CANTOOL

APP For Windows

Team 24

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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

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

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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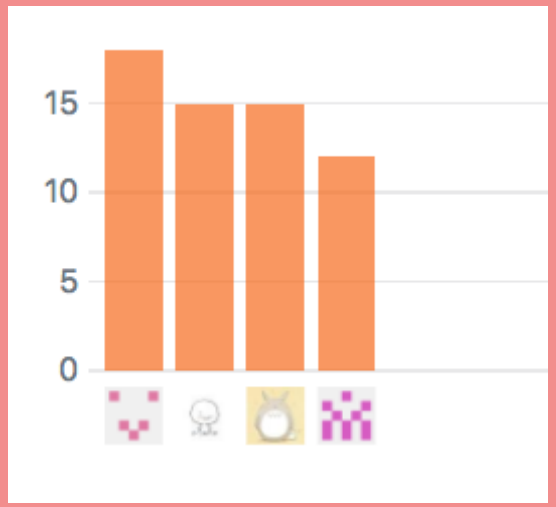
GitHub

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**.

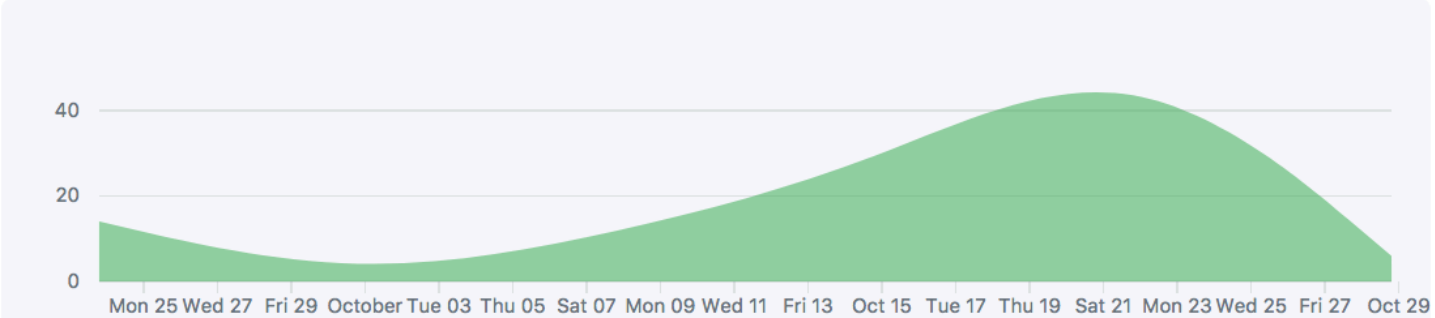
Pulse



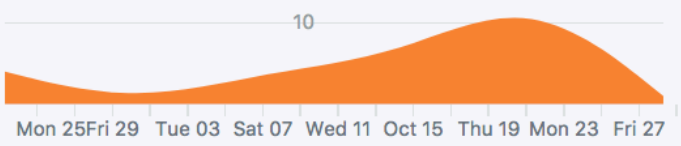
Sep 24, 2017 – Oct 29, 2017

Contributions: **Commits**

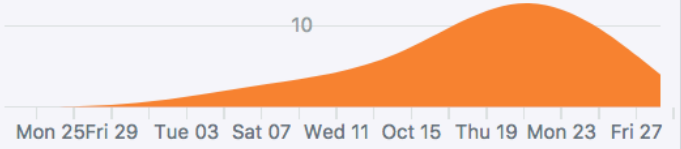
Contributions to master, excluding merge commits



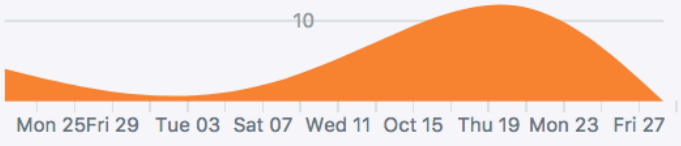
Rainbow0625 #1
29 commits 13,264 ++ 5,475 --



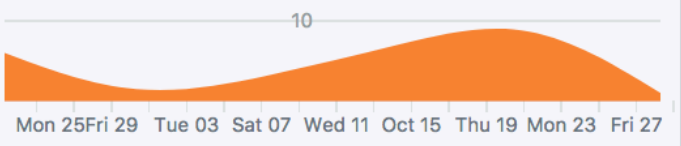
incomparableTJU #2
29 commits 2,861 ++ 479 --



