Projeto BD – Parte 1

2º Semestre – 2022/2023

Grupo 27

Nº aluno	Nome	Percentagem de contribuição	Esforço	Turno	Professor
102879	António Silva	33,33%	04:30	BD2L06	Tomás Caldeira Pedro Sousa
102760	Diogo Marques	33,33%	04:30		
103215	Leonardo Pinheiro	33,33%	04:30		

Modelo Relacional e Restrições de Integridade

Customer(cust_no, name, email, phone, address)

- unique(email)
- IC-1: Customer can only pay for the sale of on order they have placed themselves.

Order(order_no, date, cust_no)

- cust_no: FK(customer)
- IC-2: every order must contain one or more products.

Sale(order_no)

- order_no: FK(order)

Pay(order_no, cust_no)

- order_no: FK(sale)
- cust_no: FK(customer)

Employee(ssn, TIN, bdate, name)

- IC-3: An employee must work in a Department and a Workplace.
- unique(TIN)

Process(order_no, ssn)

- order_no: FK(order)
- ssn: FK(employee)

Department(name)

Workplace(address, lat, long)

- unique(lat, long)

Works(ssn, name, address)

- ssn: FK(employee)
- name: FK(department)
- address: FK(workplace)

Office(address)

- address: FK(workplace)

Warehouse(address)

- address: FK(workplace)

Product(sku, name, description, price)

- IC-4: Every sku must participate in Supplier.

EAN_Product(sku, ean)

- sku: FK(product)

Supplier(TIN, name, address, sku, date)

- sku: FK(product)

Delivery(address, TIN)

- address: FK(warehouse)
- TIN: FK(supplier)

Contains(order_no, sku, qty)

- order_no: FK(order)
- sku: FK(product)

TÉCNICO LISBOA

Álgebra Relacional

1. Liste o nome de todos os clientes que fizeram encomendas contendo produtos de preço superior a €50 no ano de 2023.

products ⟵ $\rho_{name \rightarrow name\_Product}$(contains⋈product)
clients ⟵ $\rho_{name \rightarrow name\_Client}$(customer⋈order)
$\pi_{name\_Client}(\sigma_{price>50 \ \wedge \ 01/01/2023 \leq date \leq 31/12/2023}$(product⋈clients))

2. Liste o nome de todos os empregados que trabalham em armazéns e não em escritórios e processaram encomendas em janeiro de 2023.

employeesWarehouse ⟵ $\rho_{name \rightarrow nameEmp}$(employee⋈ $\rho_{name \rightarrow name\_Dep}$(works⋈warehouse))
employeesOffice ⟵ $\rho_{name \rightarrow nameEmp}$(employee⋈ $\rho_{name \rightarrow name\_Dep}$(works⋈office))
employeesOnlyWarehouse⟵$\pi_{nameEmp}$(employeesWarehouse) – $\pi_{nameEmp}$(employeesOffice)
ordersJanuary2023 ⟵ $\pi_{name}(\sigma_{01/01/2023 \leq date \leq 31/01/2023}$(order⋈process⋈employee))
result ⟵ $\pi_{nameEmp}$(employeesOnlyWarehouse⋈ $\rho_{name \rightarrow nameEmp}$(ordersJanuary2023))

3. Indique o nome do produto mais vendido.

sales ⟵ $\rho_{name \rightarrow name\_Pro}$(order⋈sale⋈contains⋈product)
numSales ⟵ $_{name\_Pro}\mathcal{G}_{sum(qty) \rightarrow quantity\_selled}$ (Sales)
bestSeller ⟵ $\mathcal{G}_{max(quantity\_selled)}$(numSales)⋈numSales

4. Indique o valor total de cada venda realizada.

sales ⟵ $\rho_{name \rightarrow name\_Pro}$(sale⋈contains⋈product)
totalValueOfEachSale ⟵ $_{order\_no}\mathcal{G}_{sum(qty*price) \rightarrow value\_of\_each\_sale}$ (sales)