Title: Capture the Bug in 32:1 MUX (level1_design1.v)
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Abstract: For the given 32:1 MUX, the test cases are written with the provided COCOTB environment by using Vyoma's UpTickPro framework. Furthermore, the bugs are identified and debugged with the help of the UpTickPro framework.
Verification strategy: CoCotb test bench is written for the given 32:1 MUX, with this a functional verification is done for all possible test cases and the failure is observed once the test case is FAILED in the test environment of the UpTickPro framework.
Bugs found: There are 4 bugs in the mux.v, level1_design1

bug1-> sel of inp12 is wrong
To Prove: run ***make*** file to capture the bug @ line 45 --> dut.sel.value= dut.sel.value= 0b01100
bug2 -> inp30 is not assigned
To Prove: run ***make*** file to capture the bug @ line 45 --> dut.sel.value= dut.sel.value= 0b11110
bug3 -> inp31 is not assigned
To Prove: run ***make*** file to capture the bug @ line 45 --> dut.sel.value= dut.sel.value= 0b11111
bug 4 -> default condition is not required in a mux,

Debug information: The debugged mux design is stored in the file name: mux_debug.v
test_mux_debug.py --> contains the test case for the bug-free mux.

run **makefile** by changing the file location for the bug-free design

run ***make*** file to capture the bug @ line 45 --> dut.sel.value= dut.sel.value= 0b11110

run ***make*** file to pass the test @ line 45 --> dut.sel.value= 0b00000 to dut.sel.value= 0b01011

run ***make*** file to pass the test @ line 45 --> dut.sel.value= 0b01101 to dut.sel.value= 0b11101