

# UDTs To Add:

## Structure of section:

- **Grandparent (/Domain)**
  - **Parent (/Subdomain)**
    - **Child**

Etc.

## UDTs:

### • **Numeric**

- **Money** (based on NUMERIC(17, 2)) (Reason: allows for tracking money into the trillions (i.e. more than realistically necessary))
- **Flag** (based on bit) (Reason: can flag some column value to true/false where relevant)
- **LineNumber** (based on smallint) (Reason: realistically will not have >30k items on one sale line)
- **RowNumber** (based on int) (Reason: realistically can have many rows)
- **KeyNumeric**
  - **SurrogateKeyInt** (based on INT) (Reason: reusable for any surrogate key)

### • **String**

- **BuyerComment** (based on nvarchar(500)) (Reason: realistically a comment won't be absurdly long)
- **ClassTime** (based on nchar(4)) (Reason: any HH:MM time in 24hr format is in 4 characters)
- **KeyString**
  - **StockCode** (based on nchar(36)) (Reason: all stock codes are 36 characters long)
  - **Invoice** (based on nchar (8)) (Reason: all invoices generated are 3 (CurrencyISO3) + 2 (Customer CountryISO2) + 3 (SaleID formatted to 3 digits) = 8 characters long)
- **DescriptionString**

- **PersonName** (based on nvarchar(50)) (Reason: longest customer name is ~40 characters, 50 characters gives more leeway for longer, but can also be reused in DbSecurity.UserAuthorization)
- **CurrencyName** (based on nvarchar(50)) (Reason: to ensure any specific currency name can fit)
- **ColorName** (based on nvarchar(50)) (Reason: to allow flexibility on color name inputs)
- **CarDescription** (based on nvarchar(20)) (Reason: longest make, model, and model variant name entry is ~15 characters)
- **WorkflowDescription** (based on nvarchar(100)) (Reason: gives sufficient space to succinctly describe what a certain step did)
- **ProjectDescription** (based on nvarchar(60)) (Reason: give sufficient space to succinctly describe the project)
- **LocationString**
  - **CountryName** (based on nvarchar(60)) (Reason: longest country name in world ~60 characters)
  - **RegionName** (based on nvarchar(20)) (Reason: longest continent name is ~20 characters, otherwise region is abbreviated and so is <20 characters)
  - **TownName** (based on nvarchar(50)) (Reason: reasonable length for a town name)
  - **Address** (based on nvarchar(60)) (Reason: standard length for addresses)
  - **PostCode** (based on nvarchar(9)) (Reason: post codes can go up to 9)
- **ISOString**
  - **ISO2** (based on nchar(2)) (Reason: these are only 2 characters long)
  - **ISO3** (based on nchar(3)) (Reason: these are only 3 characters long)
- **DateTime**
  - **DateYYYYMMDD** (based on date) (Reason: keeps track of only dates)
  - **DateYYYY** (based on int) (Reason: only keeps track of year parts of a date)
  - **SaleTime** (based on time(0)) (Reason: realistically no reason to keep track of further precision after seconds)
  - **SaleDateTime** (based on DATETIME2(0)) (Reason: no real reason to keep track of further precision after seconds)

# Note For Following Changes:

*Note: For the table changes, only those directly resulting from the change are listed for compactness (e.g., every table references DbSecurity.UserAuthorization, but for compactness it is not shown in the ERD listing the changes)*

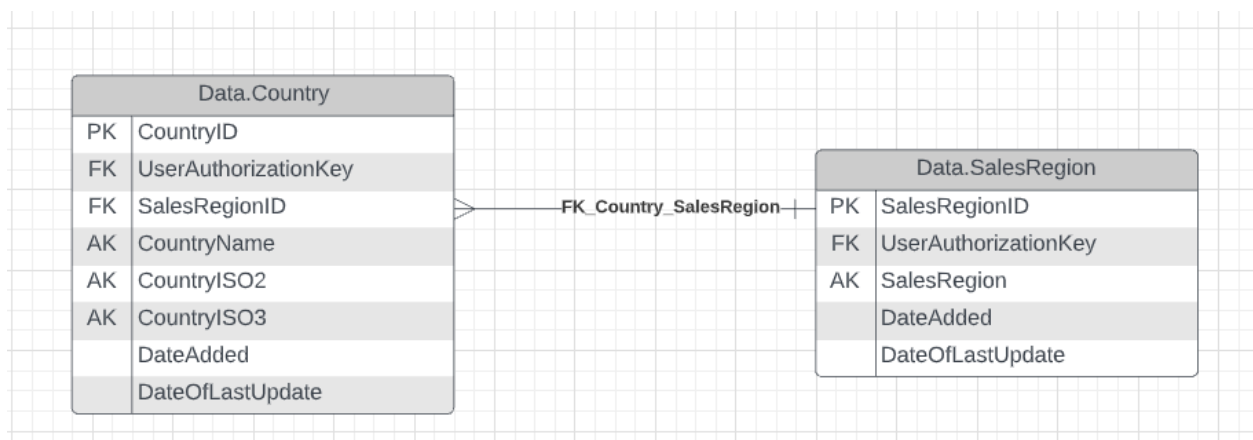
## Data.Country Changes:

