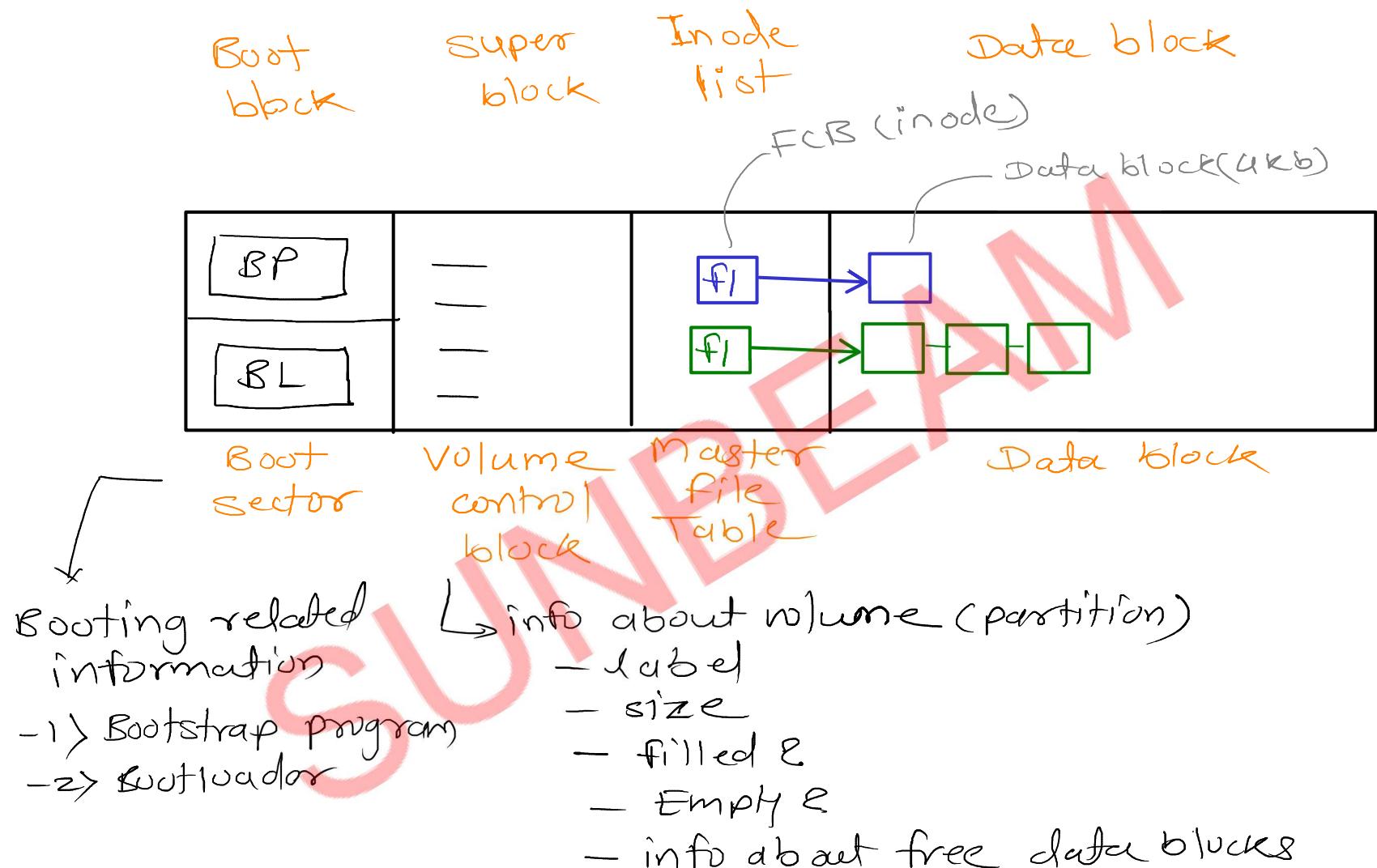


File System



File system – organizing files on partitions

File Allocation Algorithms

- to allocate multiple data blocks to the file

1. Contiguous allocation
2. Linked allocation
3. Indexed allocation

Free Space Management

- track of free data blocks of the partition is done

- this info is kept into volume control block (super block) of partition

- In super block this information is kept by using any one the method which are listed below

1. Bit vector
2. Linked List
3. Grouping
4. Counting

Contiguous Allocation

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

f1.tot

f2.tot

f1.tot(5)

f2.tot(3)

f3.tot(4)

start count

21 5

71 3

56 4

Above info is kept
into FCB(inode)

