| Revision History | | | |
| --- | --- | --- | --- |
| Date | Version | By | Description of Change |
| 21 Aug, 2022 | 0.01 | Kunming Yang | First version |
| 29 Aug, 2022 | 0.02 | Jerry Wang | Define some Req |
| 09 Sep,2022 | 0.03 | Kunming Yang | Update as review |
| 19 Sep,2022 | 0.04 | Kunming Yang | Update as review |
| 21 Sep, 2022 | 0.05 | Jerry Wang | Define Weld Result and Weld Signature work flow |
| 22 Sep, 2022 | 0.06 | Kunming Yang | Update as review |
| 29 Sep, 2022 | 0.07 | Kunming Yang | Change type of some Table ID to long long |
| 09 Oct, 2022 | 0.08 | Kunming Yang | Create all 19 tables |
| 11 Oct, 2022 | 0.09 | Kunming Yang | Update tables based on DB file;  Add table AlarmLog |
| 13 Oct, 2022 | 0.10 | Kunming Yang | Add table HeightCalibration |

# Schedule

|  |  |
| --- | --- |
| Day | Sprint 1st |
| 1 | Database concurrent mechanism |
|  | 1st Week |
| 6 | Database architecture review |
|  | 2nd Week |
| 11 | Database initialization workflow review |
| 14 | Database Interface & message queue definition |
| 15 | Recipe, WeldResult, Weld Signature |
|  | 3rd Week |
| 21 | Code Review |
|  | Sprint 2nd |
|  | 1st Week |
| 25 | Performance testing |
|  | 2nd Week |
| 1 | Test Report Review |
| 2 | Database daemon task |
|  | 3rd Week |
| 8 | Code Review |

# DataBase

## General requirements

1. The database file should be named as sample\_l20\_base.db
2. The database file should be stored in /mmc1
3. The database should include 20 tables

## Table AlarmLog

Max count 1000000

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | AlarmLog | | | | | | |
| Primary Key | | ID | | | | | | |
| Sort other fields | | DateTime, AlarmType, PresetID, UserID, IsReset, WeldResultID | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER | 1 |
|  | DateTime | DATETIME | Y | N | N |  | TEXT | 12-12-2022 12:12:21 345 |
|  | AlarmType | ENUM | Y | N | N |  | INTEGER | 1 |
|  | RecipeID | INTEGER | N | N | N |  | INTEGER | 1 |
|  | UserID | INTEGER | Y | N | N |  | INTEGER | 1 |
|  | IsReseted | INTEGER | Y | N | N | 0 | INTEGER | 0 |
|  | WeldResultID | INTEGER | N | N | N |  | INTEGER | 1 |
| Sqlite script | | 1. --Create table   CREATE TABLE "AlarmLog" (  "ID" INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT UNIQUE,  "DateTime" TEXT NOT NULL,  "AlarmType" INTEGER NOT NULL,  "RecipeID" INTEGER,  "WeldResultID" INTEGER,  "UserID" INTEGER NOT NULL,  "IsReset" INTEGER NOT NULL,  FOREIGN KEY("WeldResultID") REFERENCES "WeldResult"("ID") ON DELETE CASCADE  );   1. --Insert a record   (DateTime,AlarmType, RecipeID, UserID,IsReset,WeldResultID) VALUES (”2021-11-26 12:12:12 999”,1,1,1,0,999) | | | | | | |
| Tips | |  | | | | | | |
| Notes: | | The table operands should include INSERT for a whole record, DELETE oldest records using quantity, UPDATE “IsReset” field following ID, QUERY records using “IsReset”, Date and quantity. | | | | | | |

## Table Connectivity

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | Connectivity | | | | | | |
| Primary Key | | -- | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example value |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | TEXT | Y | N | Y | 0 | TEXT |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 1.00 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0.00 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 4000 | INTEGER |  |
| Sqlite Scripts | | --Create the table  CREATE TABLE "Connectivity" (  "EthernetType" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "EthernetOption" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "SignatureOption" INTEGER NOT NULL UNIQUE,  "ServerPort" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "DeviceIP" TEXT NOT NULL DEFAULT '127.0.0.1' UNIQUE,  "WeldResultOption" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "WeldRecipeOption" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "WeldSignatureOption" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "SystemConfigureOption" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "GatewayID" INTEGER NOT NULL DEFAULT 0 UNIQUE  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Please ignore it. | | | | | | |