Original:

| Country (Data) |              |                |                                     |
|----------------|--------------|----------------|-------------------------------------|
|                | Column Name  | Data Type      | Allow Nulls                         |
|                | CountryName  | nvarchar(150)  | <input checked="" type="checkbox"/> |
|                | CountryISO2  | nchar(10)      | <input checked="" type="checkbox"/> |
|                | CountryISO3  | nchar(10)      | <input checked="" type="checkbox"/> |
|                | SalesRegion  | nvarchar(20)   | <input checked="" type="checkbox"/> |
|                | CountryFlag  | varbinary(MAX) | <input checked="" type="checkbox"/> |
|                | FlagFileName | nvarchar(50)   | <input checked="" type="checkbox"/> |
|                | FlagFileType | nchar(3)       | <input checked="" type="checkbox"/> |
|                |              |                | <input type="checkbox"/>            |

After Changes:

ERD:



## Column Changes:

### Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)
- CountryID (Reason: to act as a PK for Data.Country)
- SalesRegionID (Reason: to act as a PK for Data.SalesRegion)

### Removed Columns:

- CountryFlag, FlagFileName, FlagFileType (Reason: only had NULL entries)

## Column Data Types and Nullability:

### *Data.Country:*

- CountryID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- SalesRegionID: SurrogateKeyInt, NOT NULL
- CountryName: CountryName, NOT NULL
- CountryISO2: ISO2, NOT NULL
- CountryISO3: ISO3, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### *Data.SalesRegion:*

- SaleRegionID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- SalesRegion: RegionName, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

## Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.
- Anything marked AK has a unique constraint

## Check Constraint:

- CountryISO3: [A-Z][A-Z][A-Z]
- CountryISO2: [A-Z][A-Z]

## Default

- DateAdded, DateOfLastUpdate: SYSDATETIME()

