Design and Verification of Serial Peripheral Interface (SPI) protocol using Verilog

The Serial Peripheral Interface (SPI) is a widely used synchronous serial communication protocol in embedded systems for communicating between microcontrollers, sensors, memory devices, and other peripherals. This project focuses on the design and verification of an SPI interface using Verilog hardware description language (HDL). Verilog provides a powerful platform for designing and simulating digital circuits, making it an ideal choice for implementing SPI communication modules.

The project will involve understanding the SPI protocol, designing the SPI interface module using Verilog, writing test benches for simulation, and performing functional verification to ensure the correctness and robustness of the design.

The primary outcomes of this project are to:

- Design an efficient and reliable SPI interface module in Verilog.
- Implement and simulate the SPI module using a Verilog simulator to ensure functionality and correctness.
- Generate the block design and verify its functionality by simulation.