## Table DBVersion

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | DBVersion | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | VersionNo | | | | | | |
| NO. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | Major | INTEGER | Y | N | Y |  | INTEGER | 1 |
|  | Minor | INTEGER | Y | N | Y |  | INTEGER | 1 |
|  | Build | INTEGER | Y | N | Y |  | INTEGER | 1 |
| Sqlite Scripts | | --Create the table  CREATE TABLE "DBVersion" (  "Major" INTEGER NOT NULL UNIQUE,  "Minor" INTEGER NOT NULL UNIQUE,  "Build" INTEGER NOT NULL UNIQUE  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | It should be a database key attribute for the whole system. We will manage database using it. | | | | | | |

## Table EventLog

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | EventLog | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | Datetime, EventType, EventName, UserID, Old, New, Comment | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER | 1 |
|  | Datetime | TEXT | Y | N | N |  | TEXT | 12-12-2021 12:12:12 |
|  | EventType | ENUM | Y | N | N |  | INTEGER | 1 |
|  | EventName | TEXT | Y | N | N |  | TEXT | “Modify Parameter” |
|  | UserID | INTEGER | Y | N | N |  | INTEGER | 1 |
|  | Old | TEXT | Y | N | N |  | TEXT | 5 |
|  | New | TEXT | Y | N | N |  | TEXT | 4 |
|  | Comment | VARCHAR(200) | N | N | N |  | TEXT | “Modify the param” |
| Sqlite script | | 1. --Create the table   CREATE TABLE "EventLog" (  "ID" INTEGER NOT NULL UNIQUE,  "Datetime" TEXT NOT NULL,  "EventType" INTEGER NOT NULL,  "EventName" TEXT NOT NULL,  "UserID" INTEGER NOT NULL,  "Old" TEXT NOT NULL,  "New" TEXT NOT NULL,  "Comment" TEXT,  PRIMARY KEY ("ID" AUTOINCREMENT)  );   1. --Insert a record   INSERT INTO EventLog (Datetime,EventType,EventName, UserID,Old,New,Comment) VALUES ("2021-11-11 12:12:12 666", 1, "Modify parameter", 1, "old", "New", "Changed the parameter") | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Same with Alarm Table, please ignore it firstly. | | | | | | |

## Table GatewayServer

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | GatewayServer | | | | | | |
| Primary | | ID | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y | 0 | INTEGER | 1 |
|  |  | TEXT | Y | N | Y |  | TEXT | 0 |
|  |  | INTEGER | Y | N | Y |  | INTEGER | 0 |
|  |  | TEXT | Y | N | Y |  | TEXT | 0 |
| Sqlite Scripts | | --Create the table  CREATE TABLE "GatewayServer" (  "ID" INTEGER NOT NULL UNIQUE,  "MachineName" TEXT NOT NULL UNIQUE,  "ServerPort" INTEGER NOT NULL UNIQUE,  "ServerIP" TEXT NOT NULL UNIQUE,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Please ignore it. | | | | | | |

## Table HeightCalibration

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table Name | | HeightCalibration | | | | | | |
| Primary Key | | PSI | | | | | | |
| Other fields | |  | | | | | | |
| NO. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  |  | INTEGER | Y | N | N |  | INTEGER |  |
|  |  | INTEGER | Y | N | N |  | INTEGER |  |
| Sqlite Scripts | | --Create the table  CREATE TABLE "HeightCalibration" (  "PSI" INTEGER NOT NULL,  "Count" INTEGER NOT NULL,  PRIMARY KEY("PSI")  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Please ignore it | | | | | | |

## Table LastOperate

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | LastOperate | | | | | | |
| Primary Key | | -- | | | | | | |
| Other fields | | PartCount, EndCount, OperateType, RecipeID, SequenceID | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | PartCount | INTEGER | N | N | Y | 0 | INTEGER | 0 |
|  | EndCount | INTEGER | N | N | Y | 0 | INTEGER | 10 |
|  | OperateType | ENUM | N | N | Y |  | INTEGER | 0 |
|  | RecipeID | INTEGER | N | N | Y |  | INTEGER | 1 |
|  | SequenceID | INTEGER | N | N | Y |  | INTEGER | 1 |
| Sqlite Script | | --Create the table  CREATE TABLE "LastOperate" (  "PartCount" INTEGER DEFAULT 0 UNIQUE,  "EndCount" INTEGER DEFAULT 0 UNIQUE,  "OperateType" INTEGER UNIQUE,  "RecipeID" INTEGER UNIQUE,  "SequenceID" INTEGER UNIQUE,  FOREIGN KEY("RecipeID") REFERENCES "WeldRecipe"("ID") ON DELETE CASCADE); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | The table shall have only one record so the basic operand should have INSERT and DELETE. | | | | | | |

