

# **ECEN 454**

## **LAB 9**

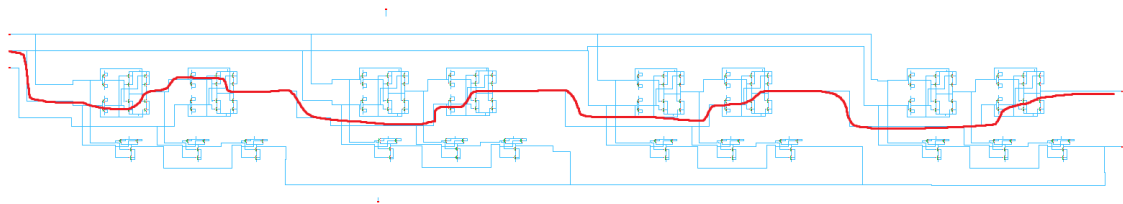
**NAME:** Jason Gilman

**UIN:** 126006979

**SECTION:** 511

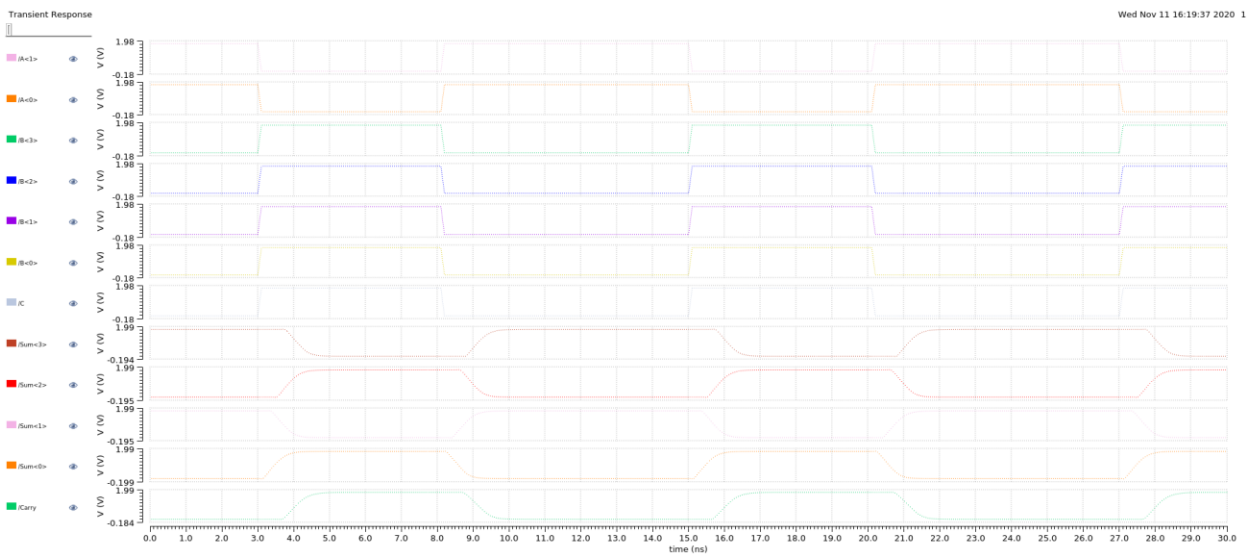
**TA:** Guaynu Gao

# Critical Path

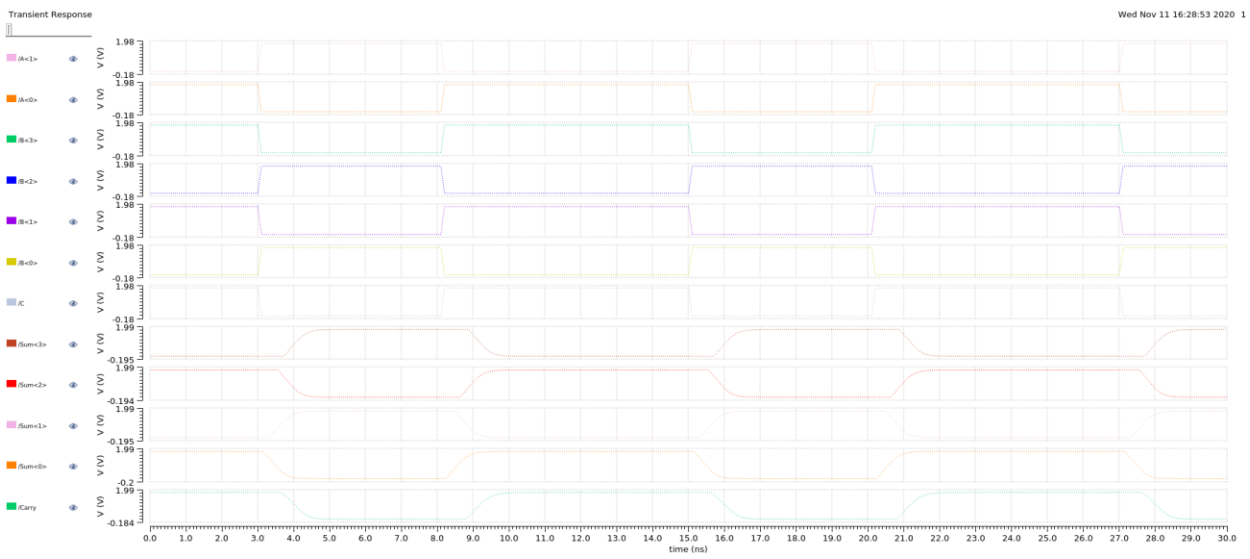


# Waveforms

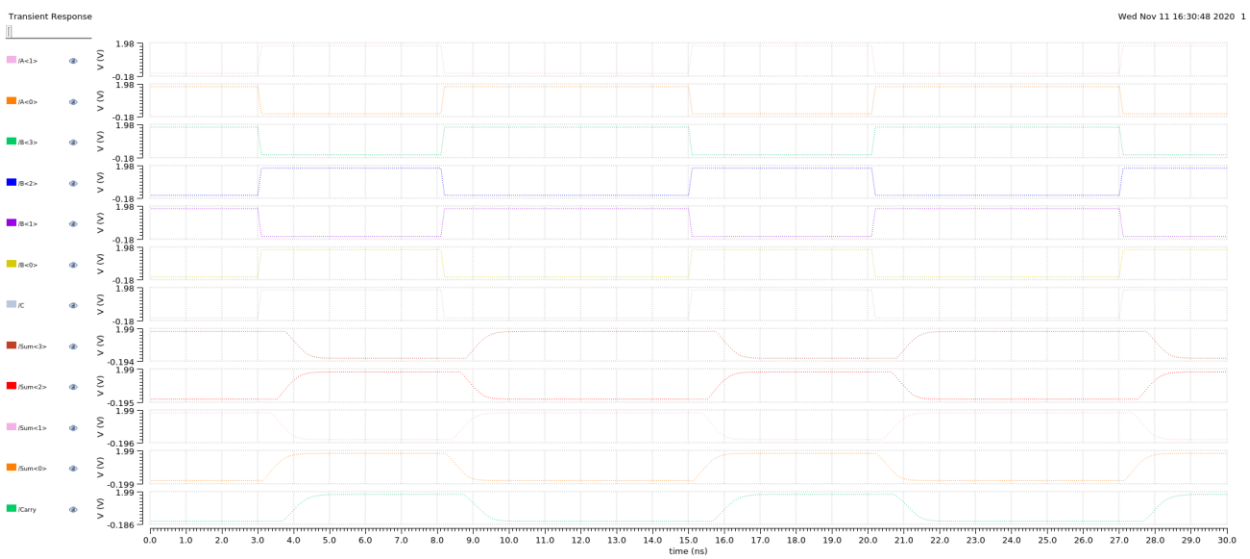
0000-1111-1



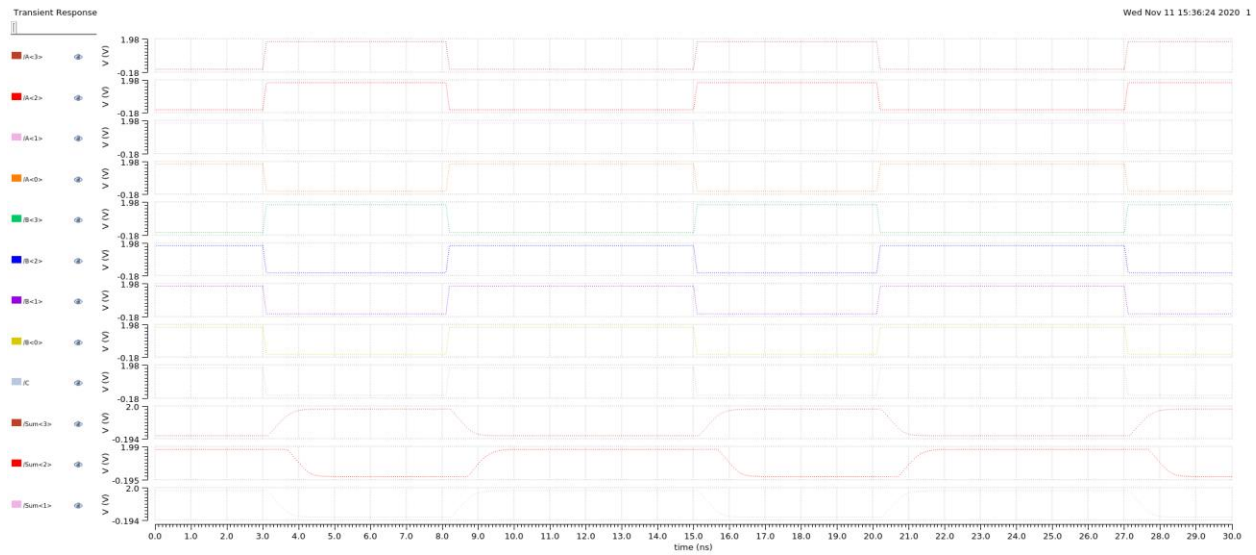
1010-0101-0



1010-0101-1



1100-1000-0



## Delay – not optimized

Input (A/B/C)	Sum<3> (ns)	Sum<2> (ns)	Sum<1> (ns)	Sum<0> (ns)	Carry (ns)
