	Original	Complement
Key	12341234 12341234	EDCBEDCBEDCBEDCB
Plaintext	12345678ABCDEF12	EDCBA987543210ED
Ciphertext	E112BE1DEFC7A367	????????????????

	Sr. No	Binary	IP	Output
E	1	1	1	9
	2	1	0	
	3	1	0	
	4	0	1	
D	5	1	0	3
	6	1	0	
	7	0	1	
	8	1	1	
C	9	1	0	7
	10	1	1	
	11	0	1	
	12	0	1	
B	13	1	0	0
	14	0	0	
	15	1	0	
	16	1	0	
A	17	1	1	9
	18	0	0	
	19	1	0	
	20	0	1	
9	21	1	1	9
	22	0	0	
	23	0	0	
	24	1	1	
8	25	1	1	8
	26	0	0	
	27	0	0	
	28	0	0	
7	29	0	1	F
	30	1	1	
	31	1	1	
	32	1	1	
5	33	0	1	8
	34	1	0	
	35	0	0	
	36	1	0	

IP							
58	50	42	34	26	18	10	2
60	52	44	36	28	20	12	4
62	54	46	38	30	22	14	6
64	56	48	40	32	24	16	8
57	49	41	33	25	17	9	1
59	51	43	35	27	19	11	3
61	53	45	37	29	21	13	5
63	55	47	39	31	23	15	7

Expansion P-box					
32	1	2	3	4	5
4	5	6	7	8	9
8	9	10	11	12	13
12	13	14	15	16	17
16	17	18	19	20	21
20	21	22	23	24	25
24	25	26	26	27	28
28	29	30	31	32	1

Straight P-box							
16	7	20	21	29	12	28	17
1	15	23	26	5	18	31	10
2	8	24	14	32	27	3	9
19	13	30	6	22	11	4	25

4	37	0	1	F
	38	1	1	
	39	0	1	
	40	0	1	
3	41	0	1	A
	42	0	0	
	43	1	1	
	44	1	0	
2	45	0	0	5
	46	0	1	
	47	1	0	
	48	0	1	
1	49	0	1	8
	50	0	0	
	51	0	0	
	52	1	0	
0	53	0	0	7
	54	0	1	
	55	0	1	
	56	0	1	
E	57	1	0	2
	58	1	0	
	59	1	1	
	60	0	0	
D	61	1	1	A
	62	1	0	
	63	0	1	
	64	1	0	

PC1							
57	49	41	33	25	17	9	1
58	50	42	34	26	18	10	2
59	51	43	35	27	19	11	3
60	52	44	36	63	55	47	39
31	23	15	7	62	54	46	38
30	22	14	6	61	53	45	37
29	21	13	5	28	20	12	4

PC2							
14	17	11	24	1	5	3	28
15	6	21	10	23	19	12	4
26	8	16	7	27	20	13	2
41	52	31	37	47	55	30	40
51	45	33	48	44	49	39	56
34	53	46	42	50	36	29	32

No. of Shifts = 1 bit

	Sr. No	Binary	PC1	L-Shift	PC2	Round
E	1	1	1	1	1	E
	2	1	1	1	1	
	3	1	1	1	1	
	4	0	1	1	0	
D	5	1	1	1	1	F
	6	1	1	1	1	
	7	0	1	1	1	
	8	1	1	1	1	
	9	1	1	1	1	

Sr. No	Key	L0	R0	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	1	0	1	0	1	0	3
2	1	0	0	1	0	1	0	0	
3	1	0	0	0	1	1	1	1	
4	0	1	0	0	0	0	0	1	
5	1	0	1	0	1	0	0	0	4
6	1	0	1	1	0	0	1	1	
7	1	1	1	0	1	0	1	0	
8	1	1	1	1	0	0	1	0	
9	1	0	1	1	0	0	0	0	

