**Database Model of a Truck Maintenance Company**  
  
Learning Team A  
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# Database Model of a Truck Maintenance Company

# Vendor

This entity outlines all of the Vendors that the Huffman Trucking Company utilizes. The Vendor entity relates to the Parts Catalogue and Contacts entities. A Vendor may have 1 or many parts they provide. A Vendor may have 1 or more contacts, billing or order.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| VendorId | Integer (PK) | Primary Identifier of the entity |
| Name | Nvarchar(50) | Name of the Vendor |

## Constraints

* Unique Index on Name

# Parts

This entity outlines all of the Parts that Huffman Trucking has on hand. A part has several types of basic information such as a name, type, etc. A part is related to a Vendor that Huffman orders from and also relates to a Manufacturer that creates the part.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| PartId | Integer (PK) | Primary Identifier of the Entity |
| VendorId | Integer (FK) | Reference to the Vendor of the Part |
| PartName | Nvarchar(255) | Name of the part |
| PartDescription | Nvarchar(max) | Description of the part |
| PartTypeId | Integer (FK) | Reference to the Part Type |
| ManufactureId | Integer (FK) | Reference to the Manufactor |
| QuantityInStock | Integer | Count of the number |
| ReorderPoint | Integer | Minimum stock point |
| ReorderQuantity | Integer | Minimum Reorder size |

## Constraints

* Unique Index PartName, PartTypeId, ManufactureId

**TODO**

* QuantityInStock- should not stored in the schema. it should be calculated through a stored procedure

# ContactType

This entity outlines the Contacts for the Vendors that Huffman Trucking does business with. A Vendor may have 1 or more contacts, such as a Billing Contact and an Order Contact.   
Contact types contact\_type Text PK that helps identify a unique contact type. This attribute is an intelligent key vs. a non-intelligent key, which can be used on its own to perform basic filtering.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| ContractTypeId | Integer(PK) | Primary ID |
| ContractType | Integer(FK) | Type of the Contract |

# Contact

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| ContactId | Integer(PK) | Primary ID |
| ContractTypeId | Integer(FK) | Reference to a Contract Type |
| VendorId | Integer(FK) | Reference to a Vendor |
| Address | NVARCHAR(200) | Shipping Address |
| AddressUnitNumber | NVARCHAR(200) | Suite or Unit Number |
| CityId | Integer(FK) | Reference to a City |
| PrimaryContactName | NVARCHAR(100) | Name of the primary contact |
| PhoneNumber | CHAR(11) | Phone Number of the contact |
| FaxNumber | CHAR(11) NULLABLE | Fax Number of the contact |

# City

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| CityId | Integer(PK) | Primary ID |
| CityName | NVARCHAR(100) | Name of the city |
| StateId | Integer(FK) | Reference to a State |
| ZipCode | CHAR(10) | ZipCode of the city |

# **ContractType**

This entity is a reference table and simply helps identify the Vendor contact type. This entity will reduce maintenance and improve data consistency.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| ContractTypeId | Integer (PK) | Primary Identifier |
| Description | NVARCHAR(255) | Description of the Contract |

# PurchaseRecord

This entity outlines the Parts that Huffman Trucking has purchased from its Vendors. A transaction is considered a purchase of a specific part.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| PurchaseRecordId | Integer (PK) | Primary Identifier |
| CatalogId | Integer (FK) | Reference to the Catalog |
| QuantityPurchased | Integer | Total purchased |
| Price | Money | Price per item in US Currency |

# InventoryActivityTransaction

This entity outlines inventory activity, such as adds or deletes. A delete would be damaged part returned to a Vendor.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| SalesRecordId | Integer (PK) | Primary Identifier |
| TransactionTypeId | Integer (FK) |  |
| TransactionDate | DateTime |  |
| PricePerUnit | Money |  |
| TotalUnits | Integer |  |

# 

# TransactionType

This entity is a reference table and simply helps identify the Transaction type. This entity will reduce maintenance and improve data consistency and relates to the Inventory Activity entity.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| Description | NVARCHAR(100) |  |

# Manufacturer

This entity relates to the Parts Catalogue along with the Tire Maintenance entity. In short a part has one and only one Vendor, but a Vendor can have one or more parts.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| ManufactuerId | Integer (PK) | Identifier |
| Name | NVARCHAR(100) |  |

# VehicleType

This entity is a reference table and simply helps identify the Vehicle description. This entity will ensure consistency.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| Description | NVARCHAR(100) |  |

# Vehicle

This entity stores the primary characteristics of the vehicles Huffman Trucking owns. This entity relates to the vehicle\_maintenace, tire\_maintenance, and maintenance\_work\_order entities. The vehicle table relates to the vehicle\_maintenane and tire\_maintenance as a 1 to 1 and acts as more or less a summary table. Where as the relationship between the vehicle and relationships between the vehicle and maintenance\_work\_order is 1 to many.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| VIN | CHAR(17) |  |
| VehicleTypeId | Integer (FK) |  |
| ClassificationId | Integer (FK) |  |
| Weight | Integer |  |
| Mileage | Integer |  |
| Capacity | Integer |  |

vehicle\_VIN - Text (PK) - Logical key that identifies a unique vehicle  
vehicle\_type\_id - Text (FK) - to vehicle\_type  
class\_code - Text - Classification of the vehicle  
gross\_weight - Number - Weight of the vehicle  
mileage\_number - Number - Mileage of the vehicle at time of purchase  
purchase\_price - Number - Purchase price of the vehicle   
accumulated\_depreciation - Number - Amount depreciation in dollars  
capacity - Number - Amount of freight the vehicle can haul

