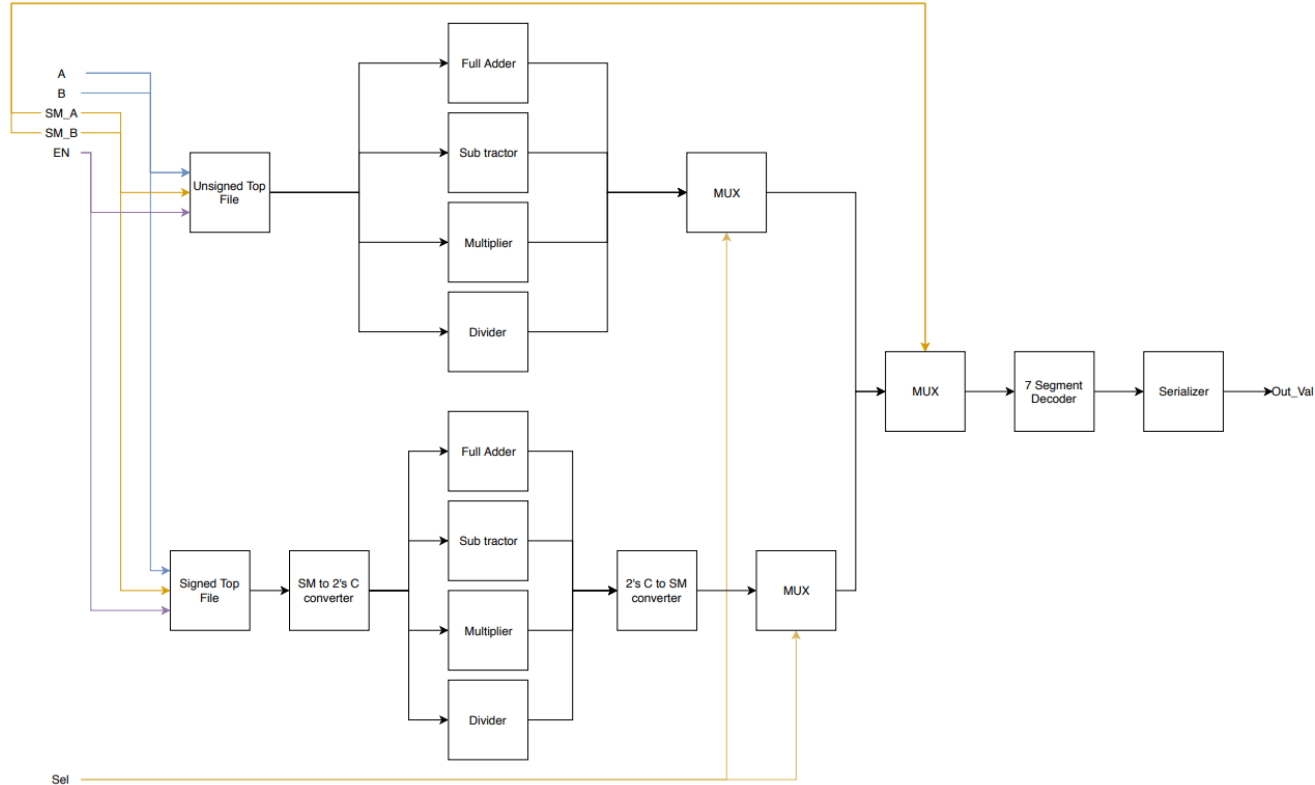




# Binary Calculator

Tod Rocco, Connor Willcock, Scotty Knight, Bradely Pfeiffer

# Flow Diagram

