

Abstract

In the automotive world, with increasingly sophisticated and complex mechanisms, implementing and testing embedded software is an increasing challenge. Therefore, major manufacturers and suppliers formed the AUTOSAR consortium, which created a unified software architecture and modelling language. The architecture includes a BSW (Basic Software) layer that forms a single interface over the electronic control unit (ECU), obscuring its specialties and ensuring the portability of “useful” applications. The aim of the thesis is to comprehensively present the communication and diagnostic modules in BSW and to detail the structure and operation of the “Diagnostic Log and Trace” module I have implemented.

Based on the literature reviewed in the semester, my thesis begins with a presentation of the structure of the software architecture used in the automotive industry, and then I describe the comprehensive operation of the modules in the communication layer. I then examine the protocols responsible for vehicle diagnostics and its two main components. Finally, I turn to the topic of my dissertation, in which I first try to provide a comprehensive picture of the functionality and location of my diagnostic module, and then I present the system for classifying the requirements set by the standard with an overview and examples. Next, I describe the structure of the dynamically changing part of the module. Finally, I present the implementation of the APIs provided by the module and the method of testing the module.