C	10	1	1	1	1	F
	11	0	1	1	1	
	12	0	1	1	1	
B	13	1	1	1	1	F
	14	0	1	1	1	
	15	1	1	1	1	
	16	1	1	0	1	
E	17	1	0	1	0	6
	18	1	1	0	1	
	19	1	0	1	0	
	20	0	1	0	1	
D	21	1	0	1	0	3
	22	1	1	0	0	
	23	0	0	1	1	
	24	1	1	0	1	
C	25	1	0	0	1	9
	26	1	0	0	0	
	27	0	0	0	0	
	28	0	0	1	1	
B	29	1	1	0	1	A
	30	0	0	1	0	
	31	1	1	0	1	
	32	1	0	1	0	
E	33	1	1	0	1	D
	34	1	0	1	1	
	35	1	1	0	0	
	36	0	0	0	1	
D	37	1	0	1	1	F
	38	1	1	0	1	
	39	0	0	1	1	
	40	1	1	0	1	
C	41	1	0	1	1	A
	42	1	1	0	0	
	43	0	0	1	1	
	44	0	1	1	0	
B	45	1	1	1	1	9
	46	0	1	1	0	
	47	1	1	1	0	
	48	1	1	1	1	
E	49	1	1	1		
	50	1	1	1		
	51	1	1	1		
	52	0	1	0		

10	1	1	0	1	0	0	1	0	**0**
11	1	1	1	1	0	1	1	0	
12	1	1	0	1	0	1	1	0	
13	1	0	0	1	0	1	0	0	**4**
14	1	0	1	1	0	0	1	1	
15	1	0	0	0	1	1	0	0	
16	1	0	1	1	0	1	0	0	
17	0	1	1	0	0	1	1	0	**3**
18	1	0	0	0	1	1	0	0	
19	0	0	0	0	0	1	1	1	
20	1	1	0	0	1	1	0	1	
21	0	1	0	1	1	0	1	0	**7**
22	0	0	1	0	0	0	1	1	
23	1	0	1	1	0	1	1	1	
24	1	1	1	1	0	1	0	1	
25	1	1	0	1	0	1	1	0	**6**
26	0	0	0	1	1	1	1	1	
27	0	0	1	0	0	1	1	1	
28	1	0	0	0	1	1	0	0	
29	1	1	1	0	1	0	0	1	**A**
30	0	1	0	0	0	1	1	0	
31	1	1	1	0	1	0	0	1	
32	0	1	0	0	0	1	1	0	
33	1			1	0				
34	1			1	0				
35	0			1	1				
36	1			0	1				
37	1			1	0				
38	1			0	1				
39	1			0	1				
40	1			1	0				
41	1			0	1				
42	0			1	1				
43	1			0	1				
44	0			1	1				
45	1			0	1				
46	0			1	1				
47	0			0	0				
48	1			1	0				

D	53	1	0	0		
	54	1	0	0		
	55	0	0	0		
	56	1	0	1		
C	57	1				
	58	1				
	59	0				
	60	0				
B	61	1				
	62	0				
	63	1				
	64	1				

No. of Shifts = 1 bit

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	A
2	1	1	0	
3	1	1	1	
4	1	1	0	
5	1	1	1	F
6	1	1	1	
7	1	1	1	
8	1	1	1	
9	1	1	0	5
10	1	1	1	
11	1	1	0	
12	1	1	1	
13	1	1	0	3
14	1	1	0	
15	1	0	1	
16	0	1	1	
17	1	0	0	7
18	0	1	1	
19	1	0	1	
20	0	1	1	
21	1	0	1	F
22	0	1	1	
23	1	0	1	
24	0	0	1	
25	0	0	0	2
26	0	0	0	
27	0	1	1	