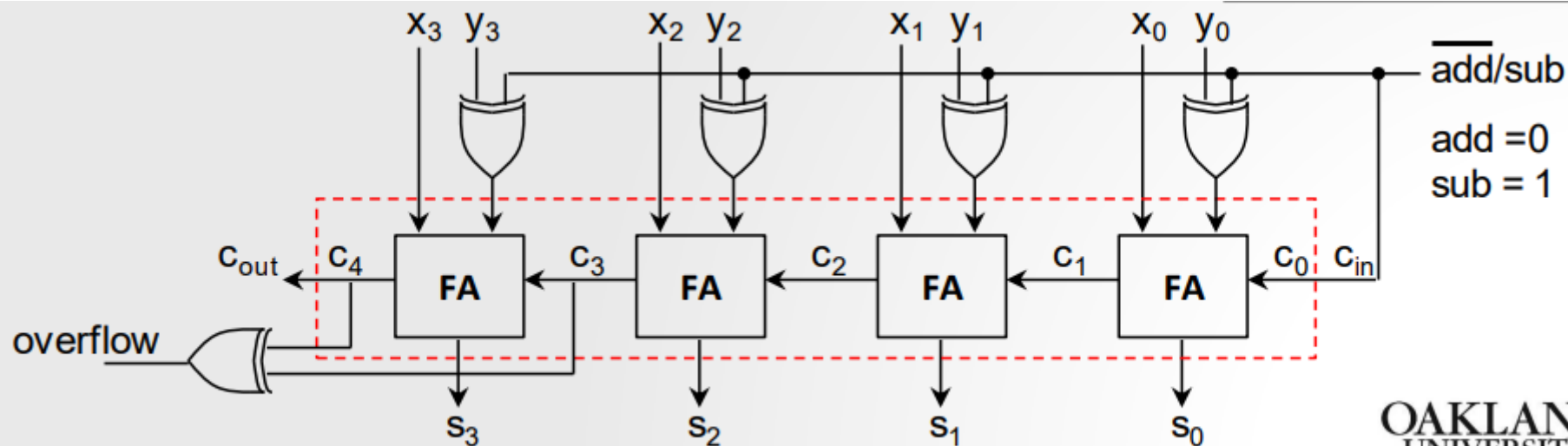


# Overall Top

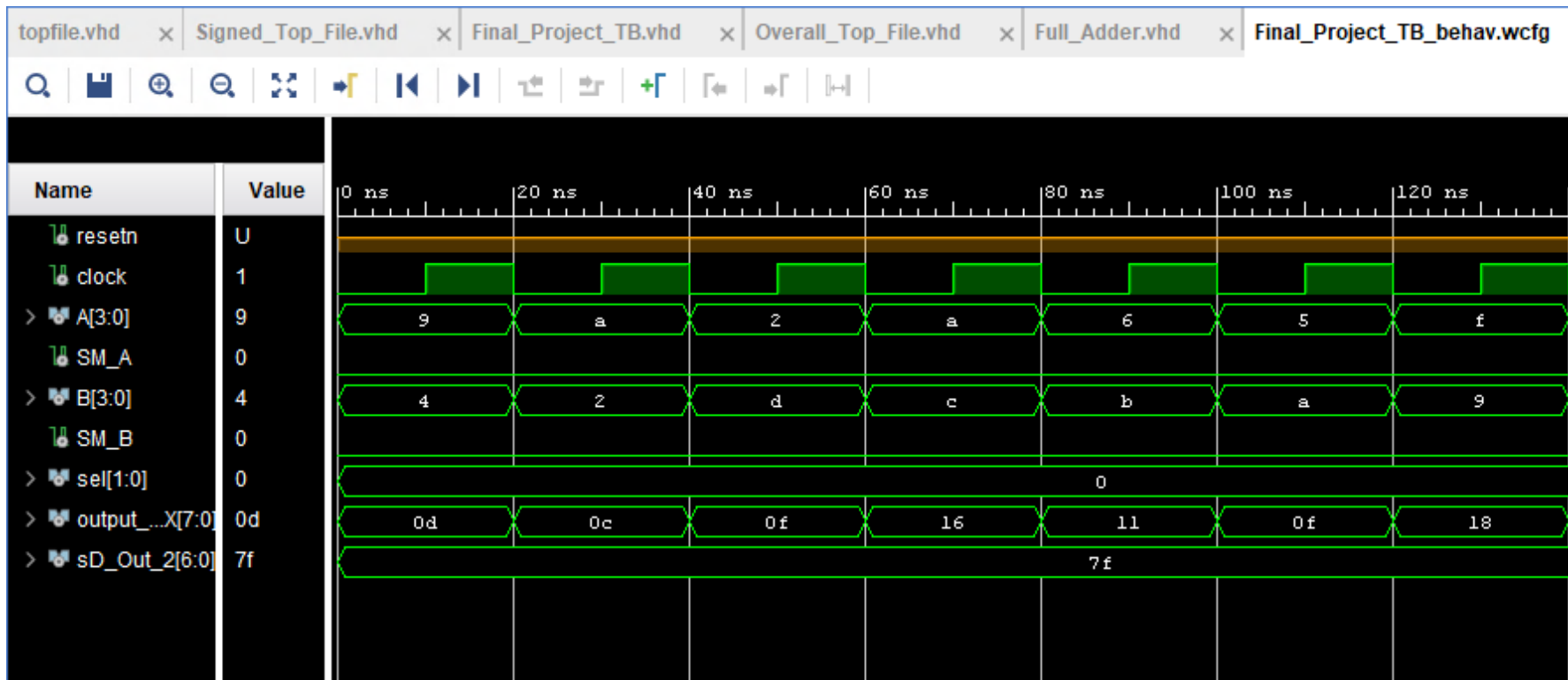
- Unsigned Top File
- Signed Top File
- Multiplexer
- Decoder
- Serializer

