Dissertation

Purpose of SVCdb database is to store data necessary for service center operations and support its operations based on data available. Database in this status represents minimum level which is necessary to handle customers, employess connected to repair process, devices received for repair and service orders as core of operations.

Simplification: SVCdb is designed to support multi-country, multi-manufacture, multi-device operations but sample data used cover only hungarian customers, two manufacturers and mobile phones and tablets.

Service process:

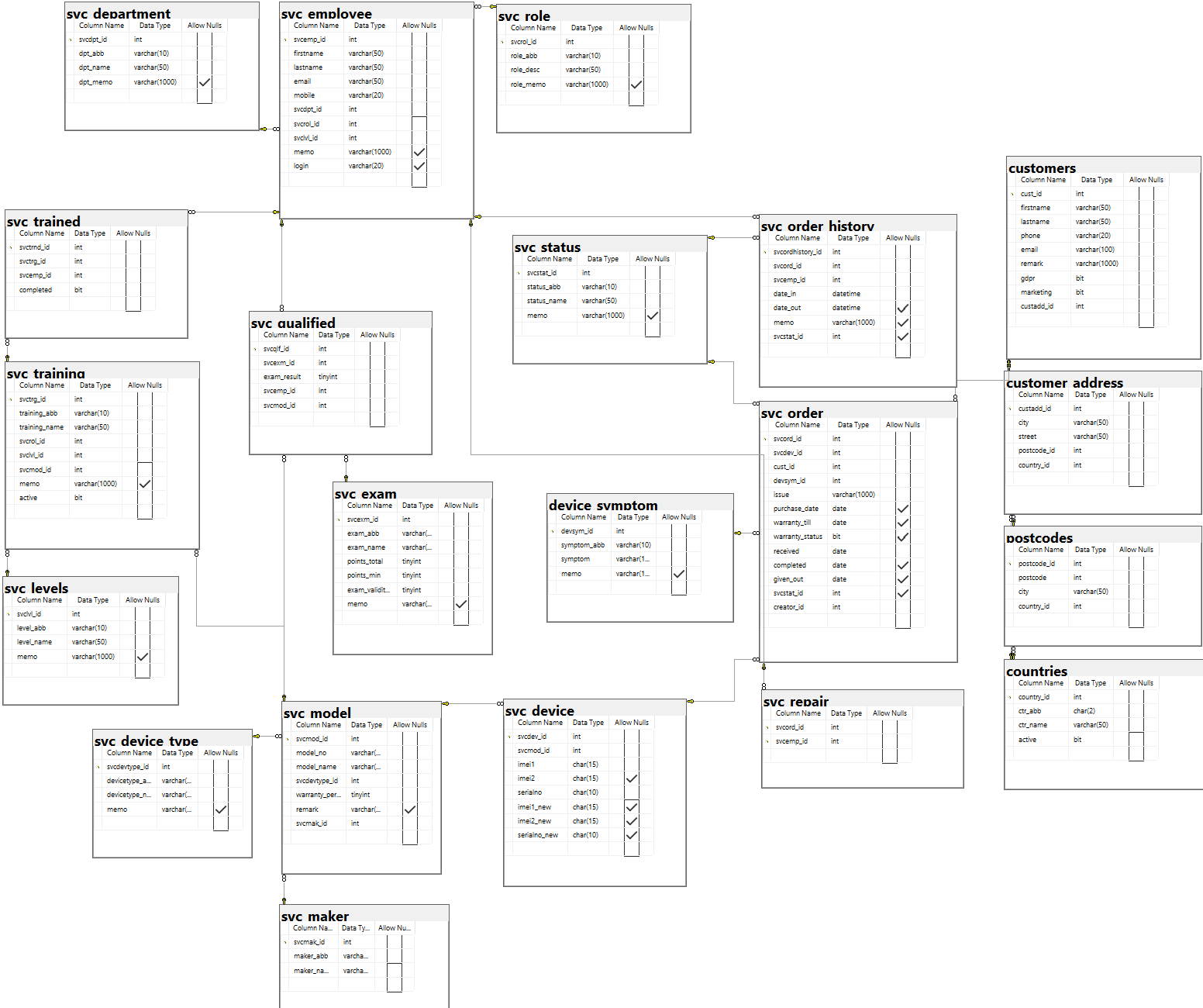
1. customer brings device to service center for repair:

Customer's personal data need to be registered together with the device given for repair. Device is accepted for repair if matching the directory manufacturer/model data, warranty repair and out of warranty repair is shown matching the base criteria.