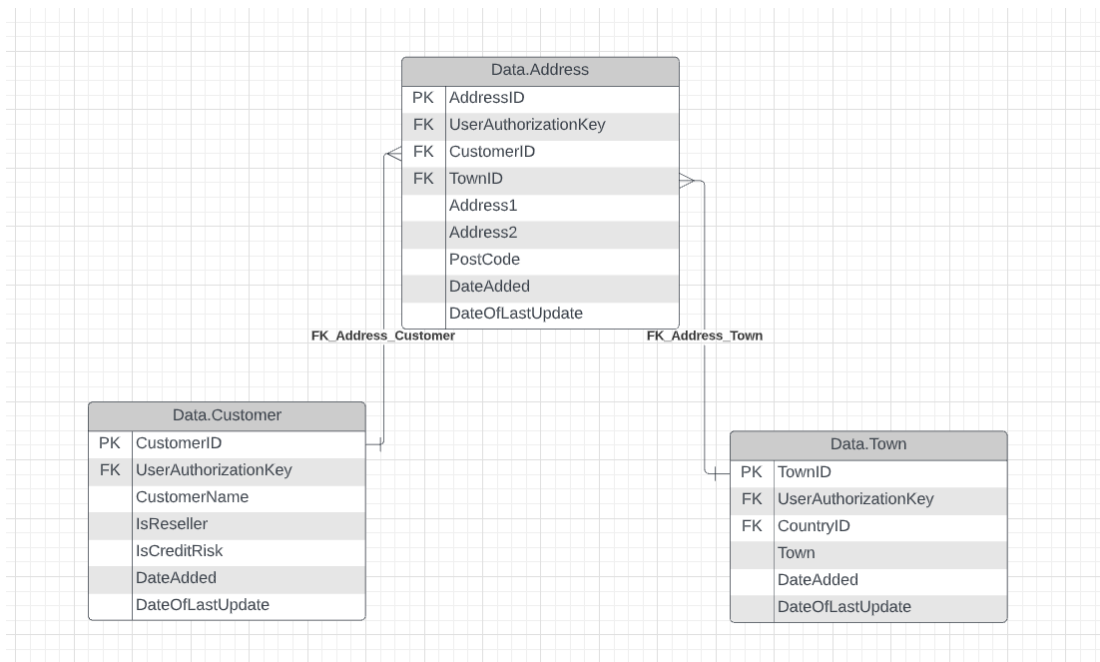
# Data.Customer Changes

Original:

| Customer (Data) |               |                                     |
|-----------------|---------------|-------------------------------------|
| Column Name     | Data Type     | Allow Nulls                         |
| CustomerID      | nvarchar(5)   | <input type="checkbox"/>            |
| CustomerName    | nvarchar(150) | <input checked="" type="checkbox"/> |
| Address1        | nvarchar(50)  | <input checked="" type="checkbox"/> |
| Address2        | nvarchar(50)  | <input checked="" type="checkbox"/> |
| Town            | nvarchar(50)  | <input checked="" type="checkbox"/> |
| PostCode        | nvarchar(50)  | <input checked="" type="checkbox"/> |
| Country         | nchar(10)     | <input checked="" type="checkbox"/> |
| IsReseller      | bit           | <input checked="" type="checkbox"/> |
| IsCreditRisk    | bit           | <input checked="" type="checkbox"/> |
|                 |               | <input type="checkbox"/>            |

After Changes:

ERD:



## Column Changes:

### Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)
- AddressID (Reason: to act as the PK for Data.Address)
- TownID (Reason: to act as the PK for Data.Town)
- CountryID (Reason: to reference Data.Country as a FK in Data.Town)

### Removed Columns:

- Country (Reason: replaced with CountryID as a means of acting as a FK)

### Modified Columns:

- CustomerID: Changed from XXXX string to an int (Reason: less space used)

## Column Data Types and Nullability:

### *Data.Customer:*

- CustomerID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- CustomerName: PersonName, NOT NULL
- IsReseller: Flag, NOT NULL
- IsCreditRisk, Flag, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

#### *Data.Address:*

- AddressID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- CustomerID: SurrogateKeyInt, NOT NULL
- TownID: SurrogateKeyInt, NOT NULL
- Address1: Address, NOT NULL
- Address2: Address, NULL
- PostCode: PostCode, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

#### *Data.Town:*

- TownID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- CountryID: SurrogateKeyInt, NOT NULL
- Town: TownName, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.

#### Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()



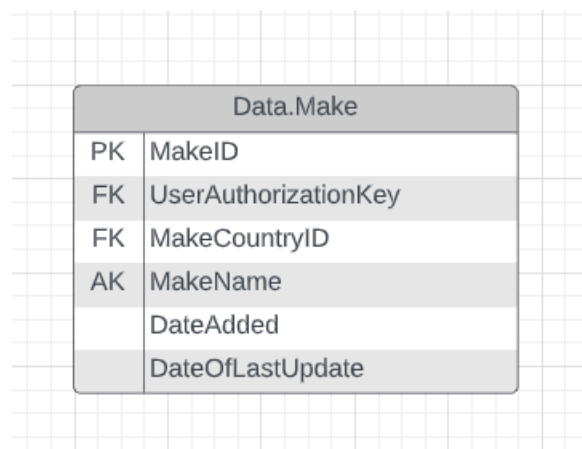
# Data.Make Changes

Original:

| Make (Data) |               |                                     |
|-------------|---------------|-------------------------------------|
| Column Name | Data Type     | Allow Nulls                         |
| MakeID      | smallint      | <input type="checkbox"/>            |
| MakeName    | nvarchar(100) | <input checked="" type="checkbox"/> |
| MakeCountry | char(3)       | <input checked="" type="checkbox"/> |
|             |               | <input type="checkbox"/>            |

After Changes:

ERD:



Column Changes:

Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)
- MakeCountryID (Reason: to reference Data.Country as a FK)

Removed Columns:

- MakeCountry (Reason: replaced with MakeCountryID to use as FK)

