

# Projeto de Bases de Dados

## Parte 2

Turno Prático BD L13, Prof. Gonçalo Babo Freire

Grupo 186			
Nome	Nº	Esforço (Horas)	Contribuição (%)
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### Modelo Relacional

Point\_of\_retail(adress, name)

IVM(serial\_number, manuf)

installed-at(serial\_number, manuf, adress, nr)

- adress: FK(Point\_of\_retail)
- serial\_number, manuf: FK(IVM)

Category(name)

RI - 1 : name tem de existir em Simple\_category ou Super\_category

RI - 2 : Uma Category não pode ser Super\_category e Simple\_category simultaneamente

Simple\_category(name)

- name: FK(Category.name)

Super\_category(name)

- name: FK(Category.name)

has-other(Category\_name, Super\_category\_name)

- Category\_name: FK(Category.name)
- Super\_category\_name: FK(Super\_category.name)
- RI-3 : Category\_name != Super\_category\_name
- RI-4: ao percorrer as Super\_category's de uma Category, nenhum Super\_category\_name pode ser igual a Category\_name
- RI-5 : Todas as Super\_category devem participar na associação has-other

Shelve(nr, serial\_number, manuf, height, name)

- serial\_number, manuf\_: FK(IVM)
- name: FK(Category)
- RI-6 : O conjunto nr, serial\_number e manuf tem de existir ou em Ambient\_temp\_shelf or em Warm\_shelf ou em Cold\_shelf, logo nenhuma shelf terá o mesmo conjunto ao mesmo tempo

Cold\_shelf(serial\_number, manuf, nr)

- serial\_number, manuf, nr: FK(Shelve)

Warm\_shelf(serial\_number, manuf, nr)

- serial\_number, manuf, nr: FK(Shelve)

Ambient\_temp\_shelf(serial\_number, manuf, nr)

- serial\_number, manuf, nr: FK(Shelve)

Retailer(TIN, name)

- unique(name)

responsible\_for(serial\_number, manuf, TIN, name)

- serial\_number, manuf: FK(IVM)
- TIN: FK(Retailer)
- name: FK(Category)

Replenishment\_event(instant, ean, serial\_number, manuf, nr, units, TIN)

- ean: FK(Product)
- nr, serial\_number, manuf: FK(Shelve)
- TIN: FK(Retailer)

- RI-7 : O Replenishment\_event.units não pode ser maior que as units da associação planograma associado ao Replenishment\_event.ean.
- RI-8 : Um Product.ean tem de estar associado a uma Shelve onde a Shelve e o ean estejam associados ao mesmo Category.name nas associações displayed e has respetivamente
- RI-9 : O Product.ean está associado ao mesmo Category.name, pela associação has, que o Retailer.TIN pela associação responsible\_for

Product(ean, descr)

has(ean, name)

- ean: FK(Product)
- name: FK(Category)
- RI-10 : todos os produtos participam na associação has

planogram(ean, nr, serial\_number, manuf, faces, units, loc)

- ean: FK(Product)
- nr, manuf, serial\_number: FK(Shelve)

## Algebra Relacional

1.  $\Pi_{ean,descr} \left( \sigma_{units > 10 \wedge instant > 2021/12/31 \wedge name = \text{Barras Energéticas}} (Replenishment\_event \bowtie Product \bowtie has) \right)$
2.  $\Pi_{serialnumber} \left( \sigma_{ean=9002490100070} (planogram) \right)$
3.  $G_{count()} \left( \sigma_{Super\_category.name = \text{Sopas Take-Away}} (has\_other) \right)$
4.  $H \leftarrow_{ean} G_{sum(units) \rightarrow S} (Replenishment\_event)$   
 $\Pi_{ean,descr} \left( \sigma_{S=M} \left( G_{max() \rightarrow M} (H) \bowtie H \bowtie Products \right) \right)$

## SQL

1.

```
SELECT ean, descr
FROM Replenishment event
      NATURAL JOIN Product
      NATURAL JOIN has
WHERE units > 10
      AND instant > 2021/12/31
      AND name = "Barras Energéticas";
```

2.

```
SELECT serial number
FROM planogram
WHERE ean = 9002490100070;
```

3.

```
SELECT COUNT(*)
FROM has_other
WHERE Super_category.name = "Sopas Take-away";
```

4.

```
SELECT ean, descr
FROM (
      SELECT ean, SUM(units)
      FROM Replenishment_event
      GROUP BY ean
    ) AS H
      NATURAL JOIN Product
WHERE units = (
      SELECT MAX(units)
      FROM H
    );
```