Lab 6 report

23b1269

Foram trivedi

Pen paper design

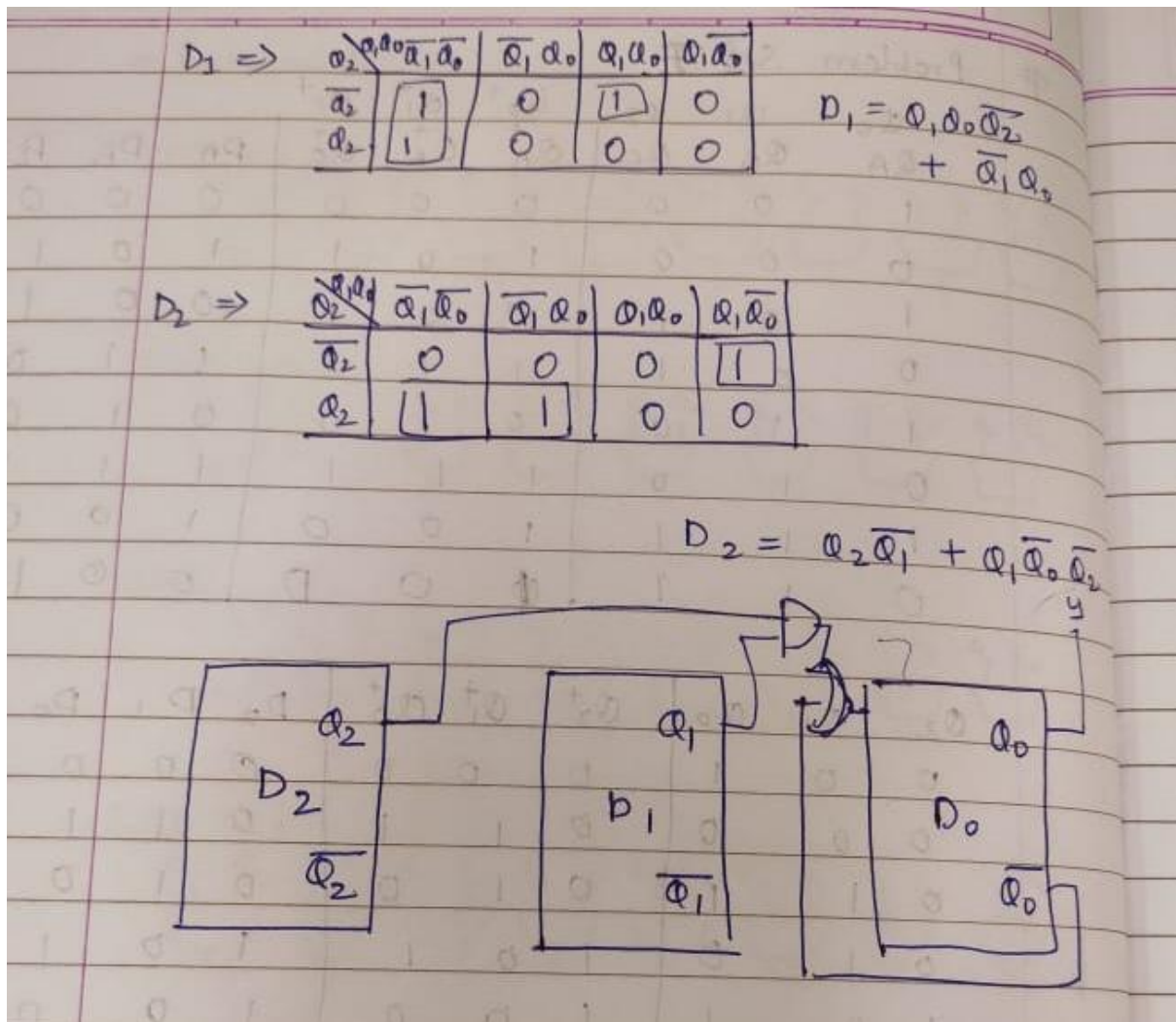# Problem Set #

Q_0	Q_1	Q_2	Q_0^+	Q_1^+	Q_2^+			
Q_A	Q_B	Q_C	Q_A^+	Q_B^+	Q_C^+	P_A	P_B	P_C
1	0	0	0	0	0	0	0	0
0	0	0	1	0	1	1	0	1
1	0	1	0	0	1	0	0	1
0	0	1	1	1	0	1	1	0
1	1	0	0	1	0	0	1	0
0	1	0	1	1	1	1	1	1
1	1	1	1	0	0	1	0	0
0	1	1	0	0	0	0	0	1

Q_2	Q_1	Q_0	Q_2^+	Q_1^+	Q_0^+	D_2	D_1	D_0
0	0	1	0	0	0	0	0	0
0	0	0	0	1	1	0	1	1
0	1	1	0	1	0	0	1	0
0	1	0	1	0	1	1	0	1
1	0	1	1	0	0	1	0	0
1	0	0	1	1	1	1	1	1
1	1	1	0	0	1	0	0	1
1	1	0	0	0	1	0	0	1