### Column Data Types and Nullability:

- MakeID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- MakeCountryID: SurrogateKeyInt, NOT NULL
- MakeName: CarDescription, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.
- Anything marked AK has a unique constraint

### Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()

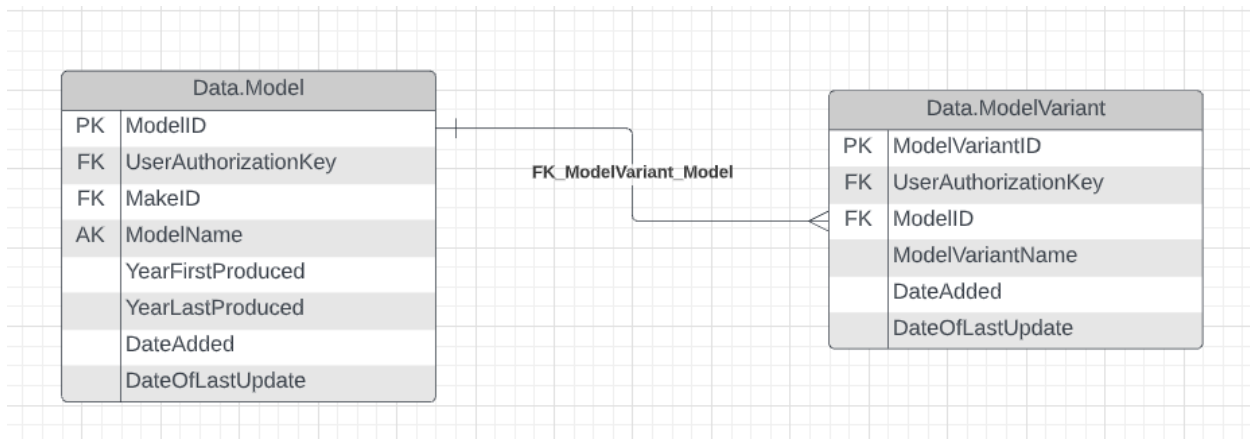
# Data.Model Changes

Original:

| Model (Data) |                   |               |                                     |
|--------------|-------------------|---------------|-------------------------------------|
|              | Column Name       | Data Type     | Allow Nulls                         |
|              | ModelID           | smallint      | <input type="checkbox"/>            |
|              | MakeID            | smallint      | <input checked="" type="checkbox"/> |
|              | ModelName         | nvarchar(150) | <input checked="" type="checkbox"/> |
|              | ModelVariant      | nvarchar(150) | <input checked="" type="checkbox"/> |
|              | YearFirstProduced | char(4)       | <input checked="" type="checkbox"/> |
|              | YearLastProduced  | char(4)       | <input checked="" type="checkbox"/> |
|              |                   |               | <input type="checkbox"/>            |

After Changes:

ERD:



Column Changes:

Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)
- ModelVariantID (Reason: to use as a PK in Data.ModelVariant)

Modified Columns:

- ModelVariant: Renamed to ModelVariantName (Reason: name more fitting now that it is in Data.ModelVariant table)

## Column Data Types and Nullability:

### *Data.Model:*

- ModelID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- MakeID: SurrogateKeyInt, NOT NULL
- ModelName: CarDescription, NOT NULL
- YearFirstProduced: DateYYYY, NULL
- YearLastProduced: DateYYYY, NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### *Data.ModelVariant:*

- ModelVariantID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- ModelID, SurrogateKeyInt, NOT NULL
- ModelVariantName: CarDescription, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

## Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.
- Anything marked AK has a unique constraint

### Check Constraint:

- YearFirstProduced: IS NULL OR >1900 (realistically wouldn't sell cars older than that)
- YearLastProduced: IS NULL OR <= YEAR(SYSDATETIME) + 1 (or manually set year)

### Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()

## Other

- There is a variant that is just an empty string, do not put it into Data.ModelVariant

# Data.PivotTable Changes

Original:

| PivotTable (Data) |                |                                     |
|-------------------|----------------|-------------------------------------|
| Column Name       | Data Type      | Allow Nulls                         |
| Color             | nvarchar(50)   | <input checked="" type="checkbox"/> |
| [2015]            | numeric(38, 2) | <input checked="" type="checkbox"/> |
| [2016]            | numeric(38, 2) | <input checked="" type="checkbox"/> |
| [2017]            | numeric(38, 2) | <input checked="" type="checkbox"/> |
| [2018]            | numeric(38, 2) | <input checked="" type="checkbox"/> |
|                   |                | <input type="checkbox"/>            |