Sr. No	Key	L1	R1	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	0	0	1	0	1	0	6
2	0	0	0	0	0	0	1	1	
3	1	0	1	0	1	0	1	1	
4	0	0	1	1	1	1	0	0	
5	1	1	0	1	0	1	1	0	6
6	1	1	1	0	1	0	0	1	
7	1	1	0	1	0	1	0	1	
8	1	1	0	0	1	1	1	0	
9	0	1	0	1	1	0	0	1	C
10	1	0	0	0	1	1	1	1	
11	0	1	0	0	0	1	1	0	
12	1	0	0	0	1	0	0	0	
13	0	0	0	0	0	1	1	1	8
14	0	1	1	0	0	0	1	0	
15	1	0	0	0	1	1	0	0	
16	1	1	0	0	1	1	1	0	
17	0	1	0	0	0	1	0	1	C
18	1	0	0	0	1	1	1	1	
19	1	0	1	0	1	0	0	0	
20	1	0	1	0	1	1	0	0	
21	1	0	0	1	0	0	0	0	7
22	1	1	1	0	1	1	0	1	
23	1	1	1	0	1	1	0	1	
24	1	1	1	0	1	0	0	1	
25	0	0	0	0	0	1	0	0	4
26	0	0	1	0	0	0	1	1	
27	1	1	1	0	1	0	1	0	

28	1	1	0	
29	0	1	1	D
30	1	0	1	
31	0	1	0	
32	1	0	1	
33	0	1	0	7
34	1	0	1	
35	0	0	1	
36	0	1	1	
37	1	0	1	C
38	0	1	1	
39	1	0	0	
40	0	1	0	
41	1	0	0	3
42	0	1	0	
43	1	1	1	
44	1	1	1	
45	1	1	1	E
46	1	1	1	
47	1	1	1	
48	1	1	0	
49	1	1		
50	1	1		
51	1	0		
52	0	0		
53	0	0		
54	0	0		
55	0	1		
56	1	0		

28	0	0	0	1	1	0	0	0	
29	1	1	1	1	0	1	1	0	5
30	1	0	0	0	1	1	1	1	
31	0	1	1	1	1	0	1	0	
32	1	0	0	0	1	0	1	1	
33	0			1	1				
34	1			1	0				
35	1			1	0				
36	1			0	1				
37	1			1	0				
38	1			0	1				
39	0			1	1				
40	0			1	1				
41	0			0	0				
42	0			1	1				
43	1			0	1				
44	1			1	0				
45	1			0	1				
46	1			1	0				
47	1			0	1				
48	0			0	0				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	A
2	1	1	0	
3	1	1	1	
4	1	1	0	
5	1	1	1	F
6	1	1	1	
7	1	1	1	
8	1	1	1	
9	1	1	0	5
10	1	1	1	

Sr. No	Key	L2	R2	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	0	0	1	0	0	1	1	8
2	0	0	1	0	0	1	0	0	
3	1	1	1	1	0	0	1	0	
4	0	1	0	1	1	0	1	0	
5	1	0	0	0	1	1	0	0	3
6	1	1	1	0	1	0	1	0	
7	1	0	1	0	1	0	1	1	
8	1	0	0	0	1	1	1	1	
9	0	0	1	1	1	0	0	0	6
10	1	0	1	1	0	1	1	1	

11	1	1	0	5
12	1	1	1	
13	1	0	0	3
14	1	1	0	
15	0	0	1	
16	1	1	1	
17	0	0	1	F
18	1	1	1	
19	0	0	1	
20	1	1	1	
21	0	0	1	D
22	1	0	1	
23	0	0	0	
24	0	0	1	
25	0	1	1	A
26	0	1	0	
27	1	1	1	
28	1	1	0	
29	1	1	1	D
30	0	0	1	
31	1	1	0	
32	0	0	1	
33	1	0	0	5
34	0	1	1	
35	0	0	0	
36	1	1	1	
37	0	0	1	8
38	1	1	0	
39	0	0	0	
40	1	1	0	
41	0	1	1	F
42	1	1	1	
43	1	1	1	
44	1	1	1	
45	1	1	0	6
46	1	1	1	
47	1	1	1	
48	1	1	0	
49	1	0		
50	1	0		
51	0	0		
52	0	0		
53	0	1		

