- You need to write the procedure using which you obtain a solution; otherwise the solution is invalid!
- Number of points per question is stated in the parentheses after each question.
- Maximum number of points is 100.

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1) **Let's have Cormack hashing. With following hashing functions:** **(20)**
   h(k) = k mod 4
   h_i(k, r) = (k >> i) mod r
   Insert records: 5, 7, 13
   The directory and primary file are in following state:

Directory:

	p	i	r
0			
1	0	0	1
2			
3	1	0	1

Primary file:

0	1
1	3
2	
3	
4	

2) After an insert of element the node in R-tree overflow. **(20)**
Split it using Green algorithm.

A	**A**					**B**
				C	**C**	**C**
E	**E**			**C**	**C**	**C**
E	**E**			**C**	**C**	**C**
		F				
		F	**D**			

3) What is cuckoo hashing and how does it works? (10)

4) What is hierarchical data storage and how does it work? (5)

5) How does the R*-tree forced reinsert works, what is the motivation for doing it? (10)

6) What is van Emde Boas ordering and for what it can be used for? (10)

7) What is the difference between Hilbert R-tree and R-tree? (5)

8) What is the difference between clustered and nonclustered index? (5)

9) What is zoned bit recording? (5)

10) What data are suitable for bitmap indexing and why? What is the difference to hierarchical indexes like a index sequential files or B-trees? (5)

11) Describe the basic idea behind Streaming B-trees (Fractal tree)? (5)