

**Instituto Superior de Gestão e Administração de Santarém**

**Curso Técnico Superior Profissional de**

**Tecnologias e Programação em Sistemas de Informação**

Relatório do trabalho de base de dados I:

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Unidade Curricular: Base de dados I

Santarém

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# Resumo

Este é um trabalho de base de dados para avaliação prática da cadeira de Base de Dados I do curso TESP – TPSI (Tecnologias e Programação de Sistemas de Informação) do Instituto Isla Santarém, trabalho feito em grupo de dois sendo Samuel Rita e Jacksoneli Chaves, fizemos um sistema de base de dados para uma solução de atualização de preços de pneus utilizando SQL Server 2014 na sua infra estrutura e para o desenvolvimento de diagramas utilizamos o PowerArctect.

# Descrição dos objetivos do Trabalho

Com este trabalho pretende-se:

Apresentar a solução para uma estrutura de dados que suporte um sistema de atualizações de preços para pneus.

Apresentar o levantamento dos requisitos respetivos a futura base de dados.

Desenvolver um diagrama para o modelo de dados da base de dados a ser desenvolvida.

Desenvolver um modelo ER adequado para a base de dados em questão.

Criar a base de dados pretendida.

Apresentar um relatório do processo de desenvolvimento da base de dados.

# Descrição do levantamento de requisitos

Uma loja de pneus precisa de manter os preços dos seus pneus atualizados, para isso solicitou a criação de uma base de dados que suporte este sistema de atualização dos mesmos. Esta loja recebe todos os meses dos seus fornecedores de pneus os preços atualizados através de um ficheiro. O ficheiro enviado pelos fornecedores podem vir em vários formatos: txt, access, excel e csv. A base de dados deve guardar os dados dos fornecedores e para cada fornecedor deve ser guardado o layout do ficheiro enviado pelo mesmo.

Para os pneus é necessário guardar toda informação enviada pelos fornecedores relativamente aos pneus: Índice de carga, Índice de velocidade, largura, diâmetro, marca, preço, EcoValor e toda informação possível, para futuras necessidades. No final de todo tratamento dos dados contidos nos ficheiros enviados pelos fornecedores deve ser gerada uma tabela final de preços que ira alimentar seu sistema de vendas de pneus.

# Country

(Physical Name: Country)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(70) |  | NOT NULL |

**Referenced By**

* [EcoValuePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValuePrice) referencing (ID)

# EcoValue

(Physical Name: EcoValue)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Code | Code | VARCHAR(3) |  | NOT NULL |
| Category | Category | VARCHAR(50) |  | NOT NULL |
| EcoValueTypeID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValueType)) | EcoValueTypeID | INTEGER |  | NOT NULL |

**References**

* [EcoValueType](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValueType) through (EcoValueTypeID)

**Referenced By**

* [EcoValuePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValuePrice) referencing (ID)
* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# EcoValuePrice

(Physical Name: EcoValuePrice)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| EcoValueID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValue)) | EcoValueID | INTEGER |  | NOT NULL |
| CountryID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Country)) | CountryID | INTEGER |  | NOT NULL |
| Year | Year | INTEGER |  | NOT NULL |
| Price | Price | DECIMAL(10,2) |  |  |

**References**

* [Country](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Country) through (CountryID)
* [EcoValue](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValue) through (EcoValueID)

# EcoValueType

(Physical Name: EcoValueType)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(10) |  | NOT NULL |

**Referenced By**

* [EcoValue](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValue) referencing (ID)

# FileType

(Physical Name: FileType)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(50) |  | NOT NULL |
| Note | Note | VARCHAR(200) |  |  |

**Referenced By**

* [TireFileLayout](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireFileLayout) referencing (ID)

# LogType

(Physical Name: LogType)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(50) |  | NOT NULL |
| Note | Note | VARCHAR(100) |  |  |

**Referenced By**

* [TireLog](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireLog) referencing (ID)

