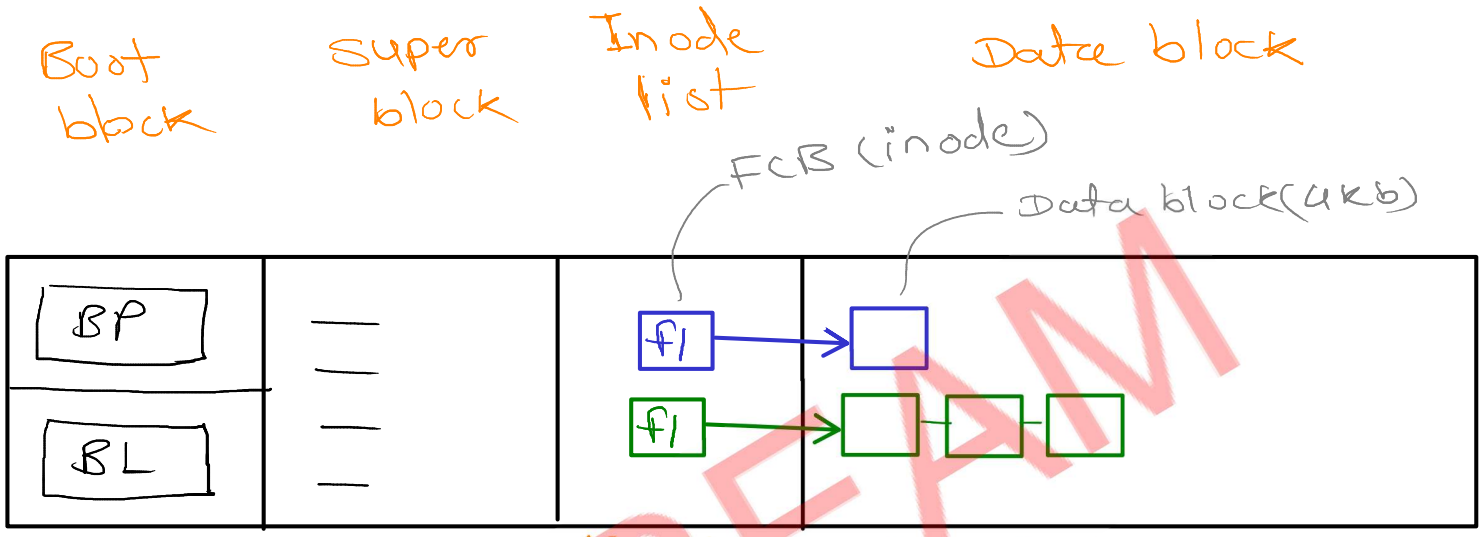
File System



Booting related information
- 1) Bootstrap program
- 2) Bootloader

↳ info about volume (partition)
- label
- size
- filled &
- Empty &
- info about free data blocks

File system – orgnizing 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
f1.txt 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 f3.txt	60
61	62	63	64	65	66	67	68	69	70
f2.txt 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

	start	count
f1.txt (5)	21	5
f2.txt (3)	71	3
f3.txt (4)	56	4

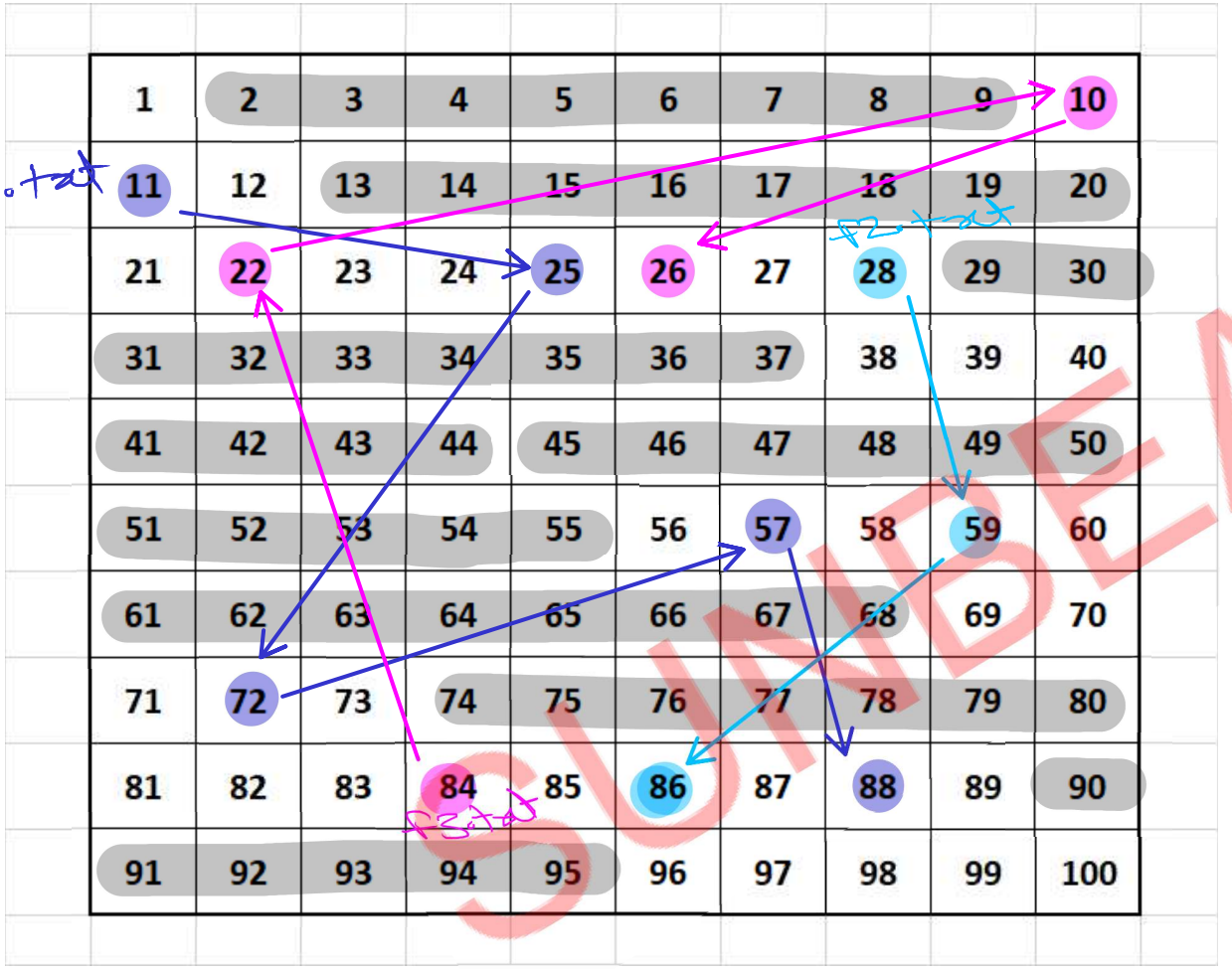
Above info is kept into FCB(inode)

- 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.txt(5)	11	88
f2.txt(3)	28	86
f3.txt(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 upto 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