## Table MaintenanceCounter

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | MaintenanceCounter | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  |  | INTEGER | Y | Y | N |  | INTEGER |  |
|  |  | INTEGER | Y | N | N |  | INTEGER |  |
|  |  | INTEGER | Y | N | N | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | N | 0 | INTEGER |  |
|  |  | REAL | Y | N | N | 0 | REAL |  |
|  |  | INTEGER | Y | N | N | 0 | INTEGER |  |
|  |  | TEXT | Y | N | N |  | TEXT |  |
|  |  | INTEGER | Y | N | N | 0 | INTEGER |  |
| Sqlite scripts | | 1. --Create the table   CREATE TABLE "MaintenanceCounter" (  "ID" INTEGER NOT NULL UNIQUE,  "ToolingType" INTEGER NOT NULL,  "CurrentCounter" INTEGER NOT NULL DEFAULT 0,  "EnergySum" INTEGER NOT NULL DEFAULT 0,  "CounterLimit" REAL NOT NULL DEFAULT 0,  "EnergyLimit" INTEGER NOT NULL DEFAULT 0,  "StartDate" TEXT NOT NULL,  "AlarmOption" INTEGER NOT NULL DEFAULT 0,  PRIMARY KEY("ID" AUTOINCREMENT)  );   1. --Insert a record   INSERT INTO MaintenanceCounter VALUES (?,?,…) | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Please ignore it. | | | | | | |

## Table MaintenanceLog

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | MaintenanceLog | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGERT | Y | Y | Y | -- | INTEGER | 1 |
|  | MaintenanceType | INTEGER | Y | N | N | -- | INTEGER | 1(Calibration) |
|  | DateTime | TEXT | Y | N | N | -- | TEXT | 12-12-2021 12:12:11 |
|  | UserID | INTEGER | Y | N | N | -- | INTEGER | 1 |
| Sqlite Scripts | | --Create the table  CREATE TABLE "MaintenanceLog" (  "ID" INTEGER NOT NULL UNIQUE,  "MaintenanceType" INTEGER NOT NULL,  "DateTime" TEXT NOT NULL,  "UserID" INTEGER NOT NULL,  PRIMARY KEY ("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes: | | Shall be same with Alarm Log | | | | | | |

## Table PowerSupply

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table names | | PowerSupply | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | SequenceName, CreatedDate, UserID | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER |  |
|  | Frequency | INTEGER | Y | N | N |  | INTEGER |  |
|  | Power | INTEGER | Y | N | N |  | INTEGER |  |
| Sqlite scripts | | 1. --Create the table   CREATE TABLE "PowerSupply" (  "ID" INTEGER NOT NULL UNIQUE,  "Frequency" INTEGER NOT NULL,  "Power" INTEGER NOT NULL,  PRIMARY KEY("ID" AUTOINCREMENT)  );   1. Insert a record | | | | | | |
| Tips | |  | | | | | | |
| Notes | |  | | | | | | |

## Table PrivilegeConfiguration

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table names | | PrivilegeConfiguration | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER |  |
|  | PermissionLevel | BOOLEAN | Y | N | N | 2 | INTEGER |  |
|  | ScreenIndex | BOOLEAN | Y | N | Y |  | INTEGER |  |
| Sqlite scripts | | 1. --Create the table   CREATE TABLE "PrivilegeConfiguration" (  "ID" INTEGER NOT NULL UNIQUE,  "PermissionLevel" INTEGER NOT NULL DEFAULT 2,  "ScreenIndex" INTEGER NOT NULL UNIQUE,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | | The ID means the screen number and the details is shown below table. There needs to insert 20 records when create the table. | | | | | | |
| Notes: | | Please ignore it | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Screen** | **ID** | **Screen** | **ID** | **Screen** | **ID** | **Screen** |
| 1 | Create Splice | 2 | Create Sequence | 3 | Edit Splice | 4 | Edit Sequence |
| 5 | Operate splice | 6 | Operate Sequence | 7 | Test | 8 | Teach Mode |
| 9 | Calibration | 10 | Advanced Maintenance | 11 | Maintenance Counter | 12 | Maintenance Log |
| 13 | Weld Result History | 14 | Statistical Trend | 15 | Alarm/Error Log | 16 | Library |
| 17 | Version Information | 18 | Permission Setting | 19 | Data Communication | 20 | Operator Library |

