CANTOOL

APP For Windows

Team 24

苗旭 魏卿 汪嫱 吴虹

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苗旭

- Com口的设置
- 接受和发送信息
- 动态创建用户设置物理信息所需控件
- 仪表盘、实时曲线的整合
- 数据库类的创建
- 对应代码的类图

魏卿

- 发送的Can信号进行解析
- 对用户设置的物理值解析到Can信息
- 接收数据的长度和合法性校验
- 对应代码的类图

汪嫱

- 载入数据库后的树形结构显示
- 解析后数据的实时结构化显示
- 仪表盘、实时曲线的显示
- 对应代码的类图，会议记录等

吴虹

- Can信息布局显示
- 设定Cantool装置和Can总线速率
- 用户数据库文件读取并转存为Xml、Json
- 用例图、活动图等，对应代码的类图
- 界面设计


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GitHub
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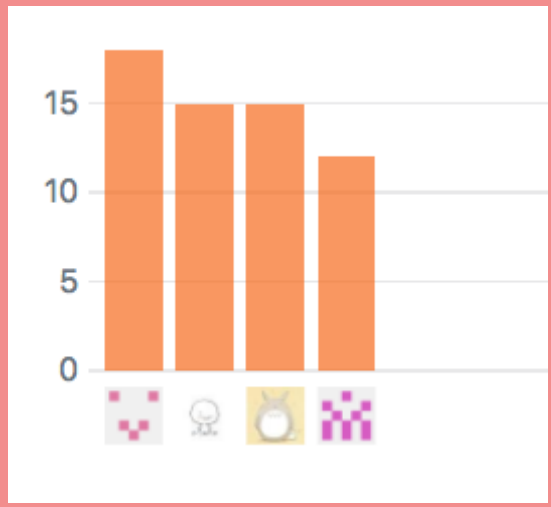
GitHub

Excluding merges, **4 authors** have pushed **60 commits** to master and **60 commits** to all branches. On master, **143 files** have changed and there have been **14,167 additions** and **1,121 deletions**.

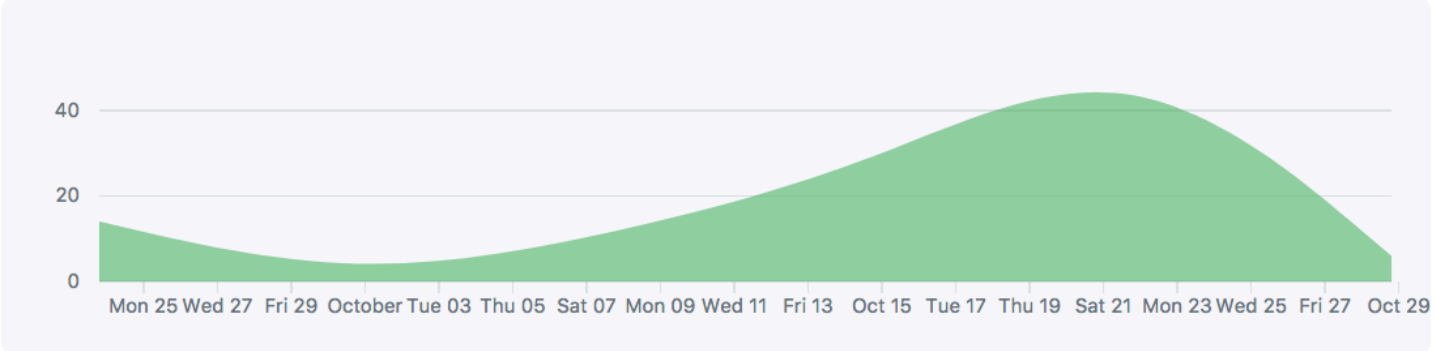
Pulse



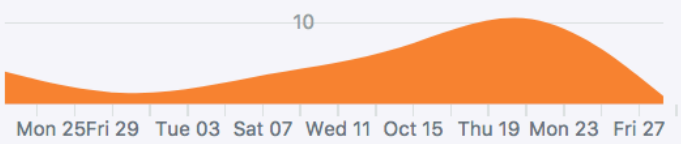
Sep 24, 2017 – Oct 29, 2017

Contributions: **Commits**

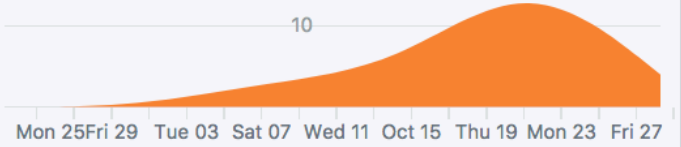
Contributions to master, excluding merge commits



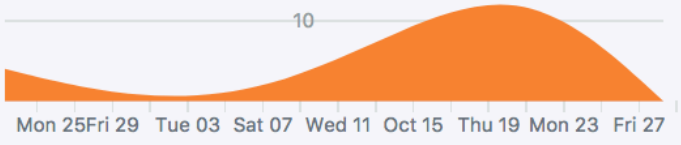
Rainbow0625 #1
29 commits 13,264 ++ 5,475 --



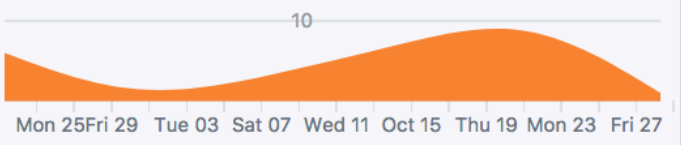
incomparableTJU #2
29 commits 2,861 ++ 479 --



summerrr #3
29 commits 9,218 ++ 1,487 --



miaoxu9999 #4
28 commits 12,339 ++ 1,389 --

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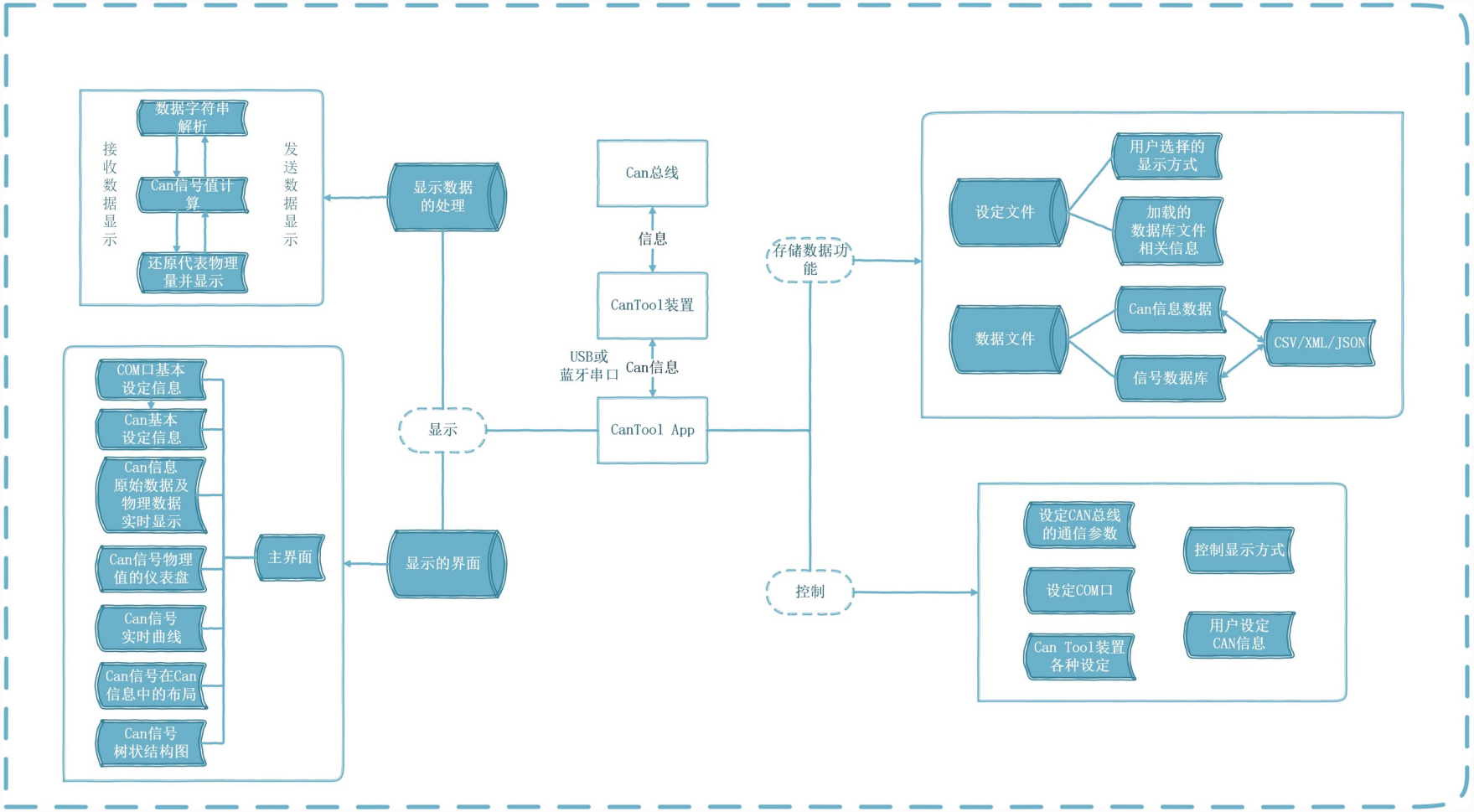
2
3
分析设计
与成果展示
4

