22.12.2022

Lecture 12

II 1. conceptual evaluation = defines the meaning (the result) of the query

clauses order in a query:
1. FROM
2. WHERE
3. GROUP BY
4. HAVING
5. SELECT
6. DISTINCT
7. ORDER BY
8. TOP

2. Natural join : associative inner join without join condition
   ↳ a sequence of conditions based on rows & AND

All operations return 1 operation instance (table).

3. exactly one conceptual structure
multiple external structures → users, groups of users
1 physical structure → storage

4. 1NF — no repeating attributes
2NF — each non-prime attribute is fully functionally dependent on every key of the relation (non-prime: not included in key)
1NF
$\alpha \to \beta$ β ffd if $\beta \not\subset \gamma$, $\gamma \in$ subsets(α)
3NF — 2NF
no non-prime attributes is transitively dependent on a key: $ABC \to F \to H$ (F: not key)

BCNF ← 3NF + ..
every determinant for a functional dependency is a key

5. B – tree m ; $\left[\frac{m}{2}\right]$ – nodes

7. clustered ordered by RiD , B+ tree
nonclustered sorted by Mechanic iD , B+ tree
select without repairtime → no key look up → 1c

8. card $Q_2 = 6$ card $Q_1 = 9$

9. $FK1 \not\rightarrow A$ $FK2 \not\rightarrow \{A, B\}$ (c)

10. card $Q_1 = 0$ card $Q_2 = 0$

12.

A	B
A1	B2
A1	B1
A2	B1

B	C
B2	C1
B1	C2
B1	C1

A	B	C
A1	B2	C1
A1	B1	C2
A1	B1	C1
~~A2~~	~~B1~~	~~C2~~
A2	B1	C1

=> A1 B1 C1

A	C
A1	C1
A1	C2
A2	C1

II. 3.

RID	c2	c3
2	202	10201
4	400	40000
5	400	40000
6	600	90000

4. S: RID 1 2 5 6

T: 24 (4 · 6) with 4 same values

(π doesn't remove duplicates)

5.

R1	R2	R3
RID, A	RID B	RID, D
1, 100	3, 100	
1, 100	5, 100	
3, 100	3, 100	
3, 100	5, 100	
4, 200	1, 200	$\Longrightarrow t = \emptyset$
4, 200	4, 200	right join $\Longrightarrow$ 6 rows
5, 200	1, 200	
5, 200	4, 200	

6. $RID \longrightarrow D$

$D \longrightarrow D$

all the dependencies because you cannot have

α	D
α_1	200
α_1	!200

because $D = 200$

7. R\ intersect $S = R \cap S = R - (R - S) = S - (S - R)$

$\sigma_{R.ID=S.RID}(R \times S) - (\sigma_{R.ID=S.RID}(R \times S) - \sigma_{T.ID=U.TID}(T \times U))$