CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEVANG PATEL INSTITUTE OF ADVANCE TECHNOLOGY AND RESEARCH

Department of Computer Science & Engineering

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Subject Code	:	CS350	**Subject Name**	:	OPERATING SYSTEM
Date of exam	:	16 NOV 2021			

DEFINITION:

Simulate Optimal Page Replacement Algorithm

PROGRAM CODE:

```
#include<stdio.h>
int
main ()
{

int numberOfFrames;

int numberOfPages;

int frames[10];

int pages[30];

int temp[10];

int flag_1, flag_2, flag_3;

int i, j, k;
int pos;

int max;

int faults = 0;

printf ("ENTER THE TOTAL NUMBER OF FRAMES: ");

printf ("\n------------------------------------\n");

scanf ("%d", &numberOfFrames);

printf ("\n------------------------------------\n");


printf ("ENTER THE NUMBER OF THE PAGES: ");

printf ("\n------------------------------------\n");

scanf ("%d", &numberOfPages);

printf ("\n------------------------------------\n");


printf ("ENTER THE PAGE REFERENCE STRING: ");

printf ("\n------------------------------------\n");
```

```
for (i = 0; i < numberOfPages; ++i)
    {

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

}



for (i = 0; i < numberOfFrames; ++i)
    {

frames[i] = -1;

}



for (i = 0; i < numberOfPages; ++i)
    {

flag_1 = flag_2 = 0;



for (j = 0; j < numberOfFrames; ++j)
            {

if (frames[j] == pages[i])
                {

flag_1 = flag_2 = 1;
break;

}

}



if (flag_1 == 0)
          {

for (j = 0; j < numberOfFrames; ++j)
             {

if (frames[j] == -1)
                   {

faults++;

frames[j] = pages[i];

flag_2 = 1;

break;

}

}

}
```

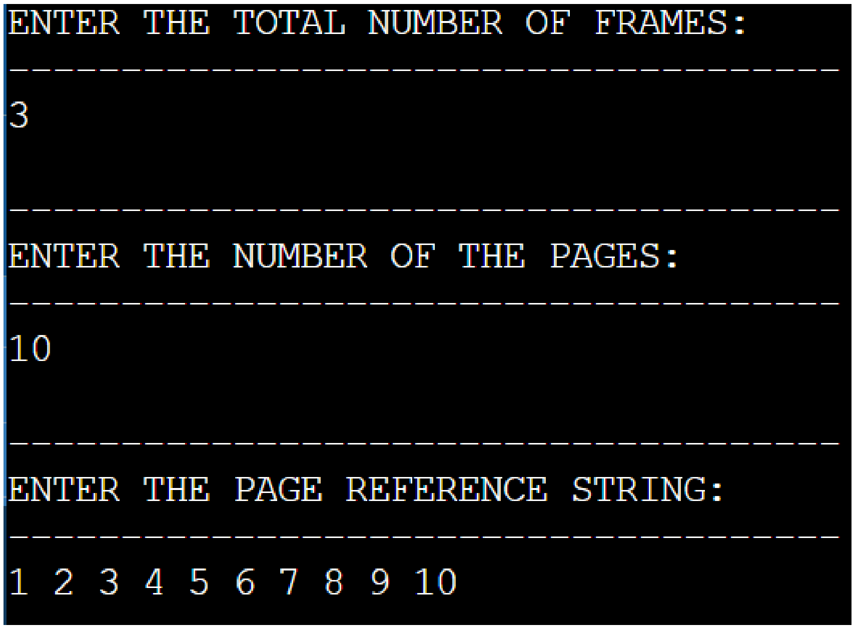
```
if (flag_2 == 0)
        {

flag_3 = 0;



for (j = 0; j < numberOfFrames; ++j)
           {

temp[j] = -1;



for (k = i + 1; k < numberOfPages; ++k)
                {

if (frames[j] == pages[k])
                   {

temp[j] = k;

break;

}

}

}
```

```
for (j = 0; j < numberOfFrames; ++j)
            {


if (temp[j] == -1)
                  {


pos = j;


flag_3 = 1;


break;


}


}



if (flag_3 == 0)
            {


max = temp[0];


pos = 0;



for (j = 1; j < numberOfFrames; ++j)
                  {


if (temp[j] > max)
                     {
```

