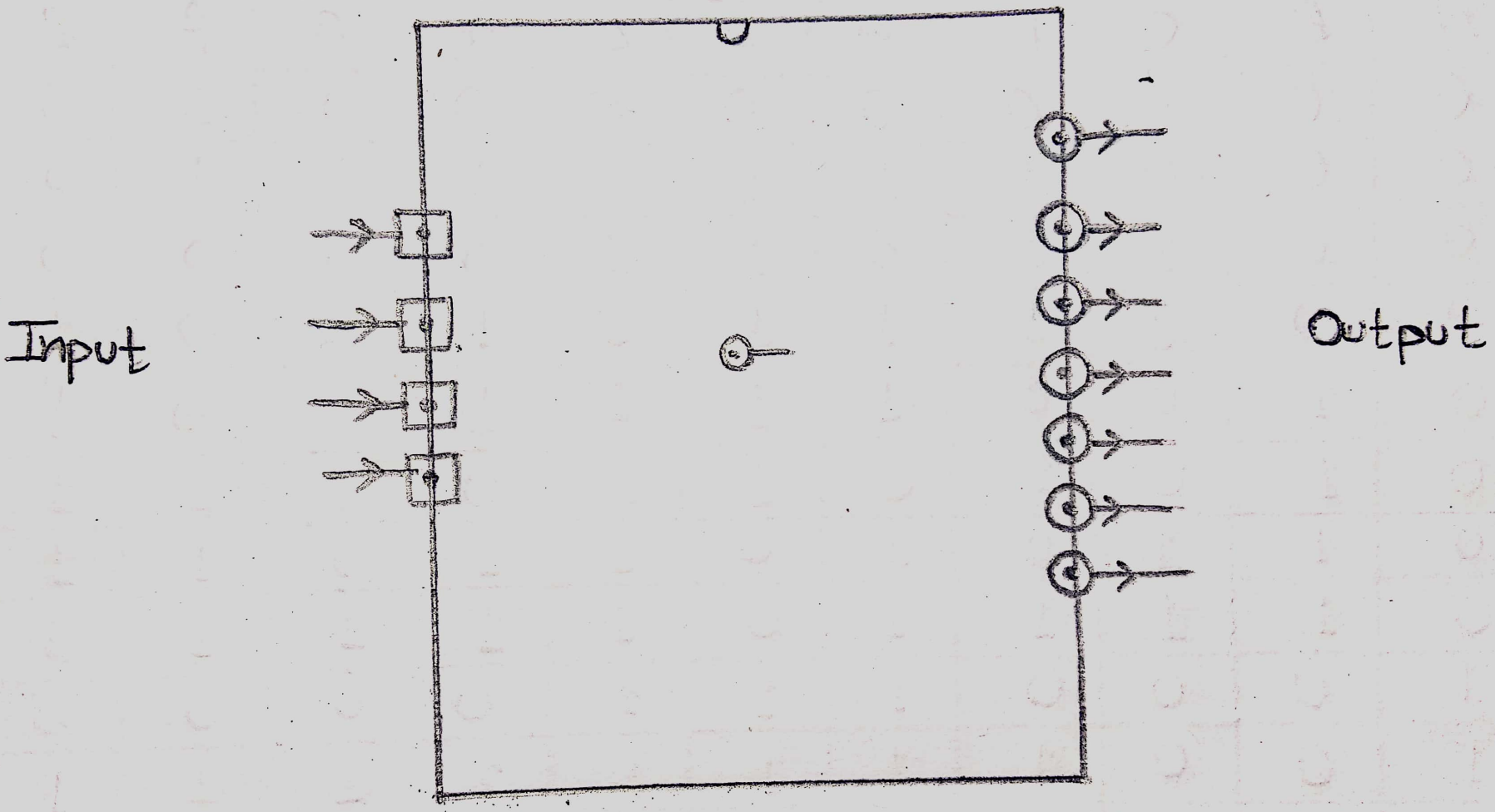
Block Diagram of 7-segment



Seven Segment Decoder Truth Table

	INPUT				OUTPUT						
LED	A	B	C	D	a	b	c	d	e	f	g
NULL	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	0	0	1	1	0	0	0	0
2	0	0	1	1	1	1	0	1	1	0	1
3	0	1	0	0	1	1	1	1	0	0	1
4	0	1	0	1	0	1	1	0	0	1	1
5	0	1	1	0	1	0	1	1	0	1	1
6	0	1	1	1	1	0	1	1	1	1	1
7	1	0	0	0	1	1	1	0	0	0	0
8	1	0	0	1	1	1	1	1	1	1	1
9	1	0	1	0	1	1	1	1	0	1	1
n	1	0	1	1	0	0	1	0	1	0	1
o	1	1	0	0	0	0	1	1	1	0	1
12	1	1	0	1	X	X	X	X	X	X	X
13	1	1	1	0	X	X	X	X	X	X	X
14	1	1	1	1	X	X	X	X	X	X	X

Karnaugh Maps Simplification

AB/CD	00	01	11	10
00	0	1	1	0
01	1	0	1	1
11	0	X	X	X
10	1	1	0	1

a= A'B'D + A'BD' + AB'C' + AB'D'

AB/CD	00	01	11	10
00	0	1	1	1
01	1	1	0	0
11	0	X	X	X
10	1	0	0	1

b= C'D + A'B'C + A'BC' + AB'D'

AB/CD	00	01	11	10
00	0	1	0	1
01	1	1	1	1
11	1	X	X	X
10	1	1	1	1

c = C'D + CD' + B + A

AB/CD	00	01	11	10
00	0	1	1	0
01	1	0	1	1
11	1	X	X	X
10	0	1	0	1

d = A'B'D + B'C'D + BD' + BC + ACD'

AB/CD	00	01	11	10
00	0	1	1	0
01	0	0	1	0
11	1	X	X	X
10	0	1	1	0

$e = B'D + CD + AB$

AB/CD	00	01	11	10
00	0	1	0	0
01	0	1	1	1
11	0	X	X	X
10	0	1	0	1

$f = C'D + BC + ACD'$

AB/CD	00	01	11	10
00	0	0	1	0
01	1	1	1	1
11	1	X	X	X
10	0	1	1	1

$g = CD + B + AD + AC$