After Changes:

ERD:

| Data.PivotTable |                      |
|-----------------|----------------------|
| PK              | Color                |
| FK              | UserAuthorizationKey |
|                 | 2015                 |
|                 | 2016                 |
|                 | 2017                 |
|                 | 2018                 |
|                 | DateAdded            |
|                 | DateOfLastUpdate     |

## Column Changes:

### Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)

## Column Data Types and Nullability:

- Color: ColorName, NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- 2015, 2016, 2017, 2018: Money, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### Check Constraint:

- For each of 2015, 2016, 2017, 2018 check if  $\geq 0.00$

### Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()

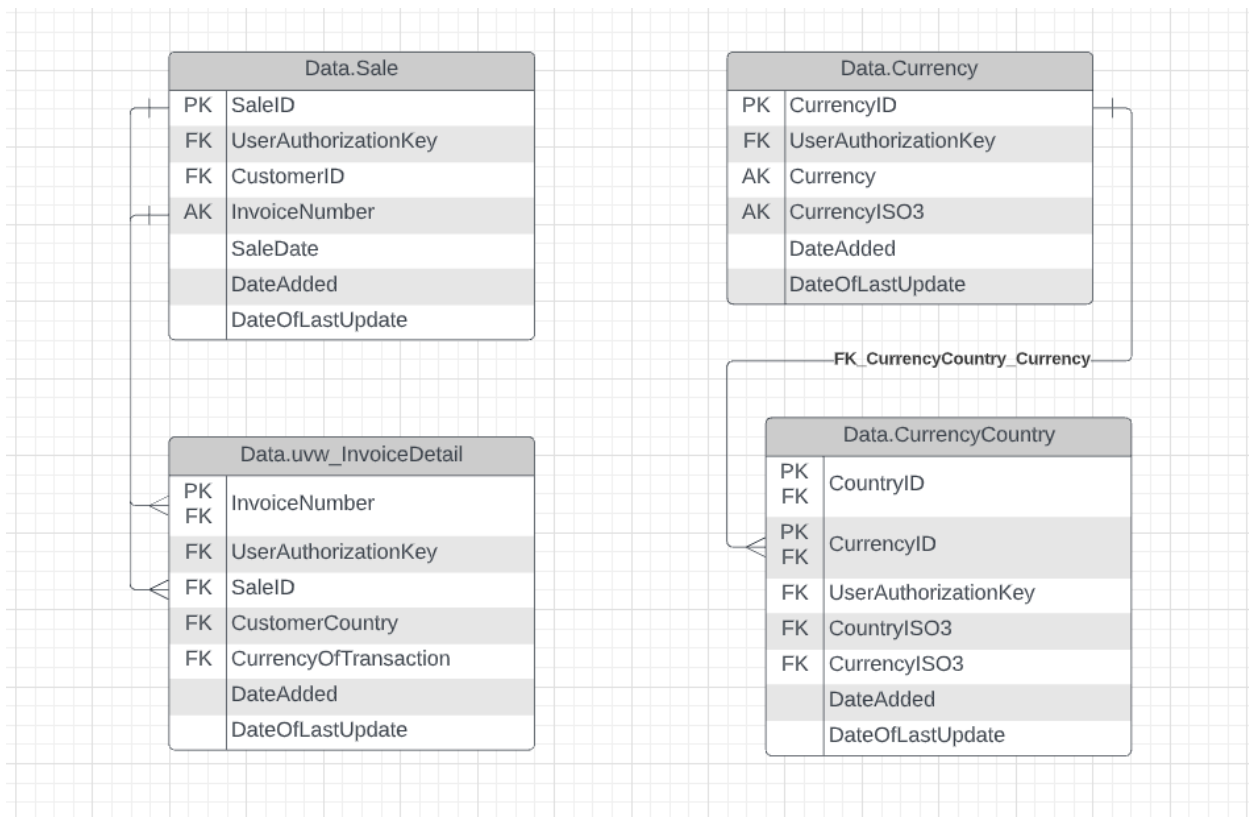
# Data.Sales Changes

Original:

| Sales (Data) |                |                |                                     |
|--------------|----------------|----------------|-------------------------------------|
|              | Column Name    | Data Type      | Allow Nulls                         |
|              | SalesID        | int            | <input type="checkbox"/>            |
|              | CustomerID     | nvarchar(5)    | <input checked="" type="checkbox"/> |
|              | InvoiceNumber  | char(8)        | <input checked="" type="checkbox"/> |
|              | TotalSalePrice | numeric(18, 2) | <input checked="" type="checkbox"/> |
|              | SaleDate       | datetime       | <input checked="" type="checkbox"/> |
|              | ID             | int            | <input type="checkbox"/>            |
|              |                |                | <input type="checkbox"/>            |

