Written Assignment: 1

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1.1 How many Blocks or Pages that needs for storing this data file in a hard drive?

A) Number of Records = 20,000

Total Record Size = 2 Byte + 16 Byte + 2 Byte + 10 Byte
= 30 Byte

Block Page Size = 1024 Byte

Total No. of Records size = 20,000 × 30 = 6,00,000 Byte

Total No. of Blocks = $\frac{6,00,000}{1024}$ = 585.93 = 585 Blocks

1.2. If we store the data file in SQLite, how many blocks or pages that need for the storing?

A) SQLite page size = 4 Kb = 4 × 1024 = 4,096

$$\Rightarrow \frac{20,000 \times 30}{4,096} = 146.48$$

$$\Rightarrow 147 \text{ Blocks}$$

(2) What are the similarities and different b/w RAID 0 and RAID 1? what is the type of organization should use RAID 0 over RAID 1?

Sol) Similarities between RAID 0 and RAID 1

1. Both Raid 0 and RAID 1 Provides increased performance or Redundancy.
2. Also, But use minimum of 2 drives.

3. Both Dogmat use parity Blocks.

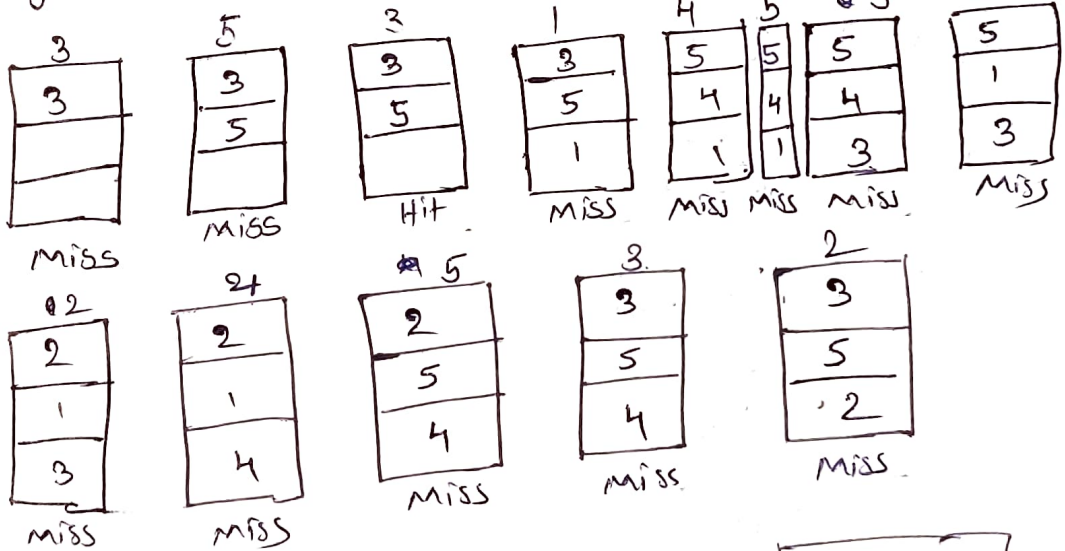
Difference between RAID 0 and RAID 1

Re	RAID 0	RAID 1
Redundancy (Backup)	No Backup	Backup
fault Tolerance	No Fault Tolerance	mirror
Performance	Fastest	Normal
storage space	100% use all Array	50% usage

(3) Show the buffer's page Allocation using the replacement policy Least Recently used - LRU where buffer size = 3

Program require 3, 5, 3, 1, 4, 5, 3, 1, 2, 4, 5, 3, 2

Sol)



