Design Document - CarSmart

Inputs and outputs of modules are documented using Doxygen.

Main Module
The main module holds a user interface that prompts user to pair the application with the car.

Car Module
The car module holds the user interface that simulates the sensors/actions/display on a car.

CarGPS Module
This module simulates a car's ability to take a GPS coordinate as an input.

Defogger Module
This module controls the functions related to the use of defogger system.

Feedback Mechanism: Module listens to car, monitors the current defogger setting. The car listens to app, changes defogger settings based on feedback provided.

FuelMonitor Module
This module controls and manipulates elements related to the use and monitoring of the fuel system.

ElectricFuelMonitor Module
This module is a child of the FuelMonitor module. This module is used for electric cars.

GasFuelMonitor Module
This module is a child of the FuelMonitor module. This module is used for cars that run on gasoline.

Heating Module
This module controls and manipulates elements related to the use of the heating system in the car.

Feedback Mechanism: Module constantly listens to car's sensors, monitoring the heating level. The car constantly listens to app, increases/decreases heating level from feedback.

Error 1:
    Cause: User attempts to increase the heat when it is at max level (5)
    Meaning: System throws exception: Heating level is max.
Error 2:
    Cause: User attempts to decrease the heat when it is off (level 0)
    Meaning: System throws exception: Heating is off.

Location Module
This module contains the functions to get the location of nearby repair shops and to find a location based on a search.

Error1: IOException
Cause: Invalid url used to request a response from API.
Meaning: Url needs to be in the correct format.
Error2: JSONException
Cause: JSON format is not consistent.
Meaning: JSON format needs to be in correct format to be parsed.

Phone Module
The phone module holds the user interface that simulates the options/actions/display that would be on a mobile phone.

Radio Module
This module controls and manipulates elements related to the use of a radio system.

Feedback Mechanism: Module monitors the radio frequence via the car's sensors. The car listens to app, changing the radio frequency based on feedback provided.

Error1:
Cause: The user provides a frequency that is invalid.
Meaning: System throws an exception: Given set frequency is not valid.
Error2:
Cause: The user attempts to change the car frequency when the radio is off.
Meaning: System throws an exception: The radio is off. The system will now turn the radio on.

SystemCheck Module
This module is used to perform checks on the system to see whether maintenance is required through the use of built in sensors. The user is prompted when a failure has been identified.