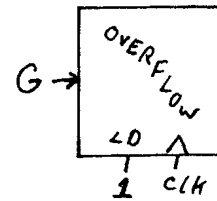
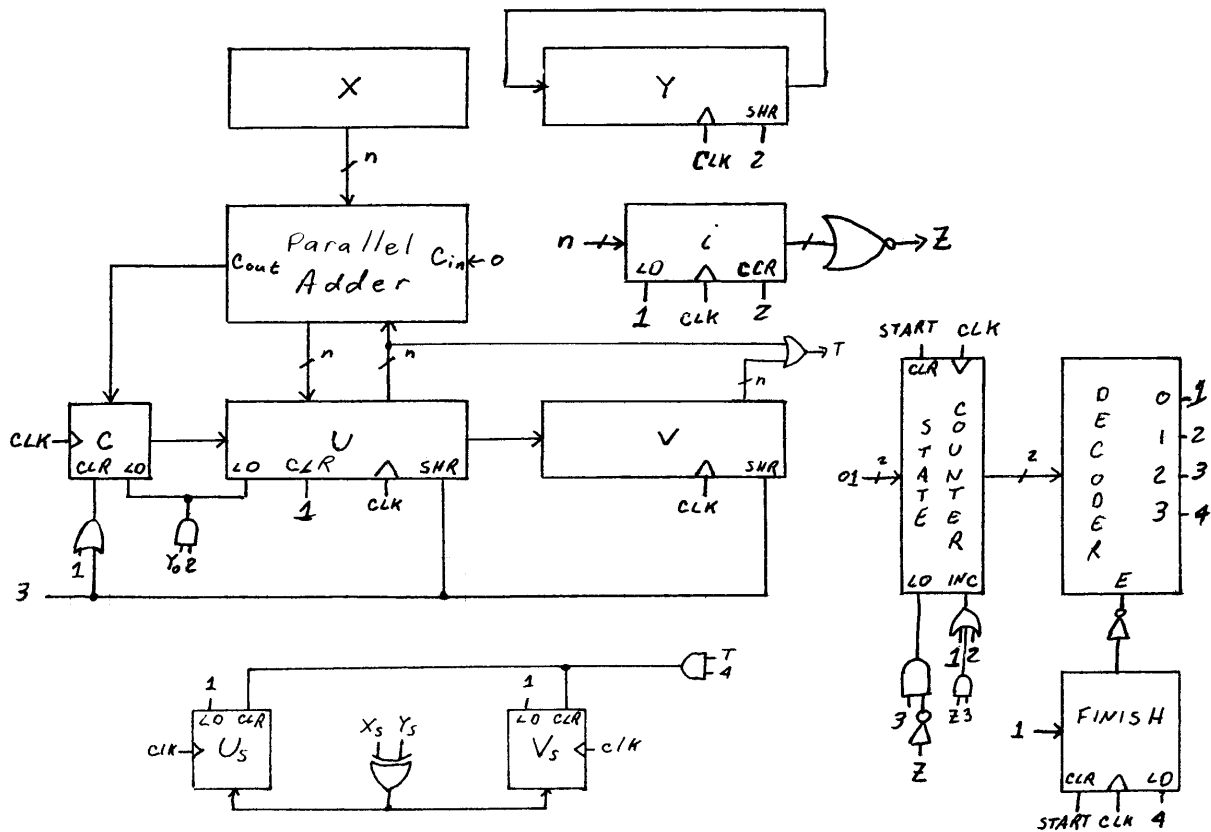


13. $I: OVERFLOW \leftarrow G$
 $GI: FINISH \leftarrow 1$
 2: $Y \leftarrow 0, C \leftarrow 0, i \leftarrow n$
 3: $shl\ CUV, shl\ Y, i \leftarrow i - 1$
 $(C + G)4: Y_0 \leftarrow 1, U \leftarrow U + X' + 1$
 $Z4: goto\ 3$
 $Z4: FINISH \leftarrow 1$



(Only I , GI , and 2 , and the $OVERFLOW$ hardware are changed; the rest is the same as in the chapter.)

- 20.



28. a) 20 ns

b) $S_{\infty} = \frac{T_1}{T_k} = \frac{15 + 10 + 15}{20} = 2$

c) $n * 40 > 20 * (n + 2)$, which yields $n > 2$

d) $\frac{n * 40}{2(n + 2)} = 1.5$, which yields $n = 6$

29.

Addresses	xxx000	xxx001	xxx010	xxx011	xxx100	xxx101	xxx110	xxx111
0-7	0	0	0	0	0	0	0	0
8-15	0	1	2	3	4	5	6	7
16-23	0	2	4	6	8	10	12	14
24-31	0	3	6	9	12	15	18	21
32-39	0	4	8	12	16	20	24	28
40-47	0	5	10	15	20	25	30	35
48-55	0	6	12	18	24	30	36	42
56-63	0	7	14	21	28	35	42	49

30.

