**MUX code**

module mux(

input wire [7:0] a\_i,

input wire [7:0] b\_i,

input wire sel\_i,

output wire [7:0] y\_o

);

assign y\_o = sel\_i ? a\_i : b\_i;

endmodule

**Test Bench Code**

module tb\_mux();

logic [7:0] a\_i;

logic [7:0] b\_i;

logic sel\_i;

logic [7:0] y\_o;

mux mux\_1(.\*);

initial begin

for (int i = 0; i <10; i=i++)begin

a\_i = $urandom\_range (0,8'hff); //generates a random value within the specified range

b\_i = $urandom\_range (0,8'hff);

sel\_i = $random%2; //generates a random binary value, specifically either 0 or 1

#5;

end

end

initial begin

$dumpfile("mux.vcd"); //specifies the filename ("mux.vcd") for the VCD file where simulation waveform data will be stored.

$dumpvars(0, tb\_mux);

end

endmodule