Operating Systems ClassWork 7 – File Management Page 1 of 3

Class Work 7 - Solution

File Management Layer

Consider a storage device with 100 blocks of storage. Each block has a size of 2kB. A file directory contains the following files that are to be saved in by the file manager. The shaded area of the storage space is already occupied.

|  |  |
| --- | --- |
| File name | File size |
| MyDoc.doc | 50kB |
| Another.txt | 20kB |
| Abcfile.xls | 10kB |
| Anyfile.txt | 30kB |

Show how the above files would be stored under each of the following strategies:

* Contiguous blocks
* Block Linkage

**HINT:** Compute the number of blocks required for each file in order to be saved.

Use different colours to indicate the blocks used by a given file

# Contiguous Blocks

Catalogue

|  |  |  |
| --- | --- | --- |
| File name | File size | Other Information |
| MyDoc.doc | 50k | Requires 25 continuous blocks, starting block:71 |
| Another.txt | 20k | Requires 10 continuous blocks, starting block:1 |
| Abcfile.xls | 10k | Requires 5 continuous blocks, starting block:11 |
| Anyfile.txt | 30k | Requires 15 continuous blocks, starting block: cannot fit! |

Storage Space

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |  |
|  |  |  |  |  |  |  |  |  |  | 10 |
|  |  |  |  |  |  |  |  |  |  | 20 |
|  |  |  |  |  |  |  |  |  |  | 30 |
|  |  |  |  |  |  |  |  |  |  | 40 |
|  |  |  |  |  |  |  |  |  |  | 50 |
|  |  |  |  |  |  |  |  |  |  | 60 |
|  |  |  |  |  |  |  |  |  |  | 70 |
|  |  |  |  |  |  |  |  |  |  | 80 |
|  |  |  |  |  |  |  |  |  |  | 90 |
|  |  |  |  |  |  |  |  |  |  | 100 |

# Block Linkage

Catalogue

|  |  |  |
| --- | --- | --- |
| File name | File size | Other Information |
| MyDoc.doc | 50k | Requires 25 blocks, starting block:1 |
| Another.txt | 20k | Requires 10 blocks, starting block:36 |
| Abcfile.xls | 10k | Requires 5 blocks, starting block:50 |
| Anyfile.txt | 30k | Requires 15 blocks, starting block:75 |

Storage Space

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 |  |  |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 10 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 31 | 20 |
|  |  |  |  |  |  |  |  |  |  | 30 |
| 32 | 33 | 34 | 35 | 0 | 39 |  |  | 40 | 41 | 40 |
| 42 | 43 | 44 | 45 | 46 | 49 |  |  | 0 | 71 | 50 |
|  |  |  |  |  |  |  |  |  |  | 60 |
|  |  |  |  |  |  |  |  |  |  | 70 |
| 72 | 73 | 74 | 0 | 76 | 77 | 78 | 79 | 80 | 81 | 80 |
| 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 0 |  | 90 |
|  |  |  |  |  |  |  |  |  |  | 100 |