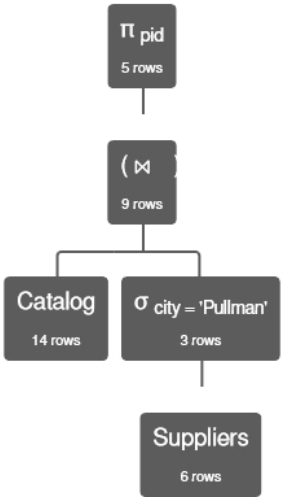
Cpts 451 HW 3 – Relational Algebra

Zach Fechko (011711215)

2/7/23

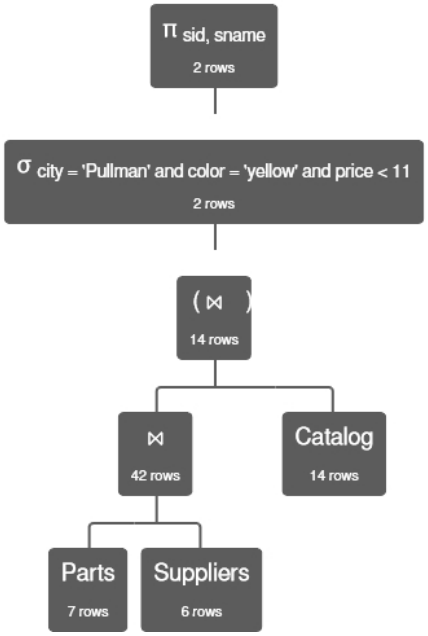
1. Find all distinct parts supplied by Pullman stores. Return "pid"s of those parts

$\Pi_{\text{pid}}(\text{Catalog} \bowtie \sigma_{\text{city}} = \text{'Pullman'}(\text{Suppliers}))$



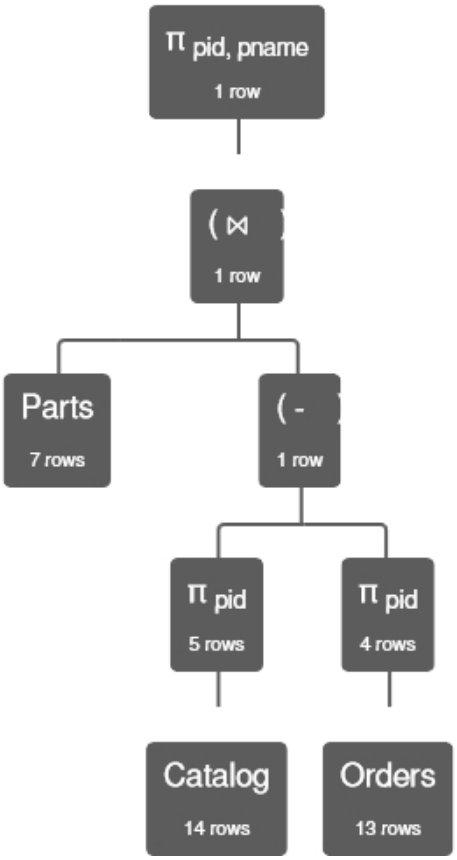
2. Find the suppliers in Pullman who supply a yellow part for less than $11. Return "sid"s and names for those suppliers

$$\Pi_{\text{sid, sname}}(\sigma_{\text{city}} = \text{'Pullman'} \wedge \text{color} = \text{'yellow'} \wedge \text{price} < 11(\text{Parts} \bowtie \text{Suppliers} \bowtie \text{Catalog}))$$



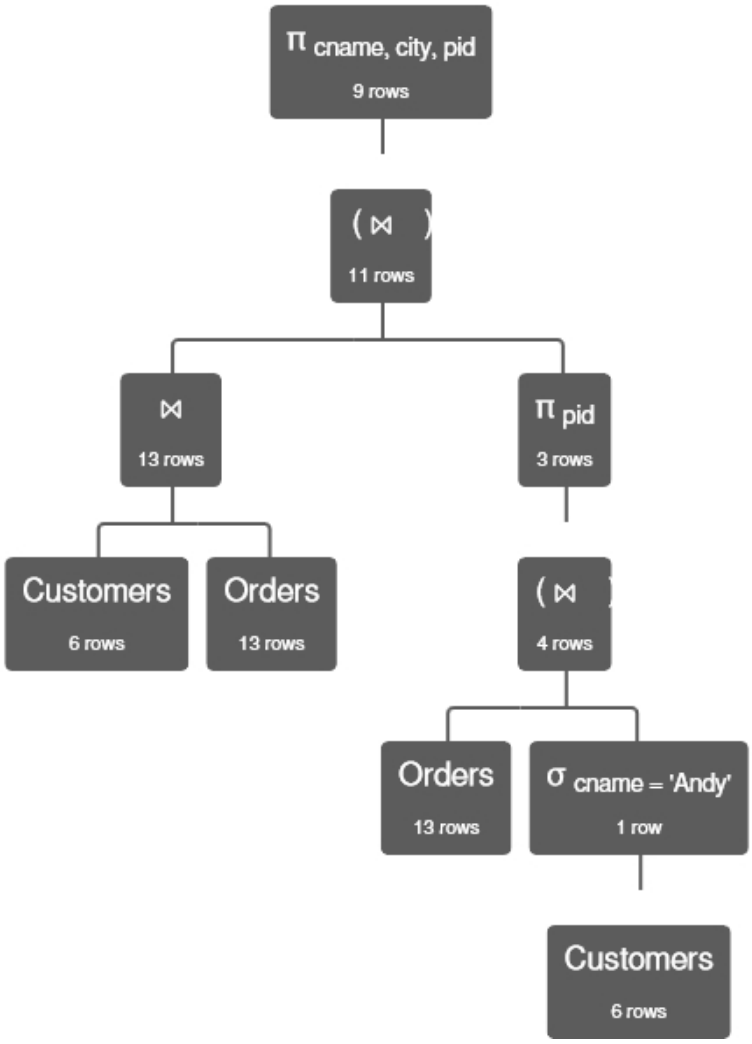
3. Find all parts which are provided by some supplier (i.e., they appear in the catalog) but they were never ordered by a customer. Return the "pid"s and names of those parts.