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



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



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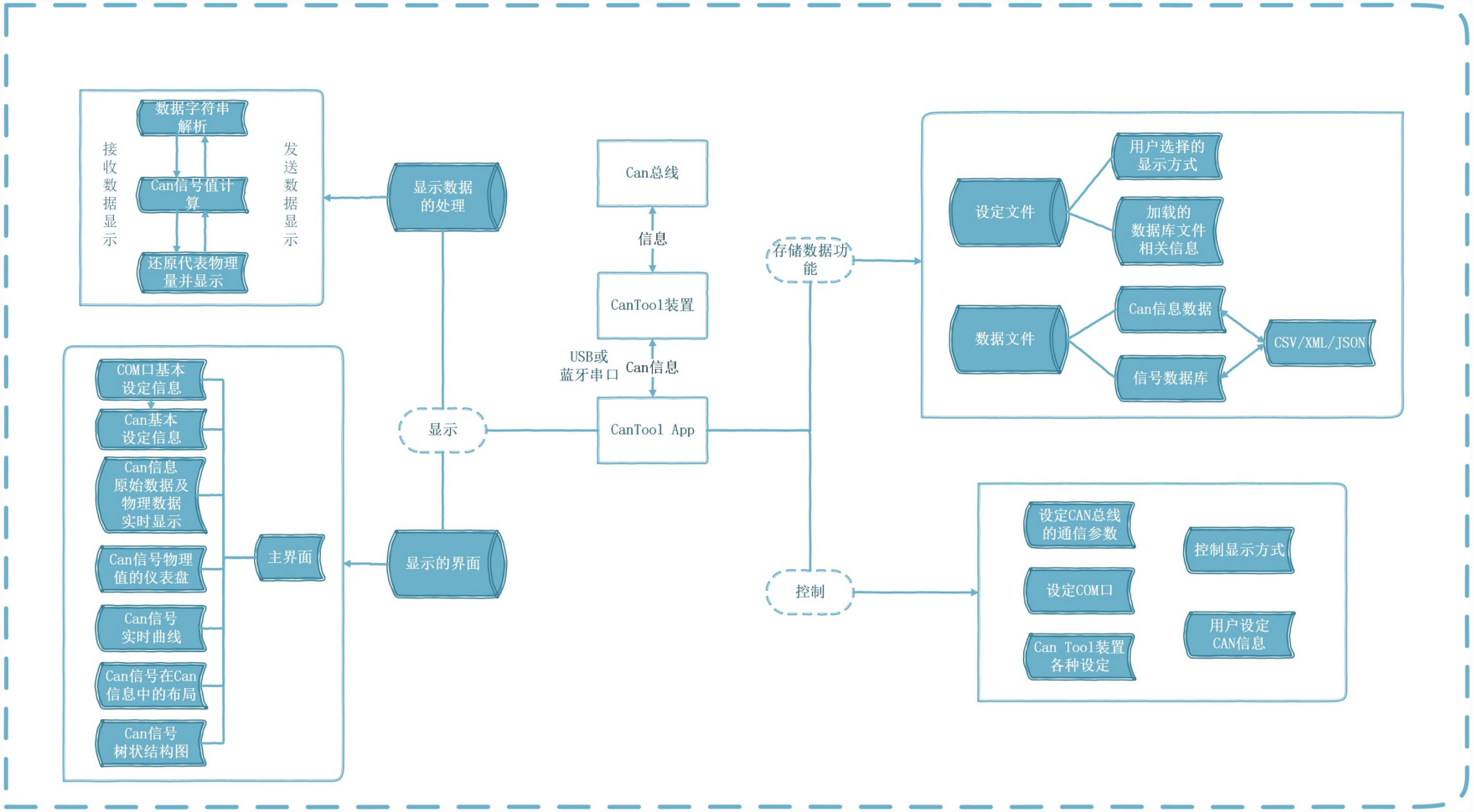
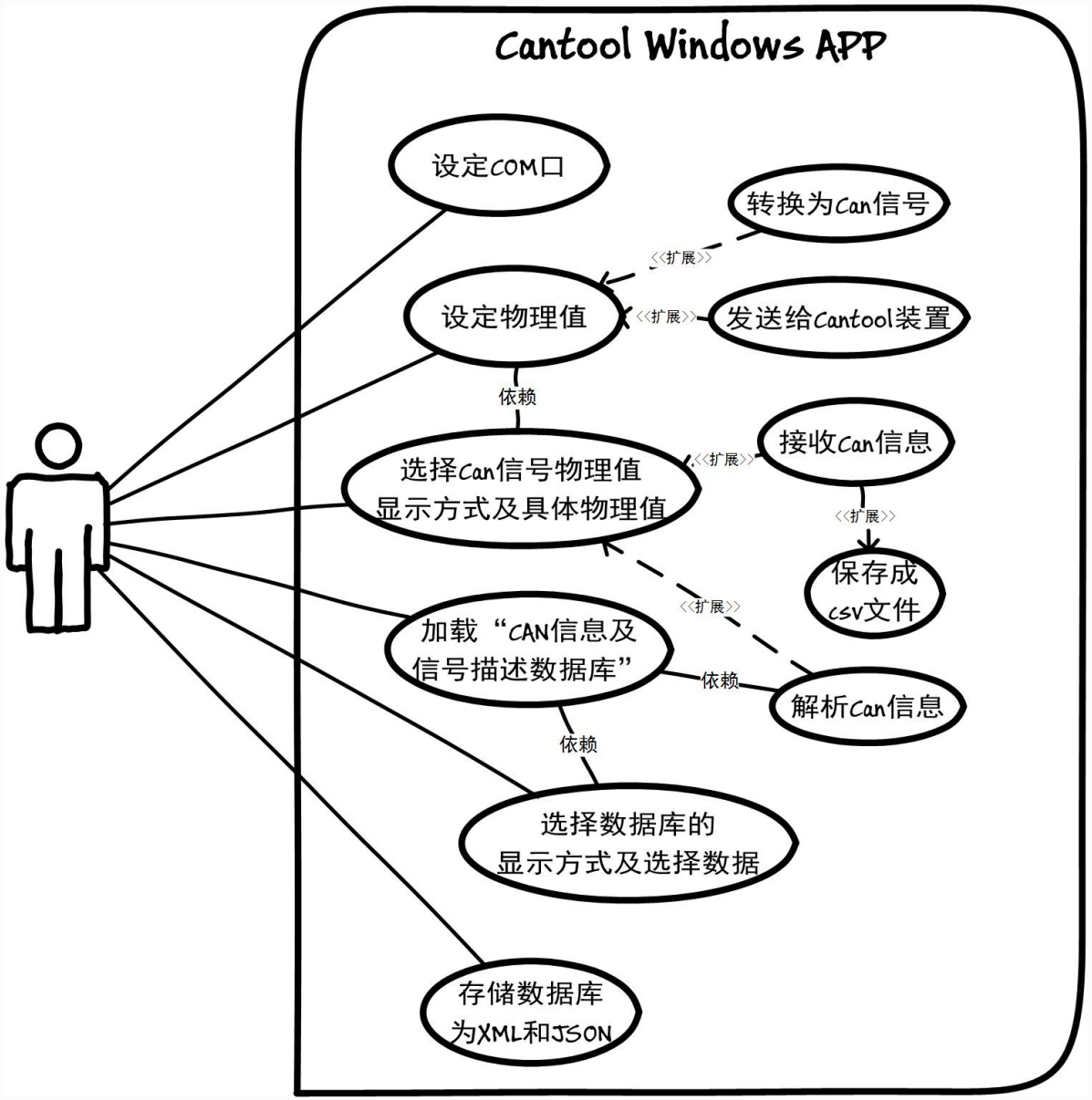
开发环境

