Helpful Verilog Guidelines

1. Spend time designing before you start coding.
2. Make your sequential block as simple as possible. They shouldn't have much control flow.
3. Use sane and descriptive names for variables. (e.g. **`tmp`** is a bad name. What is it a temp of?)
4. White space is your friend, but don't abuse it. You want to break code up into related chunks using whitespace.
5. Use tabs and spaces in the right places. It is generally best to indent with tabs not spaces. But be consistent.
6. Avoid having really long lines of HDL. Wrap code at reasonable places. The code below is a lot more readable formatted this way than it would be if it was all on one line.
    - ```
      Bus_select=   (conditionA?thingA:
                    (conditionB?thingB:
                    (conditionC?thingC:
                    (conditionD?thingD:thingE) ) ) );
      ```
7. Don't have 7 always_ff @(posedge clock) blocks when one will do.
8. All always_ff blocks in your behavioral SystemVerilog should register values on the positive edge of the system clock.
9. Only change values in a test bench on the negative edge.
10. When modeling sequential logic, use nonblocking assignments.
11. When modeling combinational logic with an always_comb block, use blocking assignments.
12. Do not mix blocking and nonblocking assignments in the same always block.
13. Do not make assignments to the same variable in more than one always block.
14. Only use while loops in testbenches.
15. For loops don't work like you think, make sure that you understand what they do before using them!
16. Don't have initial blocks in Verilog you plan to synthesize.
17. Make sure that all paths through an **`always_comb`** block assign all variables to prevent latches.
18. If you follow the above you'll have a much better chance of having synthesizable code that doesn't have race conditions or errors.

Portions Taken from: C. E. Cummings, "Nonblocking Assignments in Verilog Synthesis, Coding Styles That Kill," SNUG 2000. (http://www.sunburst-design.com/papers/CummingsSNUG2000SJ NBA.pdf)
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