

Base de données Northwind

Algèbre

- (1) $\pi_{\text{FirstName,LastName,Address,City,Region}}(\text{Employees})$
- (2) $\pi_{\text{FirstName,LastName,CompanyName}}(\text{Employees} * \text{Orders} * \sigma_{\text{City}='Bruxelles'}(\text{Customers}) * \text{ShipVia} \leftarrow \text{ShipperID}(\pi_{\text{ShipperID}}(\sigma_{\text{CompanyName}='Speedy Express'}(\text{Shippers}))))$
- (3) $\pi_{\text{Title,FirstName,LastName}}(\text{Employees} * \text{Orders} * [\text{Order Details}] * \sigma_{\text{ProductName}='Gravad Lax' \vee \text{ProductName}='Mishi Kobe Niku'}(\text{Products}))$
- (4) $\pi_{\text{Title,LastName,TitleSup,LastNameSup}}(\text{Employees} * \text{ReportsTo} = \text{EmployeeID} \rho_{\text{TitleSup} \leftarrow \text{Title,LastNameSup} \leftarrow \text{LastName}}(\text{Employees}))$
- (5) $\pi_{\text{CompanyName,ProductName,SupplierName}}(\sigma_{\text{City}='London'}(\text{Customers}) * \text{Orders} * [\text{Order Details}] * \text{Products} * \rho_{\text{SupplierName} \leftarrow \text{CompanyName}}(\sigma_{\text{CompanyName}='Pavlova, Ltd.' \vee \text{CompanyName}='Karkki Oy'}(\text{Suppliers})))$
- (6) $\pi_{\text{ProductName}}(\sigma_{\text{City}='London'}(\text{Employees}) * \text{Orders} * [\text{Order Details}] * \text{Products}) \cup \pi_{\text{ProductName}}(\sigma_{\text{City}='London'}(\text{Customers}) * \text{Orders} * [\text{Order Details}] * \text{Products})$
- (7) (a) $\pi_{\text{FirstName,LastName}}(\text{Employees} \bowtie_{\text{BirthDate} < \text{BirthDate}} \pi_{\text{BirthDate}}(\sigma_{\text{City}='London'}(\text{Employees})))$
 (b) $\pi_{\text{FirstName,LastName}}(\text{Employees}) - \pi_{\text{FirstName,LastName}}(\text{Employees} \bowtie_{\text{BirthDate} \geq \text{BirthDate}} \pi_{\text{BirthDate}}(\sigma_{\text{City}='London'}(\text{Employees})))$
 Autre solution: Solution a) divisée par les employés de Londres.
 $\pi_{\text{FirstName,LastName}}(\text{Employees} \bowtie_{\text{BirthDate} < \text{BirthDate}} \pi_{\text{BirthDate}}(\sigma_{\text{City}='London'}(\text{Employees}))) \div \pi_{\text{EmployeeID}}(\sigma_{\text{City}='London'}(\text{Employees}))$
- (8) $\pi_{\text{FirstName,LastName}}(\text{Employees}) - \pi_{\text{FirstName,LastName}}(\text{Employees} \bowtie_{\text{HireDate} \geq \text{HireDate}} \pi_{\text{HireDate}}(\sigma_{\text{City}='London'}(\text{Employees})))$
- (9) $\pi_{\text{LastName,City}}(\text{Employees} * \text{Orders} * \pi_{\text{CustomerID,City}}(\text{Customers}))$
- (10) $\pi_{\text{CompanyName}}(\text{Customers} * (\pi_{\text{CustomerID}}(\text{Customers}) - \pi_{\text{CustomerID}}(\text{Orders})))$
- (11) $\pi_{\text{CompanyName,ProductID}}(\text{Customers} * \text{Orders} * [\text{Order Details}]) \div \pi_{\text{ProductID}}(\text{Products})$
 Autre solution
 $\pi_{\text{CompanyName,ProductID}}(\text{Customers} * (\pi_{\text{CompanyID,ProductID}}(\text{Orders} * [\text{Order Details}]) \div \pi_{\text{ProductID}}(\text{Products})))$
- (12) $\pi_{\text{ProductName,EmployeeID}}(\text{Orders} * [\text{Order Details}] * \text{Products}) \div \pi_{\text{EmployeeID}}(\text{Employees})$
- (13) $\pi_{\text{CustomerID,CompanyName,ProductID}}(\sigma_{\text{CustomerID} \neq 'LAZYK'}(\text{Orders}) * \text{Orders} * [\text{Order Details}]) \div \pi_{\text{ProductID}}(\sigma_{\text{CustomerID}='LAZYK'}(\text{Orders}) * [\text{Order Details}])$
- (14) $(\pi_{\text{CustomerID,CompanyName,ProductID}}(\sigma_{\text{CustomerID} \neq 'LAZYK'}(\text{Orders}) * \text{Orders} * [\text{Order Details}]) \div \pi_{\text{ProductID}}(\sigma_{\text{CustomerID}='LAZYK'}(\text{Orders}) * [\text{Order Details}])) - (\pi_{\text{CustomerID,CompanyName}}(\text{Customers} * \text{Orders} * [\text{Order Details}]) * (\pi_{\text{ProductID}}(\text{Products}) - \pi_{\text{ProductID}}(\sigma_{\text{CustomerID}='LAZYK'}(\text{Orders}) * [\text{Order Details}])))$