2. repair process

When device handled by initial administration, it is assigned to service employee who is authorized to handle repair after completed training and exam for particular model. Standard repair process follows this flow: incoming administration - test for symptom - repair of device - test for functionality - outgoing administration.

3. customer picks up device from service center after repair

Database   
diagram

Schema: dbo

Base schema dbo is used. No additional schema is used because of the size of the database itself.

Tables

dbo.countries

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| country\_id | int | NOT NULL |  | PK Country ID | PK |
| ctr\_abb | char(2) | NOT NULL |  | ISO short name | UNIQUE [A-Z][A-Z] |
| ctr\_name | varchar(50) | NOT NULL |  | Full name |  |
| active | bit | NOT NULL |  | Currently used Active/Inactive |  |

dbo.postcodes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| postcode\_id | int | NOT NULL |  | PK Postal code ID | PK |
| postcode | int | NOT NULL |  | Postal code | [1-9] [0-9] [0-9] [0-9] |
| city | varchar(50) | NOT NULL |  | City |  |
| country\_id | int | NOT NULL |  | Country ID | FK |

dbo.customer\_address

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| custadd\_id | int | NOT NULL |  | PK address ID | PK |
| city | varchar(50) | NOT NULL |  | City |  |
| street | varchar(50) | NOT NULL |  | Street |  |
| postcode\_id | int | NOT NULL |  | Postcode | FK |
| country\_id | int | NOT NULL |  | Country ID | FK |

dbo.customers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| cust\_id | int | NOT NULL |  | Primary key for Customers | PK |
| firstname | varchar(50) | NOT NULL |  | Customer's first name |  |
| lastname | varchar(50) | NOT NULL |  | Customer's last name |  |
| phone | varchar(20) | NOT NULL |  | Customer's phone number | +[1-9]...[1-0] |
| email | varchar(100) | NOT NULL |  | Customer's email address | %\_\_@\_\_% |
| remark | varchar(1000) | NOT NULL |  | Remarks for customer data |  |
| gdpr | bit | NOT NULL |  | Customer's consent with data processing |  |
| marketing | bit | NOT NULL |  | Customer's consent with marketing communication |  |
| custadd\_id | int | NOT NULL |  | Connecting field for Customer's address information | FK |

dbo.device\_symptom

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| devsym\_id | int | NOT NULL |  | PK for Device Symptom table | PK |
| symptom\_abb | varchar(10) | NOT NULL |  | Short name | UNIQUE |
| symptom | varchar(100) | NOT NULL |  | Symptom description |  |
| memo | varchar(1000) | NULL |  | Additional information |  |

dbo.svc\_department

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcdpt\_id | int | NOT NULL |  | PK Service department | PK |
| dpt\_abb | varchar(10) | NOT NULL |  | Short name | UNIQUE |
| dpt\_name | varchar(50) | NOT NULL |  | Full name |  |
| dpt\_memo | varchar(1000) | NULL |  | Memo |  |

dbo.svc\_device

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcdev\_id | int | NOT NULL |  | PK Device ID | PK |
| svcmod\_id | int | NOT NULL |  | Service model ID | FK |
| imei1 | char(15) | NOT NULL |  | IMEI1 | imei1 like '[0-9]...[0-9]' |
| imei2 | char(15) | NULL |  | IMEI2 | imei2 like '[0-9]...[0-9]' or  imei2 is NULL |
| serialno | char(10) | NOT NULL |  | Seriál number | serialno not like '%[^0-9a-z]%' |
| imei1\_new | char(15) | NULL |  | IMEI1 new | imei1 like '[0-9]...[0-9]' |
| imei2\_new | char(15) | NULL |  | IME2 new | imei2\_new like '[0-9]...[0-9]'  or imei2 is NULL |
| serialno\_new | char(10) | NULL |  | Serial number new | serialno\_new  not like '%[^0-9a-z]%' |

Remark:

1) IMEI1 and IMEI2 identify the same device in case device works with 2 SIM cards.