# VehnicleMaintenance

This entity is primarily a summary table which will store information as to the current state of maintenance on a vehicle,   and a method to track last maintenance and next maintenance attributes for a vehicle. This entity has a 1 to 1 relationship with the vehicle entity.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| ID | Integer (PK) |  |
| VehicleId | Integer (FK) |  |
| MaintenanceTypeId | Integer (FK) |  |
| MaintenanceDate | DateTime |  |
| NextScheduledDate | DateTime nullable |  |
| Under Warrenty | Bit |  |

# TireMaintenance

This entity is used to track what types of tires are installed on each vehicle and what the state of said maintenance is for that vehicle / tire combination. It relates to the vehicle table having a 1 to 1 relationship.  
maintenance\_work\_order work\_order\_id AutoNumber PK which uniquely identifies a specific work order.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| TireBarcode | CHAR(15) |  |
| TireMaintainceTYpeId | Integer (FK) |  |
| TireMaintenceDate | DateTime |  |
| RotationMileage | Integer |  |
| NextSchedule | Datetime |  |
| DisposalDate | Date |  |

tire\_maintenance\_VIN - Text (PK) - Logical key that identifies a unique vehicle  
tire\_barcode - Text - Number that uniquely identifies a single tire.  
tire\_maint\_type - Text - The type of service as it relates specifically to the tires on a vehicle  
manufacturer\_id - Text (FK) - ID that ties back to specific manufacturer. It is the foreign key to the reference table manufacturer  
tire\_maintenance\_date - Date - Date the tires were last serviced or installed  
rotation\_mileage - Number - Number of miles per rotation  
rotation\_schedule - Date - Next scheduled tire rotation  
disposal\_date - Date - Date in which tires were disposed

# MaintenanceRecord

This entity will act as the primary table for tracking the maintenance of a single vehicle. That is, it will relate to the vehicle table via the VIN. Hence, a vehicle can have a single or many work orders where as a single work order can only relate to one vehicle.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
|  |  |  |

VIN - Text (FK) - This will link a work order to a specific vehicle in the vehicle table   
maintenance\_type\_id - Text (FK) - ID identifying the type of maintenance that was done. This ID comes from the reference table maintenance types.  
date\_started - Date - Date the maintenance began  
date\_completed - Date - Date when maintenance was completed

# WorkOrder

This is a child table to the parent table maintenance\_work\_order that is joined by the work\_order\_id. The purpose of this table is to track each line item/job that makes up a work order. Therefore, a work order can have one or more line items but a single line item can only belong to one work order. In addition, maintenance\_work\_order\_line will also join to the orders table via the work\_order\_line\_id. This will ultimately allow the tracking of each individual part to be associated to a specific maintenance line item by then joining to the parts catalogue.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| WorkOrderTypeId | Integer (FK) |  |
| Description | Text |  |
| StartDate | DateTime |  |
| CompletionDate | DateTime nullable |  |

maintenance\_work\_order\_line work\_order\_line\_id - Text (PK) - Surrogate key that will uniquely identify each job/work order being done on the vehicle.  
work\_order\_id - Text (FK) - foreign key to maintenance\_work\_order  
line\_description - Text - line Description assigned\_to Text Name of the mechanic hours Number Length of job  
date\_started - Date - Date started for a particular line item  
date\_completed - Date - Date ended for a particular line item

# OrderCatalogue

This table will serve as an associative table that will bridge the gap between the maintenance\_work\_order\_line table and the parts\_catalogue table. This will allow a work order line to have one or many parts and a single part or many parts can belong to a maintenance\_work\_order\_line.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| Work Order LineId | Integer (PK) |  |
|  |  |  |

orders\_catalogue\_id - Text (PK) - compound key that will join to the parts\_catalgue table  
work\_order\_line\_id - Text (PK) - compound key that will join to the maintenance\_work\_order\_line table

# MaintenanceJob

This entity is a reference table and simply helps identify the various types of maintenance. This entity will reduce data maintenance and improve data consistency.

|  |  |  |
| --- | --- | --- |
| Column | Type | Description |
| Id | Integer (PK) |  |
| LevelCode | CHAR(15) |  |
| Description | NVARCHAR(255) |  |
| HoursRequired | Float |  |
| RecommendedSchedule | Timespan |  |
| MaximumSchedule | Timespan |  |

maintenance\_types maintenance\_type\_id - Text (PK) - Surrogate key that will uniquely identify each maintenance type.  
level\_code - Text - Number designating the degree of scope  
description - Text - Description of a particular job  
avg\_hours\_required - Number - Average shop time needed to complete the job  
recommended\_schedule - Text - Recommended time between services for a particular service  
maximum\_schedule - Text - Maximum time between services for a particular service