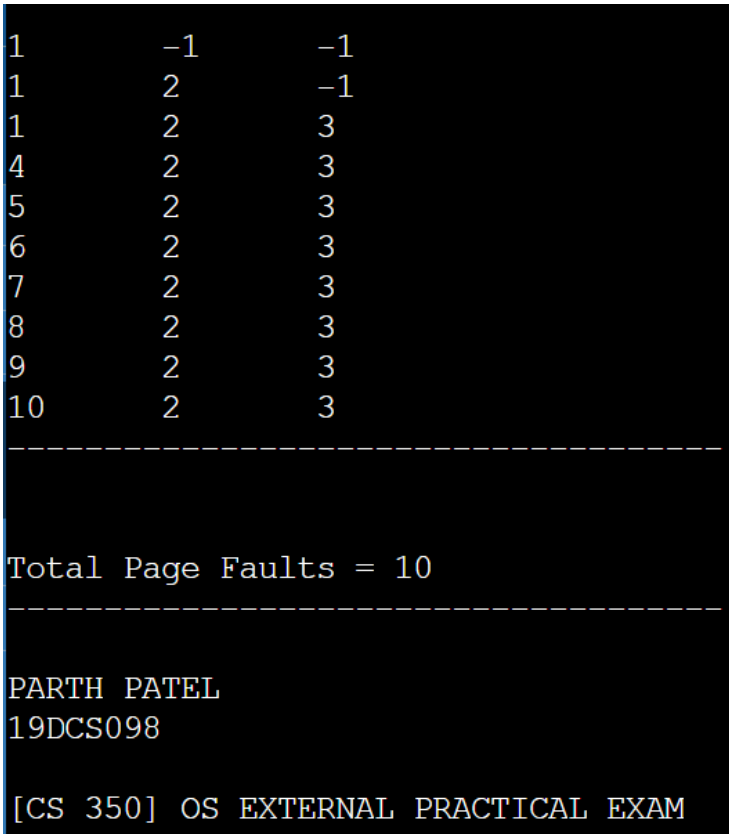
```
max = temp[j];

pos = j;

}

}

}

frames[pos] = pages[i];

faults++;

}


printf ("\n");


for (j = 0; j < numberOfFrames; ++j)
            {

printf ("%d\t", frames[j]);

}

}
```

```
printf ("\n-----------------------------------\n");

printf ("\n\nTotal Page Faults = %d", faults);

printf ("\n-----------------------------------\n");

printf ("\nPARTH PATEL\n19DCS098\n");

printf ("\n[CS 350] OS EXTERNAL PRACTICAL EXAM");


return 0;

}
```

OUTPUT:



```
ENTER THE TOTAL NUMBER OF FRAMES:
-------------------------------------
3

-------------------------------------
ENTER THE NUMBER OF THE PAGES:
-------------------------------------
10

-------------------------------------
ENTER THE PAGE REFERENCE STRING:
-------------------------------------
1 2 3 4 5 6 7 8 9 10
```



```
1       -1      -1
1       2       -1
1       2       3
4       2       3
5       2       3
6       2       3
7       2       3
8       2       3
9       2       3
10      2       3
-------------------------------------


Total Page Faults = 10
-------------------------------------

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[CS 350] OS EXTERNAL PRACTICAL EXAM
```

DEFINITION:

Write a C program in LINUX to perform Worst Fit Memory allocation algorithms and Calculate Internal and External Fragmentation.

PROGRAM CODE:

