

Lab 8. For week 15/04

We discussed several kind of adders: ripple adders, carry look-ahead adders (CLA): binary and radix 2K, carry save adders (CSA). In this lab you will be implementing a couple of these adders.

Task 1.

A. One stage of a n-bit CLA is composed of propagation and generate signals producing carry and sum bits. Use a mux and 2 xor gates to implement the stage. Chain these stages to make a n-bit adder.

B. Consider $k=4$. Implement a m-digit adder with each digit in base $B=2^k$. Use the propagate and generate circuits discussed in class to implement digit adders.

Task 2. Implement a carry save adder to add m numbers, each of which is n-digits long. The carry save adder uses $m+n$ single bit FAs, and some registers to store intermediate variables. (There is a correction here, earlier I have mentioned that you need n single bit FAs, it should be $m+n$ bit).