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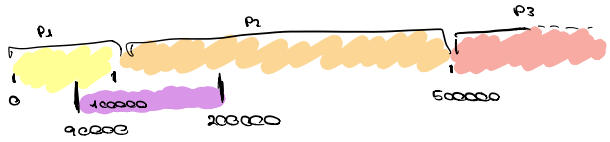
Solve the following exercise (you can do it with one of your classmates), and hand in the solution at the beginning of the lecture on "Distributed Query Processing":

Consider the following distributed schema for the Project relation (primary key underlined).

Project(pno, name, head, budget, city):

- P1 = $\sigma_{budget<100000}(Project)$
- P2 = $\sigma_{100000\leq budget\leq 500000}(Project)$
- P3 = $\sigma_{budget>500000}(Project)$



You can assume that this fragmentation strategy is correct (i.e., complete, disjoint and reconstructible). Given the following query:

SELECT * FROM Project WHERE budget > 90000 AND budget < 200000;

Reproduce the data location (i.e., express the query in terms of fragments) and determine which steps the reduction phase would follow.

$Q_1 = \sigma_{90000 < budget < 200000}$

$Q'_1 = \sigma_{90000 < budget < 200000}(P_1 \cup P_2 \cup P_3)$

$= \sigma_{90000 < budget < 200000}(P_1) \cup \sigma_{90000 < budget < 200000}(P_2) \cup \sigma_{90000 < budget < 200000}(P_3)$

$= \sigma_{cond}(\sigma_{budget < 100000}) \cup \sigma_{cond}(\sigma_{100000 \leq budget \leq 500000}) \cup \sigma_{cond}(\sigma_{500000 < budget})$

$= \sigma_{budget < 100000 \wedge 90000 < budget \wedge budget < 200000}$ ⇝ no null

$\cup$

$\sigma_{100000 \leq budget \wedge budget \leq 500000 \wedge 90000 < budget \wedge budget < 200000}$ → no null

$\cup$

$\sigma_{500000 < budget \wedge 90000 < budget \wedge budget < 200000}$ → nul → no fa falta

per simplificar, cond ≡ $90000 < budget < 200000$

$= \sigma_{90000 \leq budget < 100000}(P) \cup \sigma_{100000 \leq budget < 200000}(P)$

$= \sigma_{90000 < budget}(P_1) \cup \sigma_{budget < 200000}(P_2)$

Per tant, la nova query serà: $Q'_1 = \sigma_{90000 < budget}(P_1) \cup \sigma_{budget < 200000}(P_2)$