

# CS280D HW1

Due: Wednesday 4/17 in class, each problem separate sheet of paper

1. Decipher Siddharth solution to the HW2 problem of 4 processors one Byz, and either approve as correct or give a counter example.
2. In class we have seen Bracha's algorithm for reliable broadcast in asynchronous Message Passing system where messages not deleted by the adversary will eventually arrive. With  $t < n/3$  where  $t$  is the number of maximum Byz faults and  $n$  the number of processors we proved that the algorithm guarantees:
  - (a) if the broadcaster is correct then all correct processors will output its value of broadcast
  - (b) if the broadcaster is Byz then if one correct processor will output a value for the broadcast then eventually all correct processors will output same

We know that in a  $t$ -resilient asynchronous system we can solve  $t + 1$  election where each correct processor outputs a participating id (we assume complete network of communication so each processor when receiving a message on an input port knows who is the sender). Can we solve this task in the asynchronous Byz? (there is a subtlety here, proc  $p_i$  might not participate ( it counts against a fault) but other Byz might lie and say she is. I am not sure it can be dealt with, so on first cut allow to output such participant)