11	0	0	0	0	0	1	1	1	**6**
12	1	0	0	1	0	1	0	0	
13	0	0	1	0	0	0	1	1	**9**
14	0	1	0	1	1	1	1	0	
15	1	0	0	1	0	1	0	0	
16	1	0	0	0	1	1	1	1	
17	1	0	1	0	1	1	1	1	**C**
18	1	0	1	1	0	1	1	1	
19	1	1	0	0	1	1	1	0	
20	1	1	0	1	0	1	1	0	
21	1	0	0	0	1	1	1	1	**F**
22	1	1	1	0	1	0	0	1	
23	0	1	1	0	0	1	0	1	
24	1	1	1	1	0	1	0	1	
25	1	0	0	0	1	1	1	1	**C**
26	0	1	1	1	1	0	0	1	
27	1	1	0	1	0	0	1	0	
28	0	0	0	0	0	1	0	0	
29	1	1	0	0	1	0	0	1	**F**
30	1	0	1	0	1	1	1	1	
31	0	1	0	0	0	0	0	1	
32	1	0	1	0	1	1	1	1	
33	0			1	1				
34	1			1	0				
35	0			1	1				
36	1			0	1				
37	1			1	0				
38	0			0	0				
39	0			1	1				
40	0			0	0				
41	1			0	1				
42	1			0	1				
43	1			0	1				
44	1			0	1				
45	0			1	1				
46	1			0	1				
47	1			1	0				
48	0			0	0				

54	0	0		
55	1	1		
56	0	0		

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	9
2	1	1	0	
3	1	1	0	
4	1	1	1	
5	1	1	1	F
6	1	1	1	
7	1	1	1	
8	1	1	1	
9	1	1	0	5
10	1	1	1	
11	1	0	0	
12	1	1	1	
13	0	0	1	B
14	1	1	0	
15	0	0	1	
16	1	1	1	
17	0	0	1	F
18	1	1	1	
19	0	0	1	
20	1	0	1	
21	0	0	1	9
22	0	0	0	
23	0	1	0	
24	0	1	1	
25	1	1	1	8
26	1	1	0	
27	1	1	0	
28	1	1	0	
29	1	1	0	5
30	0	0	1	
31	1	0	0	
32	0	1	1	
33	0	0	1	C
34	1	1	1	
35	0	0	0	
36	1	1	0	

Sr. No	Key	L3	R3	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	0	1	1	0	1	1	1	9
2	0	1	0	1	1	0	1	0	
3	0	1	0	0	0	1	1	0	
4	1	0	0	0	1	1	1	1	
5	1	0	0	0	1	0	1	1	3
6	1	1	0	0	1	1	0	1	
7	1	1	1	0	1	1	0	1	
8	1	0	1	0	1	0	1	1	
9	0	1	0	0	0	0	1	0	3
10	1	1	1	1	0	0	1	0	
11	0	0	1	1	1	0	1	1	
12	1	0	0	0	1	0	1	1	
13	1	1	1	1	0	1	0	1	C
14	0	0	0	0	0	0	1	1	
15	1	0	0	1	0	1	0	0	
16	1	0	1	1	0	1	0	0	
17	1	1	1	0	1	1	0	1	E
18	1	1	1	1	0	1	0	1	
19	1	0	0	0	1	0	1	1	
20	1	0	0	1	0	1	0	0	
21	1	0	1	0	1	1	1	1	D
22	0	1	1	0	0	1	0	1	
23	0	1	1	1	1	1	1	0	
24	1	1	1	1	0	1	0	1	
25	1	0	1	1	0	1	0	0	1
26	0	1	1	1	1	1	1	0	
27	0	0	0	1	1	0	0	0	
28	0	0	0	0	0	0	1	1	
29	0	0	1	0	0	1	1	1	E
30	1	1	1	1	0	0	0	1	
31	0	0	1	0	0	0	1	1	
32	1	1	1	1	0	1	1	0	
33	1			1	0				
34	1			1	0				
35	0			1	1				
36	0			1	1				