## Table PrivileveLevelName

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | PrivileveLevelName | | | | | | |
| Primary Key | | -- | | | | | | |
| Other fields | | Level1, Level2, Level3, Level4 | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | Level1 | TEXT | Y | N | N | Level1 | TEXT | TECHNICAL |
|  | Level2 | TEXT | Y | N | N | Level2 | TEXT | OPERATE |
|  | Level3 | TEXT | Y | N | N | Level3 | TEXT | EXECUTE |
|  | Level4 | TEXT | Y | N | N | Level4 | TEXT | Level4 |
| Sqlite Scripts | | 1. --Create the table   CREATE TABLE "PrivileveLevelName" (  "Level1" TEXT NOT NULL DEFAULT 'Level1',  "Level2" TEXT NOT NULL DEFAULT 'Level2',  "Level3" TEXT NOT NULL DEFAULT 'Level3',  "Level4" TEXT NOT NULL DEFAULT 'Level4'  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Please ignore it | | | | | | |

## Table SequenceRecipe

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | SequenceRecipe | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | SequenceID, Order, Quantity, PresetID | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite type | Example value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER |  |
|  | SequenceID | INTEGER | Y | N | N |  | INTEGER |  |
|  | RecipeID | INTEGER | Y | N | N |  | INTEGER |  |
|  | Order | INTEGER | Y | N | N |  | INTEGER |  |
|  | Quantity | INTEGER | Y | N | N | 1 | INTEGER |  |
| Sqlite Scripts | | 1. --Create the table   CREATE TABLE "SequenceRecipe" (  "ID" INTEGER NOT NULL UNIQUE,  "SequenceID" INTEGER NOT NULL,  "RecipeID" INTEGER NOT NULL,  "Order" INTEGER NOT NULL,  "Quantity" INTEGER NOT NULL DEFAULT 1,  FOREIGN KEY("SequenceID") REFERENCES "WeldSequence"("ID") ON DELETE CASCADE,  FOREIGN KEY("RecipeID") REFERENCES "WeldRecipe"("ID") ON DELETE CASCADE,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes: | |  | | | | | | |

## Table SystemConfigure

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | SystemConfigure | | | | | | |
| Primary Key | | -- | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Values |
|  |  | INTEGER | Y | N | Y | 0 | INTERGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTERGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTERGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTERGER |  |
|  |  | INTEGER | Y | N | Y | 1 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | N | 72 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 38000 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 1 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 0 | INTEGER |  |
|  |  | INTEGER | Y | N | Y | 19950 | INTEGER |  |
| Sqlite script | | 1. --Create the table   CREATE TABLE "SystemConfigure" (  "FootPedalAbort" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "LockOnAlarm" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "HeightEncoder" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "CoolingOption" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "CoolingDuration" INTEGER NOT NULL DEFAULT 1.00 UNIQUE,  "CoolingDelay" INTEGER NOT NULL DEFAULT 0.00 UNIQUE,  "Language" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "AmplitudeUnit" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "PressureUnit" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "HeightUnit" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "MaxAmplitude" INTEGER NOT NULL DEFAULT 72,  "TeachModeID" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "HomePositionCount" INTEGER NOT NULL DEFAULT 38000 UNIQUE,  "PowerSupplyID" INTEGER NOT NULL DEFAULT 1 UNIQUE,  "FrequencyOffset" INTEGER NOT NULL DEFAULT 0 UNIQUE,  "TunePoint" INTEGER NOT NULL DEFAULT 19950 UNIQUE  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes: | | Please ignore it firstly. | | | | | | |

