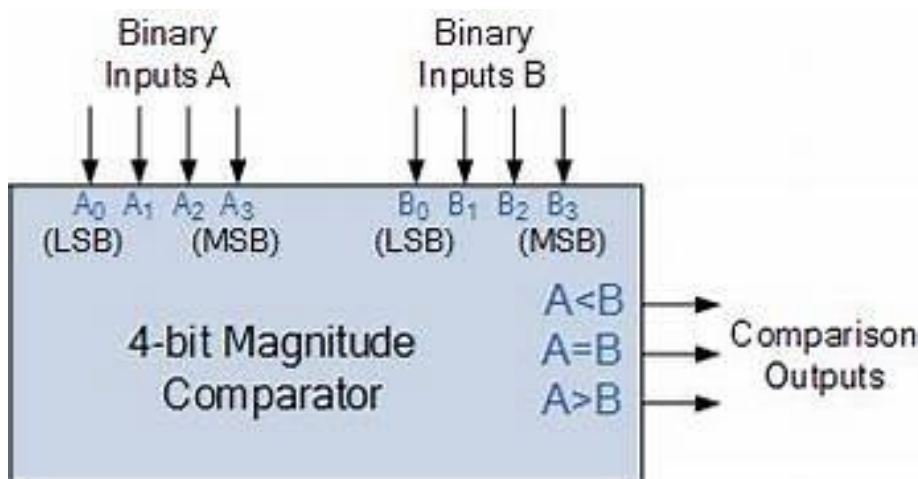


4-BIT COMPARATOR

It can be used to compare two four-bit words. The two 4-bit numbers are $A = A_3 A_2 A_1 A_0$ and $B = B_3 B_2 B_1 B_0$ where A_3 and B_3 are the most significant bits.

It compares each of these bits in one number with bits in that of other number and produces one of the following outputs as $A = B$, $A < B$ and $A > B$. The output logic statements of this converter are

- If $A_3 = 1$ and $B_3 = 0$, then A is greater than B ($A > B$). Or
- If A_3 and B_3 are equal, and if $A_2 = 1$ and $B_2 = 0$, then $A > B$. Or
- If A_3 and B_3 are equal & A_2 and B_2 are equal, and if $A_1 = 1$, and $B_1 = 0$, then $A > B$. Or
- If A_3 and B_3 are equal, A_2 and B_2 are equal and A_1 and B_1 are equal, and if $A_0 = 1$ and $B_0 = 0$, then $A > B$.



RTL CODE:

```
module t1s (input[4:0]a,input [4:0]b,output g,output l,output e);
    assign g=(a>b)?1'b1:1'b0;
    assign l=(a<b)?1'b1:1'b0;
    assign e=(a==b)?1'b1:1'b0;
endmodule
```

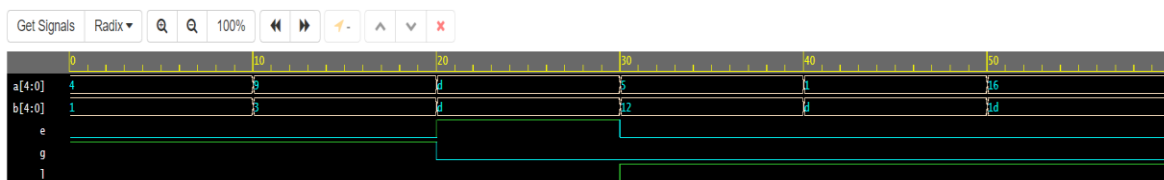
TESTBENCH:

```
module test;
```

```

reg [4:0]a;
reg [4:0]b;
wire g,l,e;
tls h1(a,b,g,l,e);
initial begin
    $dumpfile("dump.vcd");
    $dumpvars(1);
end
initial begin
    repeat(10) begin
        a=$random;b=$random;
        #10;
    end
end
initial begin
    #60 $finish();
end
endmodule

```



Note: To revert to EPWAVE opening in a new browser window, set that option on your user page.