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	A1	A0	B1	B0	or S2	S1	S0
1	0	0	0	0	0	0	0
	0	0	0	1	0	0	1
	0	0	1	0	0	1	0
	0	0	1	1	0	1	1
	0	1	0	0	0	0	1
	0	1	0	1	0	1	0
	0	1	1	0	0	1	1
	0	1	1	1	1	0	0
	1	0	0	0	0	1	0
	1	0	0	1	0	1	1
	1	0	1	0	1	0	0
	1	0	1	1	1	0	1
	1	1	0	0	0	1	1
	1	1	0	1	1	0	0
	1	1	1	0	1	0	1
	1	1	1	1	1	1	0

2. $A1=0$ S0

truth table for $A1=0$ S0

	A0	B1	B0
0	0	0	1
1	1	1	0

$$\bar{B}A0 + \bar{A}0B1$$

$$B1 \oplus A0$$

S0F0 and S0F1

$A1=1$ S0 same

$A1=0$ S1

truth table for $A1=0$ S1

	A0	B1	B0
0	0	1	1
1	1	1	0

$$\bar{B}1\bar{B}0 + \bar{A}0\bar{B}0 + A0B1\bar{B}0$$

$$S1F0$$

$A1=1$ S1

truth table for $A1=1$ S1

	A0	B1	B0
0	1	0	0
1	1	0	1

$$\bar{B}1\bar{B}0 + \bar{A}0\bar{B}0 + A0B1\bar{B}0$$

$$S1F1$$

$A1=0$ S2 or 1

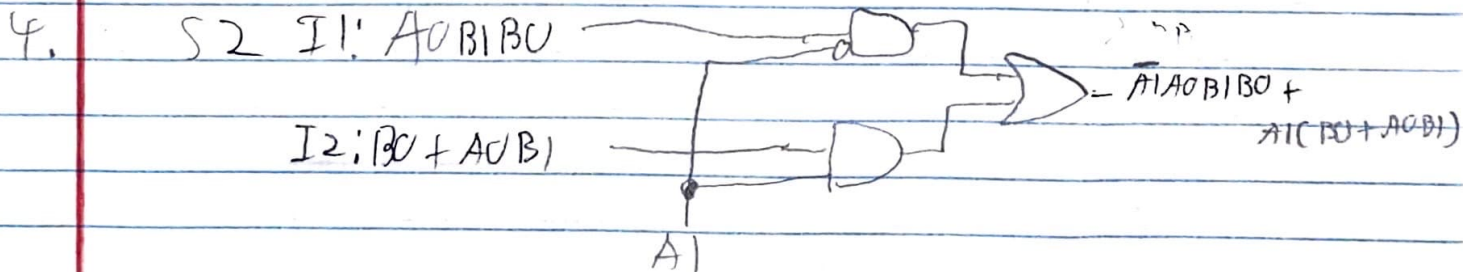
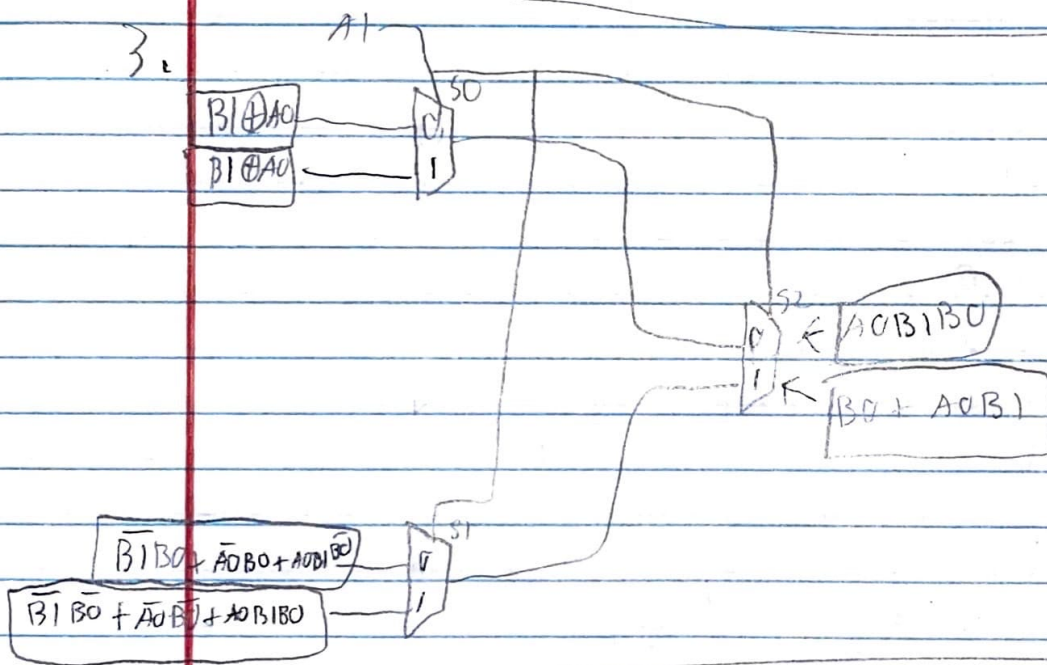
	B1 B0			
	00	01	11	10
B0	0	0	0	0
1	0	0	1	0

$A0/B1 B0$
S2 F0

$A1=1$

	B1 B0			
	00	01	11	10
B0	0	0	1	0
1	0	1	1	1

$B0 + A0 B1$
S2 F1



S1 behavioral

module S1 (A1, A0, B1, B0, f);

input A1, A0, B1, B0;

output f;

assign f = ((((~B1 & B0) | (~A0 & B0) | (A0 & B0 & ~B1)) & ~A1) |
'(((~B0 & ~B1) | (~A0 & ~B0) | (A0 & B1 & B0)) & A1));

end module

So behavioral

```
module S0(A1,A0,B1,B0,f);
```

```
  input A1,A0,B1,B0;
```

```
  output f;
```

```
  assign f = B1 ^ A0;
```

```
endmodule
```