2) IMEI1\_new, IMEI2\_new and serialno\_new fields are part of design, when full device is exchanged during the repair. This scenario has not been covered, all three fields are NULLs then.

dbo.svc\_device\_type

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcdevtype\_id | int | NOT NULL |  | PK Device type ID | PK |
| devicetype\_abb | varchar(10) | NOT NULL |  | Device type short name | UNIQUE |
| devicetype\_name | varchar(50) | NOT NULL |  | Device type full description |  |
| memo | varchar(1000) | NULL |  | Memo |  |

dbo.svc\_employee

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcemp\_id | int | NOT NULL |  | PK service employee ID | PK |
| firstname | varchar(50) | NOT NULL |  | First name |  |
| lastname | varchar(50) | NOT NULL |  | Last name |  |
| email | varchar(50) | NOT NULL |  | Email | %\_\_@\_\_% |
| mobile | varchar(20) | NOT NULL |  | Mobile phone | +[1-9]...[1-0] |
| svcdpt\_id | int | NOT NULL |  | Service department ID | FK |
| svcrol\_id | int | NOT NULL |  | Service role ID | FK |
| svclvl\_id | int | NOT NULL |  | Service level ID | FK |
| memo | varchar(1000) | NULL |  | Memo |  |
| login | varchar(20) | NULL |  | Login |  |

dbo.svc\_exam

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcexm\_id | int | NOT NULL |  | PK service exam ID | PK |
| exam\_abb | varchar(10) | NOT NULL |  | Exam short name | UNIQUE |
| exam\_name | varchar(50) | NOT NULL |  | Exam full name |  |
| points\_total | tinyint | NOT NULL |  | Points total |  |
| points\_min | tinyint | NOT NULL |  | Points min |  |
| exam\_validity\_months | tinyint | NOT NULL |  | Validity in months |  |
| memo | varchar(1000) | NULL |  | Memo |  |

dbo.svc\_levels

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svclvl\_id | int | NOT NULL |  | PK service level ID | PK |
| level\_abb | varchar(10) | NOT NULL |  | Service level short name | UNIQUE |
| level\_name | varchar(50) | NOT NULL |  | Service level full name |  |
| memo | varchar(1000) | NULL |  | Memo |  |

dbo.svc\_maker

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcmak\_id | int | NOT NULL |  | PK Maker ID | PK |
| maker\_abb | varchar(10) | NOT NULL |  | Maker short name | UNIQUE |
| maker\_name | varchar(50) | NOT NULL |  | Maker full name |  |

dbo.svc\_model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcmod\_id | int | NOT NULL |  | PK service model ID | PK |
| model\_no | varchar(20) | NOT NULL |  | Model number | UNIQUE |
| model\_name | varchar(50) | NOT NULL |  | Model name |  |
| svcdevtype\_id | int | NOT NULL |  | Device type ID | FK |
| warranty\_period | tinyint | NOT NULL |  | Warranty period | '[0-4][0-8]' |
| remark | varchar(1000) | NULL |  | Remark |  |
| svcmak\_id | int | NOT NULL |  | Maker ID | FK |

dbo.svc\_order

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcord\_id | int | NOT NULL |  | PK service order ID | PK |
| svcdev\_id | int | NOT NULL |  | Device ID | FK |
| cust\_id | int | NOT NULL |  | Customer ID | FK |
| devsym\_id | int | NOT NULL |  | Device symptom ID | FK |
| issue | varchar(1000) | NOT NULL |  | Issue |  |
| purchase\_date | date | NULL |  | Purchase date |  |
| warranty\_till | date | NULL |  | Warranty till |  |
| warranty\_status | bit | NULL |  | Warranty status |  |
| received | date | NOT NULL |  | Received from customer |  |
| completed | date | NULL |  | Repair completed |  |
| given\_out | date | NULL |  | Returned to customer |  |
| svcstat\_id | int | NULL |  | Service status ID | FK |
| creator\_id | int | NOT NULL |  | Creator ID |  |