After Changes:

ERD:



## Column Changes:

### Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)
- CountryISO3: (Reason: to reference Data.Country as a FK, but also get direct access to the ISO)
- Currency: (Reason: to have as a unique value in Data.Currency, give the name of currency)
- CurrencyISO3: (Reason: to have as a unique value in Data.Currency, lets it be used as alternate key so Data.CurrencyCountry can reference Data.Currency and use it as FK)
- CurrencyOfTransaction: (Reason: gives some information of the invoice)
- CustomerCountry (Reason: gives some information of the invoice)
- CurrencyID: (Reason: to act as a PK in Data.Currency)

### Removed Columns:

- ID (Reason: redundant column, mirrors SaleID)
- TotalSalePrice (Reason: it is derived based off Data.SaleDetail, does not make much sense to derive something in a parent from a child, also means it is dependent on SaleDetail and not Sale so not really normalized if done like that)

### Modified Columns:

- SalesID: Renamed to SaleID (Reason: makes naming more consistent)



## Column Data Types and Nullability:

### *Data.Sale*

- SaleID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- CustomerID: SurrogateKeyInt, NOT NULL
- InvoiceNumber: Invoice, NOT NULL
- SaleDate: SaleDateTime, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### *Data.Currency*

- CurrencyID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- Currency: CurrencyName, NOT NULL
- CurrencyISO3: ISO3, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### *Data.CurrencyCountry*

- CountryID: SurrogateKeyInt, NOT NULL
- CurrencyID: SurrogateKeyInt, NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- CountryISO3: ISO3, NOT NULL
- CurrencyISO3: ISO3, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

## Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.
- Anything marked AK has a unique constraint

## Check Constraint:

- InvoiceNumber:
  - Option A: Set it up so it directly compares if the invoice matches a computed invoice using CurrencyISO3 + CountryISO2 + XXX SaleID (BETTER)
  - Option B: [A-Z][A-Z][A-Z][A-Z][A-Z][0-9][0-9][0-9]

## Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()

# Data.SalesDetails

Original:

| SalesDetails (Data) |                |                                     |
|---------------------|----------------|-------------------------------------|
| Column Name         | Data Type      | Allow Nulls                         |
| SalesDetailsID      | int            | <input type="checkbox"/>            |
| SalesID             | int            | <input checked="" type="checkbox"/> |
| LineItemNumber      | tinyint        | <input checked="" type="checkbox"/> |
| StockID             | nvarchar(50)   | <input checked="" type="checkbox"/> |
| SalePrice           | numeric(18, 2) | <input checked="" type="checkbox"/> |
| LineItemDiscount    | numeric(18, 2) | <input checked="" type="checkbox"/> |
|                     |                | <input type="checkbox"/>            |

After Changes:

ERD:

| Data.SaleDetail |                      |
|-----------------|----------------------|
| PK              | SaleDetailID         |
| FK              | UserAuthorizationKey |
| FK              | SaleID               |
| FK              | StockID              |
|                 | LineItemNumber       |
|                 | SalePrice            |
|                 | LineItemDiscount     |
|                 | DateAdded            |
|                 | DateOfLastUpdate     |

Column Changes:

Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)

Modified Columns:

- SalesDetailID: Renamed to SaleDetailID (Reason: make naming more consistent)

### Column Data Types and Nullability:

- SaleDetailID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- SaleID: SurrogateKeyInt, NOT NULL
- StockID: SurrogateKeyInt, NOT NULL
- LineItemNumber: LineNumber, NOT NULL
- SalePrice: Money, NOT NULL
- LineItemDiscount: Money, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.