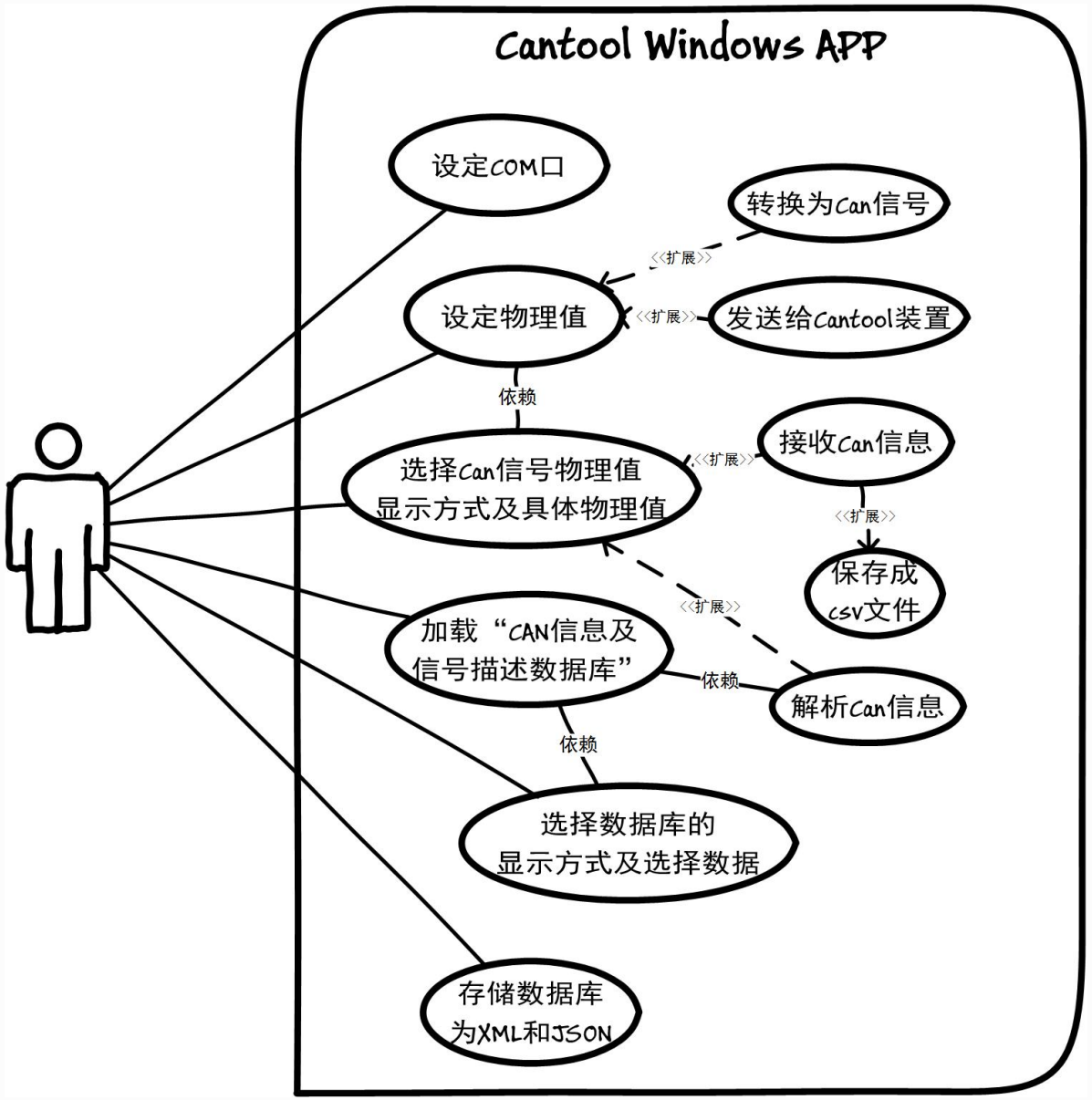
整体开发环境

- Visual Studio 2015
- Mysql 5.0
- Virtual Serial Ports

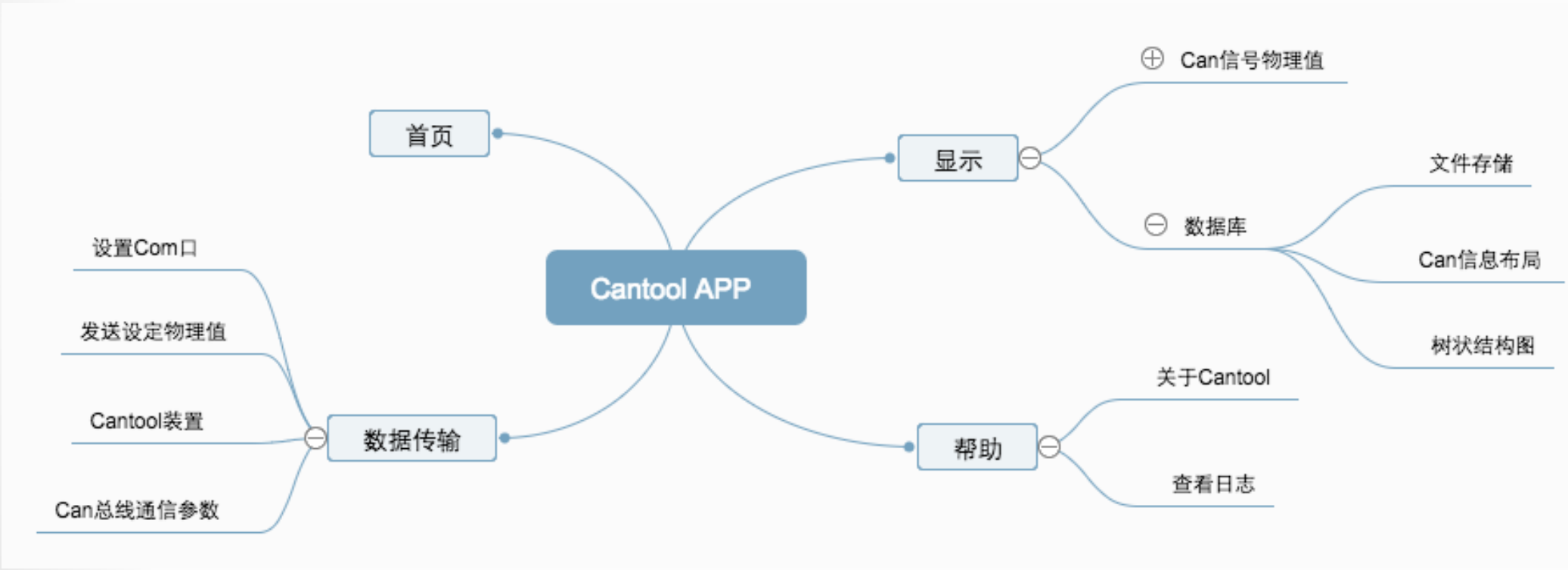
功能模块图


数据字符串解析
接收数据显示
Can信号值计算
发送数据显示
还原代表物理量并显示
显示数据的处理
Can总线
信息
CanTool装置
USB或蓝牙串口
Can信息
CanTool App
显示
显示的界面
主界面
COM口基本设定信息
Can基本设定信息
Can信息原始数据及物理数据实时显示
Can信号物理值的仪表盘
Can信号实时曲线
Can信号在Can信息中的布局
Can信号树状结构图
存储数据功能
设定文件
用户选择的显示方式
加载的数据库文件相关信息
数据文件
Can信息数据
信号数据库
CSV/XML/JSON
控制
设定CAN总线的通信参数
设定COM口
Can Tool装置各种设定
控制显示方式
用户设定CAN信息

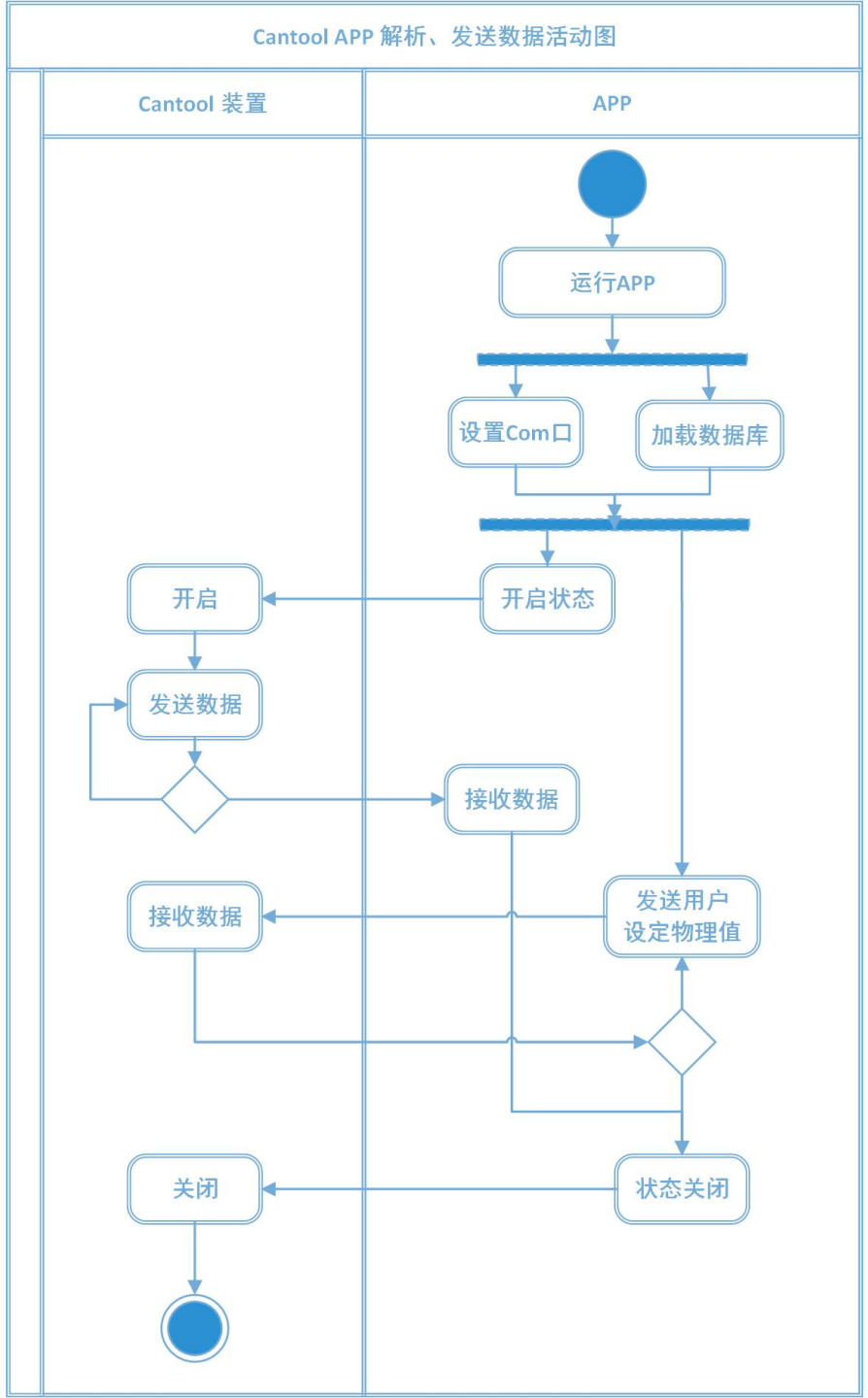
用例图


Cantool Windows APP
设定COM口
转换为Can信号
<<扩展>>
设定物理值
<<扩展>>
发送给Cantool装置
依赖
选择Can信号物理值
显示方式及具体物理值
<<扩展>>
接收Can信息
<<扩展>>
保存成
csv文件
<<扩展>>
加载“CAN信息及
信号描述数据库”
依赖
解析Can信息
依赖
选择数据库的
显示方式及选择数据
存储数据库
为XML和JSON

