**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

πname(σdate>=2023-01-01 ∧ date<=2023-12-31 ∧ price>50(customer ⋈ order ⋈ contains ⋈ ρname→product\_name(product)))

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

πname(σdate>=2023-01-01 ∧ date<=2023-01-31(order ⋈ process ⋈ employee ⋈ ρname→department\_name(works) ⋈ workplace ⋈ warehouse))

1. Indique o nome do produto mais vendido

πname(πname, MAX(qty)(nameGSUM(qty)(sale ⋈ order ⋈ contains ⋈ product)))

1. Indique o valor total de cada venda realizada

πname, price\*qty(name, priceGSUM(qty)(sale ⋈ order ⋈ contains ⋈ product))