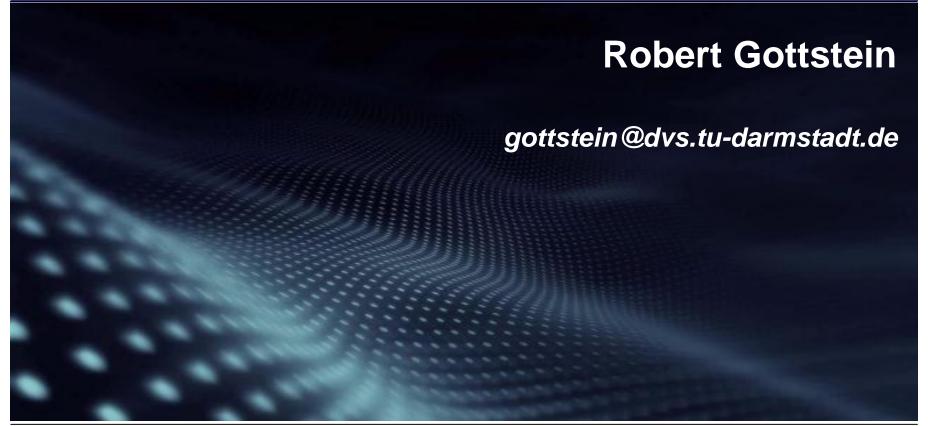
DB2 – Exercise Idx





B/B+ Tree



- 1. What is the main difference between a B and a B+ Tree?
- 2. Can you make an example where the access depth in a B* of two values is different (Different High)?
- 3. Define the Criteria of a minimum/ maximum filled B+Tree
- 4. Given a B-tree of class T(8,13), what are its maximal and minimal number of keys? Justify your answer.
- 5. Describe how a key set can be inserted into a B-tree of class T(k, h) such that the number of nodes becomes maximal.
- 6. How should the B-tree look like to make writing operations faster?
- 7. How can you speed up the construction of a B-tree for a given, large set of keys?
- 8. What are the advantages/ disadvantages of B-Trees? (Maintenance, dynamic, static, fill factor, usage...)

see: Theo Härder Grundlagen der Informatik II p. 175++ [The RED Book]

Bitmap Index



- 1. Calculate the size of the Bitmap Index: The Index is on the column "colour" of the table "subpixel". The pixel is constructed out of 3 possible subpixel {(red, green, blue)=Domain of 3}. The table indexes a Full HD Display.
- 2. How to maintain a bitmap Index? (Expansion of Domain, No Expansion of Domain)
- 3. How to scan a Bitmap Indexed Table?
- 4. Which Operations can be performed on Bitmap Idx?
- 5. What are the (dis-)advantages of Bitmap Idx over traditional idx (B-Trees) and what are the limitations of Bitmap Idx?
- 6. What is an Encoded Bitmap Index? What problem(s) does is solve?

Z – Order



Given is a 4 Bit Encoded 2D Space which is identified by pairs (x,y)

- 1. Create a Z Transformation on the given Space
- 2. How do you determine the adress of A, B, C via the Z-Order?
- 3. What are the advantages of the Z-Order?

11	1111	C 1110	1011	1010	
10	1101	1100	A 1001	1000	
01	В			0010	
	0101		0001	0000	
	11	1 10 01 00			