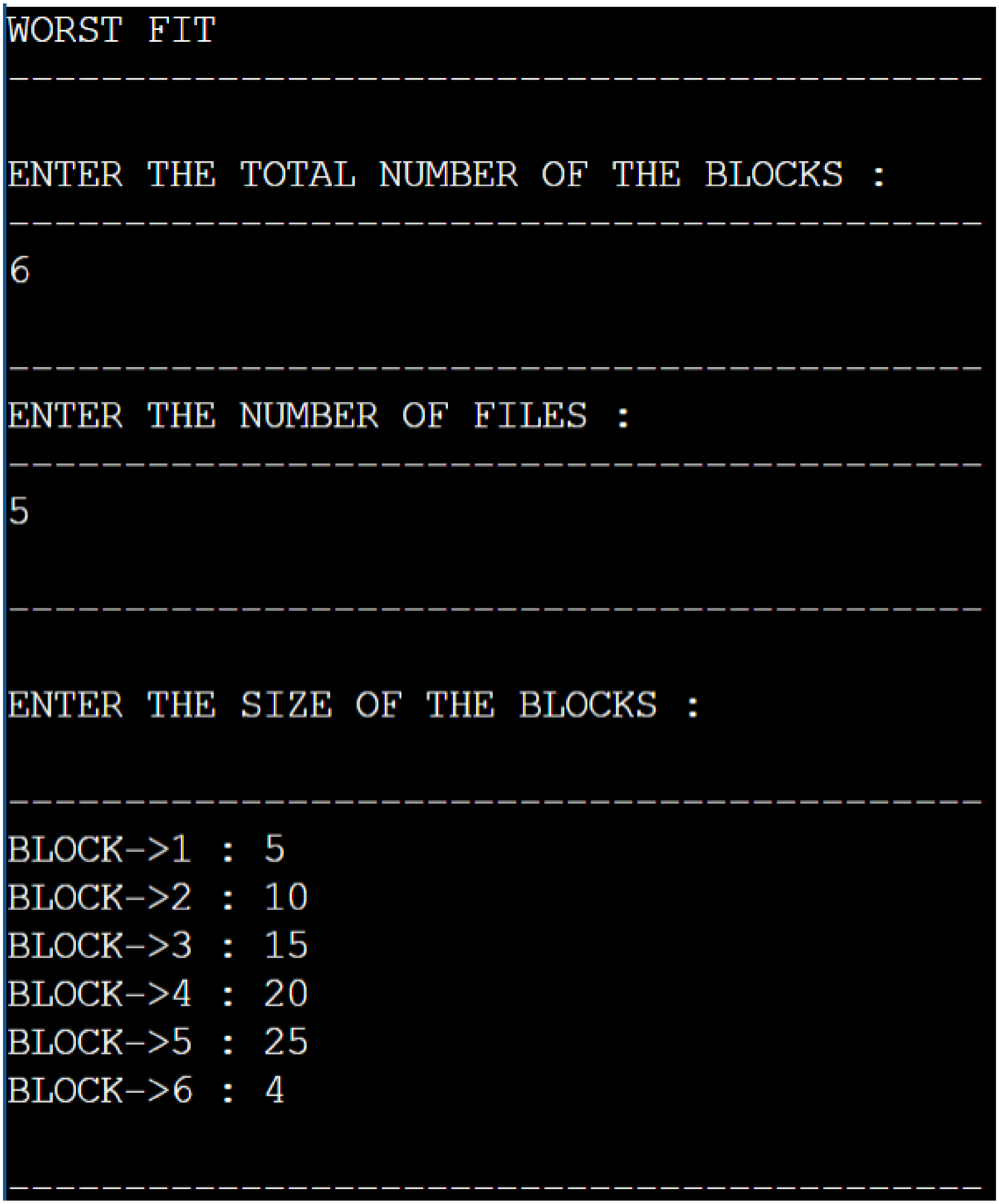
```
#include<stdio.h>
#define MAX 30
void
main ()
{

static int bf[MAX];

static int ff[MAX];

int fragment[MAX];

int blocks[MAX];

int f[MAX];

int i, j;

int numberOfBlocks, numberOfFiles;
int temp;



printf ("WORST FIT");

printf ("\n------------------------------------------\n");

printf ("\nENTER THE TOTAL NUMBER OF THE BLOCKS : ");

printf ("\n------------------------------------------\n");

scanf ("%d", &numberOfBlocks);

printf ("\n------------------------------------------\n");

printf ("ENTER THE NUMBER OF FILES : ");

printf ("\n------------------------------------------\n");

scanf ("%d", &numberOfFiles);

printf ("\n------------------------------------------\n");

printf ("\nENTER THE SIZE OF THE BLOCKS :\n");

printf ("\n------------------------------------------\n");

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

```
    {

printf ("BLOCK->%d : ", i);

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

}

printf ("\n------------------------------------------\n");

printf ("ENTER THE SIZE OF THE FILES : \n");

printf ("\n------------------------------------------\n");

