memory allocation.c
17. FCFS Disk Scheduling.c
18. SCAN Disk Scheduling.c
C:\Users\pavan\OneDrive\Documents\OS\19. Single level directory.c
"C:\Users\pavan\OneDrive\Documents\OS\19. Single level directory.exe"

```c
scanf("%s",f);
for(i=0;i<dir.fcnt;i++)
{
if(strcmp(f, dir.fname[i])==0)
{
printf("File %s is deleted ",f);
strcpy(dir.fname[i],dir.fname[dir.fcnt-1]); break; } }
if(i==dir.fcnt) printf("File %s not found",f);
else
dir.fcnt--;
break;
case 3: printf("\nEnter the name of the file -- ");
scanf("%s",f);
for(i=0;i<dir.fcnt;i++)
{
if(strcmp(f, dir.fname[i])==0)
{
printf("File %s is found ", f);
break;
}
}
if(i==dir.fcnt)
printf("File %s not found",f);
break;
case 4: if(dir.fcnt==0)
printf("\nDirectory Empty");
else
{
printf("\nThe Files are -- ");
for(i=0;i<dir.fcnt;i++)
printf("\t%s",dir.fname[i]);
}
break;
default: exit(0);
}
}
}
```

```
1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 1

Enter the name of the file -- Pavani


1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 4

The Files are --        Pavani

1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 1

Enter the name of the file -- Kalyani


1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 4

The Files are --        Pavani  Kalyani

1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 3

Enter the name of the file -- Pavani
File Pavani is found

1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 2

Enter the name of the file -- Kalyani
File Kalyani is deleted

1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 4

The Files are --        Pavani

1. Create File  2. Delete File  3. Search File
 4. Display Files       5. Exit
Enter your choice -- 5
```

20. Two level directory structure :-

Program :-

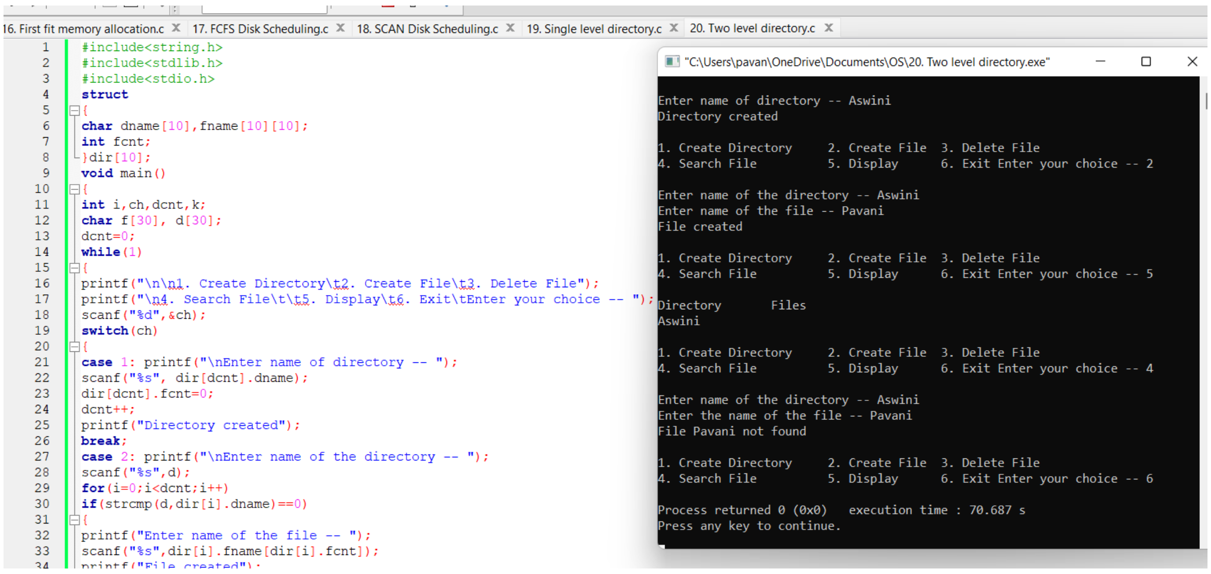
```c
#include<string.h>
#include<stdlib.h>
#include<stdio.h>
struct
{
char dname[10],fname[10][10];
int fcnt;
}dir[10];
void main()
{
int i,ch,dcnt,k;
```

```
char f[30], d[30];
dcnt=0;
while(1)
{
printf("\n\n1. Create Directory\t2. Create File\t3. Delete File");
printf("\n4. Search File\t\t5. Display\t6. Exit\tEnter your choice -- ");
scanf("%d",&ch);
switch(ch)
{
case 1: printf("\nEnter name of directory -- ");
scanf("%s", dir[dcnt].dname);
dir[dcnt].fcnt=0;
dcnt++;
printf("Directory created");
break;
case 2: printf("\nEnter name of the directory -- ");
scanf("%s",d);
for(i=0;i<dcnt;i++)
if(strcmp(d,dir[i].dname)==0)
{
printf("Enter name of the file -- ");
scanf("%s",dir[i].fname[dir[i].fcnt]);
printf("File created");
break;
}
if(i==dcnt)
printf("Directory %s not found",d);
break;
case 3: printf("\nEnter name of the directory -- ");
scanf("%s",d);
```

```
for(i=0;i<dcnt;i++)
{
if(strcmp(d,dir[i].dname)==0)
{
printf("Enter name of the file -- ");
scanf("%s",f);
for(k=0;k<dir[i].fcnt;k++)
{
if(strcmp(f, dir[i].fname[k])==0)
{
printf("File %s is deleted ",f);
dir[i].fcnt--;
strcpy(dir[i].fname[k],dir[i].fname[dir[i].fcnt]);
goto jmp;
}
}
printf("File %s not found",f);
goto jmp;
}
}
printf("Directory %s not found",d);
jmp : break;
case 4: printf("\nEnter name of the directory -- ");
scanf("%s",d);
for(i=0;i<dcnt;i++)
{
if(strcmp(d,dir[i].dname)==0)
{
printf("Enter the name of the file -- ");
scanf("%s",f);
for(k=0;k<dir[i].fcnt;k++)
{
if(strcmp(f, dir[i].fname[k])==0)
{
printf("File %s is found ",f);
goto jmp1;
}
}
printf("File %s not found",f);
goto jmp1;
}
}
printf("Directory %s not found",d);
jmp1: break;
case 5: if(dcnt==0)
printf("\nNo Directory's ");
else
{
printf("\nDirectory\tFiles");
for(i=0;i<dcnt;i++)
{
printf("\n%s\t\t",dir[i].dname);
for(k=0;k<dir[i].fcnt;k++)
printf("\t%s",dir[i].fname[k]);
}
}
break;
default:exit(0);
}
}
```