# Unsigned Top

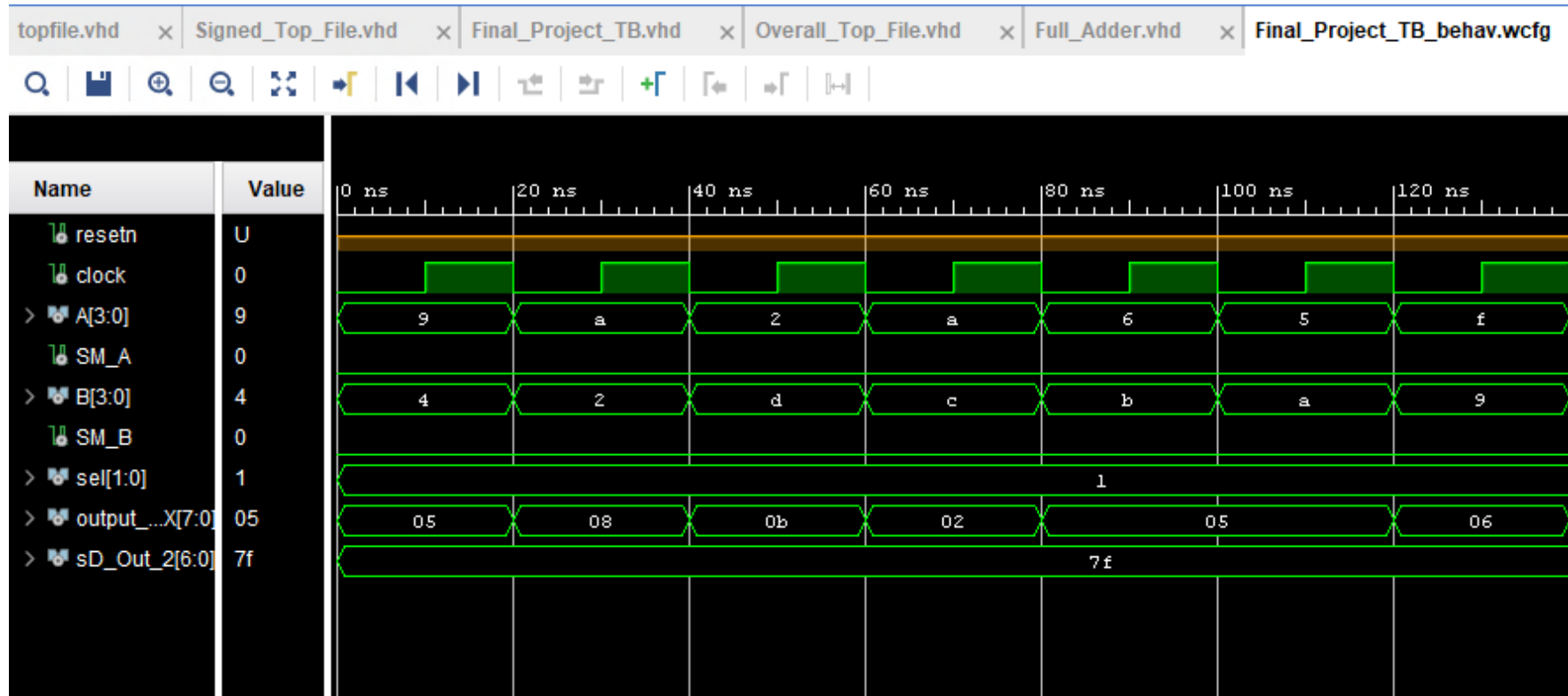
- Full Adder
- Subtractor
- Multiplier
- Divider
- Multiplexer