## Table TeachModeSetting

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | TeachModeSetting | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | |  | | | | | | |
| NO. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  |  | ENUM | Y | Y | Y | 0 | INTEGER |  |
|  |  | INT | Y | N | N | 0 | INTEGER |  |
|  |  | INT | Y | N | N | 40 | INTEGER |  |
|  |  | INT | Y | N | N | 40 | INTEGER |  |
|  |  | INT | Y | N | N | 25 | INTEGER |  |
|  |  | INT | Y | N | N | 25 | INTEGER |  |
|  |  | INT | Y | N | N | 15 | INTEGER |  |
|  |  | INT | Y | N | N | 15 | INTEGER |  |
|  |  | INT | Y | N | N | 10 | INTEGER |  |
|  |  | INT | Y | N | N | 10 | INTEGER |  |
|  |  | INT | Y | N | N | 15 | INTEGER |  |
| Sqlite Scripts | | --Create the table  CREATE TABLE "TeachModeSetting" (  "ID" INTEGER NOT NULL UNIQUE,  "TeachModeType" INTEGER NOT NULL DEFAULT 0,  "TimePLRG" INTEGER NOT NULL DEFAULT 40,  "TimeMSRG" INTEGER NOT NULL DEFAULT 40,  "PowerPLRG" INTEGER NOT NULL DEFAULT 25,  "PowerMSRG" NUMERIC NOT NULL DEFAULT 25,  "PreHeightPLRG" INTEGER NOT NULL DEFAULT 15,  "PreHeightMSRG" INTEGER NOT NULL DEFAULT 15,  "HeightPLRG" INTEGER NOT NULL DEFAULT 10,  "HeightMSRG" INTEGER NOT NULL DEFAULT 10,  "Quantity" INTEGER NOT NULL DEFAULT 15,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes: | | Please ignore it | | | | | | |

## Table UserProfiles

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | UserProfiles | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | UserName,CreateDate,WhoCreateNewID,Password,PermissionLevel | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Values |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER |  |
|  | UserName | VARCHAR(100) | Y | N | Y |  | TEXT |  |
|  | DateTime | DATETIME | Y | N | N |  | TEXT |  |
|  | WhoCreatedNewID | INTEGER | Y | N | N |  | INTEGER |  |
|  | Password | TEXT | Y | N | N | 000000 | TEXT |  |
|  | PermissionLevel | ENUM | Y | N | N |  | INTEGER |  |
| Sqlite scripts | | 1. --Create the table   CREATE TABLE "UserProfiles" (  "ID" INTEGER NOT NULL UNIQUE,  "UserName" TEXT NOT NULL UNIQUE,  "DateTime" TEXT NOT NULL,  "WhoCreateNewID" INTEGER NOT NULL,  "Password" TEXT NOT NULL DEFAULT 000000,  "PermissionLevel" INTEGER NOT NULL,  PRIMARY KEY("ID" AUTOINCREMENT)   1. ); --Insert a record   INSERT INTO UserProfiles (UserName, DateTime,WhoCreateNewID,Password,PermissionLevel) VALUES ("Def","9999","ADMIN","123456",1) | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Please ignore it. | | | | | | |

