ECS326/676 Digital Circuits and Systems - Verilog

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Instructions

Try to implement the codes using both structural and behavioral modeling approaches whenever possible. Kindly, let me know if there are any updates or corrections that need to be made. Good luck and have fun!

For any queries or clarifications, feel free to reach out to me at `ishanya21@iiserb.ac.in`.

Verilog Questions

1. Write Verilog code to implement a 1-bit AND gate.
2. Write Verilog code to implement a 1-bit OR gate.
3. Write Verilog code to implement a NOT gate.
4. Write Verilog code to implement a 2-input NAND gate.
5. Write Verilog code for a 2-bit adder (without carry input).
6. Write Verilog code to implement a 2-bit AND gate.
7. Write Verilog code for a 1-bit full adder.
8. Write Verilog code to implement a 2-bit binary counter with synchronous reset.
9. Write Verilog code for a 2-to-1 Multiplexer.
10. Write Verilog code to implement a 4-bit binary counter.
11. Write Verilog code for a 1-bit XOR gate.
12. Write Verilog code to implement a D flip-flop.
13. Implement a simple SR latch using Verilog.
14. Write Verilog code for a 2-bit OR gate.
15. Implement a 4-bit register in Verilog with a clock input and an enable signal.
16. Write Verilog code to implement a 2-bit comparator.
17. Implement a 2-bit binary-to-gray code converter using Verilog.
18. Write Verilog code to implement a 2-bit priority encoder.
19. Write Verilog code to implement a 3-bit left shift register.
20. Implement a simple 4-bit multiplier using Verilog.
21. Write Verilog code to implement a 3-bit Binary Counter with asynchronous reset.
22. Write Verilog code for a 8-to-1 Multiplexer using case statements.
23. Write Verilog code to implement a 2-bit Comparator.

24. Write Verilog code to implement a D Flip-Flop with synchronous reset.
25. Implement a 4-bit Gray code generator using Verilog.
26. Write Verilog code to implement a 4-bit Synchronous Counter.
27. Implement a 4-to-1 Multiplexer using only NAND gates in Verilog.
28. Write Verilog code for a 2-bit Full Adder.
29. Write Verilog code to implement a simple SR Latch.
30. Implement a simple state machine in Verilog to control a traffic light.