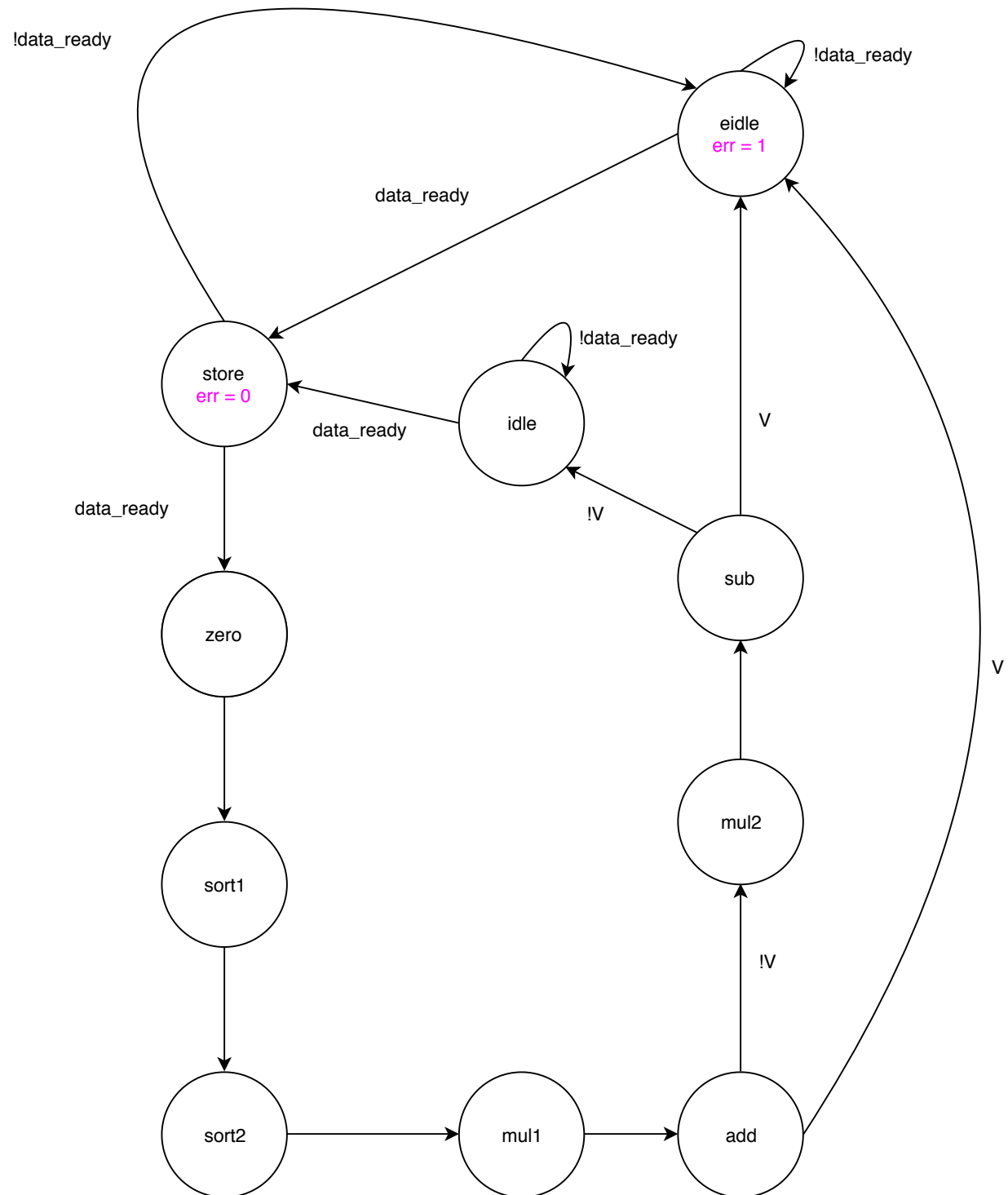


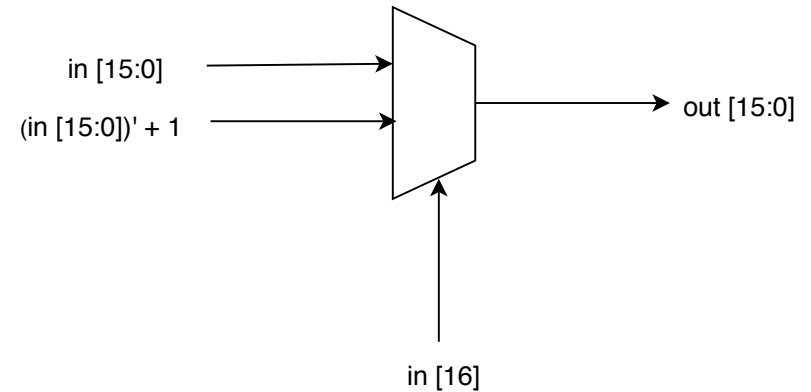
State Diagram for 2 point High-Pass Filter



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

