.NET CANDIDATE EXAM

CONTENT

1 INTRODUCTION

Rimac Automobili is constantly searching for new team members in Calibration & Diagnostic Software team. To be able to pick the best candidates we prepared exam that will help us in that task. From your solution, we want to see how you think and how good are your engineering skills. Please read the whole document first and then start with creating a solution.

If something is not defined in text of this exam, you are allowed to have assumptions, but we are kindly asking to note them in your solution.

2 DESCRIPTION

Rimac Automobili is an automotive company so this task is related to protocol that is one of the most popular and most used communication protocols in the automotive industry, **Controller Area Network (CAN)**.

CAN is a robust vehicle bus standard designed to allow microcontrollers and devices to communicate with each other's applications without a host computer. It is a message-based protocol and it usually has its own database where messages are defined. In Rimac Automobili, we use .dbc format for CAN database.

3 TASK

Your task is to develop an application that will be used for administration of CAN databases. Examples of CAN databases should be provided to you separately (via e-mail).

You are allowed to use any of available .NET technologies (WinForms, WPF, ASP.NET, ASP.NET CORE MVC/Razor pages, Blazor) to develop this application.

Application needs to have a database for storing data and you can use any relational or non-relational database of your choice.

Application should consist of:

1. <u>CAN database (.dbc file) parsing</u>

   Since CAN databases are quite complex, only following elements and their given properties need to be parsed: *Network nodes (Name), Messages (ID, Name), Signals (Name, Start bit, Length).*

2. <u>GUI functionalities</u>

   2.1. Button for loading .dbc file and storing parsed values in application's database
   2.2. List of all previously loaded CAN databases (.dbc files), together with corresponding messages and signals, should be visible in application upon starting.
   2.3. Button for deleting selected CAN database from the list in GUI and from application's database

3. <u>Integration test</u>

   Parsing logic of .dbc file needs to be verified via integration test. For this purpose, any of provided .dbc files can be used.

4 SPECIAL NOTES

What you also should have in mind:

- Visual presentation of application is not important
- You are allowed to organize GUI in any way that you consider to be the most user-friendly considering given requirements
- **It's not just about making application work, it's how you do it**