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

    {

printf ("FILE->%d : ", i);

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

}

printf ("\n------------------------------------------\n");

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

    {
```

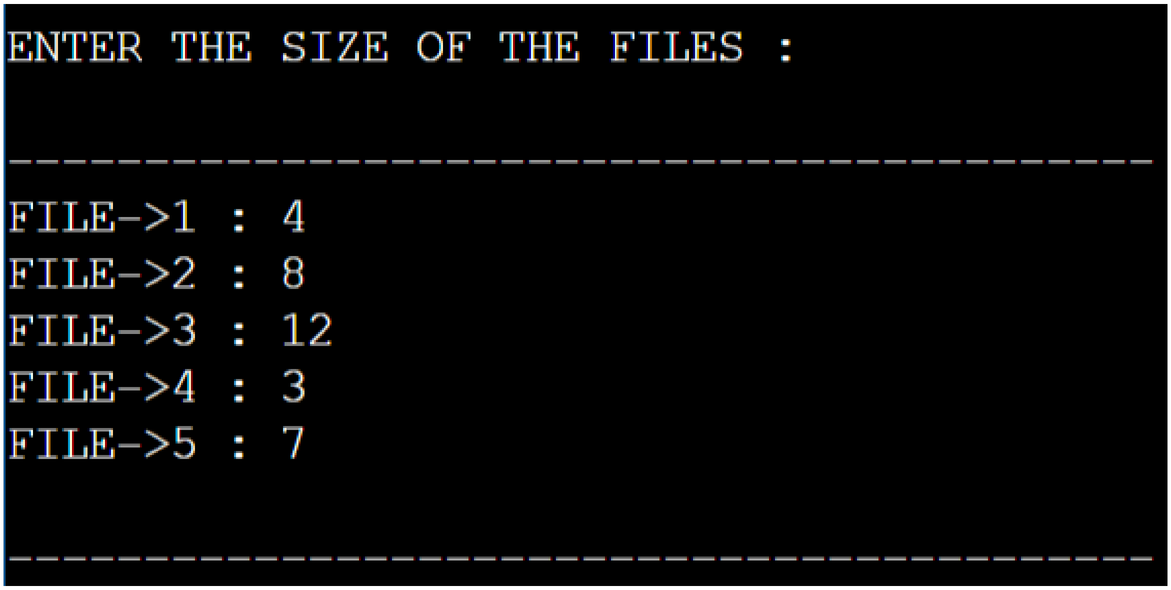
```
for (j = 1; j <= numberOfBlocks; j++)

          {

if (bf[j] != 1)

             {

temp = blocks[j] - f[i];

if (temp >= 0)

                   {

ff[i] = j;

break;

}

}

}

fragment[i] = temp;

bf[ff[i]] = 1;

}
```

```
printf
   ("\n--------------------------------------------------------------------------------\n");

printf ("\nFileNumber\tSizeOfFile\tBlockNumber\tSizeOfBlock\tFragements");

printf
   ("\n----------------------------------------------------------------------------------\n");

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

printf ("\n%d\t\t%d\t\t%d\t\t%d\t\t\t%d\n", i, f[i], ff[i],
             blocks[ff[i]], fragment[i]);

printf ("\n--------------------------------------------\n");



printf ("\nPARTH PATEL\n19DCS098");

printf ("\n--------------------------------------------\n");

printf ("\n[CS 350] OS EXTERNAL PRACTICAL EXAM");

printf ("\n--------------------------------------------\n");