## Table WeldRecipe

Max count 1000

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | WeldRecipe | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | RecipeName, DateTime, UserID, PresetPicPath, IsVerified, Amplitude, Width, WeldPressure, TriggerPresure, TimePlus, TimeMinus, PeakPowerPlus, PeakPowerMinus, TriggerHeightPlus, TriggerHeightMinus, WeldHeightPlus, WeldHeightMinus, WeldMode, ModeValue, PreBurst, HoldTime, SqueezeTime, AfterBurstDelay, AfterBurstDuration, AfterBurstAmplitude, WeldHeight, MeasuredHeight, StepWeldMode, EnergyToStep, TimeToStep, PowerToStep | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER |  |
|  | RecipeName | VARCHAR(100) | Y | N | Y |  | TEXT |  |
|  | DateTime | TEXT | Y | N | Y |  | TEXT |  |
|  | UserID | INTEGER | Y | N | N |  | INTEGER |  |
|  | PresetPicPath | VARCHAR | N | N | N |  | TEXT |  |
|  | IsValidate | BOOLEAN | Y | N | N | 0 | INTEGER |  |
|  | Amplitude | INTEGER | Y | N | N | 18 | INTEGER |  |
|  | Width | INTEGER | Y | N | N | 2000 | INTEGER |  |
|  | WeldPressure | INTEGER | Y | N | N | 20 | INTEGER |  |
|  | TriggerPressure | INTEGER | Y | N | N | 20 | INTEGER |  |
|  | TimePlus | INTEGER | Y | N | N | 5000 | INTEGER |  |
|  | TimeMinus | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | PeakPowerPlus | INTEGER | Y | N | N | 4800 | INTEGER |  |
|  | PeakPowerMinus | INTEGER | Y | N | N | 0 | INTEGER |  |
|  | TriggerHeightPlus | INTEGER | Y | N | N | 15000 | INTEGER |  |
|  | TriggerHeightMinus | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | WeldHeightPlus | INTEGER | Y | N | N | 15000 | INTEGER |  |
|  | WeldHeightMinus | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | WeldMode | ENUM | Y | N | N | 0 | INTEGER |  |
|  | ModeValue | INTEGER | Y | N | N | 0 | INTEGER |  |
|  | PreBurst | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | HoldTime | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | SqueezeTime | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | AfterBurstDelay | INTEGER | Y | N | N | 1000 | INTEGER |  |
|  | AfterBurstDuration | NUMERIC | Y | N | N | 0000 | NUMERIC |  |
|  | AfterBurstAmplitude | INTEGER | Y | N | N | 0000 | INTEGER |  |
|  | StepWeldMode | ENUM | N | N | N | -1 | INTEGER |  |
|  | EnergyToStep | JSON | N | N | N | 0 | BLOB | {"0": [1, 4, 0, 0, 7], "1": [2, 5, 0, 0, 8], "2": [3, 6, 0, 0, 9]} |
|  | TimeToStep | JSON | N | N | N | 0 | BLOB | {"0": [1, 4, 0, 0, 7], "1": [2, 5, 0, 0, 8], "2": [3, 6, 0, 0, 9]} |
|  | PowerToStep | JSON | N | N | N | 0 | BLOB | {"0": [1, 4, 0, 0, 7], "1": [2, 5, 0, 0, 8], "2": [3, 6, 0, 0, 9]} |
|  | WeldHeight | INTEGER | Y | N | N | 50 | INTEGER |  |
|  | MeasuredHeight | INTEGER | Y | N | N | 30 | INTEGER |  |
| Sqlite scripts | | 1. --Create the table   CREATE TABLE "WeldRecipe" (  "ID" INTEGER NOT NULL UNIQUE,  "RecipeName" TEXT NOT NULL,  "DateTime" TEXT NOT NULL,  "UserID" INTEGER NOT NULL,  "PresetPicPath" TEXT,  "IsValidate" INTEGER NOT NULL,  "Amplitude" INTEGER NOT NULL,  "Width" INTEGER NOT NULL,  "WeldPressure" INTEGER NOT NULL,  "TriggerPressure" INTEGER NOT NULL,  "TimePlus" INTEGER NOT NULL,  "TimeMinus" INTEGER NOT NULL,  "PeakPowerPlus" INTEGER NOT NULL,  "PeakPowerMinus" INTEGER NOT NULL,  "TriggerHeightPlus" INTEGER NOT NULL,  "TriggerHeightMinus" INTEGER NOT NULL,  "WeldHeightPlus" INTEGER NOT NULL,  "WeldHeightMinus" INTEGER NOT NULL,  "WeldMode" INTEGER NOT NULL,  "ModeValue" INTEGER NOT NULL,  "PreBurst" INTEGER NOT NULL,  "HoldTime" INTEGER NOT NULL,  "SqueezeTime" INTEGER NOT NULL,  "AfterBurstDelay" INTEGER NOT NULL,  "AfterBurstDuration" NUMERIC NOT NULL,  "AfterBurstAmplitude" INTEGER NOT NULL,  "StepWeldMode" INTEGER NOT NULL,  "EnergyToStep" BLOB,  "TimeToStep" BLOB,  "PowerToStep" BLOB,  "WeldHeight" INTEGER,  "MeasuredHeight" INTEGER,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | | Json format:  {Order0: [energy0, amplitude0],  Order1: [energy1, amplitude1],  Order2: [energy2, amplitude2]}  for example, {“0”: [0,0], “1”: [1, 100]} | | | | | | |
| Notes: | | The table operands should include INSERT for a new record, DELETE oldest records using quantity, UPDATE the record following ID, QUERY ID, DateTime and RecipeName using quantity; QUERY a record using ID. | | | | | | |