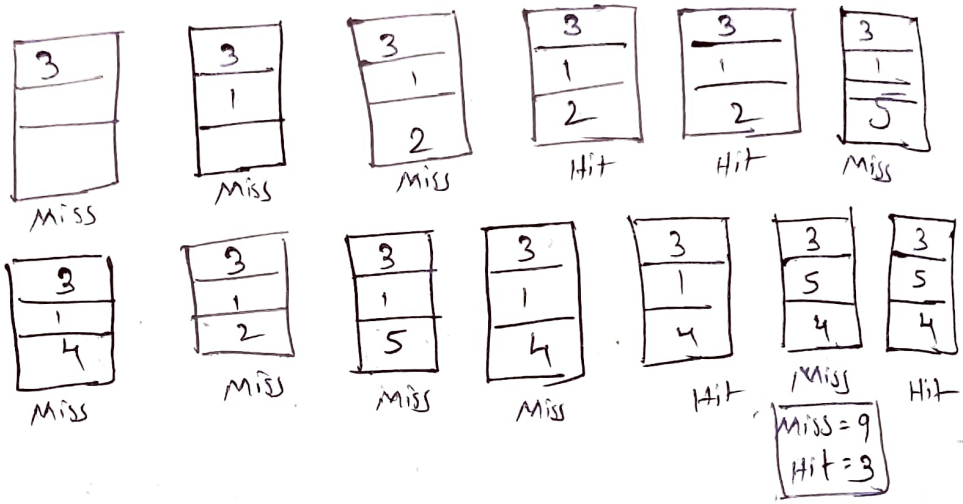
Miss = 11

Hit = 1

4. Show the Buffer's Page Allocation using the Replacement Policy Most Recently used MRU where Buffer Size = 3

Program Require = 3, 1, 2, 1, 3, 2, 5, 4, 2, 5, 4, 1, 5, 4

Sol)

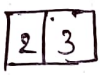


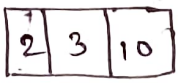
(5) Creak the B-Tree Index (m=4) After insert the following input index.

3, 2, 10, 15, 1, 16, 11, 13, 17, 8, 9, 14, 7, 5, 18, 4, 6, 19.

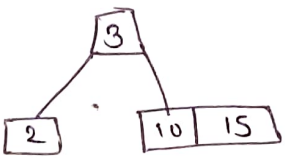
Sol) Input 1: 3

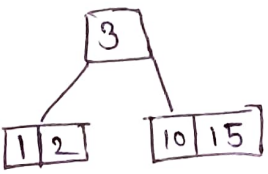
Input

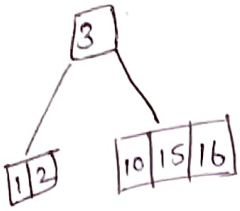




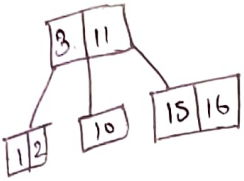
2, 3, 10, 15

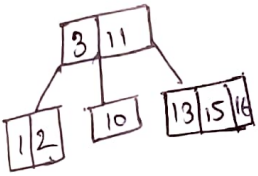




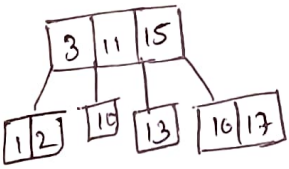


10, 11, 15, 16 ↑

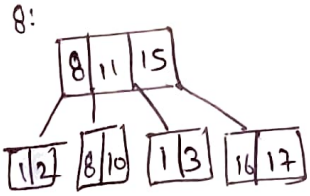




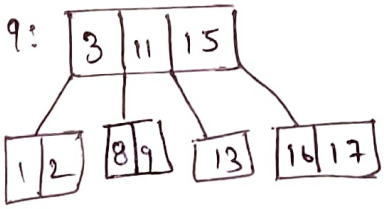
17: 13, 15, 16, 17 ↑



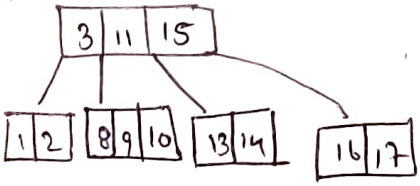
8:



9:

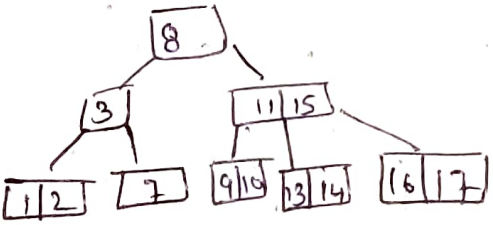


14:

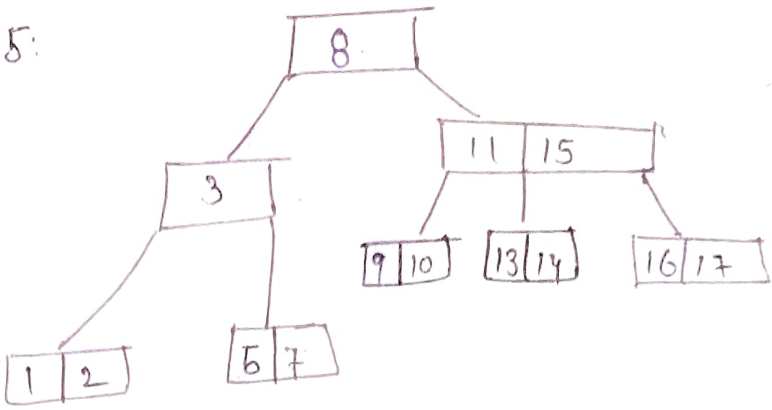


7: 7, 8, 9, 10 8↑

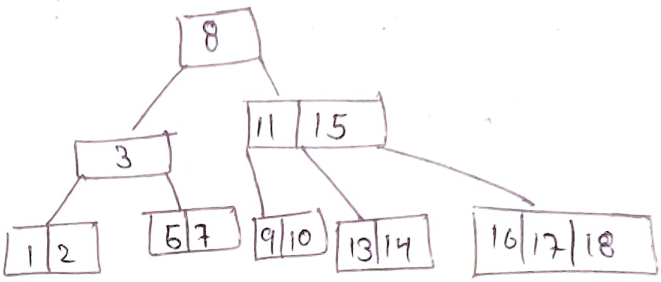
3, 8, 11, 15 8↑



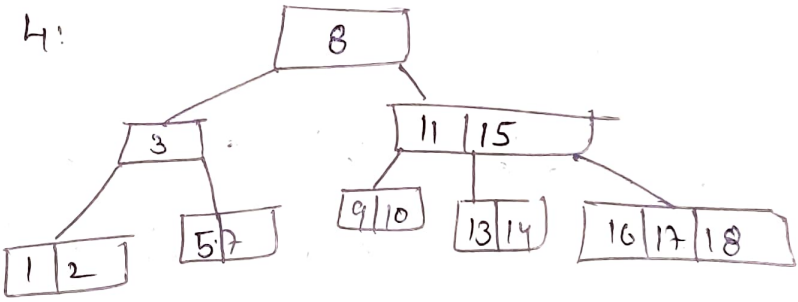
5:


8
3
11 15
1 2
6 7
9 10
13 14
16 17

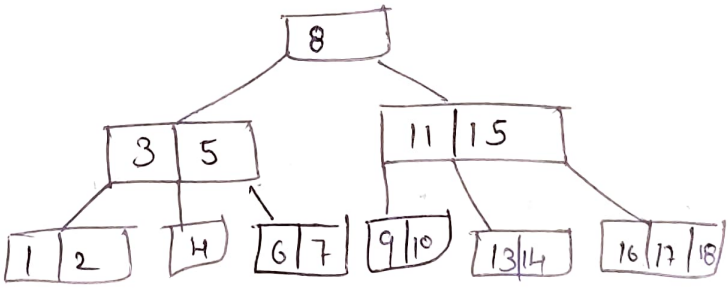
18:


8
3
11 15
1 2
6 7
9 10
13 14
16 17 18

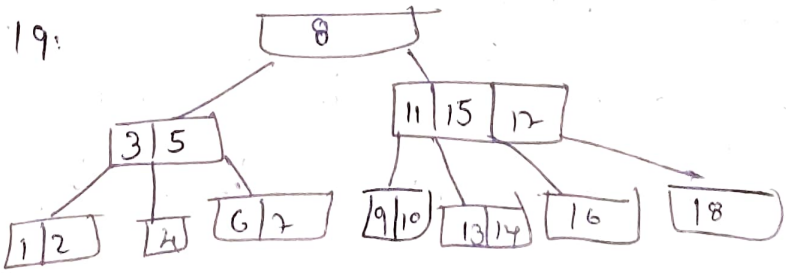
4:


8
3
11 15
1 2
5 7
9 10
13 14
16 17 18

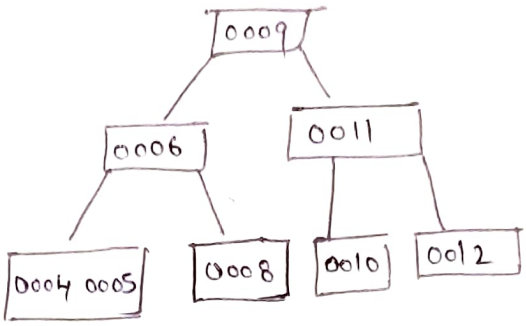
6:


8
3 5
11 15
1 2
4
6 7
9 10
13 14
16 17 18

19:


8
3 5
11 15 17
1 2
4
6 7
9 10
13 14
16
18

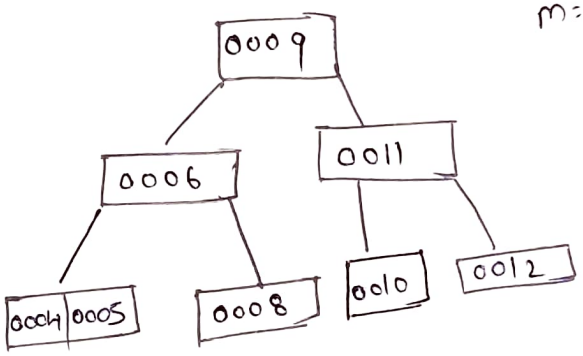
(6) Regarding to the following B- Tree Index (m:3)



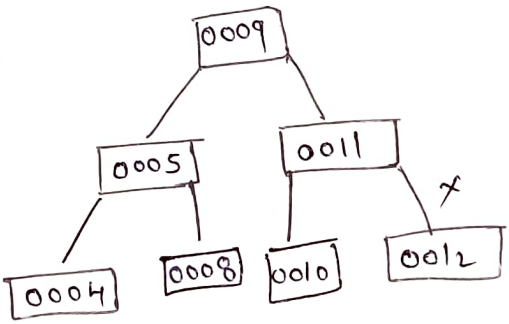
If we delete index key 6, 11, 12 what is the B-Tree Index after the deletion?

m:3

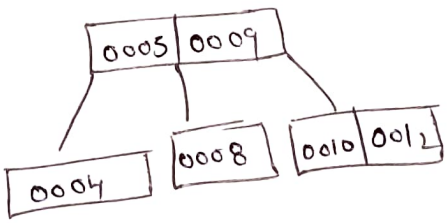
601) 6.



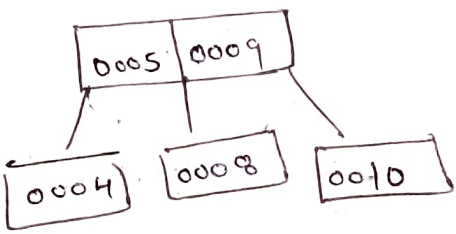
6:



11:



12:



(7) Database management system Edition 9 has 23 chapters sorted by the content for each chapter. The index at the end of a book has all keywords ordered by alphabetic?

A) 7.1 Is it clustering or non-clustering index, and why?

A) This index does not cluster, since all keywords are listed in Alphabetical order in the book's index at the end. It's not able to read. The Book's arrangement of the chapter.

7.2 Is it sparse or dense index, and why?

A) The index is dense (extensive list), Since each chapter in this book has an entry in the index, which is listed by letter it therefore makes the most sense.

7.3) Is it single level or multi-level index? why?

A) This index is a Continuous list of keywords arranged Alphabetically at the end of the book, not a Reference to a different index level, The index therefore has a single level.