Remark: creator\_id is inserted based on the value given by external application.

dbo.svc\_order\_history

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcordhistory\_id | int | NOT NULL |  | PK service order history | PK |
| svcord\_id | int | NOT NULL |  | Service order ID | FK |
| svcemp\_id | int | NOT NULL |  | Service employee ID | FK |
| date\_in | datetime | NOT NULL |  | Date/time received by employee |  |
| date\_out | datetime | NULL |  | Date/time given out by employee |  |
| memo | varchar(1000) | NULL |  | Memo |  |
| svcstat\_id | int | NULL |  | Service status ID | FK |

dbo.svc\_qualified

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcqlf\_id | int | NOT NULL |  | PK Qualified ID | PK |
| svcexm\_id | int | NOT NULL |  | Exam ID | FK |
| exam\_result | tinyint | NOT NULL |  | Exam result |  |
| svcemp\_id | int | NOT NULL |  | Employee ID | FK |
| svcmod\_id | int | NOT NULL |  | Service model ID | FK |

dbo.svc\_repair

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcord\_id | int | NOT NULL |  | service order ID | PK |
| svcemp\_id | int | NOT NULL |  | service employee ID | FK |

dbo.svc\_role

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcrol\_id | int | NOT NULL |  | PK service role ID | PK |
| role\_abb | varchar(10) | NOT NULL |  | Service role short name | UNIQUE |
| role\_desc | varchar(50) | NOT NULL |  | Service role full name |  |
| role\_memo | varchar(1000) | NULL |  | Memo |  |

dbo.svc\_status

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svcstat\_id | int | NOT NULL |  | PK service status | PK |
| status\_abb | varchar(10) | NOT NULL |  | Service status short name | UNIQUE |
| status\_name | varchar(50) | NOT NULL |  | Service status full name |  |
| memo | varchar(1000) | NULL |  | Memo |  |

dbo.svc\_trained

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svctrnd\_id | int | NOT NULL |  | PK trained ID | PK |
| svctrg\_id | int | NOT NULL |  | Training ID | FK |
| svcemp\_id | int | NOT NULL |  | Employee ID | FK |
| completed | bit | NOT NULL |  | Completed |  |

dbo.svc\_training

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **Nullable** | **Default** | **Description** | **Check** |
| svctrg\_id | int | NOT NULL |  | PK service training | PK |
| training\_abb | varchar(10) | NOT NULL |  | Training short name | UNIQUE |
| training\_name | varchar(50) | NOT NULL |  | Training full name |  |
| svcrol\_id | int | NOT NULL |  | Service role ID | FK |
| svclvl\_id | int | NOT NULL |  | Service level ID | FK |
| svcmod\_id | int | NOT NULL |  | Service model ID | FK |
| memo | varchar(1000) | NULL |  | Memo |  |
| active | bit | NOT NULL |  | Is Active (NULL/NOT NULL) |  |