#### Check Constraint:

- LineItemNumber: Have it ensure it is not less or greater than the current expected line value (e.g. Check if = COUNT(SaleID), though not sure how you could actually implement it)
- SalePrice: check if  $\geq 0$
- LineItemDiscount: check if  $\geq 0$

#### Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()
- LineItemDiscount: 0 (i.e. no discount)
- LineItemNumber: Have it try to automatically insert next value on line (e.g. COUNT(SaleID) + 1, but not sure how you could auto-generate it)

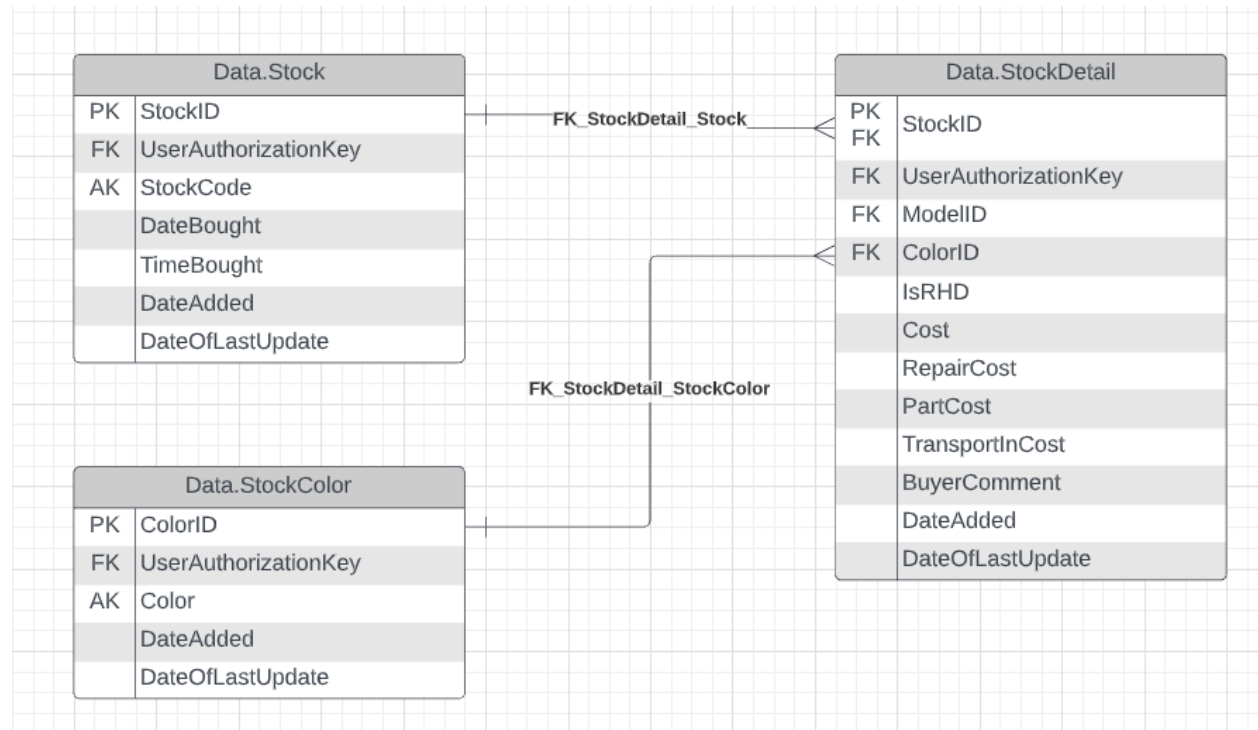
# Data.Stock

Original:

| Stock (Data) |                 |                |                                     |
|--------------|-----------------|----------------|-------------------------------------|
|              | Column Name     | Data Type      | Allow Nulls                         |
|              | StockCode       | nvarchar(50)   | <input checked="" type="checkbox"/> |
|              | ModelID         | smallint       | <input checked="" type="checkbox"/> |
|              | Cost            | money          | <input checked="" type="checkbox"/> |
|              | RepairsCost     | money          | <input checked="" type="checkbox"/> |
|              | PartsCost       | money          | <input checked="" type="checkbox"/> |
|              | TransportInCost | money          | <input checked="" type="checkbox"/> |
|              | IsRHD           | bit            | <input checked="" type="checkbox"/> |
|              | Color           | nvarchar(50)   | <input checked="" type="checkbox"/> |
|              | BuyerComments   | nvarchar(4000) | <input checked="" type="checkbox"/> |
|              | DateBought      | date           | <input checked="" type="checkbox"/> |
|              | TimeBought      | time(7)        | <input checked="" type="checkbox"/> |
|              |                 |                | <input type="checkbox"/>            |