}

Output :-


16. First fit memory allocation.c   17. FCFS Disk Scheduling.c   18. SCAN Disk Scheduling.c   19. Single level directory.c   20. Two level directory.c

```c
#include<string.h>
#include<stdlib.h>
#include<stdio.h>
struct
{
char dname[10],fname[10][10];
int fcnt;
}dir[10];
void main()
{
int i,ch,dcnt,k;
char f[30], d[30];
dcnt=0;
while(1)
{
printf("\n\n1. Create Directory\t2. Create File\t3. Delete File");
printf("\n4. Search File\t\t5. Display\t6. Exit\tEnter your choice -- ");
scanf("%d",&ch);
switch(ch)
{
case 1: printf("\nEnter name of directory -- ");
scanf("%s", dir[dcnt].dname);
dir[dcnt].fcnt=0;
dcnt++;
printf("Directory created");
break;
case 2: printf("\nEnter name of the directory -- ");
scanf("%s",d);
for(i=0;i<dcnt;i++)
if(strcmp(d,dir[i].dname)==0)
{
printf("Enter name of the file -- ");
scanf("%s",dir[i].fname[dir[i].fcnt]);
printf("File created");
```

"C:\Users\pavan\OneDrive\Documents\OS\20. Two level directory.exe"

```
Enter name of directory -- Aswini
Directory created

1. Create Directory     2. Create File  3. Delete File
4. Search File          5. Display      6. Exit Enter your choice -- 2

Enter name of the directory -- Aswini
Enter name of the file -- Pavani
File created

1. Create Directory     2. Create File  3. Delete File
4. Search File          5. Display      6. Exit Enter your choice -- 5

Directory       Files
Aswini

1. Create Directory     2. Create File  3. Delete File
4. Search File          5. Display      6. Exit Enter your choice -- 4

Enter name of the directory -- Aswini
Enter the name of the file -- Pavani
File Pavani not found

1. Create Directory     2. Create File  3. Delete File
4. Search File          5. Display      6. Exit Enter your choice -- 6

Process returned 0 (0x0)   execution time : 70.687 s
Press any key to continue.
```