Check constraints

|  |  |  |
| --- | --- | --- |
| **Constraint** | **Type** | **Code** |
| CK\_countries | CONSTRAINT | Contains only 2characters A-Z [CK\_countries] CHECK (([ctr\_abb] like '[A-Z][A-Z]')) |
| CK\_customers\_email | CONSTRAINT | Checks for correct email formate [CK\_customers\_email] CHECK (([email] like '%\_\_@\_\_%')) |
| CK\_customers\_phone | CONSTRAINT | Check for correct international phone number format [CK\_customers\_phone] CHECK (([phone] like '+[1-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]')) |
| CK\_postcodes | CONSTRAINT | Postal Code contains numbers only [CK\_postcodes] CHECK (([postcode] like '[1-9][0-9][0-9][0-9]')) |
| CK\_svc\_device\_ime2\_new | CONSTRAINT | IMEI2 contains numbers only or NULL value [CK\_svc\_device\_ime2\_new] CHECK (([imei2\_new] like '[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]' OR [imei2\_new] IS NULL)) |
| CK\_svc\_device\_IMEI1 | CONSTRAINT | IMEI1 contains numbers only [CK\_svc\_device\_IMEI1] CHECK (([imei1] like '[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]')) |
| CK\_svc\_device\_imei1\_new | CONSTRAINT | IMEI1\_new contains numbers only [CK\_svc\_device\_imei1\_new] CHECK (([imei1\_new] like '[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]')) |
| CK\_svc\_device\_IMEI2 | CONSTRAINT | IMEI2\_new contains numbers only or NULL value [CK\_svc\_device\_IMEI2] CHECK (([imei2] like '[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]' OR [imei2] IS NULL)) |
| CK\_svc\_device\_serialno\_new | CONSTRAINT | Serial number contains only letters or numbers [CK\_svc\_device\_serialno\_new] CHECK ((NOT [serialno\_new] like '%[^0-9a-z]%')) |
| CK\_svc\_device\_SN | CONSTRAINT | Serial number contains only letters or numbers [CK\_svc\_device\_SN] CHECK ((NOT [serialno] like '%[^0-9a-z]%')) |
| CK\_svc\_employee\_email | CONSTRAINT | Checks for correct email formate CK\_svc\_employee\_email] CHECK (([email] like '%\_\_\_@\_\_\_%')) |
| CK\_svc\_employee\_phone | CONSTRAINT | Check for correct international phone number format [CK\_svc\_employee\_phone] CHECK (([mobile] like '+[1-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]')) |
| CK\_svc\_model | CONSTRAINT | Checks warranty period 0-48 (months) [CK\_svc\_model] CHECK (([warranty\_period] like '[0-4][0-8]')) |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| **Index neve** | **Oszlop (ok)** | **Index típusa** | **Értelmezés** |
| PK\_countries | country\_id | clustered | Primary key |
| PK\_customers | cust\_id | clustered | Primary key |
| PK\_customer\_address | custadd\_id | clustered | Primary key |
| IX\_svc\_device\_type | devicetype\_abb | non clustered | Index based on device type short name |
| PK\_device\_symptom | devsym\_id | clustered | Primary key |
| IX\_svc\_department | dpt\_abb | non clustered | Index based on department short name |
| IX\_svc\_employee | email | non clustered | Index based on employee's email address |
| IX\_svc\_levels | level\_abb | non clustered | Index based on levels short name |
| IX\_svc\_maker | maker\_abb | non clustered | Index based on maker short name |
| IX\_svc\_employee\_1 | mobile | non clustered | Index based on employee's phone number |
| PK\_postcodes | postcode\_id | clustered | Primary key |
| IX\_svc\_role | role\_abb | non clustered | Index based on service role short name |
| IX\_svc\_status | status\_abb | non clustered | Index based on service status short name |
| PK\_svc\_device | svcdev\_id | clustered | Primary key |
| PK\_svc\_device\_type | svcdevtype\_id | clustered | Primary key |
| PK\_svc\_department | svcdpt\_id | clustered | Primary key |
| PK\_svc\_employee | svcemp\_id | clustered | Primary key |
| PK\_svc\_exam | svcexm\_id | clustered | Primary key |
| PK\_svc\_levels | svclvl\_id | clustered | Primary key |
| PK\_svc\_maker | svcmak\_id | clustered | Primary key |
| PK\_svc\_model | svcmod\_id | clustered | Primary key |
| PK\_svc\_order | svcord\_id | clustered | Primary key |
| PK\_svc\_repair | svcord\_id, svcemp\_id | clustered | Primary key |
| PK\_svc\_order\_history | svcordhistory\_id | clustered | Primary key |
| PK\_svc\_qualified | svcqlf\_id | clustered | Primary key |
| PK\_svc\_role | svcrol\_id | clustered | Primary key |
| PK\_svc\_status | svcstat\_id | clustered | Primary key |
| PK\_svc\_training | svctrg\_id | clustered | Primary key |
| PK\_svc\_trained | svctrnd\_id | clustered | Primary key |
| IX\_svc\_training | training\_abb | non clustered | Index based on training short name |

