Q1. 3 BIT PALINDROME DETECTOR USING TERNARY OPERATOR

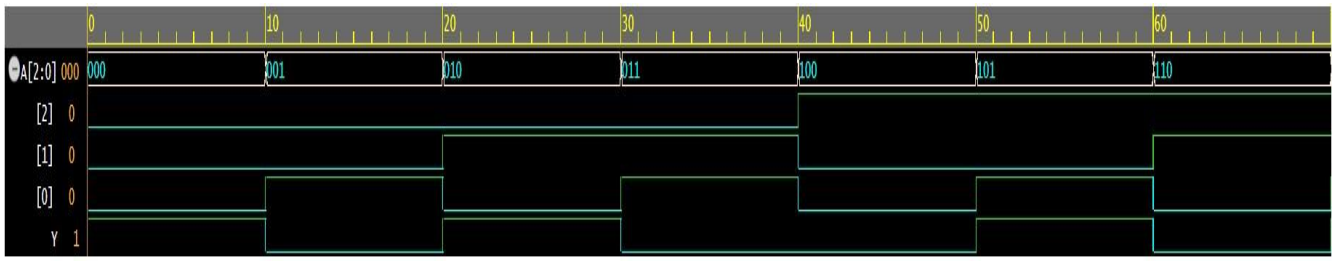
VERILOG CODE:

```
module Palindrome (A,Y);
  input[2:0] A;
    output Y;
  assign Y=(A[2]==A[0])? 1'b1:1'b0;
endmodule
```

TEST BENCH CODE:

```
module Palindrome_test;
  reg [2:0]A;
  wire Y;
 Palindrome  dut (A,Y);
  initial begin
    A[2] = 1'b0;  A[1]=1'b0;       A[0]=1'b0;
    #10 A[2] = 1'b0; A[1] =1'b0;   A[0]=1'b1;
    #10 A[2] = 1'b0; A[1] =1'b1;   A[0]=1'b0;
    #10 A[2] = 1'b0; A[1]= 1'b1;   A[0]=1'b1;
    #10 A[2] = 1'b1; A[1]= 1'b0;   A[0]=1'b0;
    #10 A[2] = 1'b1; A[1] =1'b0;   A[0]=1'b1;
    #10 A[2] = 1'b1; A[1]= 1'b1;   A[0]=1'b0;
    #10 A[2] = 1'b1; A[1]= 1'b1;   A[0]=1'b1;
  end
  initial begin
    $monitor("simtime = %0t, A[2]= %b, A[1] = %b, A[0]= %b, Y = %b ",$time,A[2],A[1],A[0],Y);
  end
  initial begin
    $dumpfile("dump.vcd");
    $dumpvars(0,A[2],A[1],A[0],Y);
  end
endmodule
```

OUTPUT WAVEFORM:



SIMULATION OUTPUT:

simtime = 0, A[2]= 0, A[1] = 0, A[0]= 0, Y = 1
simtime = 10, A[2]= 0, A[1] = 0, A[0]= 1, Y = 0
simtime = 20, A[2]= 0, A[1] = 1, A[0]= 0, Y = 1
simtime = 30, A[2]= 0, A[1] = 1, A[0]= 1, Y = 0
simtime = 40, A[2]= 1, A[1] = 0, A[0]= 0, Y = 0
simtime = 50, A[2]= 1, A[1] = 0, A[0]= 1, Y = 1
simtime = 60, A[2]= 1, A[1] = 1, A[0]= 0, Y = 0
simtime = 70, A[2]= 1, A[1] = 1, A[0]= 1, Y = 1
V C S S i m u l a t i o n R e p o r t