0000/1111/1	0.997433	0.800223	0.603093	0.416744	1.001209
1010/0101/0	0.991179	0.786862	0.58223	0.38279	1.02986
1010/0101/1	0.997515	0.800222	0.603385	0.416746	1.001566
1100/1000/0	0.819424	0.565779	0.609387	0.44322	0.42464

## Delay – optimized

Input (A/B/C)	Sum<3> (ns)	Sum<2> (ns)	Sum<1> (ns)	Sum<0> (ns)	Carry (ns)
0000/1111/1	0.632433	0.544623	0.438093	0.204744	1.301209
1010/0101/0	0.779979	0.677162	0.572358	0.36739	0.60806
1010/0101/1	0.995395	0.801842	0.609585	0.418846	1.10165356
1100/1000/0	0.601624	0.547079	0.608175876	0.44091	0.43336

### Power Consumption – not optimized

Input (A/B/C)	Power Consumption (uW)
0000/1111/1	18.33
1010/0101/0	39.56
1010/0101/1	18.87
1100/1000/0	17.52

### Power Consumption – optimized

Input (A/B/C)	Power Consumption (uW)
0000/1111/1	37.336
1010/0101/0	42.209
1010/0101/1	35.915
1100/1000/0	18.062

### Area – not optimized

18640000

### Area – optimized

28730000