## Table WeldResult

Max count 1000000

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | WeldResult | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | UserID, DateTime, SequenceID, RecipeID, WeldEnergy, TriggerPressure, WeldPressure, WeldAmplitude, WeldTime, WeldPeakPower, TriggerHeight, WeldHeight,AlarmFlags, CycleCounter | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER | 4294967298 (64bit) |
|  | PartID | TEXT[50] | Y | N | N |  | TEXT | 1 |
|  | DateTime | TEXT | Y | N | N |  | TEXT |  |
|  | RecipeID | INTEGER | N | N | N |  | INTEGER | 1 |
|  | WeldEnergy | INTEGER | Y | N | N |  | INTEGER | 100 |
|  | TriggerPressure | INTEGER | Y | N | N |  | INTEGER | 20.0(psi) \* 1000 |
|  | WeldPressure | INTEGER | Y | N | N |  | INTEGER | 20.0(psi) \* 1000 |
|  | WeldAmplitude | INTEGER | Y | N | N |  | INTEGER | 18(um) |
|  | WeldTime | INTEGER | Y | N | N |  | INTEGER | 1500(ms) |
|  | WeldPeakPower | INTEGER | Y | N | N |  | INTEGER | 100(W) |
|  | TriggerHeight | INTEGER | Y | N | N |  | INTEGER | 4250(micrometre) |
|  | WeldHeight | INTEGER | Y | N | N |  | INTEGER | 4250(micrometre) |
|  | AlarmFlag | INTEGER | Y | N | N |  | INTEGER | 0 |
|  | SequenceID | INTEGER | N | N | N |  | INTEGER | 1 |
|  | CycleCounter | INTEGER | N | N | N |  | INTEGER | 1000 |
| Sqlite scripts | | 1. --Create the table   CREATE TABLE "WeldResult" (  "ID" INTEGER NOT NULL UNIQUE,  "PartID" TEXT NOT NULL,  "DateTime" TEXT NOT NULL,  "RecipeID" INTEGER NOT NULL,  "WeldEnergy" INTEGER NOT NULL,  "TriggerPressure" INTEGER NOT NULL,  "WeldPressure" INTEGER NOT NULL,  "WeldAmplitude" INTEGER NOT NULL,  "WeldTime" INTEGER NOT NULL,  "WeldPeakPower" INTEGER NOT NULL,  "TriggerHeight" INTEGER NOT NULL,  "WeldHeight" INTEGER NOT NULL,  "AlarmFlag" INTEGER NOT NULL,  "SequenceID" INTEGER,  "CycleCounter" INTEGER,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | | Should same with Alarm Log. | | | | | | |

## Table WeldResultSignature

Max count 5000

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | WeldResultSignature | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | | WeldResultID, WeldGraph | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER | 4294967298 (64bit) |
|  | WeldResultID | INTEGER | Y | N | Y |  | INTEGER | 4294967298 (64bit) |
|  | WeldGraph | JSON | N | N | N |  | BLOB | {"0": [1, 2, 34, 5, 6, 6],  "1": [1.5, 2, 1, 1.9, 2.0]} |
| Sqlite script | | 1. --Create the table   CREATE TABLE "WeldResultSignature" (  "ID" INTEGER NOT NULL UNIQUE,  "WeldResultID" INTEGER NOT NULL UNIQUE,  "WeldGraph" BLOB,  PRIMARY KEY("ID" AUTOINCREMENT),  FOREIGN KEY("WeldResultID") REFERENCES "WeldResult"("ID") ON DELETE CASCADE   1. ); --Insert a record   INSERT INTO WeldResultGraph (WeldResultID, WeldGraph) VALUES (1," {"0": [1, 2, 34, 5, 6, 6],"1": [1.5, 2, 1, 1.9, 2.0]}") | | | | | | |
| Tips | | WeldGraph data format: {“WeldGraphType”: curve data}  The WeldGraph Type is a Enum type and its detail is shown in the chapter5.3. | | | | | | |
| Notes | | Should include INSERT and QUERY record following “WeldResultID”. | | | | | | |

## Table WeldSequence

Max count 5000

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table name | | WeldSequence | | | | | | |
| Primary Key | | ID | | | | | | |
| Other fields | |  | | | | | | |
| No. | Column | Type | Not Null | Auto Increment | Unique | Default | Sqlite Type | Example Value |
|  | ID | INTEGER | Y | Y | Y |  | INTEGER |  |
|  | SequenceName | INTEGER | Y | N | N |  | TEXT |  |
|  | DateTime | JSON | Y | N | N |  | TEXT |  |
|  | UserID | INTEGER | Y | N | N |  | INTEGER |  |
| Sqlite script | | 1. --Create the table   CREATE TABLE "WeldSequence" (  "ID" INTEGER NOT NULL UNIQUE,  "SequenceName" TEXT NOT NULL UNIQUE,  "DateTime" TEXT NOT NULL,  "UserID" INTEGER NOT NULL,  PRIMARY KEY("ID" AUTOINCREMENT)  ); | | | | | | |
| Tips | |  | | | | | | |
| Notes | |  | | | | | | |

# DataTask

## General requirements

1. When class DataTask is created, it should open database “sample\_l20\_base.db” using DBAccessL20DB::ConnectDB
2. When class DataTask is created, it should get message queue id of "/Control"
3. When class DataTask is created, it should get message queue id of "/Data"
4. When class DataTask is created, it should get message queue id of "/Request"
5. When class DataTask is destroyed, it should close database “sample\_l20\_base.db” using DBAccessL20DB::CloseDataBaseConnection

## Message Processing

The DataTask should employ 3 separate message queues based on priority to allow other tasks indirect access to the data storage for reading as well as writing.

