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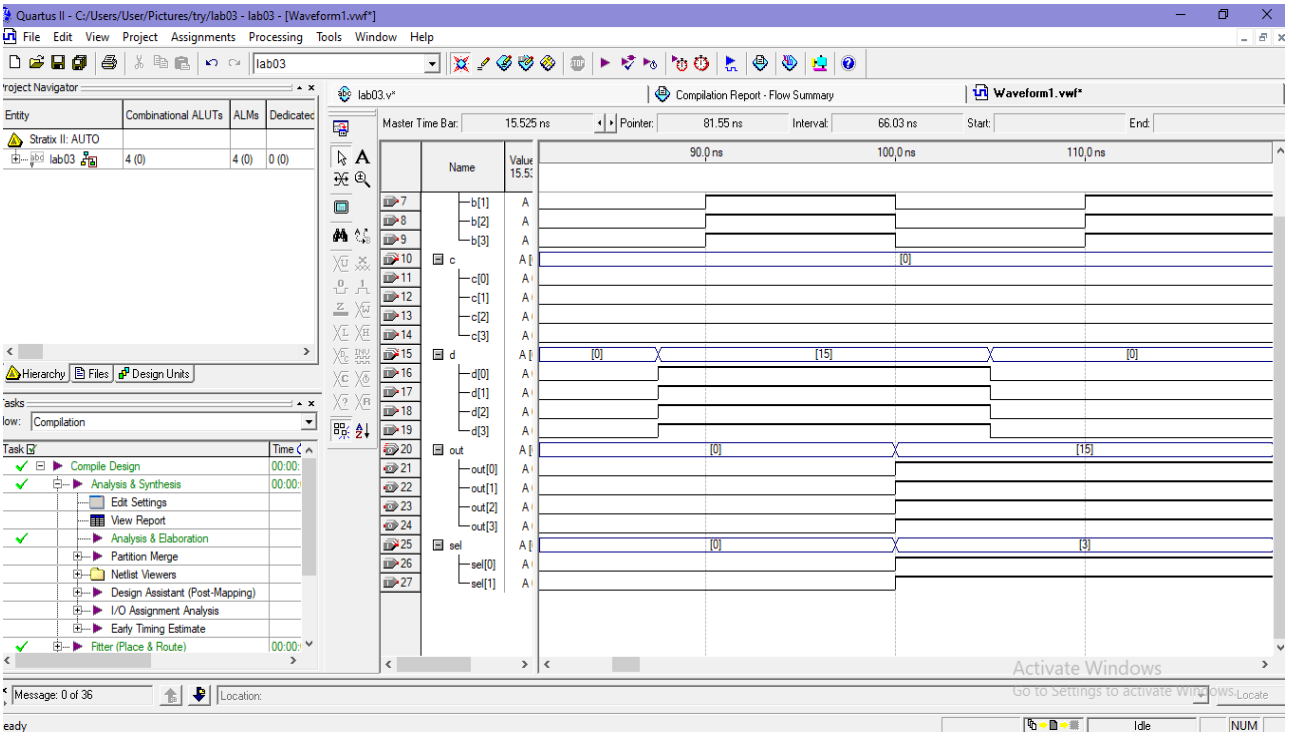
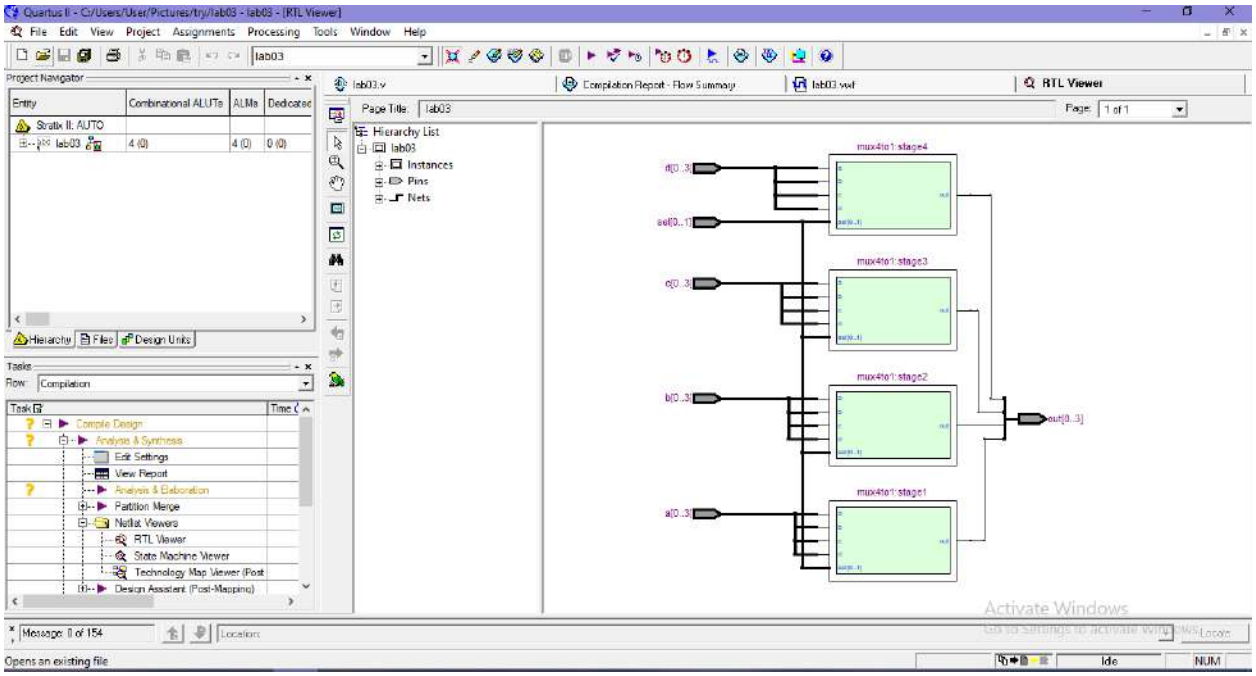
ID: 20301230
Section: 07
Lab03
CSE460
Date: 04/07/2023