$D_0 \Rightarrow$

Q_0 \ $Q_2 Q_1$	$\overline{Q_2}\,\overline{Q_1}$	$\overline{Q_2}Q_1$	$Q_2 Q_1$	$Q_2\overline{Q_1}$
$\overline{Q_0}$	1	1	1	1
Q_0	0	0	1	0

$$D_0 = Q_2 Q_1 + \overline{Q_0}$$

$D_1 \Rightarrow$

$Q_2 \backslash Q_1 Q_0$	$\overline{Q_1}\,\overline{Q_0}$	$\overline{Q_1}\,Q_0$	$Q_1 Q_0$	$Q_1\overline{Q_0}$
$\overline{Q_2}$	1	0	1	0
Q_2	1	0	0	0

$$D_1 = Q_1 Q_0 \overline{Q_2} + \overline{Q_1}\,Q_0$$

$D_2 \Rightarrow$

$Q_2 \backslash Q_1 Q_0$	$\overline{Q_1}\,\overline{Q_0}$	$\overline{Q_1}\,Q_0$	$Q_1 Q_0$	$Q_1\overline{Q_0}$
$\overline{Q_2}$	0	0	0	1
Q_2	1	1	0	0

$$D_2 = Q_2 \overline{Q_1} + Q_1 \overline{Q_0}\,\overline{Q_2}$$

Q_2 D_2 $\overline{Q_2}$ Q_1 D_1 $\overline{Q_1}$ Q_0 D_0 $\overline{Q_0}$

Simulations
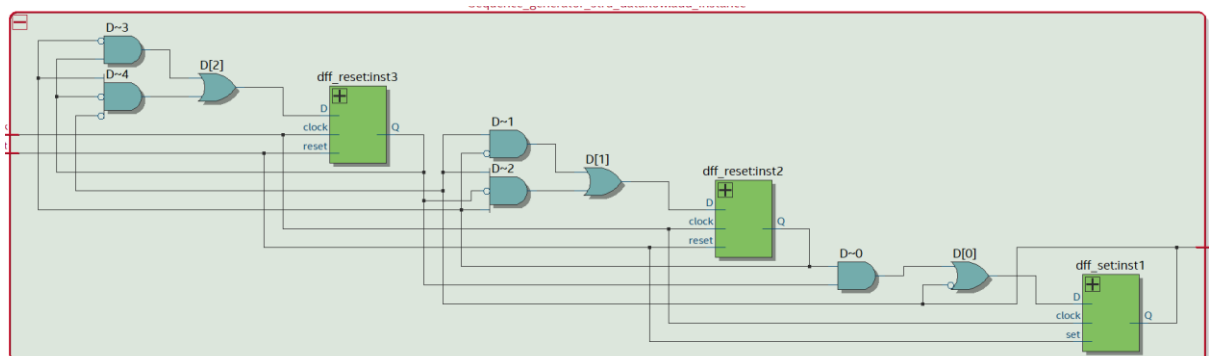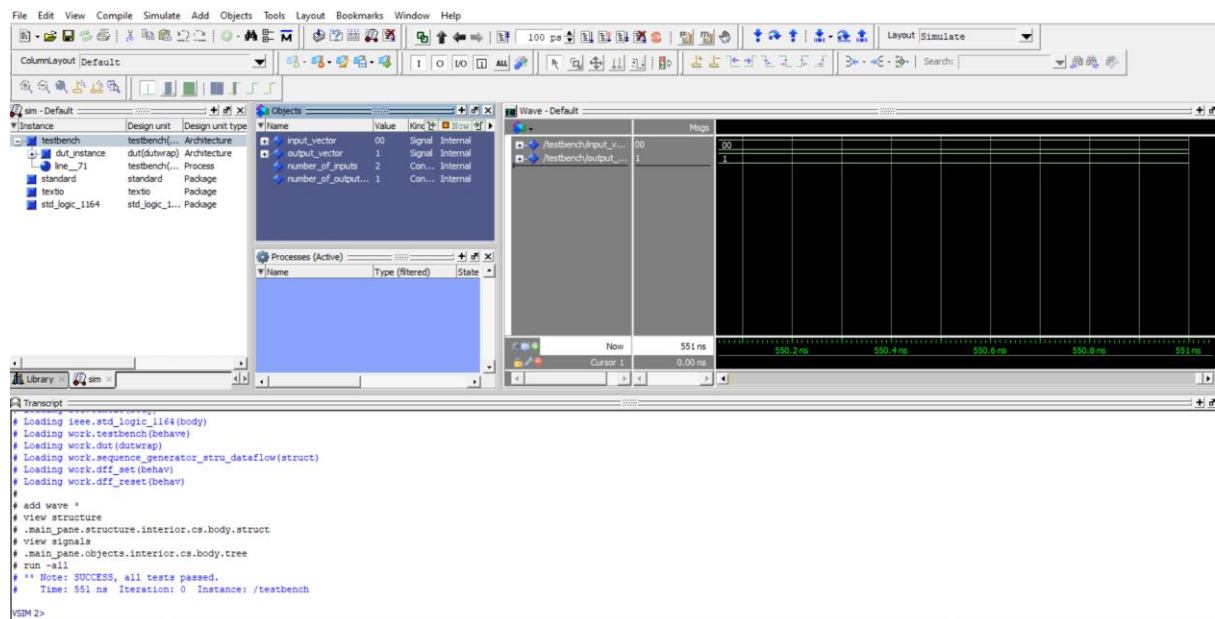
Scan chain output

```
10 1 Success
11 1 Success
00 1 Success
01 0 Success
00 0 Success
01 1 Success
00 1 Success
01 0 Success
00 0 Success
01 1 Success
00 1 Success
01 0 Success
00 0 Success
01 1 Success
00 1 Success
11 1 Success
00 1 Success
01 0 Success
00 0 Success
01 1 Success
00 1 Success
01 0 Success
00 0 Success
01 1 Success
00 1 Success
01 0 Success
```