Line Follower Robot (Combinational-logic)

Forward Direction

	Input			Output
	A	B	C	Left Motor FD
0	0	0	0	0
1	0	0	1	0
2	0	1	0	1
3	0	1	1	0
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

OUTPUT = $\bar{A}B\bar{C} + A\bar{B}\bar{C} + A\bar{B}C + AB\bar{C} + ABC$

	Input			Output
	A	B	C	Right Motor FD
0	0	0	0	0
1	0	0	1	1
2	0	1	0	1
3	0	1	1	1
4	1	0	0	0
5	1	0	1	1
6	1	1	0	0
7	1	1	1	1

OUTPUT = $\bar{A}B\bar{C} + \bar{A}B\bar{C} + \bar{A}BC + A\bar{B}C + ABC$

Backward Direction

	INPUT			Output
	A	B	C	Left Motor BD
0	0	0	0	0
1	0	0	1	1
2	0	1	0	0
3	0	1	1	1
4	1	0	0	0
5	1	0	1	0
6	1	1	0	0
7	1	1	1	0

OUTPUT = $\bar{A}B\bar{C} + \bar{A}BC$

	INPUT			Output
	A	B	C	Right Motor BD
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	0
6	1	1	0	1
7	1	1	1	0

OUTPUT = $A\bar{B}\bar{C} + AB\bar{C}$

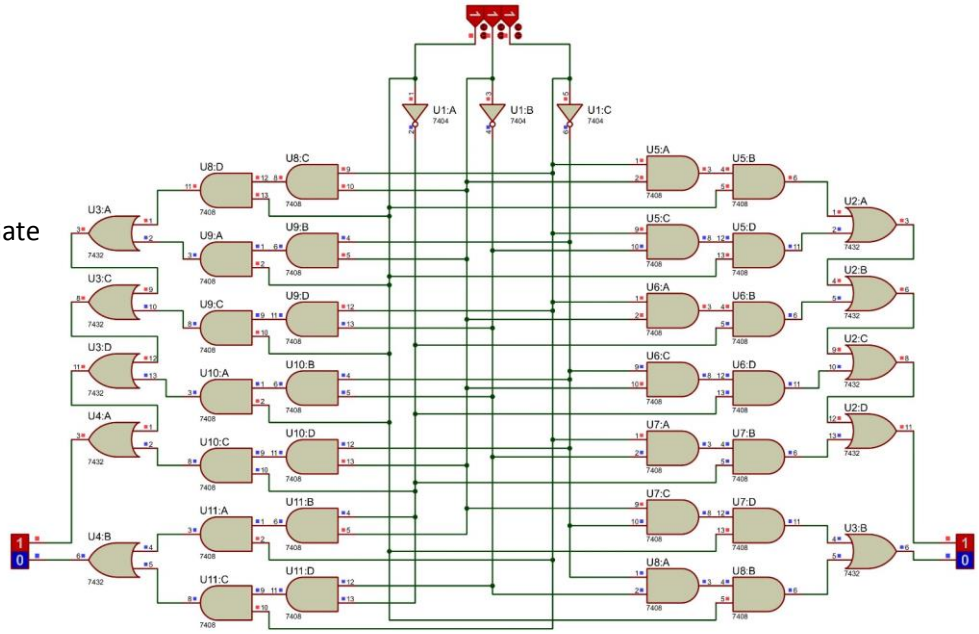
Simulation

Number of used gates:

28 AND-Gate, **10** OR-Gate, **3** NOT-Gate

Number of used ICs:

7 (7408), **3** (7432), **1** (7404)



Line Follower Robot (Enhanced)

	Input			Output
	A	B	C	Left Motor FD
0	0	0	0	0
1	0	0	1	0
2	0	1	0	1
3	0	1	1	0
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

OUTPUT = $\bar{A}B\bar{C} + A\bar{B}\bar{C} + A\bar{B}C + AB\bar{C} + ABC$

	INPUT			Output
	A	B	C	Left Motor BD
0	0	0	0	0
1	0	0	1	1
2	0	1	0	0
3	0	1	1	1
4	1	0	0	0
5	1	0	1	0
6	1	1	0	0
7	1	1	1	0

OUTPUT = $\bar{A}\bar{B}C + \bar{A}B\bar{C}$

	Input			Output
	A	B	C	Right Motor FD
0	0	0	0	0
1	0	0	1	1
2	0	1	0	1
3	0	1	1	1
4	1	0	0	0
5	1	0	1	1
6	1	1	0	0
7	1	1	1	1

OUTPUT = $\bar{A}\bar{B}C + \bar{A}B\bar{C} + \bar{A}BC + A\bar{B}C + ABC$

	INPUT			Output
	A	B	C	Right Motor BD
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	0
6	1	1	0	1
7	1	1	1	0

OUTPUT = $A\bar{B}\bar{C} + ABC$

A\BC	00	01	11	10
0	0	0	0	1
1	1	1	1	1

$X = A + B\bar{C}$

A\BC	00	01	11	10
0	0	1	1	0
1	0	0	0	0

$X = \bar{A} + C$

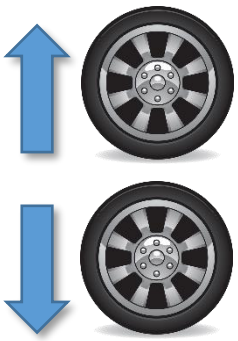
A\BC	00	01	11	10
0	0	1	1	1
1	0	1	1	0

$X = \bar{A}B + C$

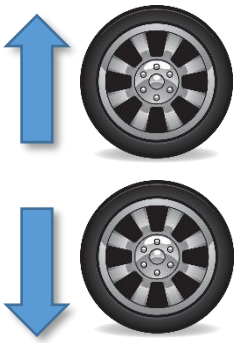
A\BC	00	01	11	10
0	0	0	0	0
1	1	0	0	1

$X = A + \bar{C}$

Left Wheel



Right Wheel



Simulation

Number of used gates:

4 AND-Gate, **2** OR-Gate, **2** NOT-Gate

Number of used ICs:

1 (7408), **1** (7432), **1** (7404)