界面导航图

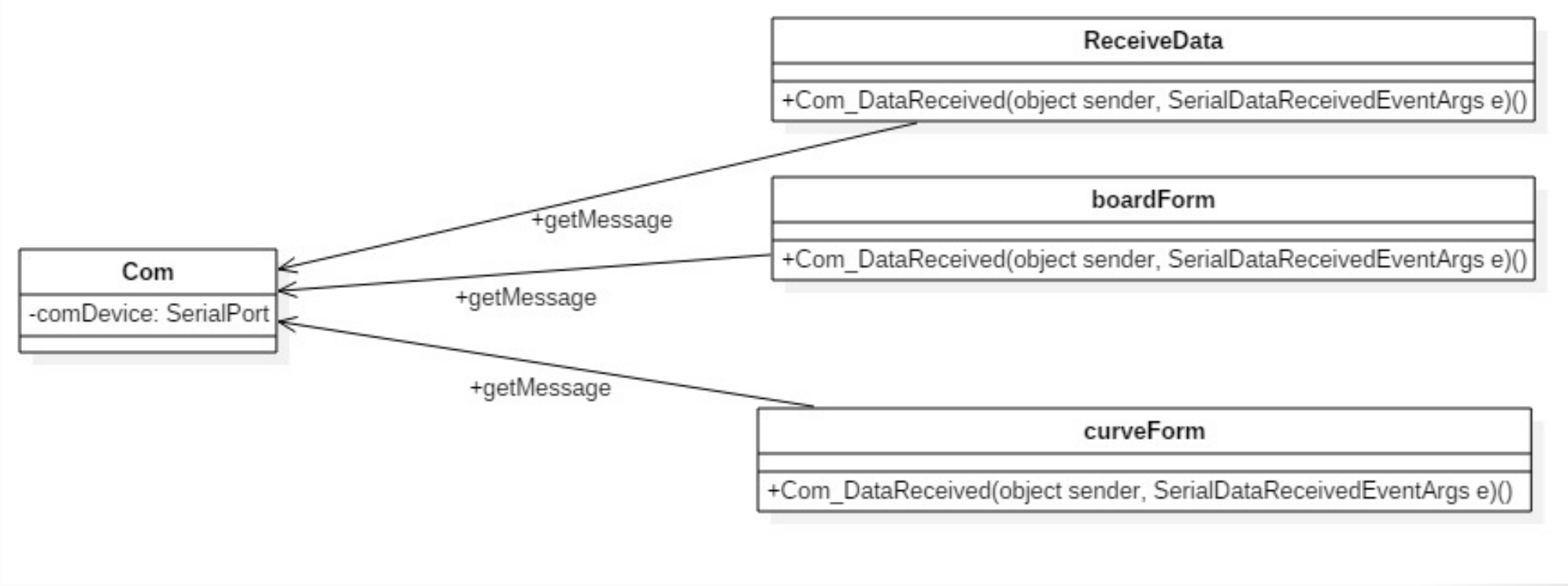

Cantool APP
首页
显示
Can信号物理值
数据库
文件存储
Can信息布局
树状结构图
数据传输
设置Com口
发送设定物理值
Cantool装置
Can总线通信参数
帮助
关于Cantool
查看日志

活动图

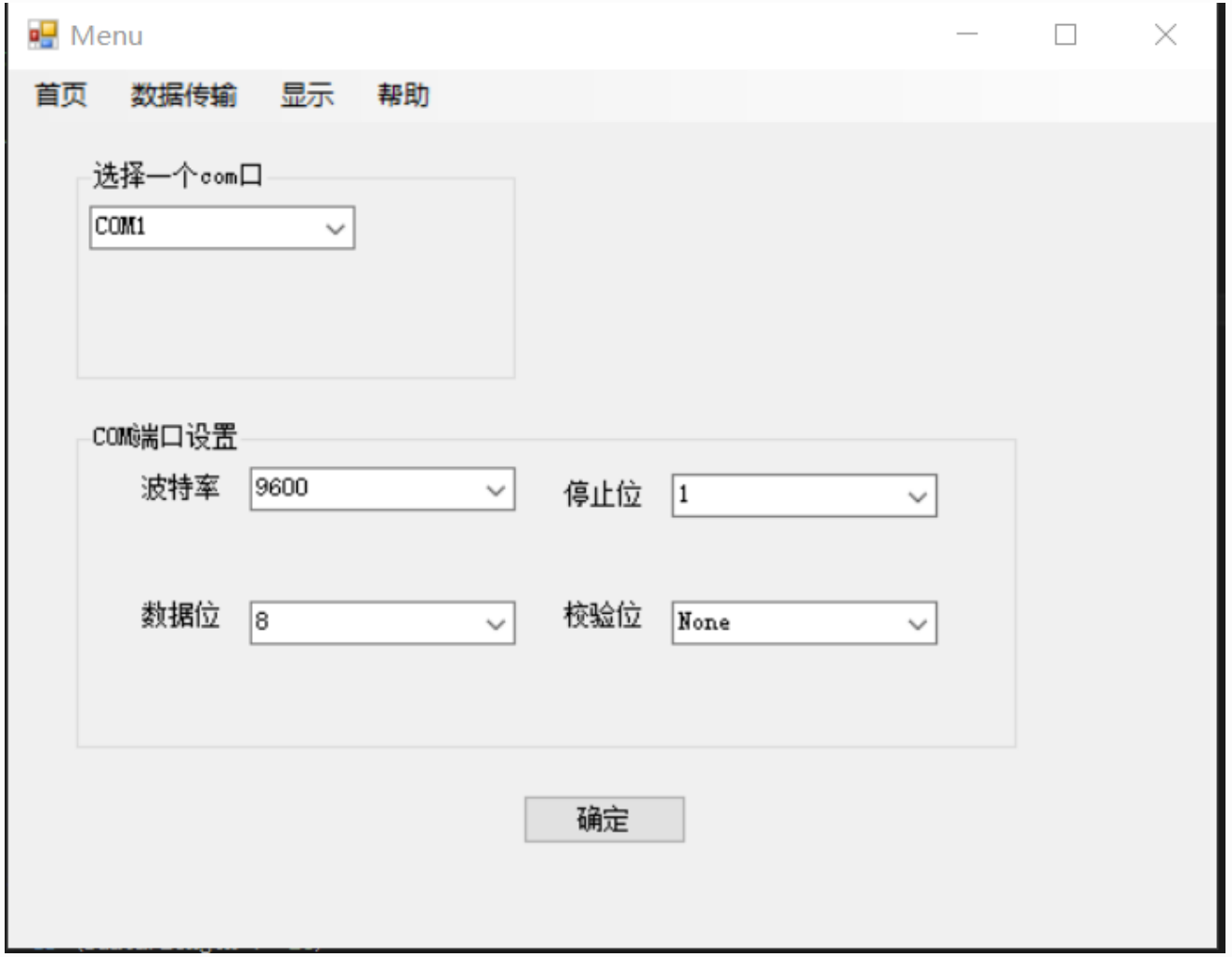

Cantool APP 解析、发送数据活动图
Cantool 装置
APP
运行APP
设置Com口
加载数据库
开启
开启状态
发送数据
接收数据
接收数据
发送用户
设定物理值
关闭
状态关闭

