

### Week 3: Programs on User Defined Functions

Name: SUNDEEP A	SRN: PES1UG20CS445	Section: H
	Date: 25-08-21	Week Number: 1

1	Basic Gates
	<p><b>Program:</b></p> <p><b>Invert operator:</b>  module invert(input wire i, output wire o1);  assign o1 = ~(i);  endmodule</p> <p><b>And operator:</b>  module and2(input wire i0, i1, output wire o2);  assign o2 = (i0 &amp; i1);  endmodule</p> <p><b>Or operator</b>  module or2(input wire i0, i1, output wire o3);  assign o3 = (i0   i1);  endmodule</p> <p><b>Xor operator</b>  module xor2(input wire i0, i1, output wire o4);  assign o4 = (i0 ^ i1);  endmodule</p> <p><b>Nand operator</b>  module nand2(input wire i0, i1, output wire o5);  wire t;  assign t = (i0 &amp; i1);  assign o5 = ~(t);  endmodule</p> <p><b>Nor operator</b>  module nor2(input wire i0, i1, output wire o6);  assign o6 = ~(i0   i1);  endmodule</p>
	Output Screenshot:

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```
C:\Users\HP\Desktop\PESU\SEM-3\DDCO_LAB\week1>iverilog -o aout b.v btestBench.v

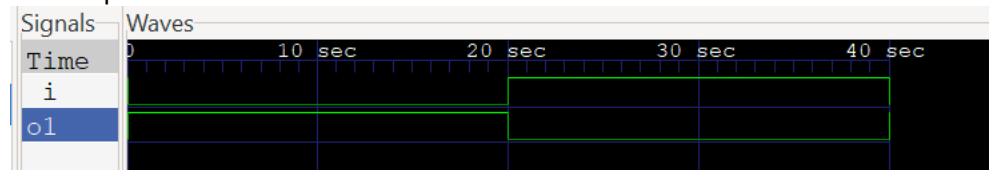
C:\Users\HP\Desktop\PESU\SEM-3\DDCO_LAB\week1>vvp aout
VCD info: dumpfile dump2.vcd opened for output.
0010001
0110111
1000111
1101100
0010001

C:\Users\HP\Desktop\PESU\SEM-3\DDCO_LAB\week1>gtkwave dump2.vcd

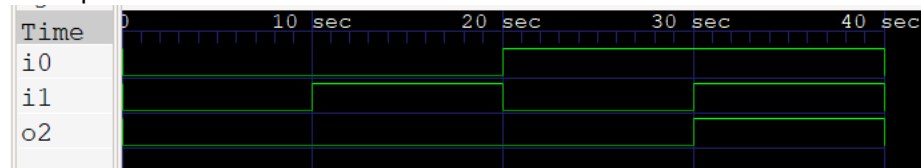
GTKWave Analyzer v3.3.108 (w)1999-2020 BSI

[0] start time.
[40] end time.
```

Invert operator:



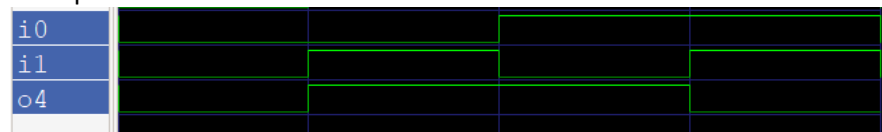
And operator:



Or operator:

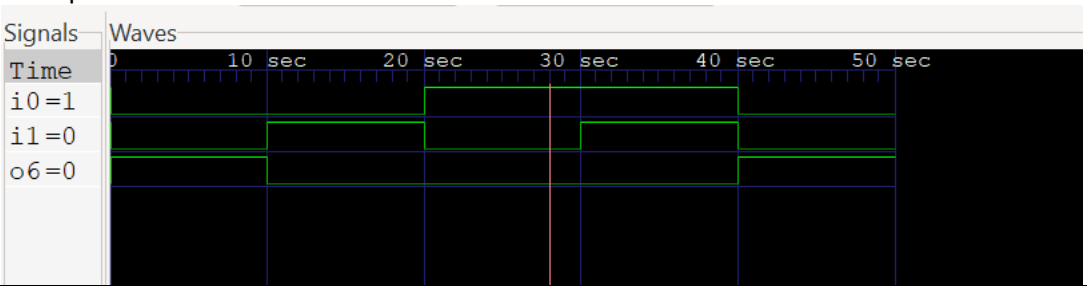
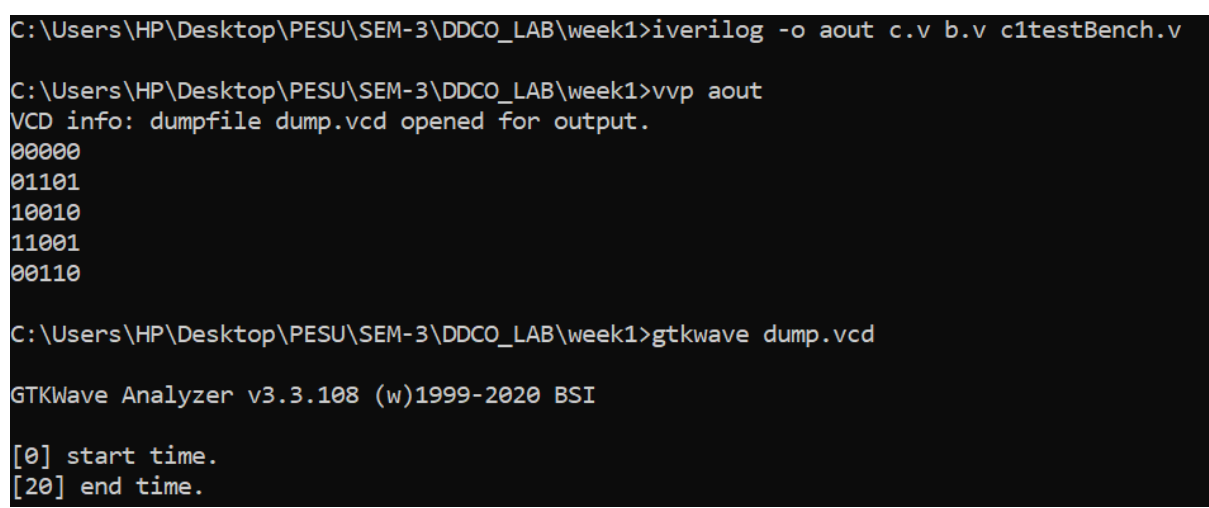


Xor operator:



Nand operator:



	<p>Nor operator:</p> 
2	<p><b>Full-Adder</b></p>
	<p><b>Program:</b></p> <pre> module fulladd(input wire a, b, cin, output wire sum, cout);   wire p,q,r,s,t;   xor2 x0(a, b, p);   xor2 x1(p, cin, sum);   and2 a0(a, b, q);   and2 a1(a, cin, r);   and2 a2(b, cin, s);   or2 o0(q, r, t);   or2 o1(s, t, cout); endmodule </pre>
	<p><b>Output Screenshot:</b></p> 

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