- Visual Studio 2015
- Mysql 5.0
- Virtual Serial Ports

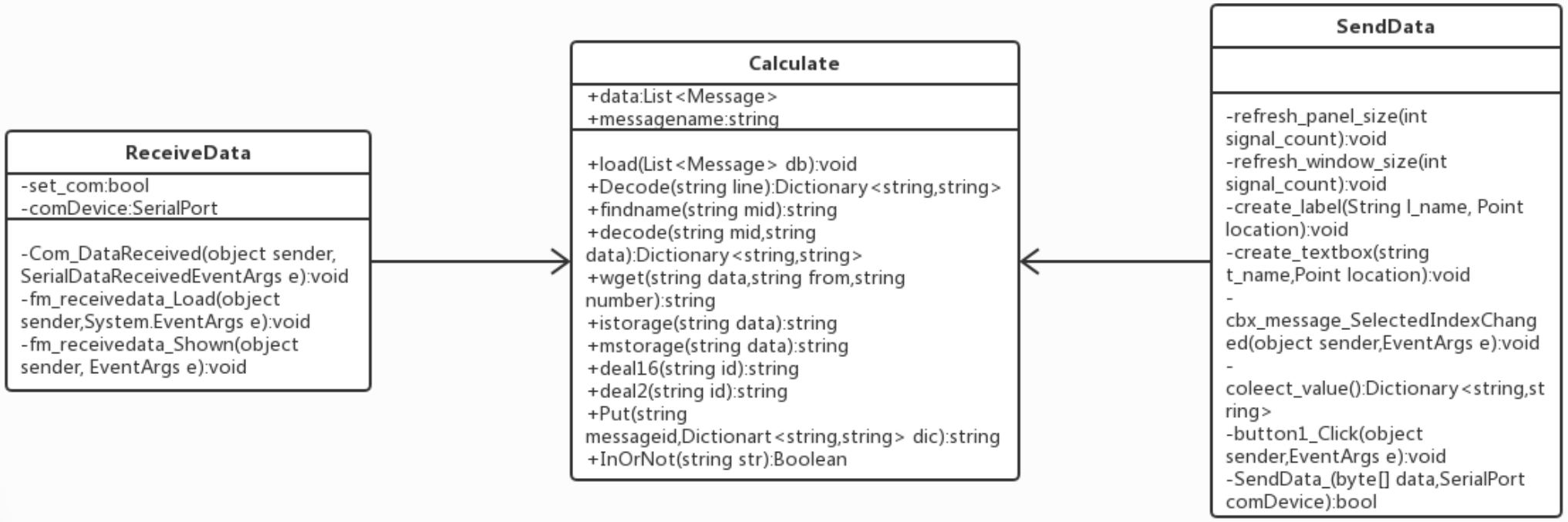
功能模块图


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

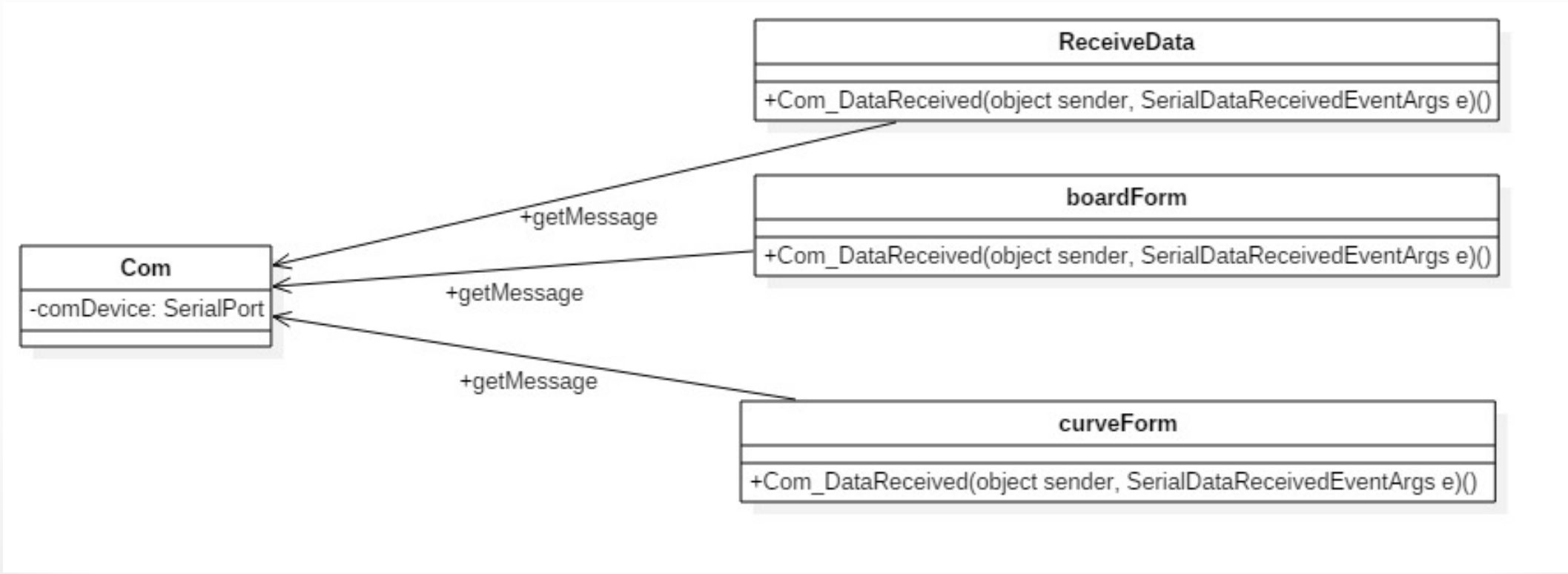
用例图


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

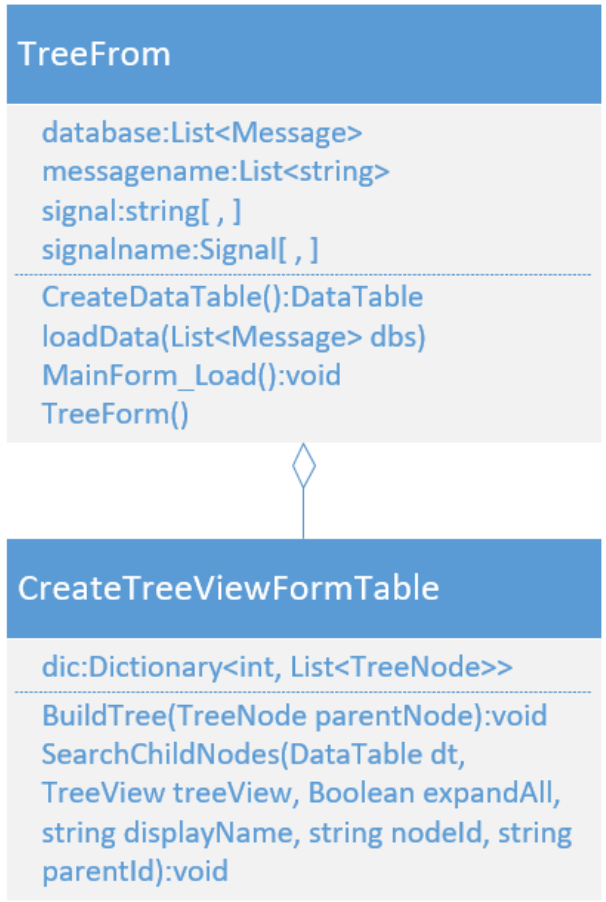
类图

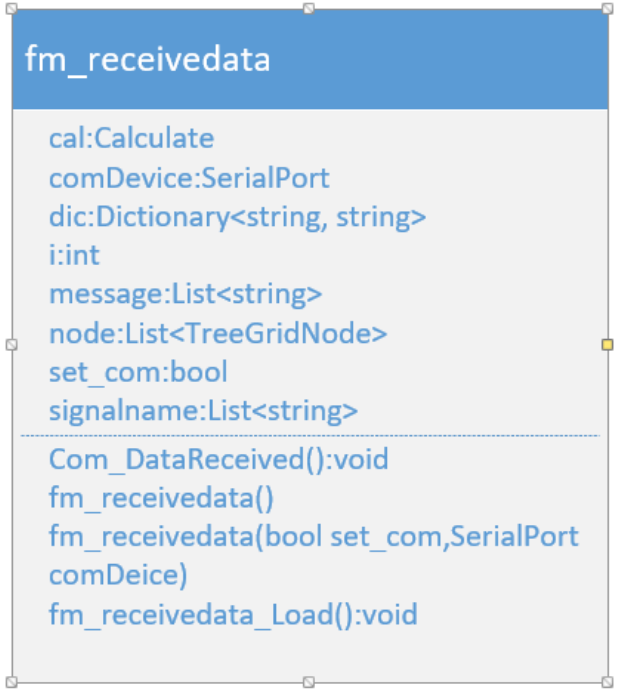

ReceiveData
-set_com:bool
-comDevice:SerialPort
-Com_DataReceived(object sender, SerialDataReceivedEventArgs e):void
-fm_receivedata_Load(object sender,System.EventArgs e):void
-fm_receivedata_Shown(object sender, EventArgs e):void
Calculate
+data:List<Message>
+messagename:string
+load(List<Message> db):void
+Decode(string line):Dictionary<string,string>
+findname(string mid):string
+decode(string mid,string data):Dictionary<string,string>
+wget(string data,string from,string number):string
+istorage(string data):string
+mstorage(string data):string
+deal16(string id):string
+deal2(string id):string
+Put(string messageid,Dictionart<string,string> dic):string
+InOrNot(string str):Boolean
SendData
-refresh_panel_size(int signal_count):void
-refresh_window_size(int signal_count):void
-create_label(String l_name, Point location):void
-create_textbox(string t_name,Point location):void
-cbx_message_SelectedIndexChanged(object sender,EventArgs e):void
-coleect_value():Dictionary<string,string>
-button1_Click(object sender,EventArgs e):void
-SendData_(byte[] data,SerialPort comDevice):bool

