#100rtldays Challenge

EXPERIENCE THE JOY OF LEARNING

#Day4: Module A is supposed to implement the function z = (x^y) & x. Implement this module.

Design

```
module A( input x,y, output z);
  assign z=(x^y)&x;

endmodule
```

Testbench

```
module tb;
  reg x,y;
  wire z;
  reg [1:0] c1;
  integer err_count=0;
  A a1(x,y,z);

  covergroup cg @(x,y);
    coverpoint {x,y};
    endgroup

  cg cg_ins;

  initial begin
    $dumpfile("test.vcd");
    $dumpvars;
  end

  initial begin
    cg_ins=new();
    repeat (20)begin
      #2 x={$random} % 2;y={$random} % 2;
    end
    $display("\nerror count=%0d time=%0t\n",err_count,$time);
    $display("\n coverage=%0.2f %%\n",cg_ins.get_inst_coverage());
 $finish;
  end

  always @(x,y) begin
    c1={x,y};
    c1=(c1==2);
    if(z==c1[0])
      $display("\nsucces1 time=%0t\n",$time);
    else begin
      $display("\nfail1 time=%0t\n",$time);
      err_count++;
    end
  end



endmodule
```

Console report

```
# KERNEL:
# KERNEL: succes1 time=26
# KERNEL:
# KERNEL:
# KERNEL: succes1 time=30
# KERNEL:
# KERNEL:
# KERNEL: succes1 time=32
# KERNEL:
# KERNEL:
# KERNEL: succes1 time=34
# KERNEL:
# KERNEL:
# KERNEL: succes1 time=36
# KERNEL:
# KERNEL:
# KERNEL: error count=0 time=40
# KERNEL:
# KERNEL:
# KERNEL:  coverage=100.00 %
# KERNEL:
# RUNTIME: Info: RUNTIME_0068 testbench.sv (28): $finish called.
# KERNEL: Time: 40 ns,  Iteration: 0,  Instance: /tb,  Process: @INITIAL#21_1@.
# KERNEL: stopped at time: 40 ns
# VSIM: Simulation has finished. There are no more test vectors to simulate.
# ACDB: Covergroup Coverage data has been saved to "fcover.acdb" database.
# VSIM: Simulation has finished.
```

Waveform