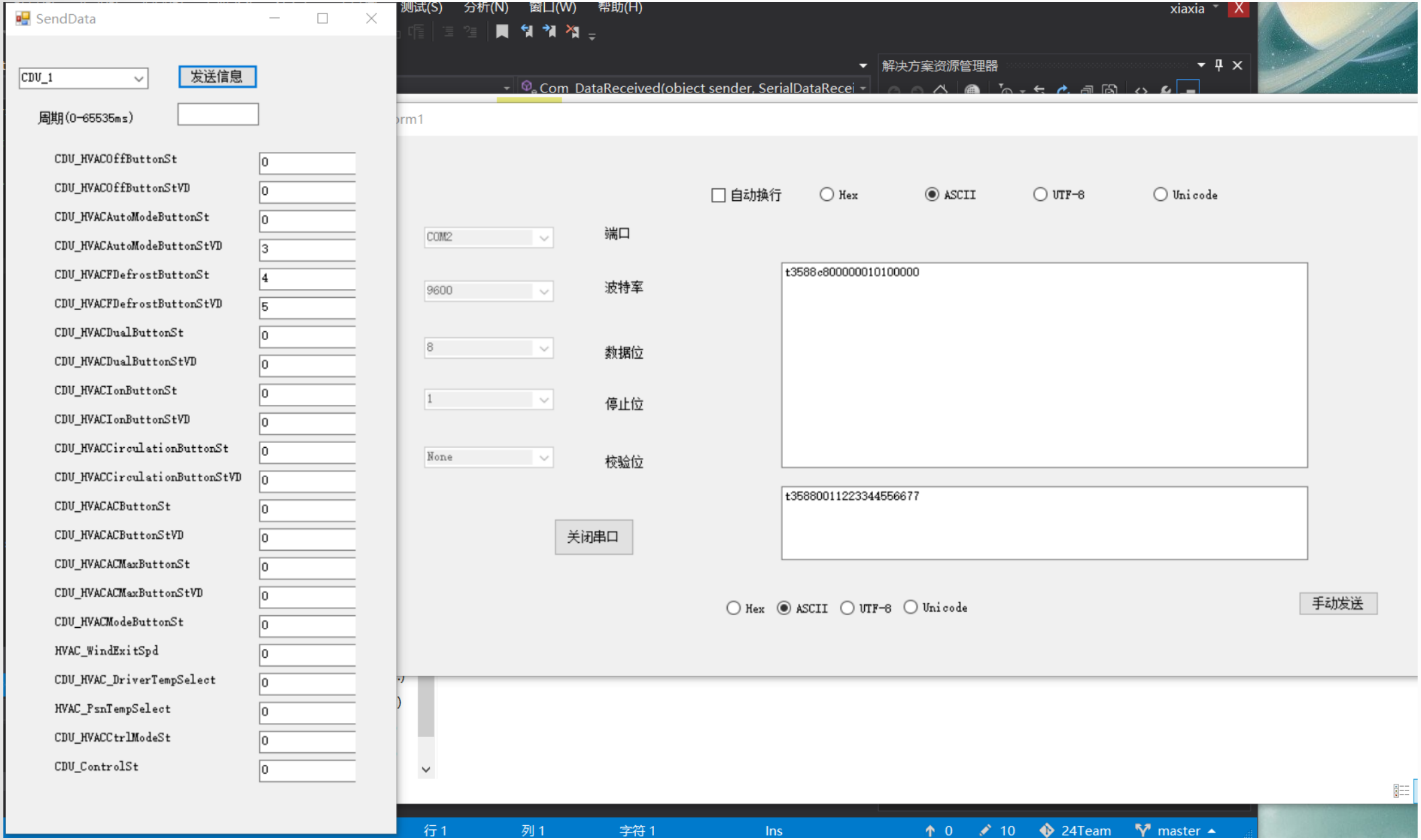
苗旭

- Com口的设置
- 接受和发送信息
- 动态创建用户设置物理信息所需控件
- 仪表盘、实时曲线的整合
- 数据库类的创建
- 对应代码的类图

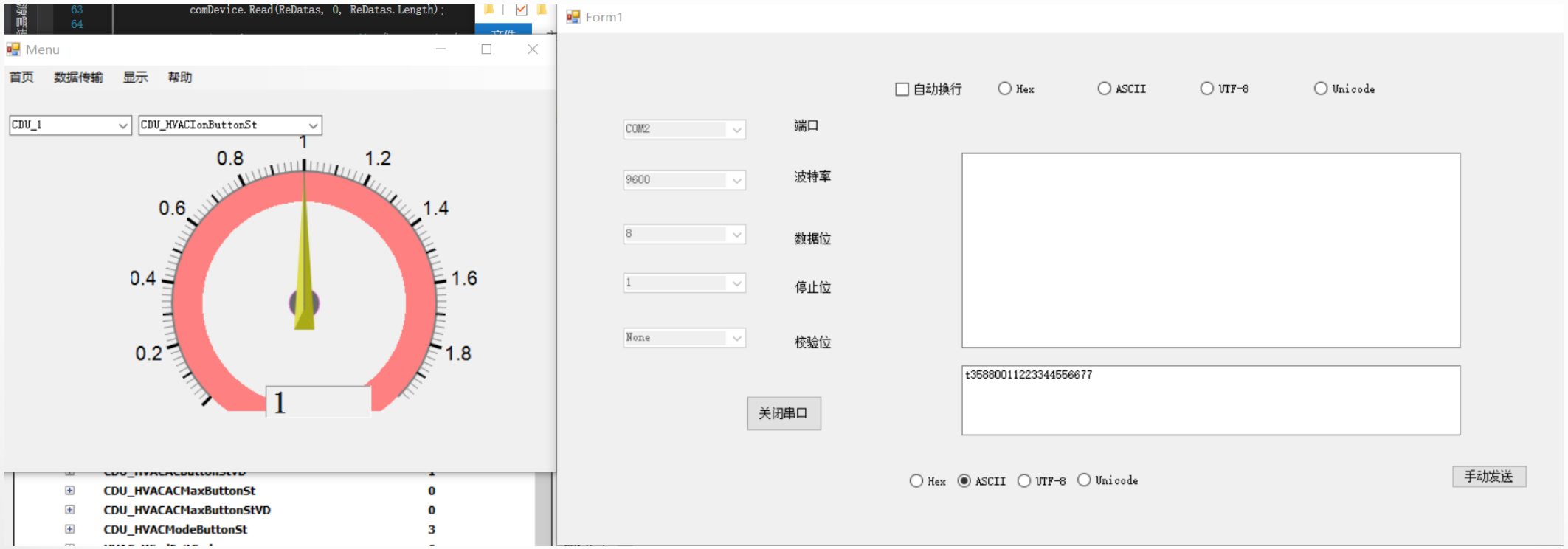


苗旭

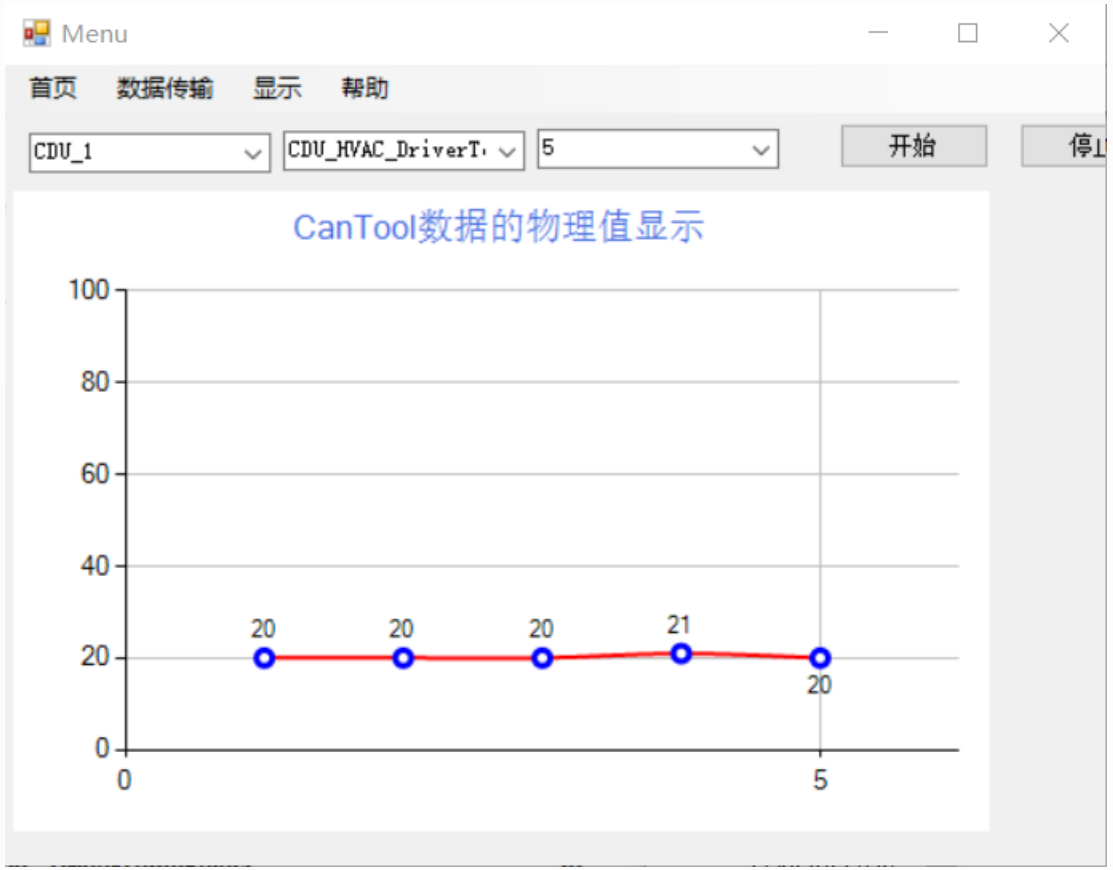

Menu
首页
数据传输
显示
帮助
选择一个com口
COM1
COM端口设置
波特率
9600
停止位
1
数据位
8
校验位
None
确定


SendData
CDU_1
发送信息
周期(0-65535ms)
CDU_HVACOffButtonSt
CDU_HVACOffButtonStVD
CDU_HVACAutoModeButtonSt
CDU_HVACAutoModeButtonStVD
CDU_HVACFDefrostButtonSt
CDU_HVACFDefrostButtonStVD
CDU_HVACDualButtonSt
CDU_HVACDualButtonStVD
CDU_HVACIonButtonSt
CDU_HVACIonButtonStVD
CDU_HVACCirculationButtonSt
CDU_HVACCirculationButtonStVD
CDU_HVACACButtonSt
CDU_HVACACButtonStVD
CDU_HVACACMaxButtonSt
CDU_HVACACMaxButtonStVD
CDU_HVACModeButtonSt
HVAC_WindExitSpd
CDU_HVAC_DriverTempSelect
HVAC_PsnTempSelect
CDU_HVACCtrlModeSt
CDU_ControlSt
测试(S)
分析(N)
窗口(W)
帮助(H)
xiaxia
解决方案资源管理器
自动换行
Hex
ASCII
UTF-8
Unicode
端口
COM2
波特率
9600
数据位
8
停止位
1
校验位
None
关闭串口
t3588c800000010100000
t3588001122334456677
手动发送
行 1
列 1
字符 1
Ins
24Team
master

苗旭

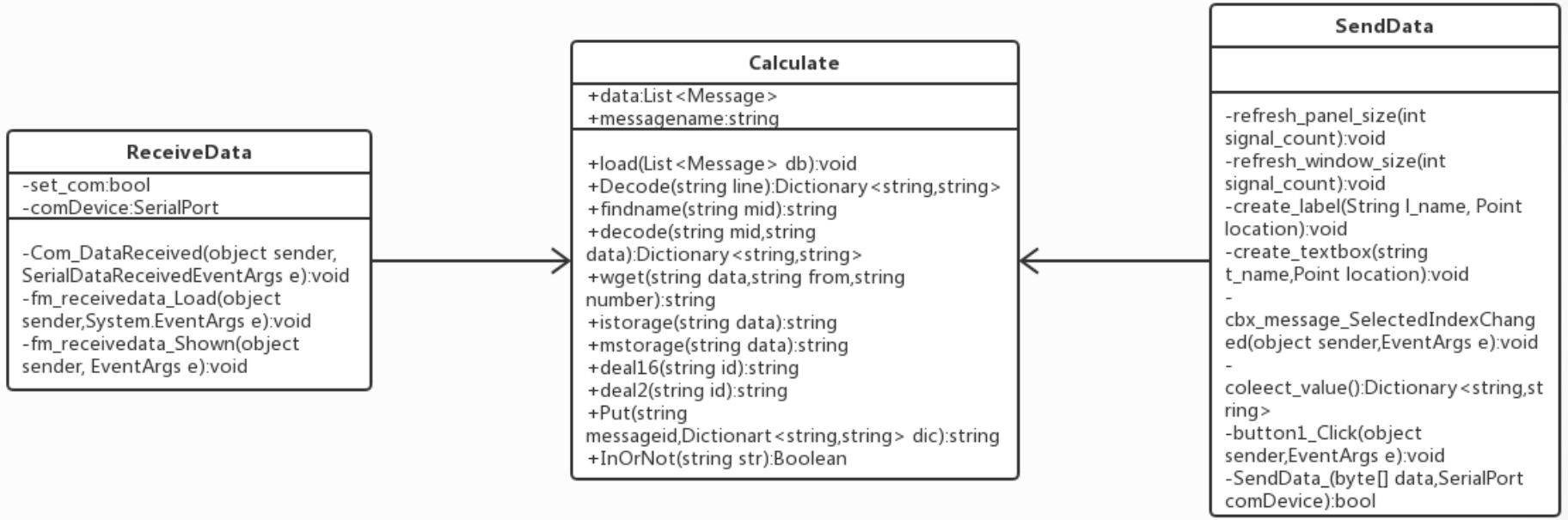

comDevice.Read(ReDatas, 0, ReDatas.Length);
Menu
首页
数据传输
显示
帮助
CDU_1
CDU_HVACIonButtonSt
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
1
CDU_HVACACMaxButtonSt 0
CDU_HVACACMaxButtonStVD 0
CDU_HVACModeButtonSt 3
Form1
自动换行
Hex
ASCII
UTF-8
Unicode
COM2
端口
9600
波特率
8
数据位
1
停止位
None
校验位
关闭串口
t35880011223344556677
Hex
ASCII
UTF-8
Unicode
手动发送

苗旭


Menu
首页
数据传输
显示
帮助
CDU_1
CDU_HVAC_DriverT
5
开始
CanTool数据的物理值显示
100
80
60
40
20
0
20
20
20
21
20
0
5

