



Ex.1

Find the names of suppliers who supply some red part.

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

Find the sids of suppliers who supply some red or green part.

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

Find the sids of suppliers who supply some red part or are at 221 Packer Street.

$$3) \pi_{sid}(\pi_{pid}(\sigma_{color=red}(Parts)) \bowtie Catalog) \cup \\ \cup \pi_{sid}(\sigma_{address=221 \text{ Packer Street}}(Suppliers))$$

Find the sids of suppliers who supply some red part and some green part.

$$4) \rho_R(\pi_{pid}(\sigma_{color=red}(Parts)) \bowtie Catalog) \\ \rho_G(\pi_{pid}(\sigma_{color=green}(Parts)) \bowtie Catalog) \\ \pi_{sid}(R \cap G)$$

Find the sids of suppliers who supply every part.

$$5) \rho_S(\pi_{sid}(((Catalog) \times \pi_{pid}(Parts)) - \pi_{sid,pid}(Catalog)))$$

\mathcal{T} - is sids of suppliers who does not supply every part

$$\Pi_{sid}(Catalog) - \mathcal{T}$$

Find the sids of suppliers who supply every red part.

$$6) \rho_{\mathcal{T}} \left(\Pi_{sid} \left((Catalog) \times \Pi_{pid}(\sigma_{color=red}(Parts)) \right) - \Pi_{sid,pid}(Catalog) \right)$$

\mathcal{T} - is sids of suppliers who does not supply every red part

$$\Pi_{sid}(Catalog) - \mathcal{T}$$

Find the sids of suppliers who supply every red or green part.

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

Find the sids of suppliers who supply every red part or supply every green part.

$$8) \Pi_{sid,pid}(Catalog) \div (\Pi_{pid}(\sigma_{color=red}(Parts)) \cup \Pi_{sid,pid}(Catalog) \div (\Pi_{pid}(\sigma_{color=green}(Parts))))$$