# Tire

(Physical Name: Tire)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| TireWidthID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireWidth)) | TireWidthID | INTEGER |  | NOT NULL |
| TireAspectRatioID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireAspectRatio)) | TireAspectRatioID | INTEGER |  | NOT NULL |
| TireDiameterID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireDiameter)) | TireDiameterID | INTEGER |  | NOT NULL |

**References**

* [TireAspectRatio](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireAspectRatio) through (TireAspectRatioID)
* [TireDiameter](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireDiameter) through (TireDiameterID)
* [TireWidth](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireWidth) through (TireWidthID)

**Referenced By**

* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# TireAspectRatio

(Physical Name: TireAspectRatio)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | DECIMAL(10,2) |  | NOT NULL |

**Referenced By**

* [Tire](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Tire) referencing (ID)

# TireBrand

(Physical Name: TireBrand)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(50) |  | NOT NULL |

**Referenced By**

* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# TireDiameter

(Physical Name: TireDiameter)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | DECIMAL(10,2) |  | NOT NULL |

**Referenced By**

* [Tire](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Tire) referencing (ID)

# TireFileLayout

(Physical Name: TireFileLayout)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(150) |  | NOT NULL |
| TireSupplierID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSupplier)) | TireSupplierID | INTEGER |  | NOT NULL |
| FileTypeID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#FileType)) | FileTypeID | INTEGER |  | NOT NULL |
| StartWidth | StartWidth | INTEGER |  | NOT NULL |
| EndWidth | EndWidth | INTEGER |  |  |
| StartAspectRatio | StartAspectRatio | INTEGER |  | NOT NULL |
| EndAspectRatio | EndAspectRatio | INTEGER |  |  |
| StartDiameter | StartDiameter | INTEGER |  | NOT NULL |
| EndDiameter | EndDiameter | INTEGER |  |  |
| StartLoad | StartLoad | INTEGER |  | NOT NULL |
| EndLoad | EndLoad | INTEGER |  |  |
| StartSpeed | StartSpeed | INTEGER |  | NOT NULL |
| EndSpeed | EndSpeed | INTEGER |  |  |
| StartNoise | StartNoise | INTEGER |  | NOT NULL |
| EndNoise | EndNoise | INTEGER |  |  |
| StartResistance | StartResistance | INTEGER |  | NOT NULL |
| EndResistance | EndResistance | INTEGER |  |  |
| StartGrip | StartGrip | INTEGER |  | NOT NULL |
| EndGrip | EndGrip | INTEGER |  |  |
| StartTaxCode | StartTaxCode | INTEGER |  | NOT NULL |
| EndTaxCode | EndTaxCode | INTEGER |  |  |
| StartPrice | StartPrice | INTEGER |  | NOT NULL |
| EndPrice | EndPrice | INTEGER |  |  |
| CharacterSeparator | CharacterSeparator | CHAR |  | NOT NULL |
| QtyDecimalPlaces | QtyDecimalPlaces | INTEGER |  | NOT NULL |
| ReplacementReferenceIdentifier | ReplacementReferenceIdentifier | VARCHAR(70) |  |  |
| BeginDate | BeginDate | DATE |  | NOT NULL |
| EndDate | EndDate | DATE |  |  |

**References**

* [FileType](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#FileType) through (FileTypeID)
* [TireSupplier](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSupplier) through (TireSupplierID)

**Referenced By**

* [TireLog](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireLog) referencing (ID)

# TireLoadIndex

(Physical Name: TireLoadIndex)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Index | Index | INTEGER |  | NOT NULL |
| LoadKg | LoadKg | DECIMAL(10,1) |  | NOT NULL |

**Referenced By**

* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# TireLog

(Physical Name: TireLog)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| TireFileLayoutID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireFileLayout)) | TireFileLayoutID | INTEGER |  | NOT NULL |
| LogTypeID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#LogType)) | LogTypeID | INTEGER |  | NOT NULL |
| Description | Description | VARCHAR(250) |  | NOT NULL |
| StampDate | StampDate | DATE |  | NOT NULL |
| StampUser | StampUser | INTEGER |  | NOT NULL |