Code:

```
module mux4to1_4bit_20301230 (a,b,c,d,sel,out);
	input [0:3]a,b,c,d;
	input [0:1]sel;
	output [0:3]out;

	mux4to1 stage1(a[0],a[1],a[2],a[3],sel,out[0]);
	mux4to1 stage2(b[0],b[1],b[2],b[3],sel,out[1]);
	mux4to1 stage3(c[0],c[1],c[2],c[3],sel,out[2]);
	mux4to1 stage4(d[0],d[1],d[2],d[3],sel,out[3]);

endmodule

module mux4to1 (a,b,c,d,sel,out);
	input a,b,c,d;
	input [0:1] sel;
	output out;

	assign out =(a^(~sel[0])^(~sel[1])) || (b^(sel[0])^(~sel[1])) || (c^(~sel[0])^(sel[1])) ||
(d^(sel[0])^(sel[1]));

endmodule
```

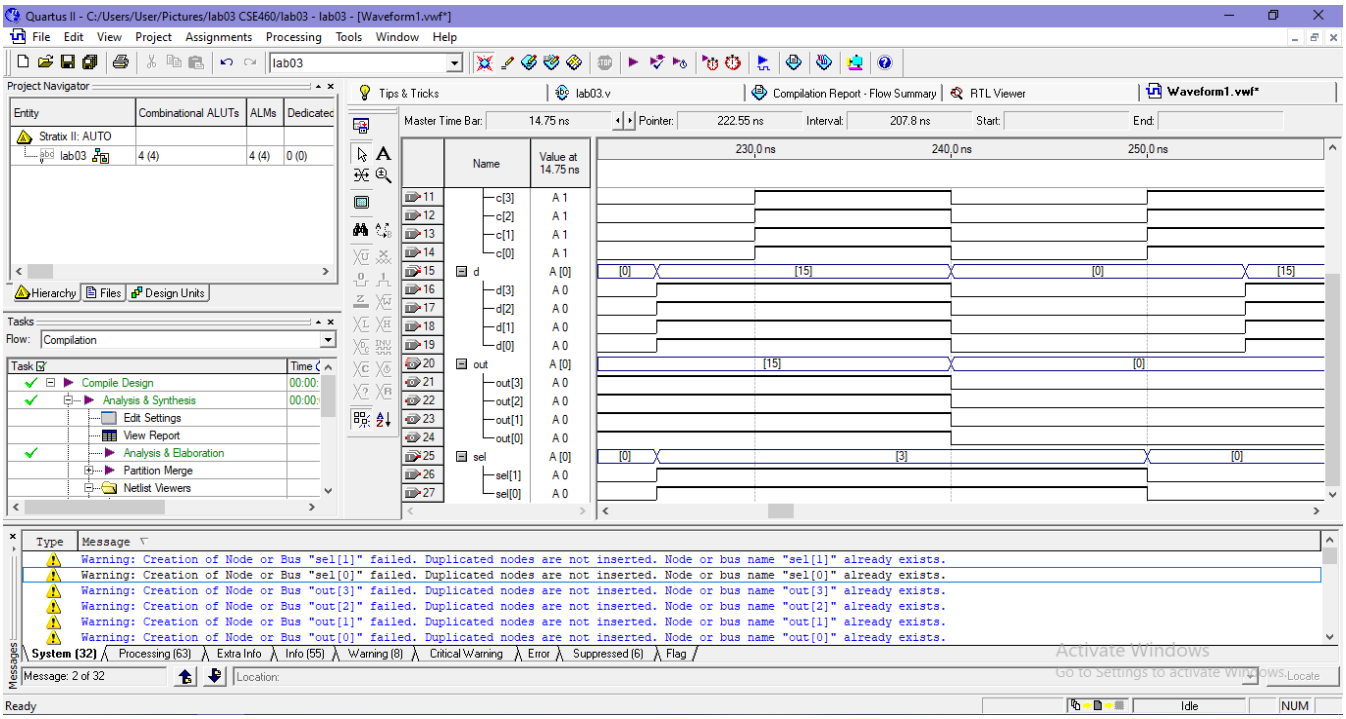

Quartus II - C:/Users/User/Pictures/try/lab03 - lab03 - [Waveform1.vwf*]
File Edit View Project Assignments Processing Tools Window Help
Waveform1.vwf*
Compilation Report - Flow Summary
Master Time Bar: 15.525 ns
Pointer: 81.55 ns
Interval: 66.03 ns
Start:
End:
90.0 ns
100.0 ns
110.0 ns
Name
b[1]
b[2]
b[3]
c
c[0]
c[1]
c[2]
c[3]
d
d[0]
d[1]
d[2]
d[3]
out
out[0]
out[1]
out[2]
out[3]
sel
sel[0]
sel[1]
Compile Design
Analysis & Synthesis
Edit Settings
View Report
Analysis & Elaboration
Partition Merge
Netlist Viewers
Design Assistant (Post-Mapping)
I/O Assignment Analysis
Early Timing Estimate
Fitter (Place & Route)
Activate Windows
Idle
NUM

