



Lab 4

Exercise 1

Find the names of suppliers who supply some red part.

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

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

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

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

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

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

$$\pi_{sid}(\sigma_{colour = red}(Part) \bowtie Catalog) \cap \pi_{sid}(\sigma_{colour = green}(Part) \bowtie Catalog)$$

Find the sids of suppliers who supply every part.

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

Find the sids of suppliers who supply every red part.

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

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

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

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

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

Find pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid.

$$\pi_{Catalog_1.sid, Catalog_2.sid}(\sigma_{Catalog_1.pid = Catalog_2.pid \wedge Catalog_1.sid \neq Catalog_2.sid \wedge Catalog_1.cost > Catalog_2.cost}(Catalog_1 \times Catalog_2))$$

Find the pids of parts supplied by at least two different suppliers.

$$\pi_{Catalog_1.pid} \sigma_{Catalog_1.pid = Catalog_2.pid \wedge Catalog_1.sid \neq Catalog_2.sid}(Catalog_1 \times Catalog_2)$$

Exercise 2

$$+ \Pi_{sname} (\Pi_{sid} ((\sigma_{color=red} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers)$$

Find the names of Suppliers who supplied some red part for less than 100\$.

$$+ (\Pi_{sname} ((\sigma_{color=red} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers) \cap (\Pi_{sname} ((\sigma_{color=green} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers)$$

List the names of suppliers so that there is a supplier with that name who can supply a red part for less than 100\$ and another who can offer a green part for less than 100\$.

$$+ (\Pi_{sid} ((\sigma_{color=red} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers) \cap (\Pi_{sid} ((\sigma_{color=green} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers)$$

Return just the sids of suppliers who supply some red part for less than \$100 and some green part for less than \$100, as listed in the table Supplier.

$$+ \Pi_{sname} \left(\left(\Pi_{sid,sname} ((\sigma_{color=red} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers \right) \cap \left(\Pi_{sid,sname} ((\sigma_{color=green} Parts) \bowtie (\sigma_{cost<100} Catalog)) \bowtie Suppliers \right) \right)$$

Show the names of suppliers that can provide some red parts for under \$100 and some green parts for under \$100.