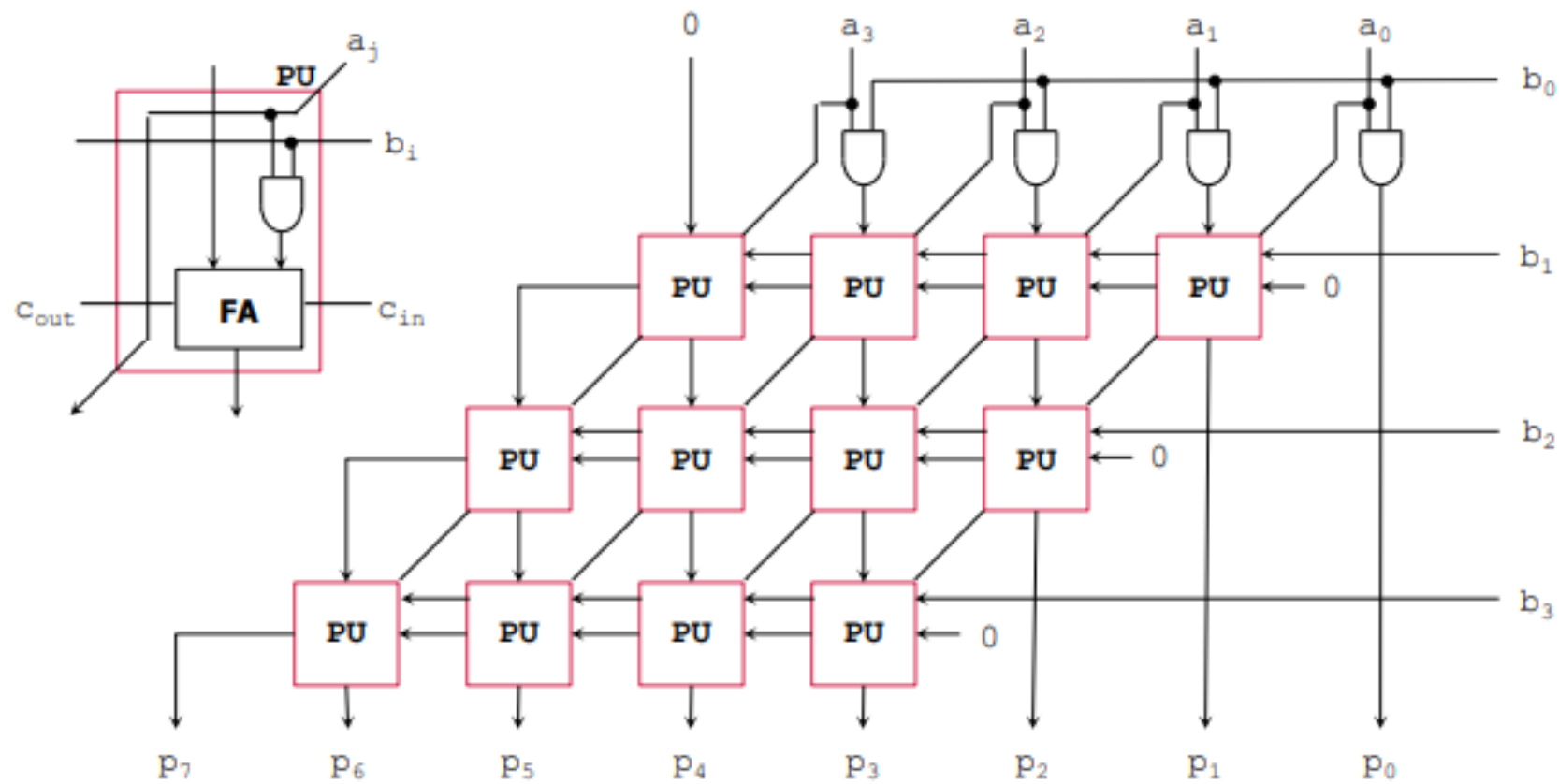
# Adder



# Subtractor

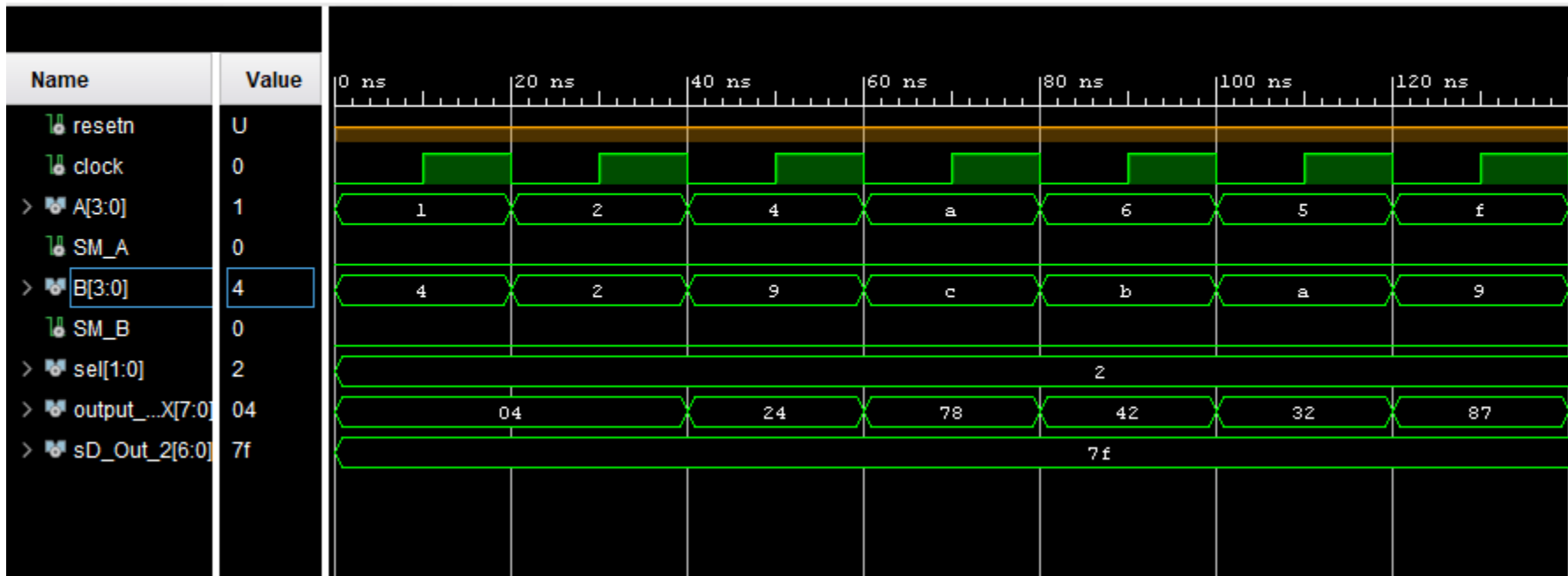




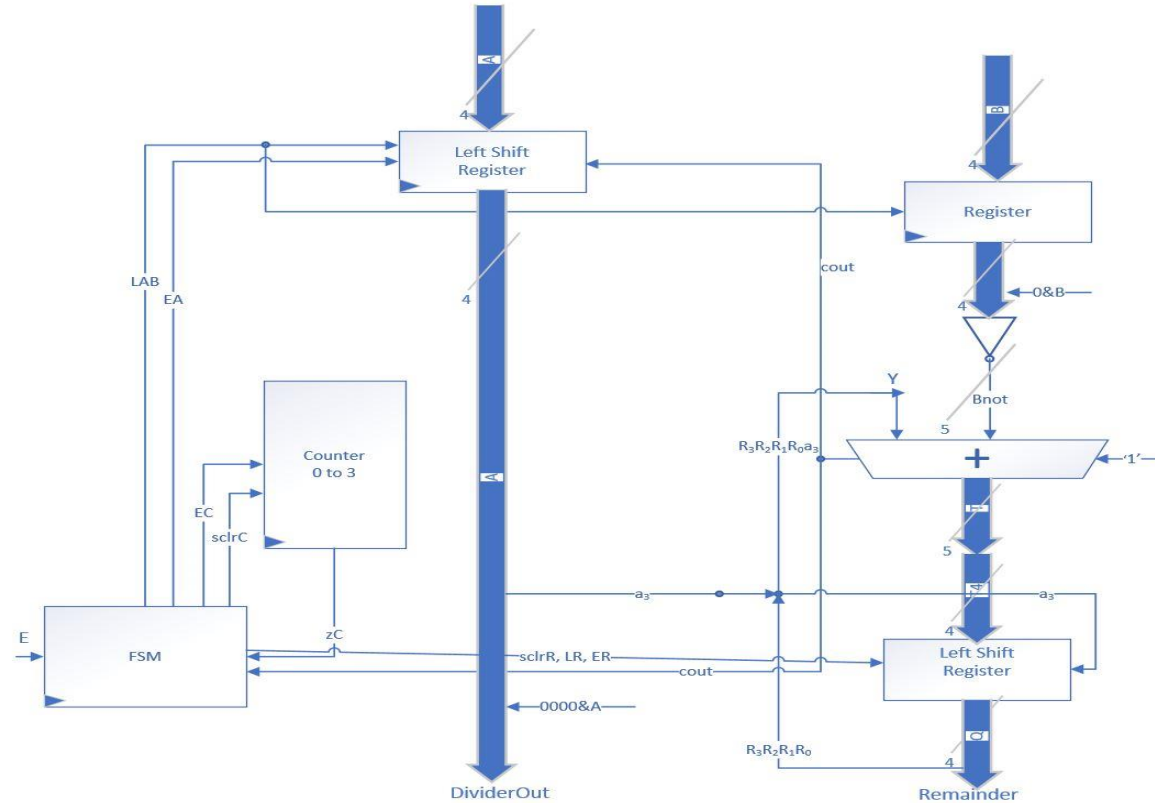