Triggers

|  |  |  |
| --- | --- | --- |
| **Trigger** | **Trigger type** | **Description** |
| triggerInsertSvcOrderHistory | DML INSERT | After new service order data inserted into table svc\_order, new row added to service order history table svc\_order\_history with current employee ID for tracking purposes. |
| triggerUpdateSvcRepair | DML INSERT, UPDATE, DELETE | After record updated in table svc\_order\_history, employee information inserted/updated into or deleted from table svc\_repair. |

Table connections

|  |  |  |
| --- | --- | --- |
| **Relation name** | **Type** | **DELETE/UPDATE** |
| FK\_customer\_address\_countries | 1:N | NO CASCADE |
| FK\_postcodes\_countries | 1:N | NO CASCADE |
| FK\_customer\_address\_postcodes | 1:N | NO CASCADE |
| FK\_customers\_customer\_address | 1:N | NO CASCADE |
| FK\_svc\_order\_customers | 1:N | NO CASCADE |
| FK\_svc\_order\_device\_symptom | 1:N | NO CASCADE |
| FK\_svc\_employee\_svc\_department | 1:N | NO CASCADE |
| FK\_svc\_device\_svc\_model | 1:N | NO CASCADE |
| FK\_svc\_order\_svc\_device | 1:N | NO CASCADE |
| FK\_svc\_model\_svc\_device\_type | 1:N | NO CASCADE |
| FK\_svc\_employee\_svc\_role | 1:N | NO CASCADE |
| FK\_svc\_order\_history\_svc\_employee | 1:N | NO CASCADE |
| FK\_svc\_qualified\_svc\_employee | 1:N | NO CASCADE |
| FK\_svc\_repair\_svc\_employee | 1:N | NO CASCADE |
| FK\_svc\_trained\_svc\_employee | 1:N | NO CASCADE |
| FK\_svc\_qualified\_svc\_exam | 1:N | NO CASCADE |
| FK\_svc\_training\_svc\_levels | 1:N | NO CASCADE |
| FK\_svc\_model\_svc\_maker | 1:N | NO CASCADE |
| FK\_svc\_qualified\_svc\_model | 1:N | NO CASCADE |
| FK\_svc\_training\_svc\_model | 1:N | NO CASCADE |
| FK\_svc\_order\_svc\_status | 1:N | NO CASCADE |
| FK\_svc\_repair\_svc\_order | 1:N | NO CASCADE |
| FK\_svc\_order\_history\_svc\_status | 1:N | NO CASCADE |
| FK\_svc\_trained\_svc\_training | 1:N | NO CASCADE |

VIEWS

|  |  |
| --- | --- |
| **Name** | **Title** |
| dbo.viewCustomerFullData | Listing all details on Customers: Name, Contacts, Address  Used in function dbo.fnCustomerDataReview |
| dbo.viewPhoneRepairStatus | Listing all details on Devices currently in service center Used in function dbo.fncheckOpenRepair |
| dbo.vQualified | Listing all details on Qualified personnel |
| dbo.vTrained | Listing all details on Trained personnel |
| dbo.vTrainings | Listing all details on Trainings to be done |

FUNCTIONS

|  |  |  |
| --- | --- | --- |
| **Name** | **Type** | **Title** |
| dbo.fnCustomerDataReview | SCALAR | Functions outputs full data of Customer based on phone number. |
| dbo.fncheckOpenRepair | SCALAR | Function outputs status on existing open service order. |
| dbo.fnCountry | SCALAR | Function outputs Country ID based on the name of Country |
| dbo.fnEmployee | SCALAR | Function outputs full name of employee based on his/her name. |
| dbo.fnFullAddress | SCALAR | Function outputs full address of customer |
| dbo.fnPostCode | SCALAR | Function outputs Postal code ID based on the Postal code value |
| dbo.fnWarrantyStatus | SCALAR | Function outputs infrormation if device repair is covered by warranty. |
| dbo.fnWarrantyValidTill | SCALAR | Function outputs information till when is device covered by warranty. |

dbo.fnCustomerDataReview

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | table type | OUT |  |
| phone | varchar(20) | IN |  |

This function is used to return customer information based on his/her phone number when called via external application.