魏卿

- 发送的Can信号进行解析
- 对用户设置的物理值解析到Can信息
- 接收数据的长度和合法性校验
- 对应代码的类图



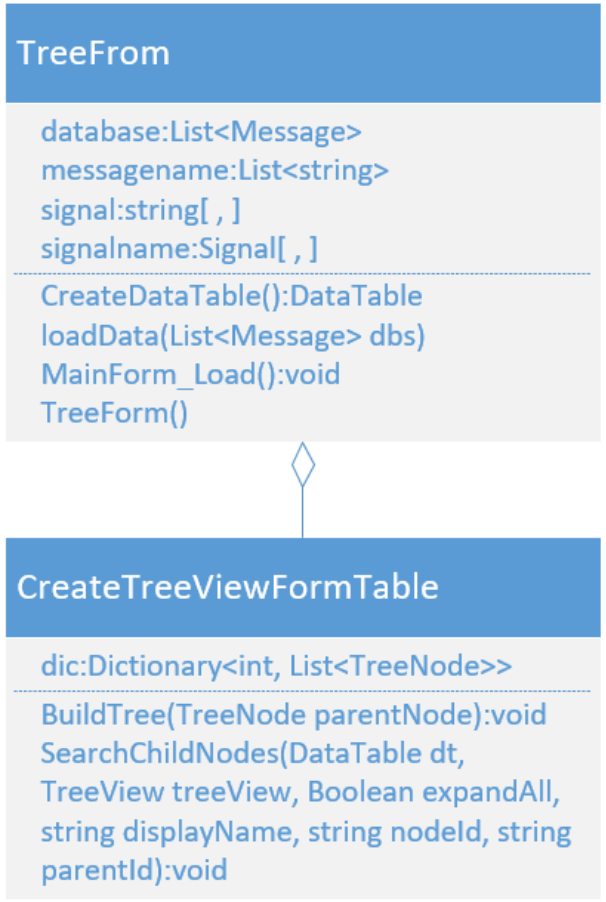
魏卿

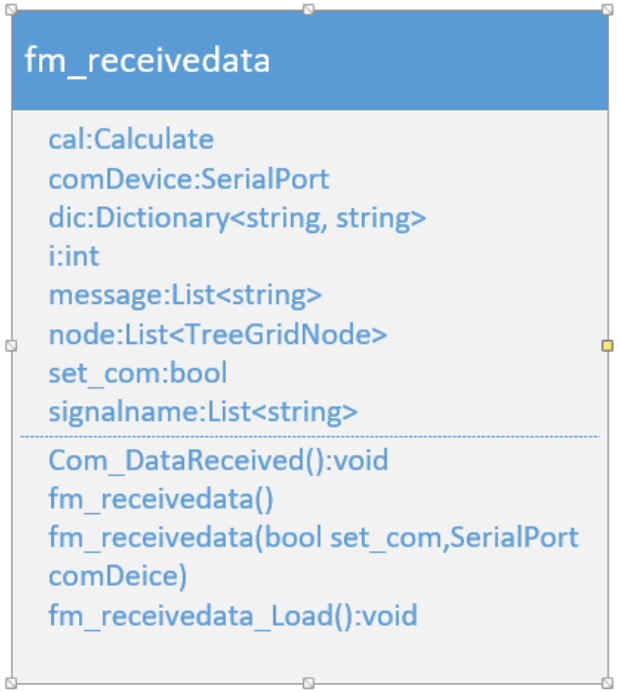
首先加载数据库，获得数据库的信息，以便后续解析设置功能的使用。然后是对**发送过来的数据进行解析**，将传过来的字符串输入进Decode方法里，在这个方法里先对信息进行拆分，获得十六进制的id信息以及数据信息。把这两个得到的值传入到decode这个方法里。进入到decode这个方法里之后，通过循环遍历数据库信息，找到与id匹配的message，并**对该message的signal进行遍历且依次进行解析**。把data根据存储类型放入到intel处理或者Motorola处理。处理完的数据再放入到wget方法中从而得到指定位数的数据并通过公式计算出该signal的物理值。

设置信息是通过**用户设置物理值**，然后根据该signal的信息确定放入can信息的位置，依次循环遍历每个设置的信息然后组合起来，**发送到CanTool装置**。