类图

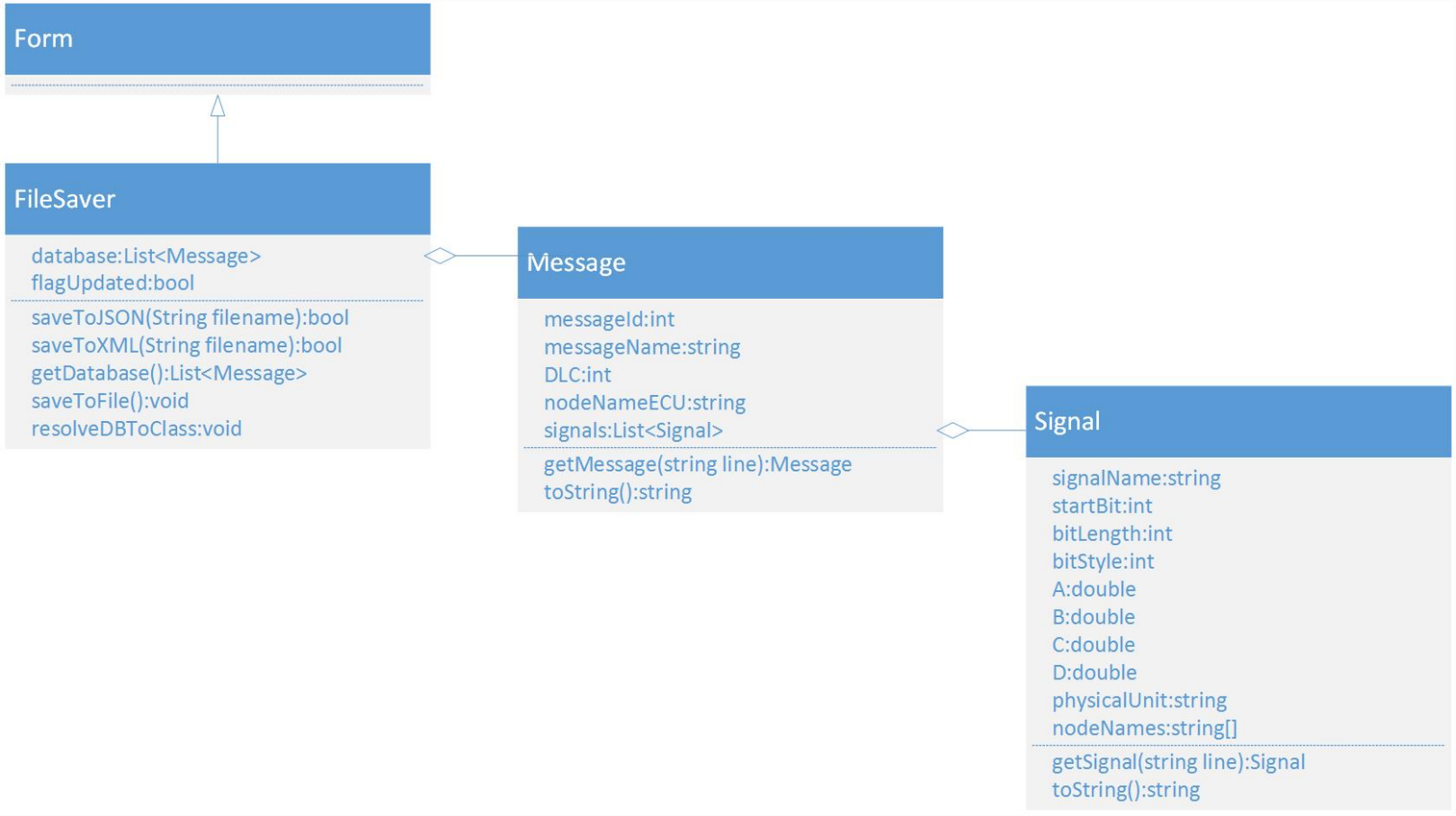

ReceiveData
+Com_DataReceived(object sender, SerialDataReceivedEventArgs e)()
boardForm
+Com_DataReceived(object sender, SerialDataReceivedEventArgs e)()
curveForm
+Com_DataReceived(object sender, SerialDataReceivedEventArgs e)()
Com
-comDevice: SerialPort
+getMessage
+getMessage
+getMessage

