**Project Report: Land Rover Figo FSM Design**

**Date: 26:6:23**

Project Overview:

The objective of this project is to design and implement a Finite State Machine (FSM) model for simulating the behavior of a Land Rover Figo vehicle. The FSM takes inputs such as a gas pedal signal and generates outputs representing the engine state, brake lights state, and speedometer reading. The project is being developed using the Intel Quartus Prime Lite Edition software.

Progress Summary:

Since the project's initiation, significant progress has been made towards the development of the Land Rover Figo FSM design. The key milestones achieved so far are as follows:

1. Design Requirements and Specification:

- Identified the core requirements for the FSM model based on the behavior of a Land Rover Figo vehicle.

- Defined the FSM states, inputs, outputs, and their corresponding behaviors.

2. Verilog Code Implementation:

- Developed the Verilog code for the Land Rover Figo FSM design.

- The code includes modules for clock and reset signals, gas pedal input, and the FSM itself.

- Implemented the FSM transitions and output logic based on the defined requirements.

3. Intel Quartus Prime Lite Edition Integration:

- Created a new project in the Intel Quartus Prime Lite Edition software.

- Added the Verilog code files to the project.

- Performed synthesis and compilation to generate the gate-level netlist and

programming files.

**CASE DIADRAM:**

LAND ROVER FIGO FSM

USER

INITIALIZE FSM

GAS PEDAL

INPUT

UPDATE STATE

SPEEDOMETER

ENGINE

BRAKE LIGHTS

GENERATE OUTPUTS

Explanation:

- **Land Rover Figo FSM**: Represents the main component of the project, which is the Finite State Machine that models the behavior of the Land Rover Figo.

- **User:** The primary actor who interacts with the Land Rover Figo FSM.

- **Initialize FSM**: Use case that involves initializing the FSM, setting the initial state and variables.

- **Update State**: Use case responsible for updating the FSM state based on the gas pedal input.

- **Gas Pedal Input**: Use case representing the input of the gas pedal signal to the FSM.

- **Generate Outputs**: Use case involving the generation of outputs such as speedometer reading, engine state, and brake lights state.

**- Speedometer:** Use case representing the output of the speedometer reading.

**- Engine**: Use case representing the output of the engine state (on/off).

- **Brake Lights**: Use case representing the output of the brake lights state (on/off).

This use case diagram provides an overview of the Land Rover Figo FSM project, showcasing the main components, user interaction, and the key use cases involved in the functionality of the FSM.

Conclusion:

The initial progress of the Land Rover Figo FSM project has been successful, with the completion of the design, code implementation, and integration into the Intel Quartus Prime Lite Edition software. The upcoming steps will focus on functional verification, performance optimization, hardware testing, and comprehensive documentation. By adhering to the planned roadmap, we aim to deliver a robust and efficient FSM model that accurately represents the behavior of the Land Rover Figo vehicle.

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