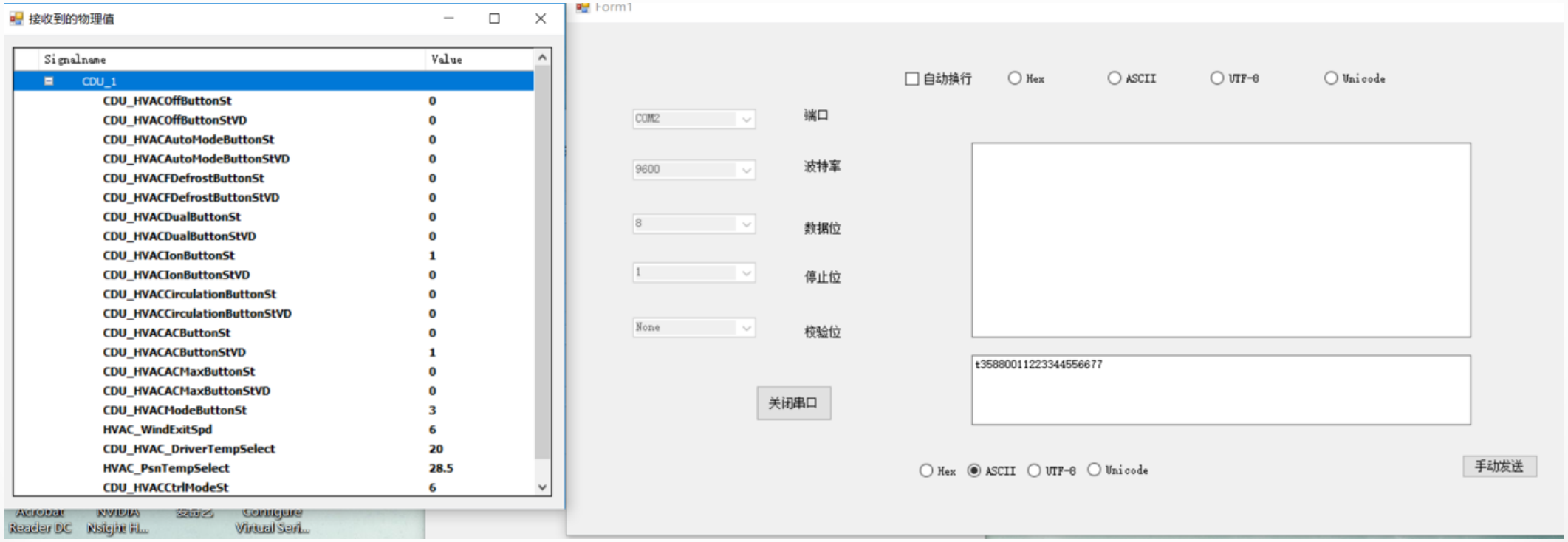
汪嫱

- 载入数据库后的树形结构显示
- 解析后数据的实时结构化显示
- 仪表盘、实时曲线的显示
- 对应代码的类图，会议记录等

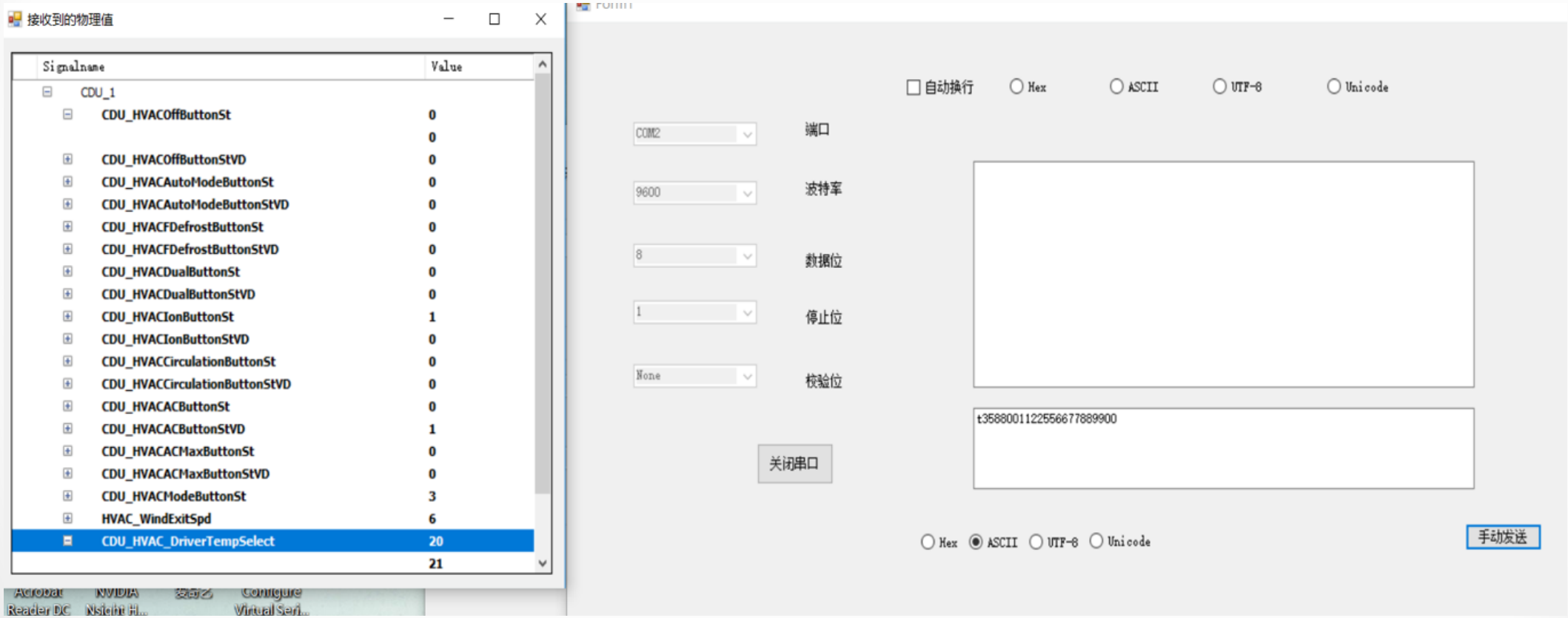




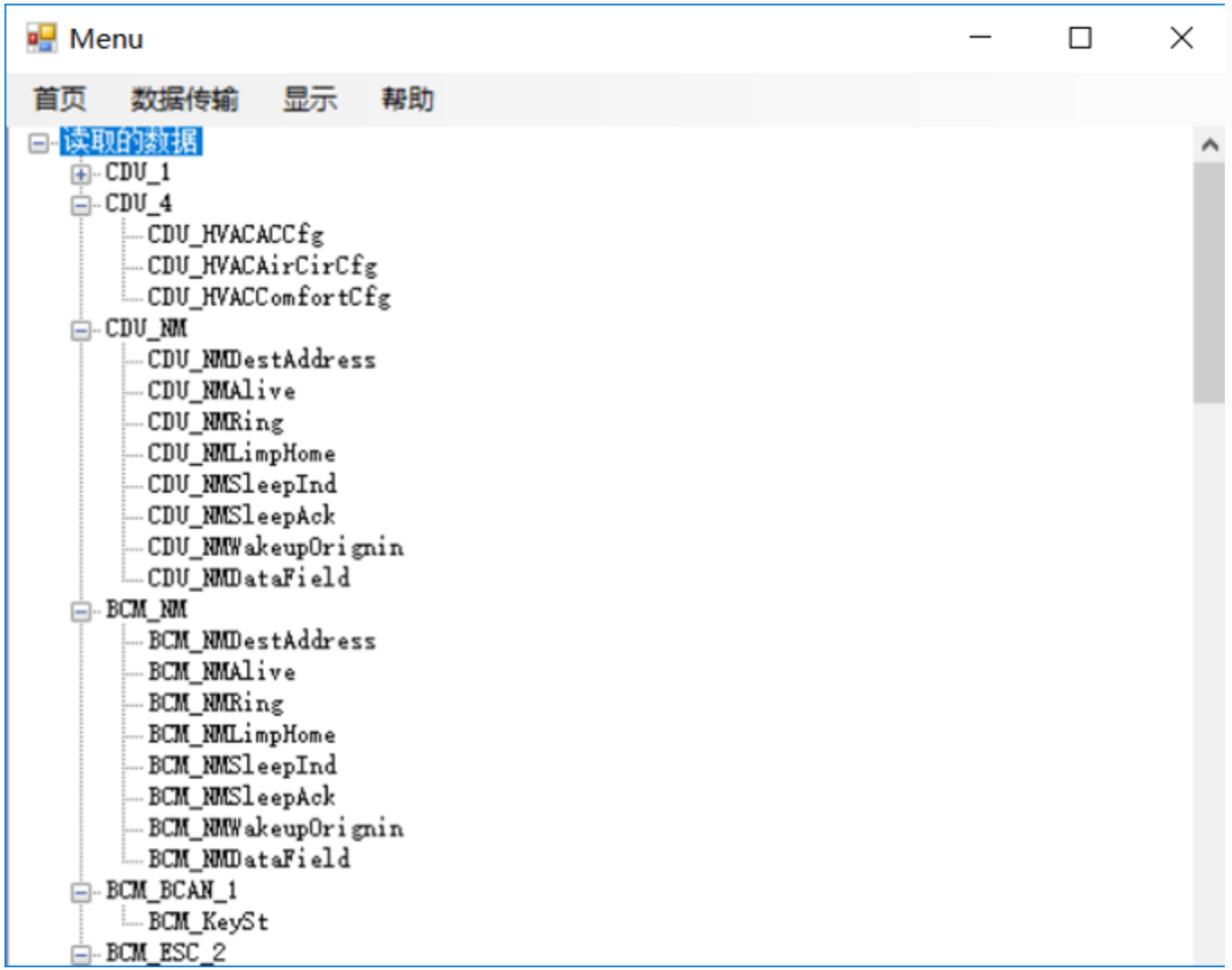
汪嫱


接收到的物理值
Signalname
Value
CDU_1
CDU_HVACOffButtonSt 0
CDU_HVACOffButtonStVD 0
CDU_HVACAutoModeButtonSt 0
CDU_HVACAutoModeButtonStVD 0
CDU_HVACFDefrostButtonSt 0
CDU_HVACFDefrostButtonStVD 0
CDU_HVACDualButtonSt 0
CDU_HVACDualButtonStVD 0
CDU_HVACIonButtonSt 1
CDU_HVACIonButtonStVD 0
CDU_HVACCirculationButtonSt 0
CDU_HVACCirculationButtonStVD 0
CDU_HVACACButtonSt 0
CDU_HVACACButtonStVD 1
CDU_HVACACMaxButtonSt 0
CDU_HVACACMaxButtonStVD 0
CDU_HVACModeButtonSt 3
HVAC_WindExitSpd 6
CDU_HVAC_DriverTempSelect 20
HVAC_PsnTempSelect 28.5
CDU_HVACCtrlModeSt 6
Form1
自动换行
Hex
ASCII
UTF-8
Unicode
端口
COM2
波特率
9600
数据位
8
停止位
1
校验位
None
关闭串口
t35880011223344556677
Hex
ASCII
UTF-8
Unicode
手动发送

汪嫱

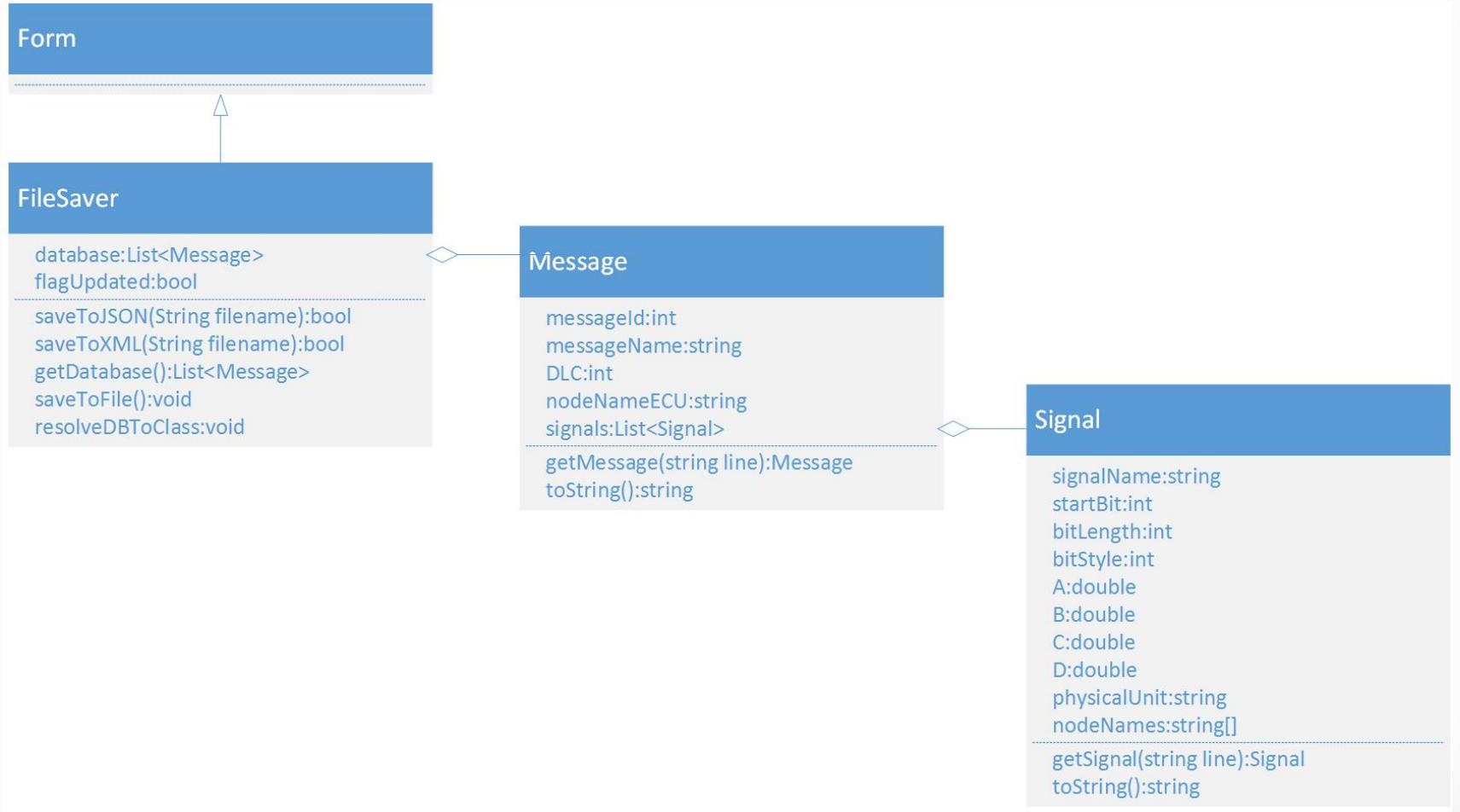

接收到的物理值
Signalname
Value
CDU_1
CDU_HVACOffButtonSt 0
0
CDU_HVACOffButtonStVD 0
CDU_HVACAutoModeButtonSt 0
CDU_HVACAutoModeButtonStVD 0
CDU_HVACFDefrostButtonSt 0
CDU_HVACFDefrostButtonStVD 0
CDU_HVACDualButtonSt 0
CDU_HVACDualButtonStVD 0
CDU_HVACIonButtonSt 1
CDU_HVACIonButtonStVD 0
CDU_HVACCirculationButtonSt 0
CDU_HVACCirculationButtonStVD 0
CDU_HVACACButtonSt 0
CDU_HVACACButtonStVD 1
CDU_HVACACMaxButtonSt 0
CDU_HVACACMaxButtonStVD 0
CDU_HVACModeButtonSt 3
HVAC_WindExitSpd 6
CDU_HVAC_DriverTempSelect 20
21
自动换行
Hex
ASCII
UTF-8
Unicode
端口
COM2
波特率
9600
数据位
8
停止位
1
校验位
None
关闭串口
t358800112255667788990O
Hex
ASCII
UTF-8
Unicode
手动发送

汪嫱

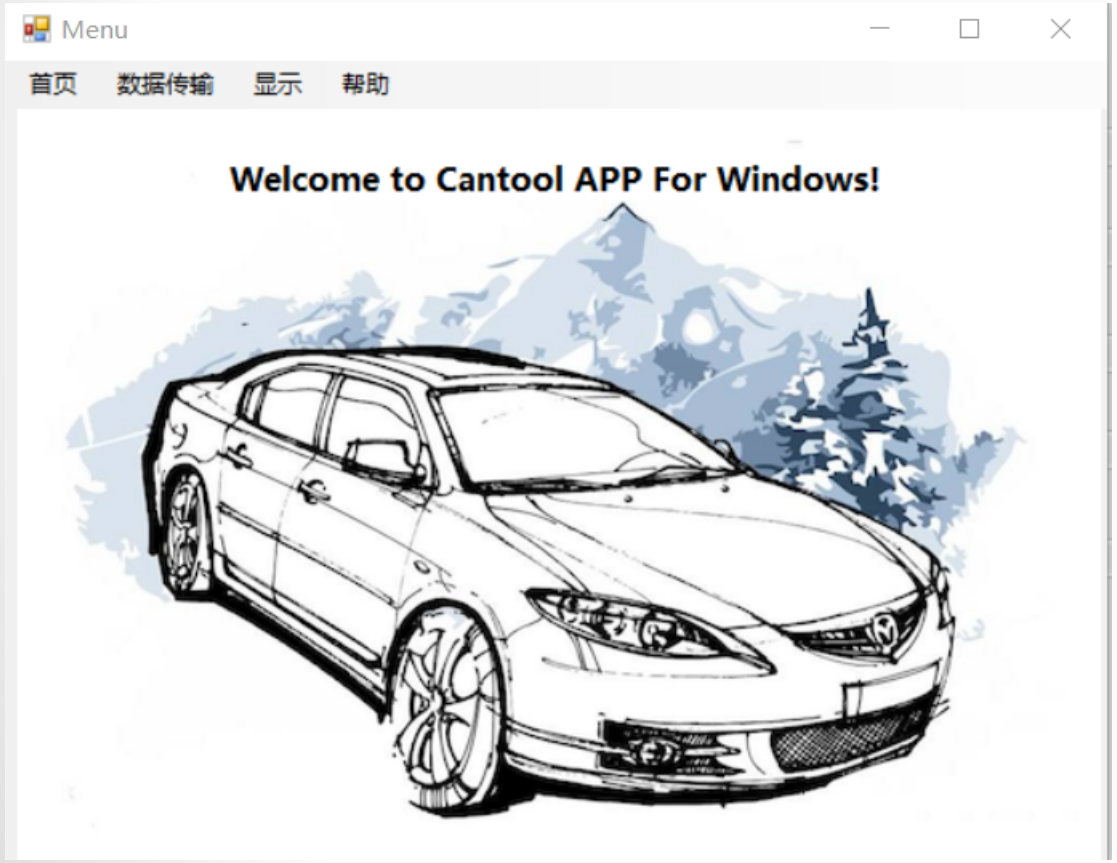

Menu
首页
数据传输
显示
帮助
读取的数据
CDU_1
CDU_4
CDU_HVACACCfg
CDU_HVACAirCirCfg
CDU_HVACComfortCfg
CDU_NM
CDU_NMDestAddress
CDU_NMAlive
CDU_NMRing
CDU_NMLimpHome
CDU_NMSleepInd
CDU_NMSleepAck
CDU_NMWakeupOrignin
CDU_NMDataField
BCM_NM
BCM_NMDestAddress
BCM_NMAlive
BCM_NMRing
BCM_NMLimpHome
BCM_NMSleepInd
BCM_NMSleepAck
BCM_NMWakeupOrignin
BCM_NMDataField
BCM_BCAN_1
BCM_KeySt
BCM_ESC_2