}
```

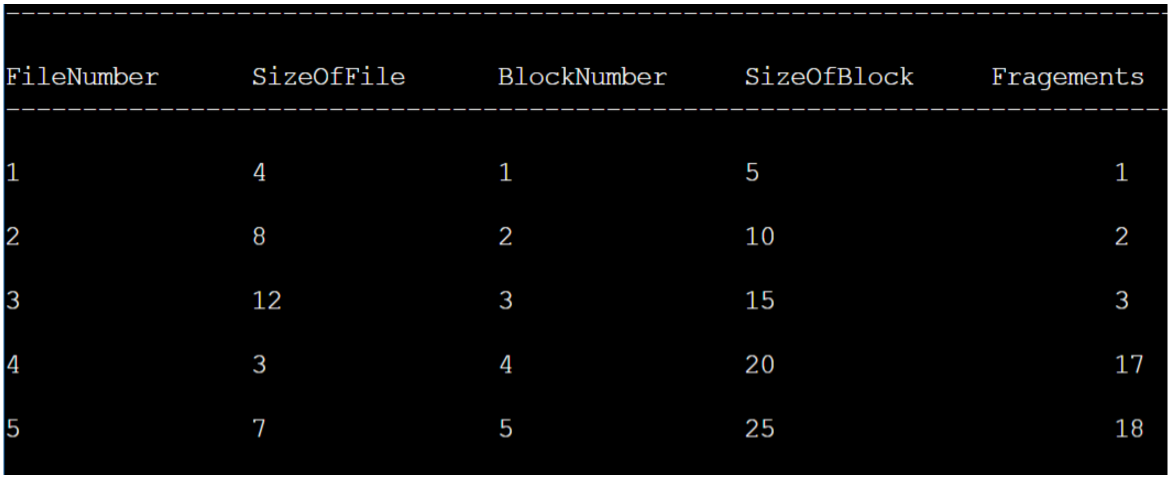
OUTPUT:



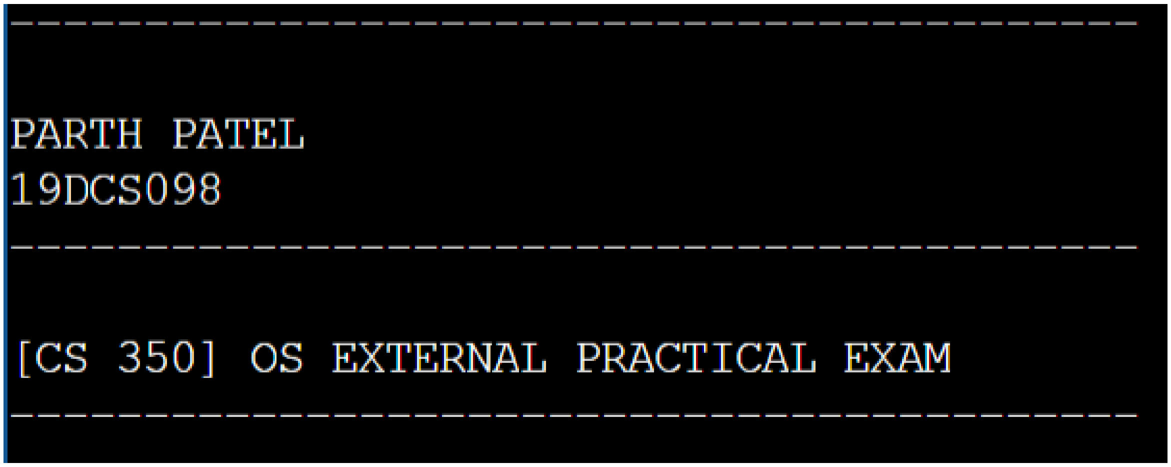
```
WORST FIT
------------------------------------------

ENTER THE TOTAL NUMBER OF THE BLOCKS :
------------------------------------------
6

------------------------------------------
ENTER THE NUMBER OF FILES :
------------------------------------------
5

------------------------------------------

ENTER THE SIZE OF THE BLOCKS :

------------------------------------------
BLOCK->1 : 5
BLOCK->2 : 10
BLOCK->3 : 15
BLOCK->4 : 20
BLOCK->5 : 25
BLOCK->6 : 4

------------------------------------------
```



```
ENTER THE SIZE OF THE FILES :

----------------------------------------
FILE->1 : 4
FILE->2 : 8
FILE->3 : 12
FILE->4 : 3
FILE->5 : 7

----------------------------------------
```



```
------------------------------------------------------------------------------------------

FileNumber          SizeOfFile          BlockNumber         SizeOfBlock         Fragements
------------------------------------------------------------------------------------------

1                   4                   1                   5                            1

2                   8                   2                   10                           2

3                   12                  3                   15                           3

4                   3                   4                   20                          17

5                   7                   5                   25                          18
```



```
----------------------------------------

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----------------------------------------

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----------------------------------------
```