类图

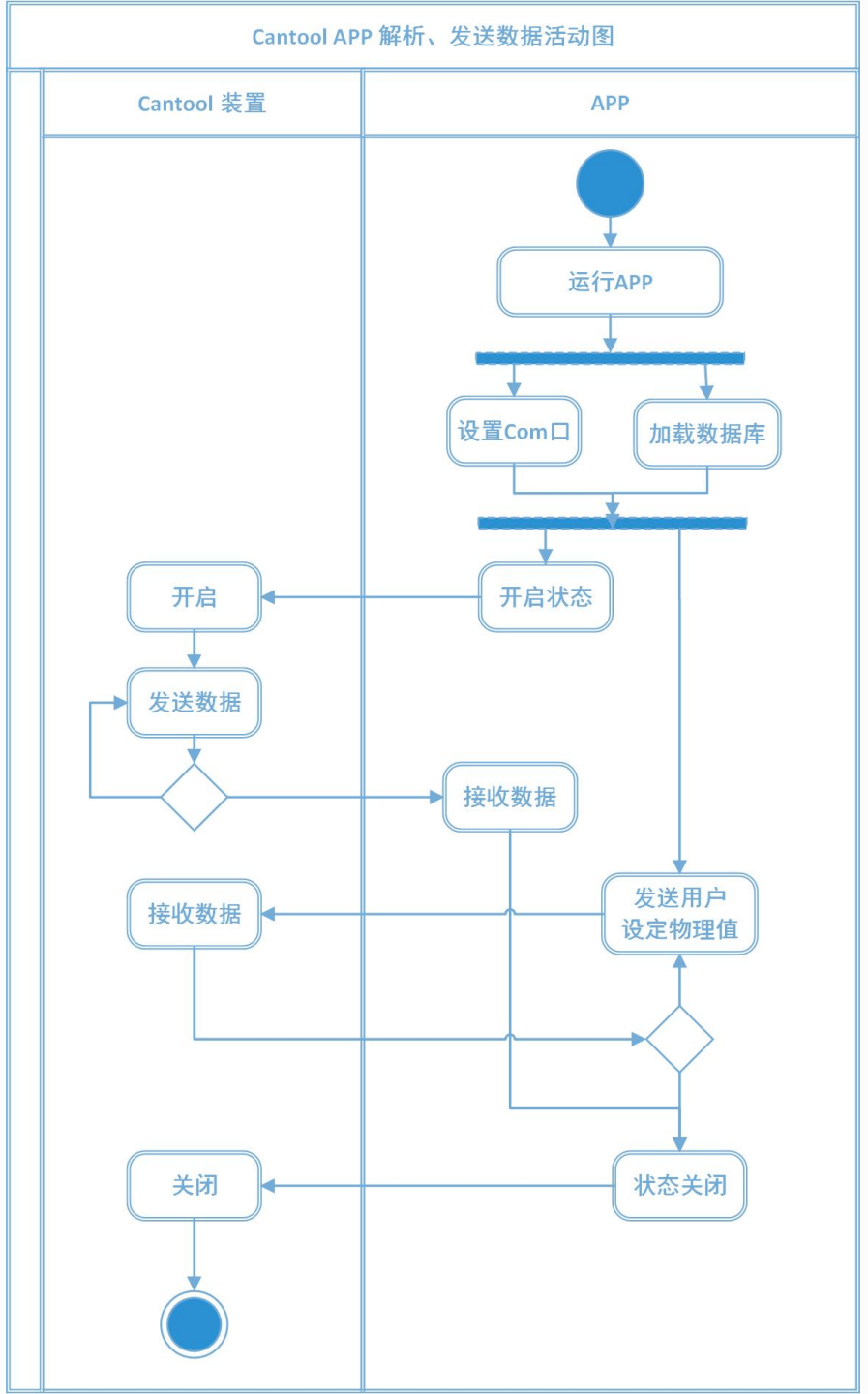

TreeFrom
database:List<Message>
messagename:List<string>
signal:string[,]
signalname:Signal[,]
CreateDataTable():DataTable
loadData(List<Message> dbs)
MainForm_Load():void
TreeForm()
CreateTreeViewFormTable
dic:Dictionary<int, List<TreeNode>>
BuildTree(TreeNode parentNode):void
SearchChildNodes(DataTable dt,
TreeView treeView, Boolean expandAll,
string displayName, string nodeId, string
parentId):void


