

4.3 Solve:

$$(1) \pi_{sname}(\pi_{sid}(\pi_{pid}(\sigma_{color=red}(Parts)) \bowtie Catalog) \bowtie Suppliers)$$

$$(2) \pi_{sid}(\pi_{pid}(\sigma_{color=red \vee color=green}(Parts)) \bowtie Catalog)$$

$$(3) \rho(R1, \pi_{sid}((\pi_{pid}(\sigma_{color=red}(Parts))) \bowtie Catalog))$$

$$\rho(R2, \pi_{sid}(\sigma_{address=221PackerAve}(Suppliers)))$$

$$R1 \cup R2$$

$$(4) \rho(R1, \pi_{sid}((\pi_{pid}(\sigma_{color=red}(Parts))) \bowtie Catalog))$$

$$\rho(R1, \pi_{sid}((\pi_{pid}(\sigma_{color=green}(Parts))) \bowtie Catalog))$$

$$R1 \wedge R2$$

$$(5) (\pi_{sid,pid}(Catalog)) / (\pi_{pid}(Parts))$$

$$(6) (\pi_{sid,pid}(Catalog)) / (\pi_{pid}(\sigma_{color=red}(Parts)))$$

$$(7) (\pi_{sid,pid}(Catalog)) / (\pi_{pid}(\sigma_{color=red \vee color=green}(Parts)))$$

$$(8) (\pi_{sid,pid}(Catalog)) / (\pi_{pid}(\sigma_{color=red}(Parts)))$$

$$(\pi_{sid,pid}(Catalog)) / (\pi_{pid}(\sigma_{color=green}(Parts)))$$

$$R1 \cup R2$$

$$(9) \rho(R1, Catalog)$$

$$\rho(R2, Catalog)$$

$$\pi_{R1.sid, R2.sid}(\sigma_{R1.pid=R2.pid \wedge R1.sid \neq R2.sid \wedge R1.cost > R2.cost}(R1 * R2))$$

$$(10) \rho(R1, Catalog)$$

$$\rho(R2, Catalog)$$

$$\pi_{R1.pid}(\sigma_{R1.pid=R2.pid \wedge R1.sid \neq R2.sid}(R1 * R2))$$

4.4 Solve:

- (1) 找出供应价格少于100美元的红色零件的供应商的名字;
- (2) 没有结果;
- (3) 找出供应价格少于100美元的红色零件与价格少于100美元的绿色零件的供应商的名字;
- (4) 找出供应价格少于100美元的红色零件与价格少于100美元的绿色零件的供应商的id;
- (5) 找出供应价格少于100美元的红色零件与价格少于100美元的绿色零件的供应商的名字;