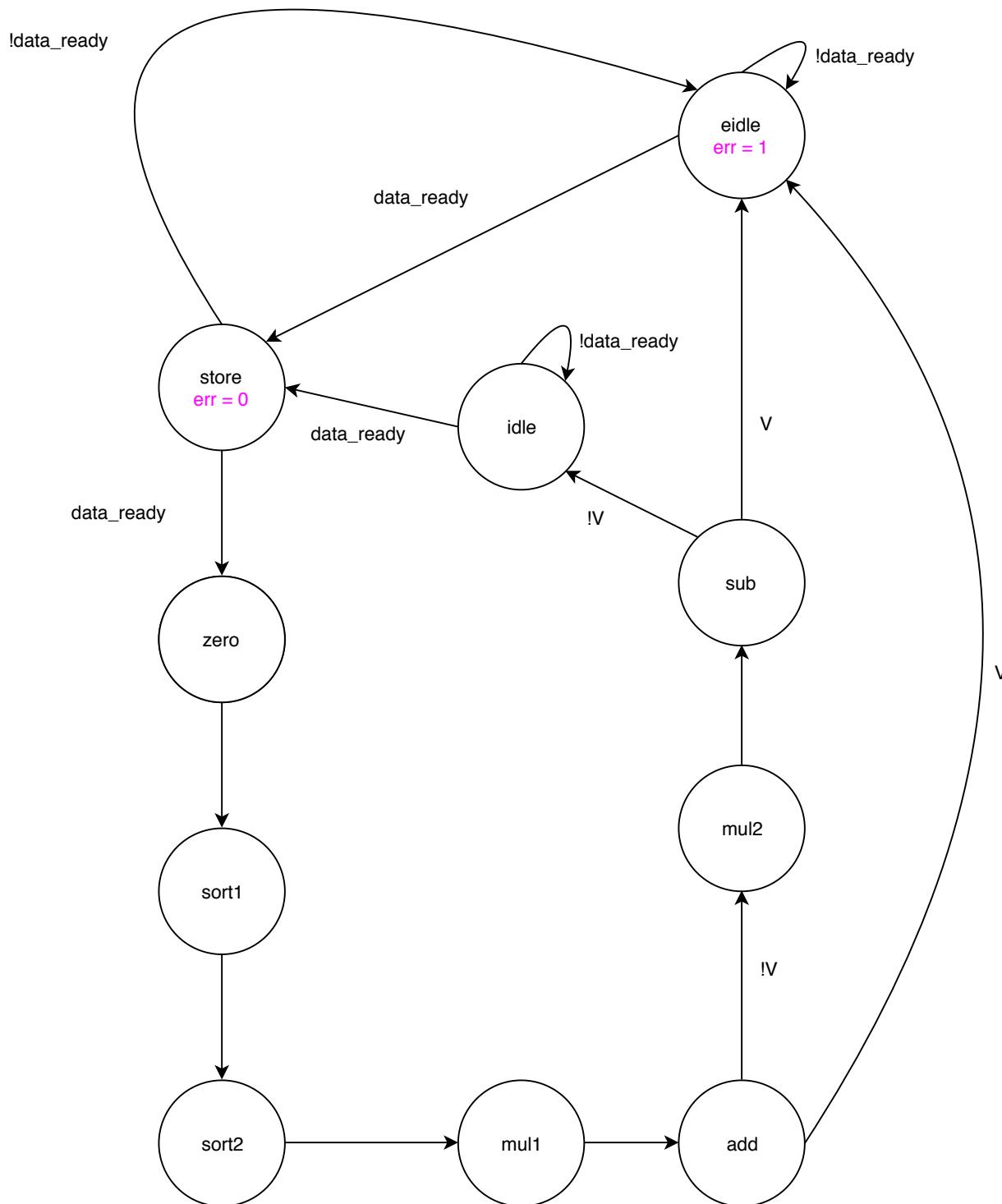


State Diagram for 2 point High-Pass Filter



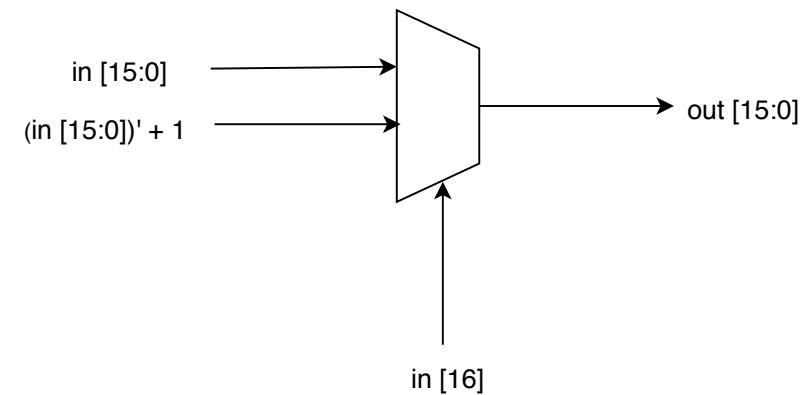
Pseudo-code for 4-input High-Pass FIR filter

```

idle: if (data_ready = 0) goto idle; //wait until data ready = 1
      if (load_coeff) goto load;
load:
  case(state) begin
    start: modwait = 0;
    if(load_coeff) goto load1;
load1: reg[9] = coef_1;
      modwait = 1;
wait1: modwait = 0;
      if(load_coeff) goto load2;
load2: reg[8] = coef_2;
      modwait = 1;
wait2: modwait = 0;
      if(load_coeff) goto load3;
load3: reg[7] = coef_3;
      modwait = 1;
wait3: modwait = 0;
      if(load_coeff) goto load4;
load4: reg[6] = coef_4;
      modwait = 1;
      goto idle;
  end
store: if (data_ready = 0) goto idle;
      reg[5] = data;
      err = 0;
zero: reg[0] = 0;
sort1: reg[1] = reg[2]; //reorder registers
sort2: reg[2] = reg[3]; //reorder registers
sort3: reg[3] = reg[4]; //reorder registers
sort4: reg[4] = reg[5]; //reorder registers
mul1: reg[10] = reg[1] * reg[6];//sample4 * F3
add1: reg[0] = reg[0] + reg[10];
      if (V) goto eidle;
mul2: reg[10] = reg[2] * reg[7];//sample3 * F2
sub1: reg[0] = reg[0] - reg[10];
      if (V) goto eidle;
mul3: reg[10] = reg[3] * reg[8];//sample2 * F1
add2: reg[0] = reg[0] + reg[10];
      if(V) goto eidle;
mul4: reg[10] = reg[4] * reg[9];//sample1 * F0
sub2: reg[0] = reg[0] - reg[10];
      if(V) goto eidle;
      else goto idle;
eidle: err = 1;
      if (data_ready=1) goto store;
      if (data_ready = 0) goto eidle;

```

schematic for magnitude block



State Transition diagram for the 4 point High Pass FIR filter