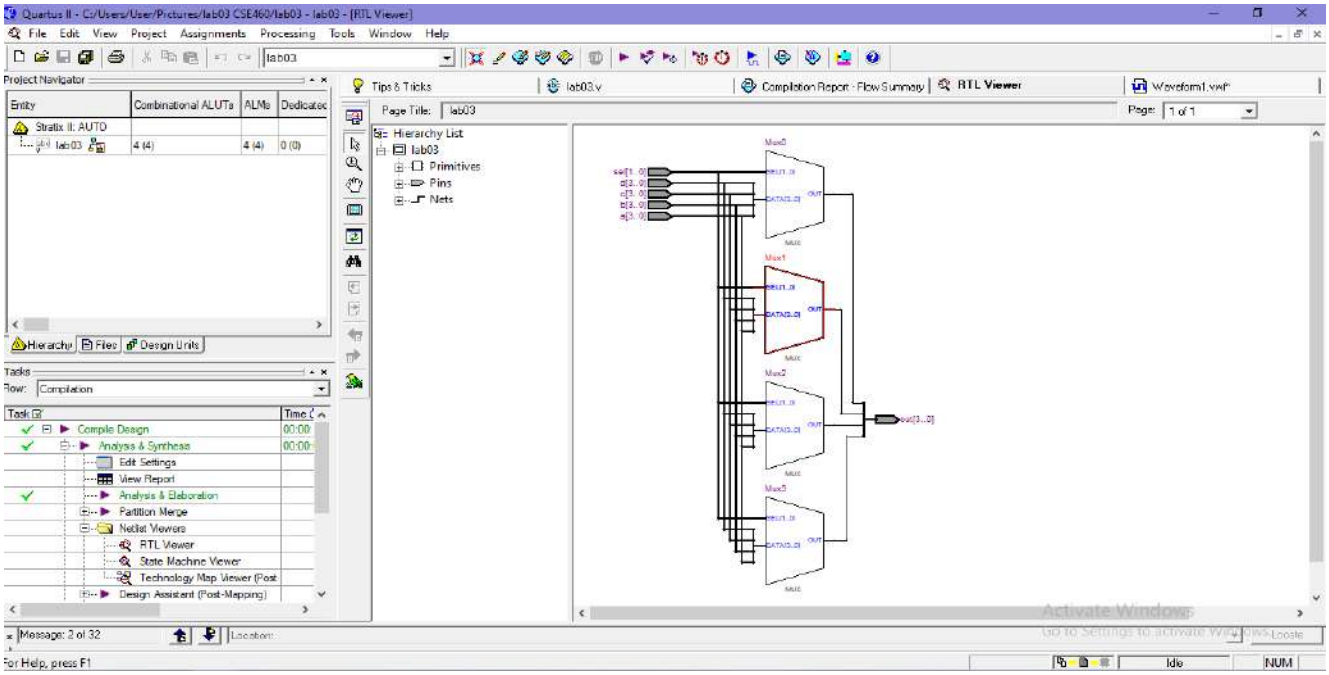

Quartus II - C:/Users/User/Pictures/try/lab03 - lab03 - [RTL Viewer]
File Edit View Project Assignments Processing Tools Window Help
RTL Viewer
Hierarchy List
lab03
Instances
Pins
Nets
mux4to1:stage4
mux4to1:stage3
mux4to1:stage2
mux4to1:stage1
Activate Windows
Idle
NUM

Alter using Case:

Code:

```
module mux4to1_4bit_20301230(a,b,c,d,sel,out);
   input [3:0] a,b,c,d;
   input [1:0] sel;
   output reg [3:0] out;

   always @(a or b or c or d or sel)
      begin
         case(sel)
            2'b00: out <= a;
            2'b01: out <= b;
            2'b10: out <= c;
            2'b11: out <= d;
         endcase

      end
endmodule
```


Quartus II - C:/Users/User/Pictures/lab03 CSE460/lab03 - lab03 - [Waveform1.vwf*]
File Edit View Project Assignments Processing Tools Window Help
Project Navigator
Entity
Combinational ALUTs
ALMs
Stratix II: AUTO
lab03
4 (4)
0 (0)
Hierarchy
Files
Design Units
Tasks
Flow: Compilation
Task
Compile Design
Analysis & Synthesis
Edit Settings
View Report
Analysis & Elaboration
Partition Merge
Netlist Viewers
Tips & Tricks
lab03.v
Compilation Report - Flow Summary
RTL Viewer
Waveform1.vwf*
Master Time Bar: 14.75 ns
Pointer: 222.55 ns
Interval: 207.8 ns
Start:
End:
Name
Value at 14.75 ns
230,0 ns
240,0 ns
250,0 ns
c[3]
c[2]
c[1]
c[0]
d
d[3]
d[2]
d[1]
d[0]
out
out[3]
out[2]
out[1]
out[0]
sel
sel[1]
sel[0]
Type
Message
Warning: Creation of Node or Bus "sel[1]" failed. Duplicated nodes are not inserted. Node or bus name "sel[1]" already exists.