# Multiplier

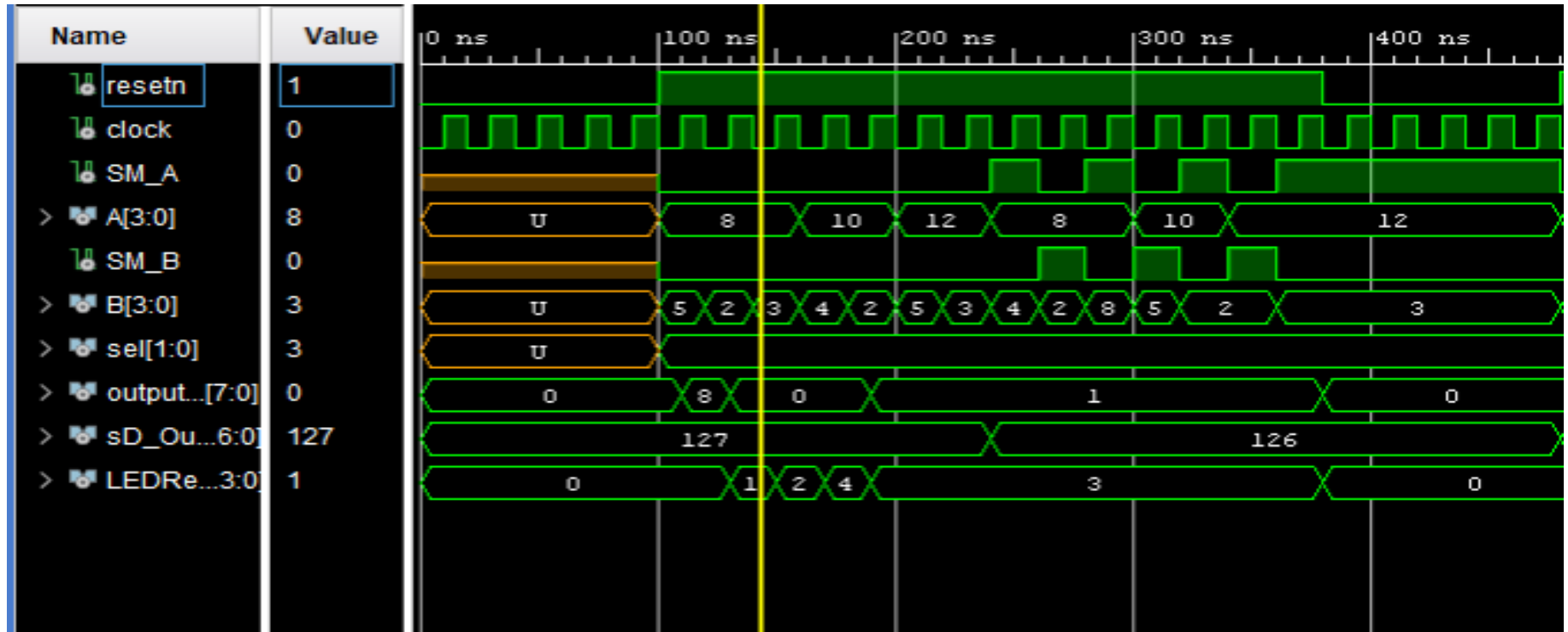
topfile.vhd x Signed\_Top\_File.vhd x Final\_Project\_TB.vhd x Overall\_Top\_File.vhd x Full\_Adder.vhd x Final\_Project\_TB\_behav.wcfg



