Grupo: 139

Turno: BD2L16

Docente: Daniel Mateus Gonçalves

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| 95606 | João Pedro Antunes Aragonez | Esforço Total Estimado:  18h | Contribuição:  O projeto foi feito em conjunto, com a presença constante de todos os membros do grupo.  Existiu debate constante de ideias. |
| 95578 | Francisco Manuel Leal Mithá Ribeiro |
| 96732 | Diogo Artur Rainha Lopes |

**Modelo Relacional**

point\_of\_retail(address, name)

ivm(serial\_number, manuf)

retailer(tin, name, instant, serial\_number, manuf, nr, ean)

* serial\_number, manuf, nr, ean: FK(replenishment\_event.serial\_number, replenishment\_event.manuf, replenishment\_event.nr, replenishment\_event.ean)
* UNIQUE(name)

installed\_at(serial\_number, manuf, address, nr)

* serial\_number, manuf: FK(ivm.serial\_number, ivm.manuf)
* address: FK(point\_of\_retail.address)

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

* serial\_number, manuf: FK(ivm.serial\_number, ivm.manuf)
* name: FK(category.name)
* RI-1: No shelf can exist at the same time in “Ambient Temp Shelf”, “Warm Shelf” and “Cold Shelf”
* RI-2: Every shelf must exist in “Ambient Temp Shelf”, “Warm Temp Shelf” and/or “Cold Shelf”

product(ean, descr)

* RI-1: Every “Product” (ean) must participate in the “has” association

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

* ean: FK(product.ean)
* serial\_number, manuf, nr: FK(shelf.serial\_number, shelf.manuf, shelf.nr)

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

* serial\_number, manuf, nr: FK(shelf.serial\_number, shelf.manuf, shelf.nr)

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

* serial\_number, manuf, nr: FK(shelf.serial\_number, shelf.manuf, shelf.nr)

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

* serial\_number, manuf, nr: FK(shelf.serial\_number, shelf.manuf, shelf.nr)

category(name, serial\_number, manuf, nr )

* serial\_number, manuf, nr: FK(shelf.serial\_number, shelf.manuf, shelf.nr)
* RI-1: No category can exist at the same time in “Simple Category” and “Super Category”
* RI-2: Every category must exist in “Simple Category” and/or “Super Category”
* RI-3: No category can contain itself
* RI-4: No cicles are allowed in the “Category” hierarchy

simple\_category(name)

* name: FK(category.name)

super\_category(name)

* name: FK(category.name)
* RI-1: Every “Super Category” (name) must participate in the “has\_other” association

has\_other(name, super\_name)

* name: FK(category.name)
* super\_name: FK(super\_category.name)

has(name, ean)

* name: FK(category.name)
* ean: FK(product.ean)

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

* tin: FK(retailer.tin)
* name: FK(category.name)
* serial\_number, manuf: FK(ivm.serial\_number, ivm.manuf)

replenishment\_event(ean, serial\_number, manuf, nr, instant , tin, units)

* ean, serial\_number, manuf, nr : FK(planogram.ean, planogram.serial\_number, planogram.manuf, planogram.nr)
* tin : FK(Retailer.tin)
* RI-1: “units” cannot exceed planogram.units.

RI 5 e 6 não podem ser representadas neste modelo.

**Álgebra Relacional + SQL**

1.

T ← (σunits > '10' ∧ instant > '2021/12/31' (replenishment\_event))

πean,descr (σname='Barras Energéticas' (T ⨝ product ⨝ has ⨝ category))

1. SELECT ean, descr
2. FROM(
3. SELECT \*
4. FROM replenishment\_event NATURAL JOIN product NATURAL JOIN has NATURAL JOIN
5. category
6. WHERE replenishment\_event.units > 10
7. AND replenishment\_event.instant >‘2021/12/31’)
8. WHERE name = ‘Barras Energéticas’;

2.

π serial\_number (σean='9002490100070' (planogram))

1. SELECT plan.serial\_number
2. FROM planogram AS plan
3. WHERE plan.ean = ‘9002490100070’;

3.

π count (σ super\_name='Sopas Take-Away' (super\_name Gcount() (has\_other)) )

1. SELECT \*
2. FROM (
3. SELECT super\_name, COUNT(\*)
4. FROM has\_other
5. GROUP BY super\_name)
6. WHERE super\_name = ‘Sopas Take-Away’;

4.

T ← eanGsum(units)->tot\_units (replenishment\_event)

πean,descr(Gmax(tot\_units)( product ⨝ T))

1. SELECT ean, descr
2. FROM (
3. SELECT \*
4. FROM product NATURAL JOIN (
5. SELECT ean, SUM(units) AS tot\_units
6. FROM replenishment\_event
7. GROUP BY ean
8. HAVING tot\_units >= ALL;)
9. )