

## **Projeto BD – Parte 2**

Turno BDL03 – Grupo 32

Professor – Pedro Miguel Leão Veloso Dias

### **Realizado por:**

André Santos – 99730

Diogo Miranda – 102536

David Pires – 103458

### **Percentagem de contribuição de cada aluno:**

André Santos – 33.3%

Diogo Miranda – 33.3%

David Pires – 33.3%

### **Esforço Total:**

6 horas (cada aluno)

# 1ª Parte: Modelo Relacional

workplace(address, lat, long)

- UNIQUE (lat, long)

office(address)

- address: FK(workplace.address)

warehouse(address)

- address: FK(workplace.address)

department(name)

employee(ssn, TIN, bdate, name)

- UNIQUE (TIN)
- IC-6: Every employee (ssn) must participate in the works association

works(ssn, address, name)

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

product(sku, name, description, price)

- IC-7: Every product (sku) must participate in the supply-contract association

EAN-product(sku, ean)

- sku: FK(product.sku)

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

delivery(address, TIN, sku)

- address: FK(workplace.address)
- TIN: FK(supplier)
- sku: FK(product)

customer(cust\_no, name, email, phone, address)

- UNIQUE (email)
- IC-1: Customers can only pay for the Sale of an Order they have placed themselves

order(order\_no, date, cust\_no)

- IC-8: Every order (order\_no) must participate in the contains association

sale(order\_no)

- order\_no: FK(order.order\_no)

pay(cust\_no, order\_no)

- cust\_no: FK(customer)
- order\_no: FK(order.order\_no)

process(ssn, order\_no)

- ssn: FK(employee)
- order\_no: FK(order)

contains(sku, order\_no, qty)

- sku: FK(product)
- order\_no: FK(order)

## 2ª Parte: Álgebra Relacional

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

$\pi_{\text{name}}(\sigma_{\text{date} \geq 2023-01-01 \wedge \text{date} \leq 2023-12-31 \wedge \text{price} > 50}(\text{customer} \bowtie \text{order} \bowtie \text{contains} \bowtie \rho_{\text{name} \rightarrow \text{product\_name}}(\text{product})))$

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

$\pi_{\text{name}}(\sigma_{\text{date} \geq 2023-01-01 \wedge \text{date} \leq 2023-01-31}(\text{order} \bowtie \text{process} \bowtie \text{employee} \bowtie \rho_{\text{name} \rightarrow \text{department\_name}}(\text{works}) \bowtie \text{workplace} \bowtie \text{warehouse}))$

3. Indique o nome do produto mais vendido

$\pi_{\text{name}}(\pi_{\text{name}, \text{MAX}(\text{qty})}(\rho_{\text{name}} \text{G}_{\text{SUM}(\text{qty})}(\text{sale} \bowtie \text{order} \bowtie \text{contains} \bowtie \text{product})))$

4. Indique o valor total de cada venda realizada

$\pi_{\text{name}, \text{price} * \text{qty}}(\rho_{\text{name}, \text{price}} \text{G}_{\text{SUM}(\text{qty})}(\text{sale} \bowtie \text{order} \bowtie \text{contains} \bowtie \text{product}))$