# Divider

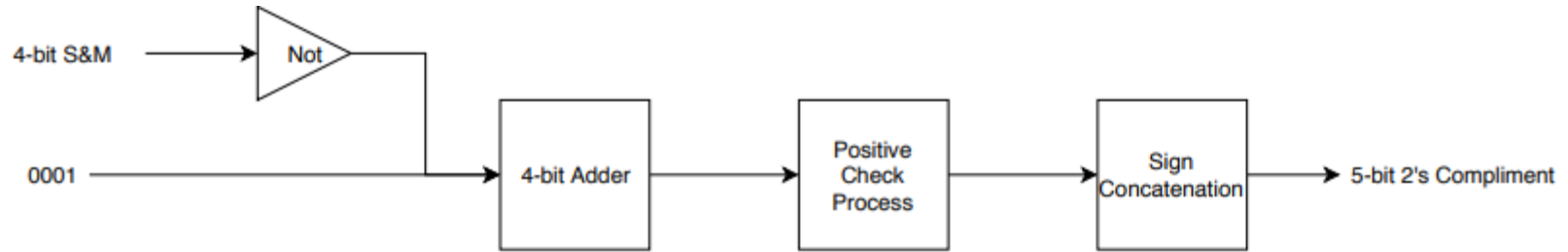


# Divider

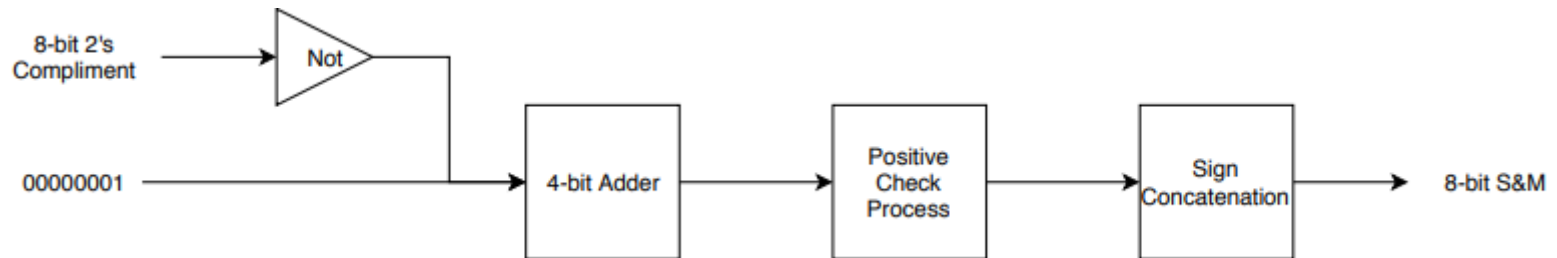


- Sign and Magnitude to 2's Complement
- Full Adder
- 2's Complement to Sign and Magnitude
- Subtractor
- 2's Complement to Sign and Magnitude
- Multiplier
- Divider
- Multiplexer