1. DataTask should process all messages from the CONTROL queue first.
2. Then DataTask should process messages from the DATA queue, then it should check for new messages from the CONTROL queue.
3. Then DataTask should process messages from the REQUEST queue, then it should check for new messages from the CONTROL queue and the DATA queue.



1. The message processing flow of the data task is triggered by event.
2. The message struct should be defined in Common.h as

struct MESSAGE

{

UINT32 msgID;

char Buffer[MAX\_SIZE\_OF\_MSG\_LENGTH - sizeof(msgID)];

};

1. The length of structure should not be out of the Buffer range.

## Database Processing

1. DataTask should provide method to open the database.
2. DataTask should provide method to close the database.
3. DataTask should provide method to insert new record for table WeldRecipe.
4. Data for WeldRecipe should be extracted from message queue using struct type WeldRecipeSC

Comments from Jerry: With meeting discussion with WindRiver and Liu Qun, there are three solutions for the data exchange between control task and data task as following…

* + - 1. Keep global variables CommonProperty::WeldResult and CommonProperty::WeldSignatureVector as the data source for the data exchange between control task and data task. If we still stick to send data using message queue, the Weld Signature size will be out of message queue (1024).
      2. In order to make sure the data integrity without any missing, there is the serial process between control task and data task using message queue. At the begin the control task send the request command to data task and wait for the response command from data task until the data is inserted into database.
      3. It seems the size of message queue is not able to save the weld signature data. In order to keep the data process with high performance, there should be a round-robin queue between control task and data task so control task and data task can run each other parallel. All the data shall be saved in the round-robin queue temporarily.

In order to keep Branson be better policy, let’s keep 1# to implement weld result and weld signature saving with data task.

1. DataTask should provide method to insert new record for table WeldResult, with table WeldResultSignature and AlarmLog.
2. Data for WeldResult should be extracted from CommonProperty::WeldResult
3. Data for WeldResultSignature should be extracted from CommonProperty::WeldSignatureVector
4. The size of vector in CommonProperty::WeldSignatureVector should not exceed 200.
5. When the number of records exceeds the limit of table “WeldResult” and “WeldResultSignature”, the oldest record should be removed.
6. ID of table “WeldResult” and “WeldResultSignature” should be with long long type

Comments from Jerry: We don’t need to restart incremental ID from 1 when it reaches out the table limit. With the table analysis, there is only weld result ID will be related in Alarm table and Weld Signature table. The code needs to handle with weld result ID using long long data type while the data processing for Alarm table and Weld Signature table.

1. When the number of records reaches the limit of table “WeldRecipe”, no more record should be insert.
2. Data for table AlarmLog should be extracted from AlarmDataSC::AlarmData
3. DataTask should provide method to update the record for table Recipe, meanwhile, the column DataTime should be update following current time stamp.
4. The record to be updated for table Recipe is selected by ID using value from m\_RecipeNumber of WeldRecipeSC.
5. DataTask should provide method to query 50 records using ID from table WeldResult.
6. The result of querying from table WeldResult should be parsed into CommonProperty::WeldResultForUI[50].
7. DataTask should provide method to query record of WeldGraph from table WeldResultSignature.
8. The result of querying from table WeldResultSignature should be...
9. DataTask should provide method to query for a record using ID of WeldRecipeSC from table WeldRecipe.
10. The result of querying from table WeldRecipe should be …
11. DataTask should provide method to query for all the 1000 records from table WeldRecipe. It has been changed by Branson. After the testing finished, Jerry will upload the code.
12. DataTask should provide method to query block record from table AlarmLog.
13. The result of querying from table AlarmLog should be should be parsed into vector AlarmDataSC::AlarmLog.
14. DataTask should provide method to query record from table HeightCalibration.
15. The result of querying from table HeightCalibration should be should be parsed into map HeightEncoder::HeightCalibratedMap.
16. DataTask should provide method to update the record for table HeightCalibration.
17. The data to be updated into table HeightCalibration is from map HeightEncoder::HeightCalibratedMap.