LSU EE 4720 Homework 5 Due: 27 April 2020

It's up to all of us: $r > 2\,\mathrm{m} \Rightarrow R_e < 1$ where r is the radius of the largest circle with you at the center and containing only people in your household, and R_e is the *effective reproduction number*, the number of people infected by an infectious person.

Problem 1: **Solve 2019 Final Exam Problem 2**, which asks for a pipeline execution diagram of FP code on our FP MIPS implementation, but with the comparison functional unit and floating-point condition code register added. For more information on the implementation of the floating-point compare instructions see 2018 Final Exam Problem 3. Please don't get confused about which problem to solve and which to use for background!

Problem 2: The following question appeared as Spring 2010 Homework 3 Problem 3, but in this ten-year anniversary version the solution must contain control logic for the multiplexors at the inputs to the `A1` and `A2` units. Try to initially solve it without looking at the solution, but use the solution if you get stuck.

Replace the fully pipelined adder in our FP pipeline (which appears on the next page) with one with an initiation interval of two and an operation latency of four. (The existing FP adder has an initiation interval of one and an operation latency of four.) See 2010 Homework 3 Problem 3 for more details.

Show datapath and control logic. Be sure to show control logic for the multiplexors at the inputs to `A1` and `A2`, **this control logic does not appear in the solution to the 2010 assignment**. *Hint: This additional control logic is really easy to do, it can be done just with wires, no gates!*

An Inkscape SVG version of the MIPS implementation below can be found at
`https://www.ece.lsu.edu/ee4720/2020/mpipei_fp_by.svg`.