PROJETO BD – PARTE 02

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Alunos	Esforço	Horas
Miguel Eleutério	44.4%	8
Raquel Cardoso	38.9%	7
Tiago Ferreira	16.7%	3
Total:	100%	18

GRUPO 121 – BD2L19
5 de Junho de 2022

Modelo Relacional

Product(ean, descr)

Shelve(serial number, manuf, nr, name, height)
- serial number, manuf: FK(IVM)
- name: FK(Category)

IC-1: no shelve can be ambient temperature, cold temperature and/or warm temperature at the same time.

Ambient Temp Shelf(serial number, manuf, nr)
- serial number, manuf, nr: FK(Shelve)

Cold Shelf(serial number, manuf, nr)
- serial number, manuf, nr: FK(Shelve)

Warm Shelf(serial number, manuf, nr)
- serial number, manuf, nr: FK(Shelve)

IVM(serial number, manuf)

Point of Retail(address, name)

Retailer(TIN, name)
- UNIQUE(name)

Replenishment Event(ean, nr, instant, units, TIN)
- ean: FK(Product)
- nr: FK(Shelve)
- TIN: FK(Retailer)

IC-2: the units' value can't be higher than the one specified in the planogram.

Category(name)

IC-3: no category can be contained in itself.
IC-4: there can't be cycles in the categories' hierarchies.
IC-5: no category can exist as a super category and simple category at the same time.

Simple Category(name)
- name: FK(Category.name)

Super Category(name)
- name: FK(Category.name)

has-other(Category_name, SuperCategory_name)

- Category_name: FK(Category.name)
- SuperCategory_name: FK(SuperCategory.name)

IC-6: every Super Category(SuperCategory_name) must participate in the “has-other” association.

planogram(serial number, manuf, nr, ean, faces, units, loc)

- ean: FK(Product)
- serial number, manuf: FK(IVM)
- nr: FK(Shelve)

has(ean, name)

- ean: FK(Product)
- name: FK(Category)
- IC-7: every Product(ean) must participate in the “has” association.

displayed(name, nr, serial number, manuf)

- name: FK(Category)
- serial number, manuf: FK(IVM)
- nr: FK(Shelve)

replenisher-of(TIN, instant, ean, nr, manuf, serial number)

- TIN: FK(Retailer)
- instant, ean, nr, manuf, serial number: FK(Replenishment Event)

responsible-for(name, TIN, serial number, manuf)

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

installed-at(serial number, manuf, address, nr)

- serial number, manuf: FK(IVM)
- address: FK(Point of Retail)

IC-8: a product can only be replenished in a shelf in which its’ category is represented.

IC-9: a product can only be replenished by a Retailer responsible for its’ Category.

Álgebra Relacional e SQL

Exercício 1.

$\pi_{ean,\ descr}(\sigma_{\ name\ =\ 'Barras\ Energéticas' \wedge units > 10 \wedge instant > 2021/12/31}(Product \bowtie has \bowtie Replenishment\ Event))$

```
SELECT ean, descr
FROM product
        NATURAL JOIN has
        NATURAL JOIN replenishment
event
WHERE name = 'Barras Energéticas'
        AND units > 10
        AND instant > 2021/12/31
```

Exercício 2.

$\pi_{serial\ number}(\sigma_{ean\ =\ 9002490100070}(planogram))$

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

Exercício 3.

$\sigma_{SuperCategory\_name\ =\ 'Sopas\ Take\text{-}Away'}(has\_other)\ Gcount()$

```
FROM  Category
WHERE  SuperCategory_name  =  'Sopas
Take-Away'
SELECT count(SuperCategory_name)
```

Exercício 4.

$P \leftarrow {}_{ean}G_{sum(units)}(Replenishment\ Event)$

$\pi_{ean,\ descr}(Product \bowtie (G_{max}(units)(P)))$

```
SELECT ean, descr
FROM  Replenishment  Event  NATURAL
JOIN product
        GROUP BY ean, descr
HAVING SUM(units) >= ALL
        (SELECT SUM(units)
        FROM  Replenishment  Event
        NATURAL JOIN product
                GROUP BY ean, descr);
```