吴虹

- Can信息布局显示
- 设定Cantool装置和Can总线速率
- 用户数据库文件读取并转存为Xml、Json
- 用例图、活动图等，对应代码的类图
- 界面设计



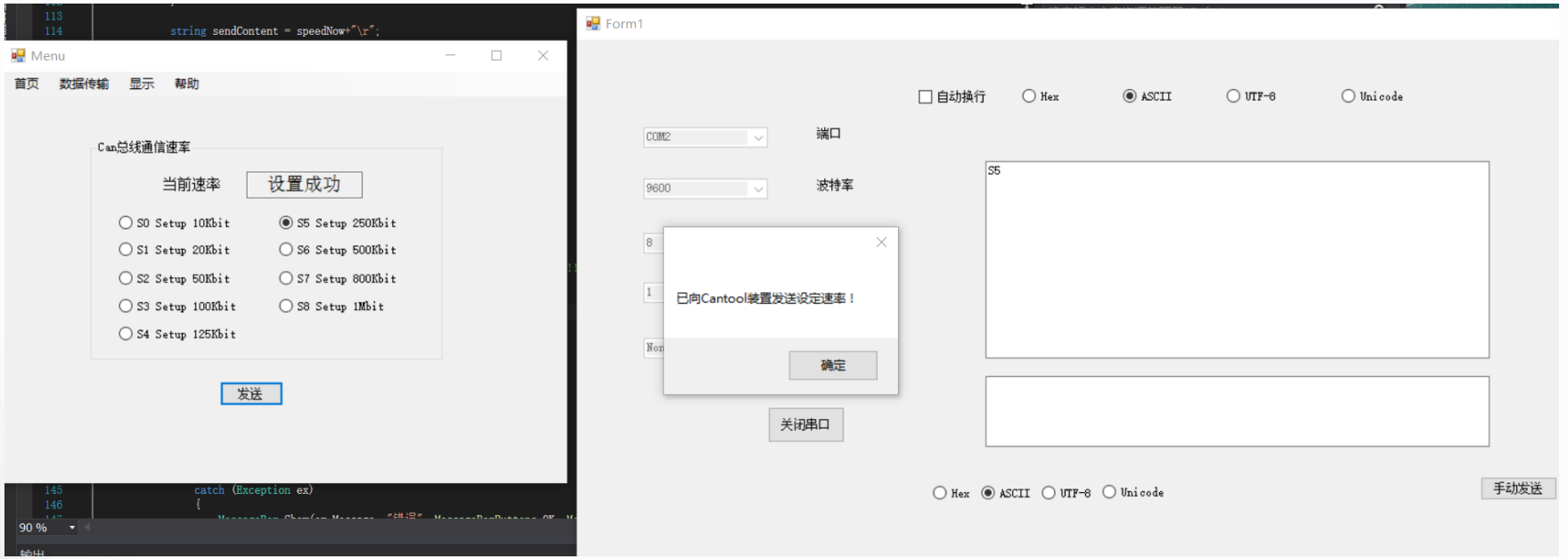
吴虹


Menu
首页
数据传输
显示
帮助
Welcome to Cantool APP For Windows!

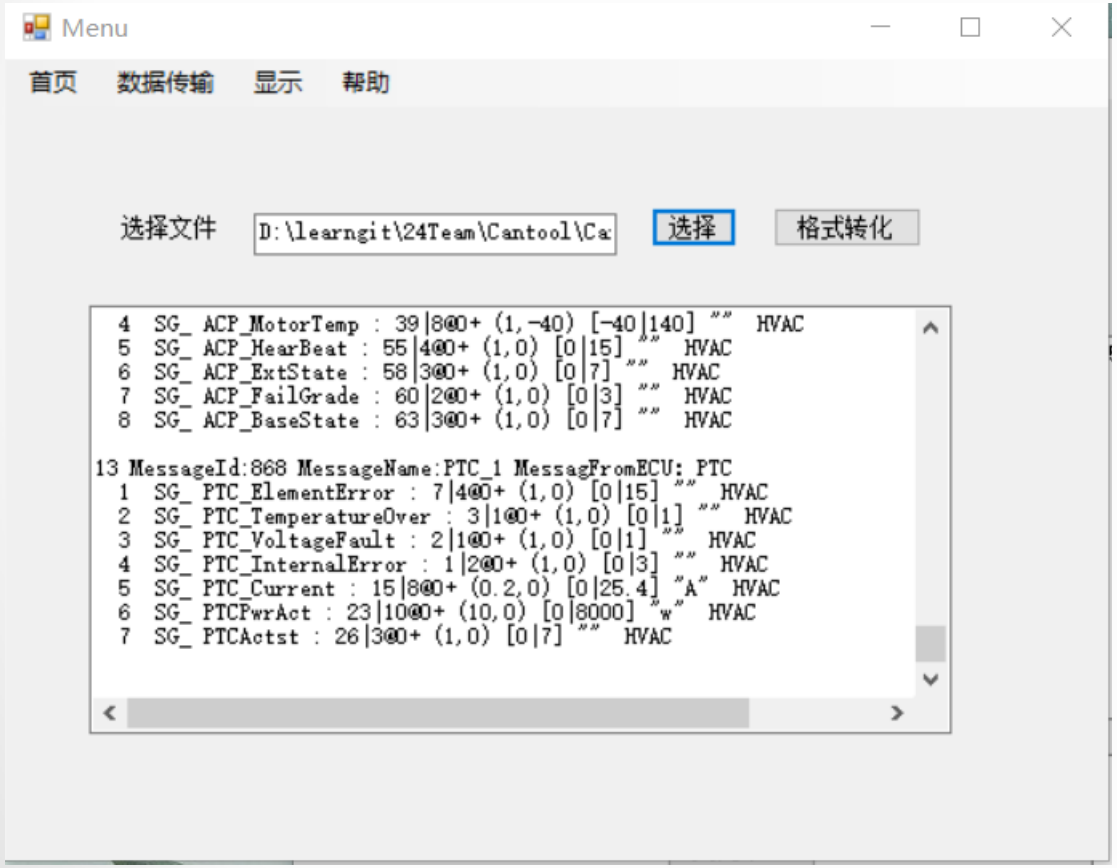

About
Cantool
www.cnblogs.com/team24
APPLICATION FOR WINDOWS
V1.3.0

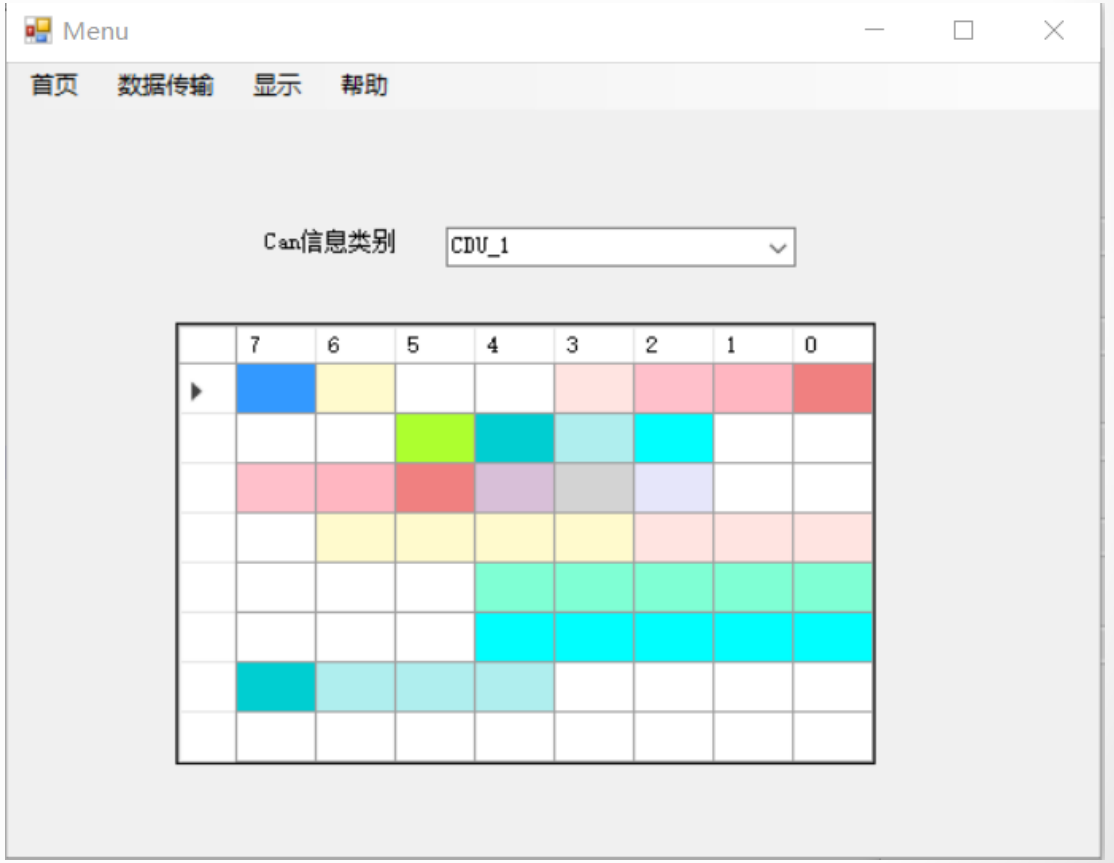
吴虹


Menu
首页
数据传输
显示
帮助
Cantool装置版本信息
获取
Cantool装置状态
已关闭
打开
关闭


string sendContent = speedNow+"\r";
Menu
首页
数据传输
显示
帮助
Can总线通信速率
当前速率
设置成功
S0 Setup 10Kbit
S1 Setup 20Kbit
S2 Setup 50Kbit
S3 Setup 100Kbit
S4 Setup 125Kbit
S5 Setup 250Kbit
S6 Setup 500Kbit
S7 Setup 800Kbit
S8 Setup 1Mbit
发送
catch (Exception ex)
{
90 %
Form1
自动换行
Hex
ASCII
UTF-8
Unicode
COM2
端口
9600
波特率
已向Cantool装置发送设定速率！
确定
关闭串口
S5
Hex
ASCII
UTF-8
Unicode
手动发送