**References**

* [LogType](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#LogType) through (LogTypeID)
* [TireFileLayout](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireFileLayout) through (TireFileLayoutID)

# TirePrice

(Physical Name: TirePrice)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| TireID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Tire)) | TireID | INTEGER |  | NOT NULL |
| TireSupplierID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSupplier)) | TireSupplierID | INTEGER |  | NOT NULL |
| TireBrandID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireBrand)) | TireBrandID | INTEGER |  | NOT NULL |
| Description | Description | VARCHAR(50) |  | NOT NULL |
| Price | Price | DECIMAL(10,2) |  | NOT NULL |
| LoadIndexID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireLoadIndex)) | LoadIndexID | INTEGER |  | NOT NULL |
| SpeedIndexID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSpeedIndex)) | SpeedIndexID | INTEGER |  | NOT NULL |
| RunFlat | RunFlat | BIT |  |  |
| EcoValueID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValue)) | EcoValueID | INTEGER |  | NOT NULL |
| Reference | Reference | VARCHAR(30) |  |  |
| Resistance | Resistance | NCHAR(1) |  |  |
| Grip | Grip | NCHAR(1) |  |  |
| Noise | Noise | INTEGER |  |  |
| DatePrice | DatePrice | DATE |  | NOT NULL |
| StampDate | StampDate | DATE |  | NOT NULL |
| TireSeasonID  ([FK](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSeason)) | TireSeasonID | INTEGER |  | NOT NULL |
| NoiseCat | NoiseCat | INTEGER |  |  |

**References**

* [EcoValue](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#EcoValue) through (EcoValueID)
* [Tire](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Tire) through (TireID)
* [TireBrand](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireBrand) through (TireBrandID)
* [TireLoadIndex](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireLoadIndex) through (LoadIndexID)
* [TireSeason](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSeason) through (TireSeasonID)
* [TireSpeedIndex](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSpeedIndex) through (SpeedIndexID)
* [TireSupplier](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireSupplier) through (TireSupplierID)

# TireSeason

(Physical Name: TireSeason)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(50) |  | NOT NULL |

**Referenced By**

* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# TireSpeedIndex

(Physical Name: TireSpeedIndex)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Index | Index | VARCHAR(2) |  | NOT NULL |
| MaxSpeedKms | MaxSpeedKms | INTEGER |  | NOT NULL |

**Referenced By**

* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# TireSupplier

(Physical Name: TireSupplier)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | VARCHAR(50) |  | NOT NULL |
| Email | Email | VARCHAR(100) |  | NOT NULL |
| PhoneNumber | PhoneNumber | VARCHAR(50) |  |  |
| ContactPerson | ContactPerson | VARCHAR(50) |  |  |
| Status | Status | BIT |  |  |
| Address | Address | VARCHAR(300) |  | NOT NULL |
| Locality | Locality | VARCHAR(200) |  | NOT NULL |
| PostalCode | PostalCode | VARCHAR(50) |  | NOT NULL |
| BeginDate | BeginDate | DATE |  | NOT NULL |
| EndDate | EndDate | DATE |  |  |

**Referenced By**

* [TireFileLayout](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TireFileLayout) referencing (ID)
* [TirePrice](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#TirePrice) referencing (ID)

# TireWidth

(Physical Name: TireWidth)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Logical Column Name** | **Physical Column Name** | **Type** | **PK** | **Nullable** |
| ID (PK) | ID | INTEGER | PK | NOT NULL |
| Description | Description | DECIMAL(10,2) |  | NOT NULL |

**Referenced By**

* [Tire](file:///C:\Users\Jacksoneli\Desktop\TrabalhoAvalia%C3%A7%C3%A3oBaseDados1\TireDB_ER_Model.html#Tire) referencing (ID)

# Diagrama do modelo de dados.

O Diagrama do modelo de dados foi desenvolvido no Power Arquitect.