



Green University of Bangladesh

Dept. of CSE

Course Title: Operating System Lab

Lab Report-05

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Experiment No: 07

Experiment Name: Write a C program to simulate the following contiguous memory allocation techniques First-fit.

Introduction:

The First Fit memory allocation checks the empty memory blocks in a sequential manner. It means that the memory Block which found empty in the first attempt is checked for size. One of the simplest methods for memory allocation is to divide memory into several fixed-sized partitions. Each partition may contain exactly one process. In this multiple-partition method, when a partition is free, a process is selected from the input queue and is loaded into the free partition. When the process terminates, the partition becomes available for another process. The operating system keeps a table indicating which parts of memory are available and which are occupied.

Algorithm:

- Start.
- Get no. of Processes and no. of blocks.
- After that get the size of each block and process requests.
- Now allocate processes

```
if(block size >= process size)
```

```
//allocate the process
```

```
else
```

```
//move on to next block
```

- Display the processes with the blocks that are allocated to a respective process.
- End.

Code:

```
#include<stdio.h>
#include<conio.h>
#define max 25
void main()
{
    int frag[max],b[max],f[max],i,j,nb,nf,temp;
    static int bf[max],ff[max];
    printf("\nMemory Management Scheme - First Fit");
    printf("\nEnter the number of blocks:");
    scanf("%d",&nb);
    printf("Enter the number of files:");
    scanf("%d",&nf);
    printf("\nEnter the size of the blocks:-\n");
    for(i=1; i<=nb; i++)
    {
        printf("Block %d:",i);
        scanf("%d",&b[i]);
    }
    printf("Enter the size of the files :-\n");
    for(i=1; i<=nf; i++)
    {
        printf("File %d:",i);
```

```

        scanf("%d",&f[i]);
    }
    for(i=1; i<=nf; i++)
    {
        for(j=1; j<=nb; j++)
        {
            if(bf[j]!=1)
            {
                temp=b[j]-f[i];
                if(temp>=0)
                {
                    ff[i]=j;
                    break;
                }
            }
        }
        frag[i]=temp;
        bf[ff[i]]=1;
    }
    printf("\nFile_no:\tFile_size :\tBlock_no:\tBlock_size:\tFragement");
    for(i=1; i<=nf; i++)
        printf("\n%d\t%d\t%d\t%d\t%d",i,f[i],ff[i],b[ff[i]],frag[i]);
}

```

Output:

```
"C:\Users\Tanvir Ahmed\Downloads\12\bin\Debug\12.exe"
Memory Management Scheme - First Fit
Enter the number of blocks:3
Enter the number of files:2

Enter the size of the blocks:-
Block 1:5
Block 2:2
Block 3:7
Enter the size of the files :-
File 1:1
File 2:4

File_no:      File_size :      Block_no:      Block_size:      Fragement
1             1             1             5             4
2             4             3             7             3
Process returned 2 (0x2)   execution time : 13.556 s
Press any key to continue.
```

Discussion:

- 1) First-fit is faster in making allocation but leads to memory waste.
- 2) First-fit memory allocation: First partition fitting the requirements.
- 3) When it is time to load a process into main memory and if there is more than one free block of memory of sufficient size.
- 4) First-fit chooses the first available block that is large enough.

Thank You