



Sequential File Allocation

FASHAD AHMED SIDDIQUE

TCIT (BCIT)

CT-19043

LAB # 05

CODE

```
CT-19043-LAB05-BestFirstWorstFit.py - OS LAB - Visual Studio Code
File Edit Selection View Go Run Terminal Help
CT-19043-LAB05-BestFirstWorstFit.py M X
Sequential File Allocation Algorithms > CT-19043-LAB05-BestFirstWorstFit.py > ...
1 |
2 def displayBlock(processSize, segments):
3     print()
4     print("Process No. Process Size")
5     for i in range(len(processSize)):
6         print(i + 1, " ", processSize[i],
7             end=" ")
8         if segments[i] != -1:
9             print(segments[i] + 1)
10        else:
11            print("Not Allocated")
12
13
14 def firstFit(blockSize, processSize):
15     segments = [-1] * len(processSize)
16     for i in range(len(processSize)):
17         for j in range(len(blockSize)):
18             if blockSize[j] >= processSize[i]:
19                 segments[i] = j
20                 blockSize[j] -= processSize[i]
21                 displayBlock(processSize, segments)
22
23
24 def bestFit(blockSize, processSize):
25     segments = [-1] * len(processSize)
26     for i in range(len(processSize)):
27         bestIndex = -1
28         for j in range(len(blockSize)):
29             if blockSize[j] >= processSize[i]:
30                 if bestIndex == -1:
31                     bestIndex = j
32                 elif blockSize[bestIndex] > blockSize[j]:
33                     bestIndex = j
34         if bestIndex != -1:
35             segments[i] = bestIndex
36             blockSize[bestIndex] -= processSize[i]
37             displayBlock(processSize, segments)
38
39
40 def worstFit(blockSize, processSize):
41     segments = [-1] * len(processSize)
42     for i in range(len(processSize)):
43         worstIndex = -1
44         for j in range(len(blockSize)):
45             if blockSize[j] >= processSize[i]:
46                 if worstIndex == -1:
47                     worstIndex = j
48                 elif blockSize[worstIndex] < blockSize[j]:
49                     worstIndex = j
50         if worstIndex != -1:
51             segments[i] = worstIndex
52             blockSize[worstIndex] -= processSize[i]
53             displayBlock(processSize, segments)
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CT-19043-LAB05-BestFirstWorstFit.py - OS LAB - Visual Studio Code

```

File Edit Selection View Go Run Terminal Help

Sequential File Allocation Algorithms > CT-19043-LAB05-BestFirstWorstFit.py > ...

55
56 def sizeBlock(blockSize, processSize):
57     if (processSize >= 0):
58         print(blockSize)
59         blcSize = [0]*blockSize
60         prcSize = [0]*processSize
61
62         for i in range(blockSize):
63             val = int(input(f"Enter block item for segment {i+1}: "))
64             blcSize[i] = val
65
66         for i in range(processSize):
67             val = int(input(f"Enter process size for segment {i+1}: "))
68             prcSize.append(val)
69
70         print()
71         print('----- BEST FIT -----')
72         print()
73         bestFit(blcSize, prcSize)
74         print()
75         print('----- FIRST FIT -----')
76         print()
77         firstFit(blcSize, prcSize)
78         print()
79         print('----- WORST FIT -----')
80         print()
81         worstFit(blcSize, prcSize)
82
83     else:
84         print("Not possible!")
85

```

Ln 84, Col 1 Spaces: 4 UTF-8 LF Python Prettier

CT-19043-LAB05-BestFirstWorstFit.py - OS LAB - Visual Studio Code

```

File Edit Selection View Go Run Terminal Help

Sequential File Allocation Algorithms > CT-19043-LAB05-BestFirstWorstFit.py > ...

61
62     for i in range(blockSize):
63         val = int(input(f"Enter block item for segment {i+1}: "))
64         blcSize[i] = val
65
66     for i in range(processSize):
67         val = int(input(f"Enter process size for segment {i+1}: "))
68         prcSize.append(val)
69
70     print()
71     print('----- BEST FIT -----')
72     print()
73     bestFit(blcSize, prcSize)
74     print()
75     print('----- FIRST FIT -----')
76     print()
77     firstFit(blcSize, prcSize)
78     print()
79     print('----- WORST FIT -----')
80     print()
81     worstFit(blcSize, prcSize)
82
83     else:
84         print("Not possible!")
85
86 if __name__ == "__main__":
87
88     blockSize = int(input('Enter block size: '))
89     processSize = int(input('Enter Number of Process: '))
90     sizeBlock(blockSize, processSize)
91

```

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OUTPUT

```

TERMINAL  PROBLEMS  DEBUG CONSOLE
fashad@FAS:~/e&f/e/5th Semester/OS/OS LAB$ /bin/python3 "/home/fashad/e&f/e/5th Semester/OS/OS LAB/Sequential File Allocation Algorithms/CT-19043-LAB05-BestFirstWorstFit.py"
Enter block size: 2
Enter Number of Process: 2
2
Enter block item for segment 1: 5
Enter block item for segment 2: 6
Enter process size for segment 1: 3
Enter process size for segment 2: 2

----- BEST FIT -----

Process No. Process Size
1           0           1
2           0           1
3           3           1
4           2           1

----- FIRST FIT -----

Process No. Process Size
1           0           2
2           0           2
3           3           2
4           2           2

----- WORST FIT -----

Process No. Process Size
1           0           2
2           0           2
3           3           2
4           2           2
fashad@FAS:~/e&f/e/5th Semester/OS/OS LAB$

```

Analysis on Results

Best Fit allocates the process to the smallest available free block of memory providing best of results in Allocation. The best fit may result into a bad fragmentation. **Worst Fit** allocates the process to the largest available free block of memory causing the worst of the results. This leads to elimination of all large blocks of memory, thus requests of processes for large memory cannot be met. **First Fit** allocates the first free partition or hole large enough which can accommodate the process. It finishes after finding the first suitable free partition.

QUESTIONS

Q1) Where files are stored on Linux?

Ans) A Linux file system is a structured collection of files on a disk drive or a partition. A partition is a segment of memory and contains some specific data. Linux file system has a hierarchical file structure as it contains a root directory and its subdirectories. All other directories can be accessed from the root directory. A partition usually has only one file system, but it may have more than one file system.

The common directories are as follows:

- /boot
- /dev
- /root
- /home
- /lib
- /etc
- /media
- /mnt

Q2) Where files are stored in the Android Mobile Phone System?

Ans) In Android Phones, the storage is classified majorly into two types namely Internal and External Storage. Internal Storage is maintained initially by the system which contains root directories and system files. Meanwhile, External Storage is inserted in the form of SD Cards. It contains several media files.