# Convertors



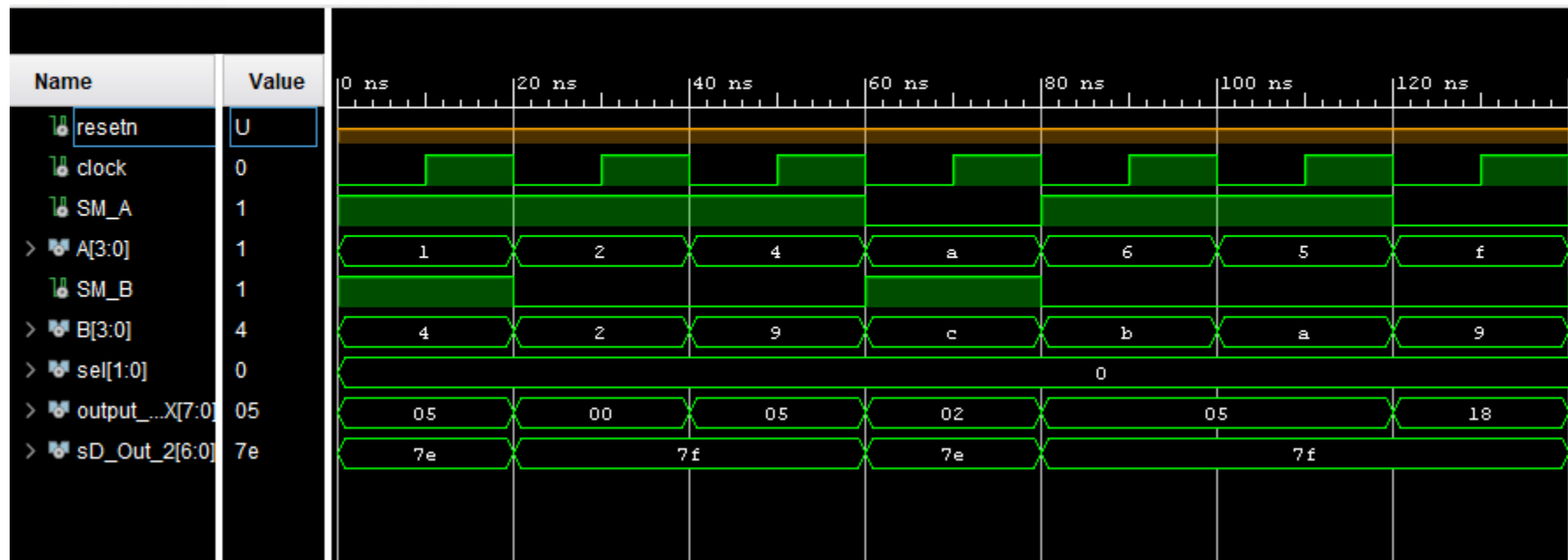
Sign and Magnitude -> 2's Complement



2's Complement -> Sign and Magnitude

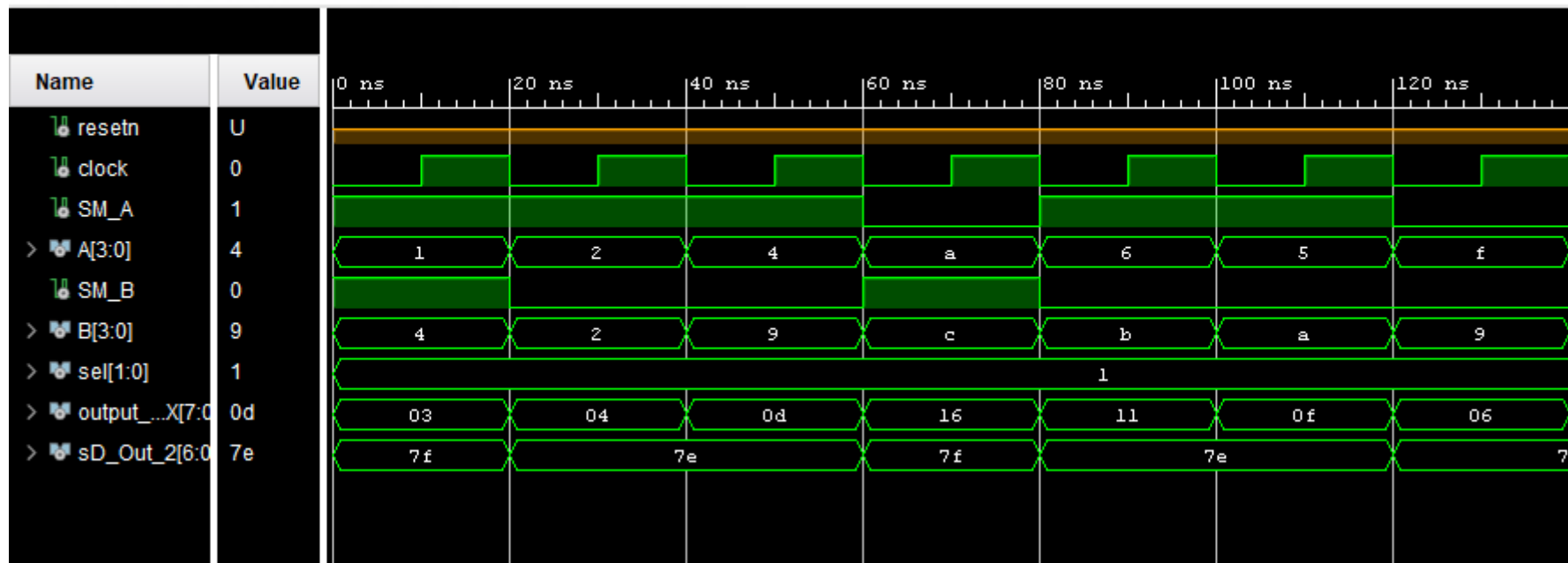
# Adder

topfile.vhd x Signed\_Top\_File.vhd x Final\_Project\_TB.vhd x Overall\_Top\_File.vhd x Full\_Adder.vhd x Final\_Project\_TB\_behav.wcfg\*



