

DataBases - EX. 2

$$① \pi_{iid} \left(\sigma_{pdate = "2017-11-24"} (Purchase) \right)$$

$$② \pi_{cname} \left(\sigma_{itype = "Smartphone" \wedge quantity \geq 8} (Purchase \bowtie Item \bowtie Costumer) \right)$$

$$③ \pi_{cname} \left[\sigma_{itype = "Smartphone"} (Purchase \bowtie Item \bowtie Costumer) \right] \cap \pi_{cname} \left[\sigma_{itype = "laptop"} (Purchase \bowtie Item \bowtie Costumer) \right]$$

$$④ \pi_{cid, iid} (Costumer \times Item) = \pi_{cid, iid} (Purchase)$$

$$⑤ \pi_{cname} \left[\sigma_{budget \geq 7,000} (Costumers) \right] \cap$$

$$\left[\pi_{cname, iid} (Costumer \bowtie Purchase) \div \pi_{iid} \left[\sigma_{price \leq 300} (Item) \right] \right]$$

$$⑥ \pi_{iid} \left[\sigma_{price > 400} (Item) \right] \cap$$

$$(\star) \left[\pi_{iid} \left[\sigma_{\substack{purchase(cid1, iid1, \dots) \times purchase(cid2, iid2, \dots) \times purchase(cid3, iid3, \dots) \\ (iid1 = iid2 = iid3) \\ \wedge cid1 \neq cid2 \neq cid3}} \right] \right]$$

$$(\star) \left[\pi_{iid} \left[\sigma_{\substack{purchase(cid1, iid1, \dots) \times \dots \times purchase(cid4, iid4, \dots) \\ (iid1 = iid2 = iid3 = iid4) \\ \wedge cid1 \neq cid2 \neq cid3 \neq cid4}} \right] \right]$$

(★) Item id. of items which were bought by at least 3 different costumers.

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$(i, j \in \{1, \dots, n\}) \ a_i, a_j : \text{cis blk given } a_1 = a_2 = \dots = a_n : 2017$
 $(\neq \text{ of } i, j) \ a_i = a_j \text{ p.p.p.p}$