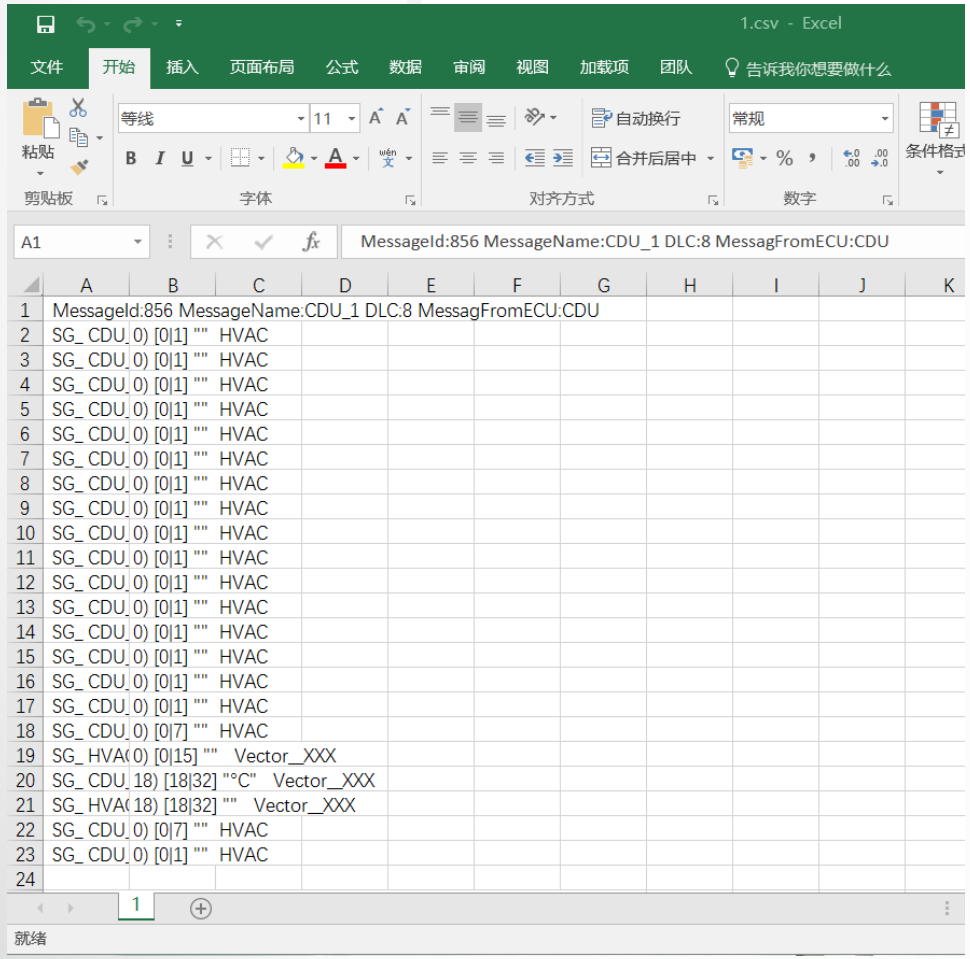
吴虹


Menu
首页
数据传输
显示
帮助
选择文件
D:\learngit\24Team\Cantool\Ca
选择
格式转化
4 SG_ ACP_MotorTemp : 39|8@0+ (1,-40) [-40|140] "" HVAC
5 SG_ ACP_HearBeat : 55|4@0+ (1,0) [0|15] "" HVAC
6 SG_ ACP_ExtState : 58|3@0+ (1,0) [0|7] "" HVAC
7 SG_ ACP_FailGrade : 60|2@0+ (1,0) [0|3] "" HVAC
8 SG_ ACP_BaseState : 63|3@0+ (1,0) [0|7] "" HVAC
13 MessageId:868 MessageName:PTC_1 MessagFromECU: PTC
1 SG_ PTC_ElementError : 7|4@0+ (1,0) [0|15] "" HVAC
2 SG_ PTC_TemperatureOver : 3|1@0+ (1,0) [0|1] "" HVAC
3 SG_ PTC_VoltageFault : 2|1@0+ (1,0) [0|1] "" HVAC
4 SG_ PTC_InternalError : 1|2@0+ (1,0) [0|3] "" HVAC
5 SG_ PTC_Current : 15|8@0+ (0.2,0) [0|25.4] "A" HVAC
6 SG_ PTCPwrAct : 23|10@0+ (10,0) [0|8000] "w" HVAC
7 SG_ PTCActst : 26|3@0+ (1,0) [0|7] "" HVAC


Menu
首页
数据传输
显示
帮助
Can信息类别
CDU_1
7
6
5
4
3
2
1
0

吴虹


```
{"messageId":856,"messageName":"CDU_1","DLC":8,"nodeNameECU":"CDU","signals":[" SG_ CDU_HVACOffButtonSt : 0|1@0+ (1,0) [0|1] \"\"  H
{"messageId":61,"messageName":"CDU_4","DLC":8,"nodeNameECU":"CDU","signals":[" SG_ CDU_HVACACCfg : 1|2@0+ (1,0) [0|3] \"\"  HVAC","
{"messageId":1067,"messageName":"CDU_NM","DLC":8,"nodeNameECU":"CDU","signals":[" SG_ CDU_NMDestAddress : 7|8@0+ (1,0) [0|255] \"\"
{"messageId":1056,"messageName":"BCM_NM","DLC":8,"nodeNameECU":"BCM","signals":[" SG_ BCM_NMDestAddress : 7|8@0+ (1,0) [0|255] \"\"
{"messageId":792,"messageName":"BCM_BCAN_1","DLC":8,"nodeNameECU":"BCM","signals":[" SG_ BCM_KeySt : 1|2@0+ (1,0) [1|3] \"\"  PEPS,I
{"messageId":837,"messageName":"BCM_ESC_2","DLC":8,"nodeNameECU":"BCM","signals":[" SG_ ESC_VehSpdVD : 37|1@0+ (1,0) [0|1] \"\"  BCM
{"messageId":915,"messageName":"BCM_VCU_2","DLC":8,"nodeNameECU":"BCM","signals":[" SG_ VCU_CompressorPwrLimit : 21|6@0+ (100,0) [0|
{"messageId":800,"messageName":"HVAC_1","DLC":8,"nodeNameECU":"HVAC","signals":[" SG_ HVAC_AirCompressorSt : 2|3@0+ (1,0) [0|1] \"\"
{"messageId":801,"messageName":"HVAC_2","DLC":8,"nodeNameECU":"HVAC","signals":[" SG_ HVAC_RawCabinTemp : 7|8@0+ (0.5,-40) [-40|87.5
{"messageId":797,"messageName":"HVAC_3","DLC":8,"nodeNameECU":"HVAC","signals":[" SG_ HVAC_ACCfgSt : 0|1@0+ (1,0) [0|1] \"\"  CDU","
{"messageId":864,"messageName":"HVAC_4","DLC":8,"nodeNameECU":"ACP","signals":[" SG_ HVAC_ACPCommandVD : 0|1@0+ (1,0) [0|1] \"\"  AC
{"messageId":867,"messageName":"ACP_1","DLC":8,"nodeNameECU":"ACP","signals":[" SG_ ACP_Speed : 6|7@0+ (100,0) [0|8600] \"\"  HVAC",
{"messageId":868,"messageName":"PTC_1","DLC":8,"nodeNameECU":"PTC","signals":[" SG_ PTC_ElementError : 7|4@0+ (1,0) [0|15] \"\"  HVA
```


```
<?xml version="1.0" encoding="utf-8"?>
<Messages>
  <Message id="856" name="CDU_1" DLC="8" fromECU="CDU">
    <Signal> SG_ CDU_HVACOffButtonSt : 0|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACOffButtonStVD : 1|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACAutoModeButtonSt : 2|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACAutoModeButtonStVD : 3|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACFDefrostButtonSt : 6|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACFDefrostButtonStVD : 7|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACDualButtonSt : 10|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACDualButtonStVD : 11|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACIonButtonSt : 12|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACIonButtonStVD : 13|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACCirculationButtonSt : 18|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACCirculationButtonStVD : 19|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACACButtonSt : 20|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACACButtonStVD : 21|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACACMaxButtonSt : 22|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACACMaxButtonStVD : 23|1@0+ (1,0) [0|1] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACModeButtonSt : 26|3@0+ (1,0) [0|7] ""  HVAC</Signal>
    <Signal> SG_ HVAC_WindExitSpd : 30|4@0+ (1,0) [0|15] ""  Vector__XXX</Signal>
    <Signal> SG_ CDU_HVAC_DriverTempSelect : 36|5@0+ (0.5,18) [18|32] "°C"  Vector__XXX</Signal>
    <Signal> SG_ HVAC_PsnTempSelect : 44|5@0+ (0.5,18) [18|32] ""  Vector__XXX</Signal>
    <Signal> SG_ CDU_HVACCtrlModeSt : 54|3@0+ (1,0) [0|7] ""  HVAC</Signal>
    <Signal> SG_ CDU_ControlSt : 55|1@0+ (1,0) [0|1] ""  HVAC</Signal>
  </Message>
  <Message id="61" name="CDU_4" DLC="8" fromECU="CDU">
    <Signal> SG_ CDU_HVACACCfg : 1|2@0+ (1,0) [0|3] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACAirCirCfg : 3|2@0+ (1,0) [0|3] ""  HVAC</Signal>
    <Signal> SG_ CDU_HVACComfortCfg : 5|2@0+ (1,0) [0|3] ""  HVAC</Signal>
  </Message>
  <Message id="1067" name="CDU_NM" DLC="8" fromECU="CDU">
    <Signal> SG_ CDU_NMDestAddress : 7|8@0+ (1,0) [0|255] ""  BCM,PEPS,ICM,CDU</Signal>
    <Signal> SG_ CDU_NMAlive : 8|1@0+ (1,0) [0|1] ""  BCM,PEPS,ICM,CDU</Signal>
    <Signal> SG_ CDU_NMRing : 9|1@0+ (1,0) [0|1] ""  BCM,PEPS,ICM,CDU</Signal>
```

展望未来

- 面临问题：性能方面，解析速度有待提高
- 原因分析：解析过程中，解析的数据需要存入Mysql数据库中，因此耗费的时间过长
- 后期完善：加速解析的速率，将所有接收的消息先暂存入队列

不足之处与改进之处

与测试组（第15组）交接与改进

1

测试过程：沟通合作较早，测试三次，一共反馈两版**正式的测试报告**，结合测试过程增量开发。

2

测试时间：

- 第一次：2017.10.21（初次测试）
- 第二次：2017.10.25（具体需求讨论交流）
- 第三次：2017.10.28（验收测试）

3

测试结果反馈的问题：

- 接收的越界校验
- 接收数据的合法性
- 界面跳转的bug问题
- 未完成的功能完善

与测试组（第4组）交接与改进

1

测试过程：测试三次，总共反馈一份测试文档。

2

测试时间：

- 第一次：2017.10.24
- 第二次： 2017.10.26
- 第三次：2017.10.28

3

测试结果反馈的问题：

- 未完成的功能

Thanks !