dbo.fncheckOpenRepair

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | bit | OUT |  |
| svcdev\_id | int | IN |  |

This function is used in stored procedure procInsertSvcOrder.

dbo.fnCountry

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | int | OUT |  |
| Country | varchar(50) | IN |  |

This function is used in stored procedure procInsertCustomer.

dbo.fnEmployee

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | varchar(100) | OUT |  |
| id | int | IN |  |

dbo.fnFullAddress

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | varchar(255) | OUT |  |
| id | int | IN |  |

dbo.fnPostCode

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | int | OUT |  |
| PostCode | int | IN |  |

This function is used in stored procedure procInsertCustomer.

dbo.fnWarrantyStatus

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | bit | OUT |  |
| svcdev\_id | int | IN |  |
| purchase\_date | date | IN |  |

This function is used in stored procedure procInsertSvcOrder.

dbo.fnWarrantyValidTill

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter name** | **Data type** | **Type** | **Default** |
| Returns | date | OUT |  |
| svcdev\_id | int | IN |  |
| purchase\_date | date | IN |  |

This function is used in stored procedure procInsertSvcOrder.

Stored procedures

|  |  |
| --- | --- |
| **Name** | **Title** |
| dbo.procInsertCustomer | Insert New Customer, contact information and address to SVCdb |
| dbo.procInsertSvcOrder | Insert new service order to SVCdb |
| dbo.procRepairStatusByIMEI | Repair status check for the device currently under service handling |

dbo.procInsertCustomer

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Data type** | **Type** | **Default** |
| firstname | varchar(50) | INPUT |  |
| lastname | varchar(50) | INPUT |  |
| phone | varchar(20) | INPUT |  |
| email | varchar(100) | INPUT |  |
| remark | varchar(1000) | INPUT |  |
| gdpr | bit | INPUT |  |
| marketing | bit | INPUT |  |
| city | varchar(50) | INPUT |  |
| street | varchar(50) | INPUT |  |
| postcode | int | INPUT |  |
| country | varchar(50) | INPUT |  |

dbo.procInsertSvcOrder

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Data type** | **Mode** | **Default** |
| svcdev\_id | int | INPUT |  |
| cust\_id | int | INPUT |  |
| devsym\_id | int | INPUT |  |
| issue | varchar(100) | INPUT |  |
| purchase\_date | date | INPUT |  |
| svcstat\_id | int | INPUT |  |
| svcemp\_id | int | INPUT |  |

dbo.procRepairStatusByIMEI

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Data type** | **Mode** | **Default** |
| IMEI | varchar(15) | INPUT |  |
| ORDER | int | INPUT |  |

Authorization system

|  |  |  |  |
| --- | --- | --- | --- |
| **Login** | **User** | **Role** | **Description** |
| employee | employee | employee | Read/Write access to all tables within SVCdb |
| manager | manager | manager | Read/Write access to all tables within SVCdb |
| svc\_admin | svc\_admin | svc\_admin | Read/Write access to all tables within SVCdb Authorized to set/modify security settings and access rights. |
| app | app | app | Full access on tables  customers, svc\_order, svc\_order\_history within SVCdb |

Installation

Database installation is done via schema.sql script.

Test data installation is done via data.sql script.

Both scripts need to be run via suitable environment as described bellow.

Prerequisites:

- MS SQL server Enterprise or Developer edition, min 2019 version,

- SQL server management studio, min version 18.x.x or Azure Data Studio 1.36.x,

- 10MB free space

Backup/restore strategy

**Backup plan**

To maintain integrity a security of database, full recovery mode is in place. Regular backup routine is set with one full backup done daily and transaction logs backup on 4hours schedule.

Full backups are taken every day Monday to Sunday at 00:30 to file called SVCdb.bak located on location C:\backup\

Transaction log backups are taken every day in 4hour intervals (Monday-Sunday at 08:00, 12:00, 16:00, 20:00) to a file called SVCdb-logs.bak located on location C:\backup\

**Restore plan**

In case a user error (accidental `DELETE`) the plan is to restore data from the last available transaction log backup. In case of catastrophic failure, data restoration is made from the full backup.