fm_receivedata
cal:Calculate
comDevice:SerialPort
dic:Dictionary<string, string>
i:int
message:List<string>
node:List<TreeGridNode>
set_com:bool
signalname:List<string>
Com_DataReceived():void
fm_receivedata()
fm_receivedata(bool set_com,SerialPort
comDeice)
fm_receivedata_Load():void

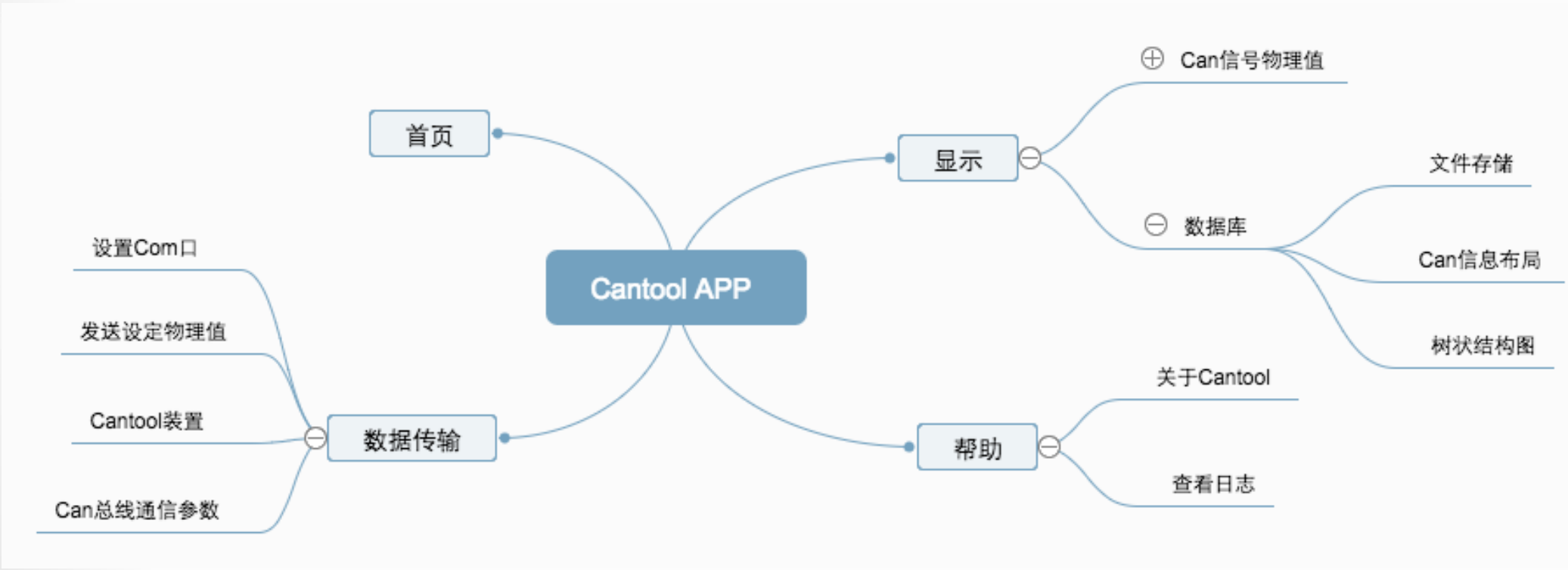
类图


Form
FileSaver
database:List<Message>
flagUpdated:bool
saveToJSON(String filename):bool
saveToXML(String filename):bool
getDatabase():List<Message>
saveToFile():void
resolveDBToClass:void
Message
messageId:int
messageName:string
DLC:int
nodeNameECU:string
signals:List<Signal>
getMessage(string line):Message
toString():string
Signal
signalName:string
startBit:int
bitLength:int
bitStyle:int
A:double
B:double
C:double
D:double
physicalUnit:string
nodeNames:string[]
getSignal(string line):Signal
toString():string

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
开启状态
开启
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

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

1 2 3 4 成果展示 5

ADD TITLE HERE

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

Thanks !