## After Changes:

### ERD:



## Column Changes:

### Added Columns:

- UserAuthorizationKey, DateAdded, DateOfLastUpdate (Reason: track member's work)

## Column Data Types and Nullability:

### *Data.Stock*

- StockID: SurrogateKeyInt, Identity(1,1), NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- StockCode: StockCode, NOT NULL
- DateBought: DateYYYYMMDD, NOT NULL
- TimeBought: SaleTime, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### *Data.StockDetail*

- StockID: SurrogateKeyInt, NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- ModelID: SurrogateKeyInt, NOT NULL
- ColorID: SurrogateKeyInt, NOT NULL
- IsRHD: Flag, NOT NULL
- Cost: Money, NOT NULL
- RepairCost: Money, NOT NULL
- PartCost: Money, NOT NULL
- TransportInCost: Money, NOT NULL
- BuyerComment: BuyerComment, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL
- DateOfLastUpdate: DateYYYYMMDD, NOT NULL

### *Data.StockColor*

- ColorID: SurrogateKeyInt, NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- Color: ColorName, NOT NULL

## Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes, Foreign Keys are marked FK.
- Anything marked AK has a unique constraint

## Check Constraint:

- All Cost-related rows: check if  $\geq 0$

## Default:

- DateAdded, DateOfLastUpdate: SYSDATETIME()
- All Cost-related (excluding Cost alone) columns: 0.00 (i.e., can easily filter out these rows if there is an insertion issue, but initial Cost should always be known)
- BuyerComment: "No Comment"

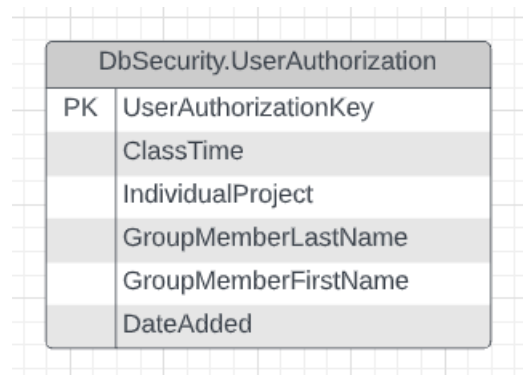
## Other

- There is 1 row where basically all columns besides two have null entries, this row will be removed from the database as it is more than likely just erroneous data



# Other Tables to Add

## DbSecurity.UserAuthorization ERD



### Column Data Types and Nullability:

- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- ClassTime: ClassTime, NOT NULL
- IndividualProject: ProjectDescription, NOT NULL
- GroupMemberLastName: PersonName, NOT NULL
- GroupMemberFirstName: PersonName, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL

### Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes

### Check Constraint:

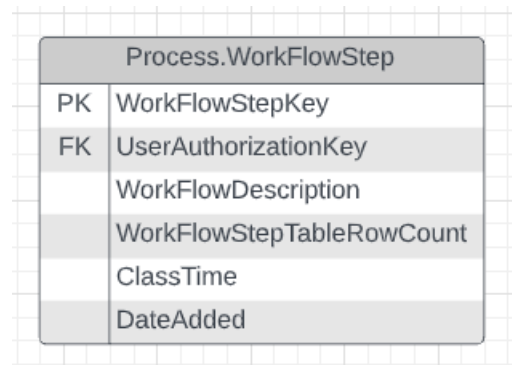
- All Cost-related rows: check if  $\geq 0$

### Default:

- DateAdded: SYSDATETIME()
- ClassTime: "09:15"
- IndividualProject: "Project 2.5: Prestige Cars Normalization Project"

## Process.WorkFlowStep

ERD:



### Column Data Types and Nullability:

- WorkFlowStepKey: SurrogateKeyInt, NOT NULL
- UserAuthorizationKey: SurrogateKeyInt, NOT NULL
- WorkFlowDescription: WorkFlowDescription, NOT NULL
- WorkFlowStepTableRowCount: RowNumber, NOT NULL
- ClassTime: ClassTime, NOT NULL
- DateAdded: DateYYYYMMDD, NOT NULL

### Constraints

- Primary Keys are marked PK in the diagram – all PKs are clustered indexes

### Check Constraint:

- WorkFlowStepTableRowCount: check if  $\geq 0$

### Default:

- DateAdded: SYSDATETIME()
- WorkFlowStepTableRowCount: 0
- ClassTime: "09:15"