Warning: Creation of Node or Bus "sel[0]" failed. Duplicated nodes are not inserted. Node or bus name "sel[0]" already exists.
Warning: Creation of Node or Bus "out[3]" failed. Duplicated nodes are not inserted. Node or bus name "out[3]" already exists.
Warning: Creation of Node or Bus "out[2]" failed. Duplicated nodes are not inserted. Node or bus name "out[2]" already exists.
Warning: Creation of Node or Bus "out[1]" failed. Duplicated nodes are not inserted. Node or bus name "out[1]" already exists.
Warning: Creation of Node or Bus "out[0]" failed. Duplicated nodes are not inserted. Node or bus name "out[0]" already exists.
System (32)
Processing (63)
Extra Info
Info (55)
Warning (8)
Critical Warning
Error
Suppressed (6)
Flag
Message: 2 of 32
Location:
Activate Windows
Go to Settings to activate Windows.
Ready
Idle
NUM


Quartus II - C:/Users/User/Pictures/lab03 CSE460/lab03 - lab03 - [RTL Viewer]
File Edit View Project Assignments Processing Tools Window Help
Project Navigator
Entity
Combinational ALUTs
ALMs
Stratix II: AUTO
lab03
4 (4)
0 (0)
Hierarchy
Files
Design Units
Tasks
Flow: Compilation
Task
Compile Design
Analysis & Synthesis
Edit Settings
View Report
Analysis & Elaboration
Partition Merge
Netlist Viewers
RTL Viewer
State Machine Viewer
Technology Map Viewer (Post
Design Assistant (Post-Mapping)
Tips & Tricks
lab03.v
Compilation Report - Flow Summary
RTL Viewer
Waveform1.vwf*
Page Title: lab03
Page: 1 of 1
Hierarchy List
lab03
Primitives
Pins
Nets
Mux0
Mux1
Mux2
Mux3
Message: 2 of 32
Location:
Activate Windows
Go to Settings to activate Windows.
For Help, press F1
Idle
NUM