- sequential & random
file access is faster

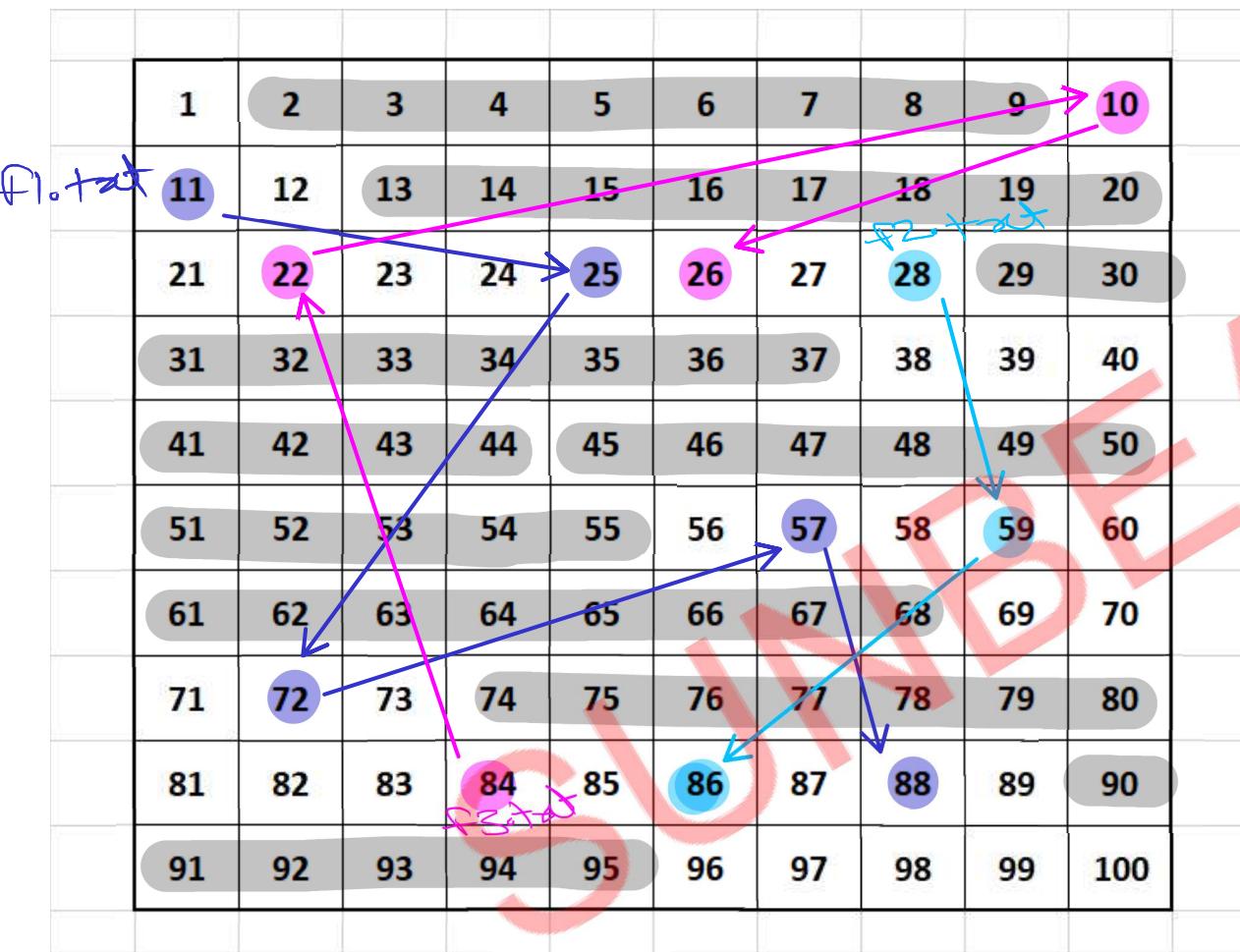
- file can grow only
if next data block is
free



External fragmentation - due to unavailability of contiguous free data block, file can not be created on partition

Defragmentation - Files are moved on partition to create contiguous free data blocks.

Linked Allocation



	start	End
f1.alloc(5)	11	88
f2.alloc(3)	28	86
f3.alloc(4)	84	26

Above info is kept into FCB(inode)

-sequential access of file is faster

-random access of file is slower

-File can grow up to any extent

- external fragmentation is totally removed.

Indexed Allocation

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

index block

$f1.\rightarrow dt(5)$

$f2.\rightarrow dt(3)$

60
100

Above info is kept
into FCB (inode)

Index
block

11
24
56
71
84

82
22
58

- sequential &
random file
access is faster

- file can grow
upto some extent