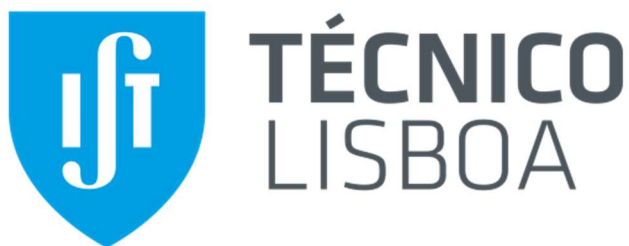


Projeto BD – Parte 2

IST - Base de Dados 2022/2023



Nomes:	João Paulo PEREIRA	Bernardo AUGUSTO
Numeros:	102081	102820
Esforço:	50%	50%
Contribuição:	6h45	6h45
N. grupo:	20	
Turno:	BD2L02	
Professor:	João Tomás Brazão Caldeira	

Tradução para o Modelo Relacional

order(order_no, date, cust_no)

- cust_no: FK(customer.cust_no)
- IC-1: Every **order** (order_no) must participate in the **contains** association

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

- UNIQUE(email)

sale(order_no)

- order_no: FK(order.order_no)

pay(cust_no, order_no)

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

product(sku, name, description, price)

- IC-2: Every **product** (sku) must appear in at least one **supplier**

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

- sku: FK(product.sku)

ean_product(sku, ean)

- sku: FK(product.sku)
- UNIQUE(ean)

contains(order_no, sku, qty)

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

employee(ssn, TIN, bdate, name)

- UNIQUE(TIN)
- IC-3: Every **employee** (ssn) must participate in the **works** association

process(order_no, ssn)

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

department(name)

workplace(address, lat, long)

- UNIQUE(lat, long)

works(ssn, name, address)

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

office(address)

- address: FK(workplace.address)

warehouse(address)

- address: FK(workplace.address)

delivery(address, sku, TIN)

- address: FK(warehouse.address)
- sku, TIN: FK(supplier.sku, supplier.TIN)

Álgebra Relacional

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

$\pi_{\text{customer.name}}(\sigma_{\text{order.date} > 2022-12-31 \wedge \text{order.date} < 2024-01-01 \wedge \text{product.price} > 50} (\text{customer} \bowtie \text{order} \bowtie \text{contains} \bowtie \text{product}))$

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

$\pi_{\text{employee.name}}(\sigma_{\text{order.date} > 2022-12-31 \wedge \text{order.date} < 2023-02-01} (\text{order} \bowtie \text{process} \bowtie \text{employee} \bowtie \text{works} \bowtie (\text{warehouse} - \text{office})))$

3. Indique o nome do produto mais vendido:

$\pi_{\text{product.name}}(\text{product.name} \text{ } G_{\text{MAX}(\text{total_qty})}(\text{product.name} \text{ } G_{\text{SUM}(\text{contains.qty}) \mapsto \text{total_qty}}(\text{sale} \bowtie \text{contains} \bowtie \text{product}))))$

4. Indique o valor total de cada venda realizada

$\text{sale.order_no} \text{ } G_{\text{SUM}(\text{product.price} * \text{contains.qty}) \mapsto \text{total_price}}(\pi_{\text{sale.order_no}, \text{product.price} * \text{contains.qty}}(\text{sale} \bowtie \text{contains} \bowtie \text{product}))$