$$\Pi_{\text{pid, pname}}(\text{Parts} \bowtie (\Pi_{\text{pid}}(\text{Catalog}) - \Pi_{\text{pid}}(\text{Orders})))$$



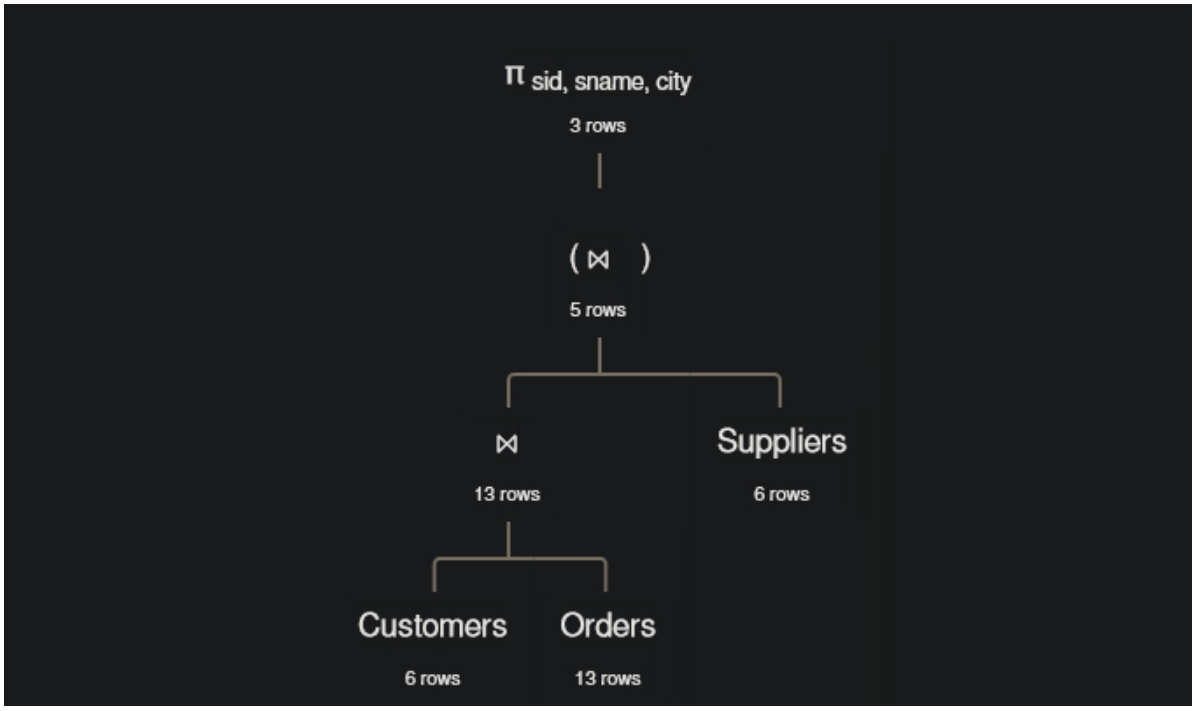
4. Find all customers who ordered one of the products that Andy ordered. Return names and cities of those customers and the `pid` of the products they ordered

$$\Pi_{\text{cname, city, pid}}(\text{Customers} \bowtie \text{Orders} \bowtie (\Pi_{\text{pid}}(\text{Orders})(\sigma_{\text{cname}} = \text{'Andy'}(\text{Customers}))))$$



5. Find the suppliers who have received orders from customers who live in the city where that supplier is located. Return `sid`, names, and cities of those suppliers.

$$\Pi_{\text{sid, sname, city}}(\text{Customers} \bowtie \text{Orders} \bowtie \text{Suppliers})$$


π sid, sname, city
3 rows
(⋈)
5 rows
⋈
13 rows
Suppliers
6 rows
Customers
6 rows
Orders
13 rows