**Base de Dados 2021/2022**

**Projeto BD - Parte 2**

Grupo nº 137, Laboratório BD2L10, Professor Flávio Martins

|  |  |  |  |
| --- | --- | --- | --- |
| Aluno | Número | Percentagem (%) | Esforço Total (h) |
| Rúben Nobre | 99321 | 33 | 8 |
| Alexandra Pato | 97375 | 33 | 8 |
| Teresa Costa | 99177 | 33 | 8 |

**Modelo Relacional**

ivm(manuf, serial\_number)

shelve(manuf, serial\_number, nr, height, category\_name)

* manuf, serial\_number: FK(ivm.manuf, ivm. serial\_number)
* category\_name: FK(category.name)
* RI-5: A product may only be replenished in a shelf where its category is present
* RI’-1: A shelf must exist in “ambientTempShelf”, “warmShelf”, or “coldShelf”
* RI’-2: No shelve can exist at the same time in any combination of “ambientTempShelf”, “warmShelf”, and “coldShelf”

ambientTempShelf(manuf, serial\_number, nr)

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

warmShelf(manuf, serial\_number, nr)

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

coldShelf(manuf, serial\_number, nr)

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

product(ean, descr)

* RI’-3: Every product must participate in the “has” association

has(ean, name)

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

category(name)

* RI-1: A category mustn't contain itself
* RI-2: There mustn’t exist hierarchical cycles of categories
* RI’-4: A category must exist in "simpleCategory" or "superCategory"
* RI’-5: No category can exist at the same time in any combination of "simpleCategory" and "superCategory"

simpleCategory(name)

* name: FK(category.name)

superCategory(name)

* name: FK(category.name)
* RI’-6: A super category must participate in the “hasOther” association

pointOfRetail(address, name)

installedAt(manuf, serial\_number, address, nr)

* manuf, serial\_number: FK(ivm.manuf, ivm. serial\_number)
* address: FK(pointOfRetail)

hasOther(super\_cat, child\_cat)

* super\_cat: FK(superCategory.name)
* child\_cat: FK(category.name)

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

* ean: FK(product)
* manuf, serial\_number, nr: FK(shelve.manuf, shelve.serial\_number, shelve.nr)
* RI-4: The number of replenished units in a Replenishment Event must not exceed the number of units specified in the planogram

retailer(tin, name)

* UNIQUE(name)

responsibleFor(manuf, serial\_number, tin, name)

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

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

* ean, manuf, serial\_number, nr: FK(planogram.ean, planogram.manuf, planogram.serial\_number, planogram.nr)
* tin: FK(retailer)
* RI-6: A product may only be replenished by a retailer that's responsible for said product's category.

**Álgebra Relacional**

**SQL**

1. SELECT DISTINCT ean, descr

FROM has NATURAL JOIN replenishmentEvent NATURAL JOIN product

WHERE name='Barras Energéticas' AND instant > ‘2021/12/31’ AND units > 10;

1. SELECT manuf, serial\_number

FROM planogram

WHERE ean=’9002490100070’;

1. SELECT COUNT (\*)  
   FROM hasOther  
   WHERE super\_category = “Sopas Take-Away”
2. WITH T as (  
    SELECT ean, descr, SUM(units) AS total\_units  
    FROM replenishmentEvent  
    NATURAL JOIN product  
    GROUP BY ean, desr  
   )  
   SELECT ean, descr  
   FROM (  
    T NATURAL JOIN (  
    SELECT MAX(total\_units)  
    AS total\_units  
    FROM T  
    )  
   AS result

**Observações**

1. Modelo Relacional:
   1. RI-n: Restrição de Integridade do enunciado
   2. RI’-n: Restrição de Integridade criada exclusivamente para o modelo relacional
2. Álgebra Relacional:
   1. Tomou-se “todos os produtos que foram repostos em mais de 10 unidades” como “todos os produtos em que houve reposição, num dado instante, de mais de 10 unidades”;
   2. Tomou-se “todas as IVMs onde este produto poderá ser apresentado” como “todas as IVMs com planograma referente ao produto”;
   3. Tomou-se “produto mais reposto” como “produto que, no total, teve mais unidades repostas”;