Projeto BD – Parte 2

Alunos:

- Bernardo Castiço ist196845 - Percentagem relativa: 33,33% - Esforço em horas: 6 horas.
- Gonçalo Rodrigues ist196863 – Percentagem relativa 33,33% - Esforço em horas: 6 horas.
- Hugo Rita ist196870 – Percentagem relativa 33,34% - Esforço em horas: 6 horas

Grupo 30

Turno BDL03

Professor Gonçalo Freire

Modelo Relacional

Point of Retail (address, name)

IVM (serial number, manuf)

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

.serial_number, manuf: FK (IVM.serial_number, IVM.manuf)

.address: FK (Point_of_Retail.address)

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

.name: FK (Category.name)

.TIN: FK (Retailer.TIN)

.serial_number, manuf: FK (IVM.serial_number, IVM.manuf)

Retailer (TIN, name)

.Unique (name)

Of (serial number, manuf, nr)

.nr: FK (Shelve.nr)

.serial_number, manuf: FK (IVM.serial_number, IVM.manuf)

Replenishment event (ean, nr, TIN, instant, units)

.ean: FK (Product.ean)

.nr: FK (Shelve.nr)

.TIN: FK (Retailer.TIN)

Replenishment(TIN, nr, ean, instant, units)

.TIN: FK (Retailer.TIN)

.nr: FK (planogram.nr)

.ean: FK (planogram.ean)

.RI-4 In a Replenishment event, at the ‘replenishment’ association the Replenishment_Event.units can’t exceed the planogram.units.

.RI-5 An ean can only be associated to a shelf.nr, shelf.manuf and to a shelf.serial_number if in the ‘has’ association is associated to a Category.name that in the ‘displayed’ association is associated to the same shelf.nr, shelf.manuf and shelf.serial_number.

.RI-6 An ean can only be associated to a retailer.TIN if the product in the ‘has’ association is associated to the same Category.name than the retailer in the ‘responsible-for’ association.

Shelve (serial number, manuf, nr, height, name)

.serial number, manuf: FK (IVM.serial_number, IVM.manuf)

.name: FK (Category)

.IC-5 Shelve.nr must exist in Ambient Temp Shelf or in Warm Shelf or in Cold Shelf.

.IC-6 No Shelve can exist at the same time in ‘Ambient Temp Shelf’ and in ‘Warm Shelf’ and in ‘Cold Shelf’.

Ambient Temp Shelf(serial number, nr)

.serial number: FK (Shelve.serial_number)

.nr :FK (Shelve.nr)

Warm Shelf(serial number, nr)

.serial number: FK (Shelve.serial_number)

.nr :FK (Shelve.nr)

Cold Shelf(serial number, nr)

.serial number: FK (Shelve.serial_number)

.nr :FK (Shelve.nr)

Planogram(ean, nr, faces, units, loc)

.nr: FK (Shelve.nr)

.ean: FK (Product.ean)

Displayed(nr, name)

.nr: FK (Shelve.nr)

.name: FK (Category.name)

Product (ean, descr)

.Unique (descr)

. IC-1 Every product (Product.ean) must participate in the ‘has’ a association.

Has (ean, name)

.ean: FK (Product.ean)

.name: FK (Category.name)

Category (name)

.IC-3 Category.name must exist in Super Category or in Simple Category.

.IC-4 No Category can exist at the same time in ‘Super Category’ and in ‘Simple Category’.

Super Category (name)

.name: FK (Category.name)

. IC-2 Every Super Category (Category.name) must participate in the ‘has-other’ association.

Simple Category (name)

.name: FK (Category.name)

Has_other (nameCategory, nameSuperCategory)

.nameCategory: FK (Category.name)

.nameSuperCategory: FK (SuperCatergory.name)

.RI-1 A Category.name can't be the same that its own SuperCategory.name.

.RI-2 It's not possible to have cycles in Category hierarchy.

Algebra Relacional

1.

A <- name('has') ⋈ 'Product'

B <- 'Replenishment Event' ⋈ A

∏ (ean, descr (δ ('name' = "barras energéticas", 'units' > 10, 'instant' > 2021/12/31) (B))

2.

A <- ean('has') ⋈ 'displayed'

∏('serial number' (δ (ean = '9002490100070'(A)))

3.

∏ ('total' (G count() -> total (δ(superCategoryName = "Sopas Take Away" (has_other)))

4.

A <- ean G sum(units)->Sum (Replenishment)

∏ ('ean', 'descr' (Product ⋈ (G max(Sum) ->Sum(A) ⋈ A))

SQL

1.

SELECT ean, descr FROM Product NATURAL JOIN (SELECT name FROM has) NATURAL JOIN 'Replenishment Event' WHERE name = "barras energéticas" AND units > 10 AND instant > 2021/12/31;

2.

SELECT 'serial number' FROM displayed NATURAL JOIN (SELECT ean FROM has) displayed WHERE ean = '9002490100070';

3.

SELECT COUNT() FROM has_other WHERE superCatergoryName = "Sopas Take Away";

4.

SELECT ean, descr FROM Product NATURAL JOIN (SELECT ean, SUM(units) AS Sum FROM replenishment GROUP BY ean) NATURAL JOIN max(Sum) AS Sum;