# Subtractor

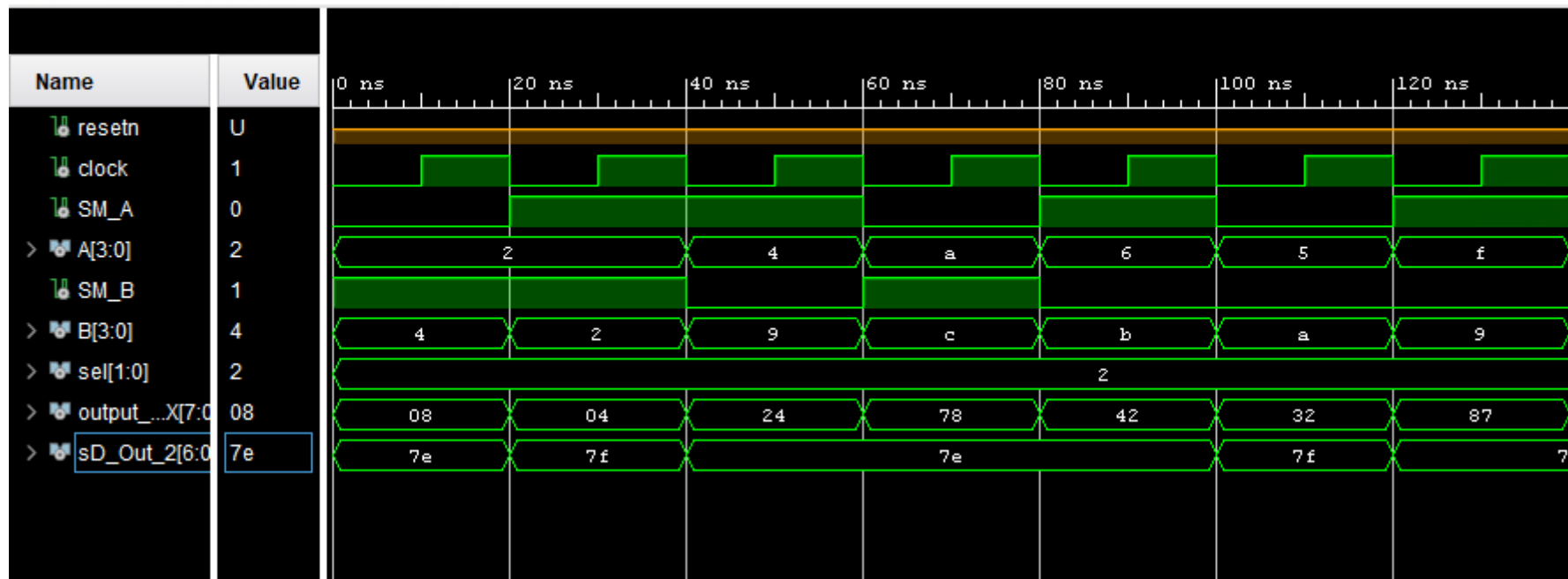
topfile.vhd x Signed\_Top\_File.vhd x Final\_Project\_TB.vhd x Overall\_Top\_File.vhd x Full\_Adder.vhd x Final\_Project\_TB\_behav.wcfg



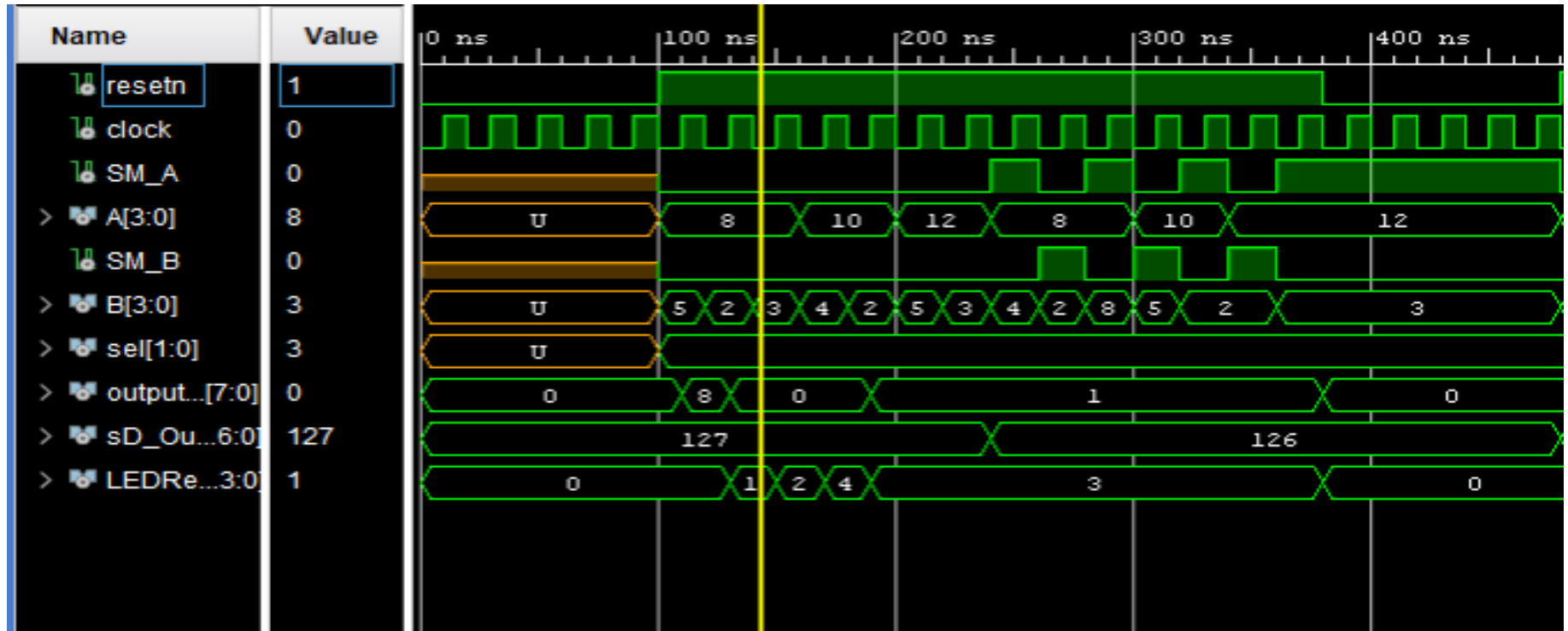


# Multiplier

topfile.vhd x Signed\_Top\_File.vhd x Final\_Project\_TB.vhd x Overall\_Top\_File.vhd x Full\_Adder.vhd x Final\_Project\_TB\_behav.wcfg



# Divider



# Conclusions

- All parts were successfully implemented into the calculator
- Biggest challenge was configuring signed sections
- Next steps could be to make the user interface easier by connecting a keyboard for input

# Questions

???

# Demo