37	0	0	1	A
38	1	1	0	
39	0	1	1	
40	1	1	0	
41	1	1	1	F
42	1	1	1	
43	1	1	1	
44	1	1	1	
45	1	1	0	7
46	1	1	1	
47	1	0	1	
48	1	0	1	
49	0	0		
50	0	0		
51	0	1		
52	0	0		
53	1	1		
54	0	0		
55	1	1		
56	0	0		

37	1			1	0				
38	0			1	1				
39	1			1	0				
40	0			0	0				
41	1			0	1				
42	1			1	0				
43	1			0	1				
44	1			1	0				
45	0			1	1				
46	1			1	0				
47	1			1	0				
48	1			1	0				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	9
2	1	1	0	
3	1	1	0	
4	1	1	1	
5	1	1	1	F
6	1	1	1	
7	1	1	1	
8	1	1	1	
9	1	0	0	7
10	1	1	1	
11	0	0	1	
12	1	1	1	
13	0	0	1	B
14	1	1	0	
15	0	0	1	
16	1	1	1	
17	0	0	1	F
18	1	0	1	
19	0	0	1	

Sr. No	Key	L4	R4	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	1	0	1	1	1	0	5
2	0	0	0	1	1	0	1	1	
3	0	0	0	0	0	0	0	0	
4	1	0	1	0	1	1	1	1	
5	1	0	1	1	0	1	1	1	9
6	1	0	1	1	0	1	0	0	
7	1	1	1	1	0	1	1	0	
8	1	1	1	1	0	1	0	1	
9	0	0	0	1	1	0	1	1	9
10	1	1	0	1	0	1	1	0	
11	1	1	1	1	0	1	1	0	
12	1	0	1	0	1	0	1	1	
13	1	1	1	1	0	0	1	0	4
14	0	0	1	0	0	1	1	1	
15	1	0	0	0	1	1	0	0	
16	1	1	0	1	0	1	1	0	
17	1	1	1	1	0	0	0	1	9
18	1	1	1	1	0	1	1	0	
19	1	0	1	1	0	1	0	0	

20	0	0	1	
21	0	1	1	9
22	0	1	0	
23	1	1	0	
24	1	1	1	
25	1	1	1	9
26	1	1	0	
27	1	1	0	
28	1	1	1	
29	1	0	0	7
30	0	1	1	
31	0	0	1	
32	1	1	1	
33	0	0	1	8
34	1	1	0	
35	0	0	0	
36	1	1	0	
37	0	1	1	E
38	1	1	1	
39	1	1	1	
40	1	1	0	
41	1	1	1	D
42	1	1	1	
43	1	1	0	
44	1	1	1	
45	1	0	0	5
46	1	0	1	
47	0	0	0	
48	0	0	1	
49	0	1		
50	0	0		
51	1	1		
52	0	0		
53	1	1		
54	0	0		
55	1	1		
56	0	0		

20	1	0	0	1	0	0	1	1	
21	1	1	1	1	0	1	1	0	7
22	0	1	1	0	0	1	0	1	
23	0	1	0	0	0	1	0	1	
24	1	1	1	1	0	0	0	1	
25	1	1	0	0	1	0	1	0	5
26	0	1	0	1	1	1	0	1	
27	0	0	0	1	1	0	0	0	
28	1	0	1	1	0	1	1	1	
29	0	1	1	0	0	1	1	0	1
30	1	1	1	1	0	0	1	0	
31	1	1	1	0	1	0	1	0	
32	1	1	0	1	0	1	0	1	
33	1			1	0				
34	0			0	0				
35	0			1	1				
36	0			0	0				
37	1			1	0				
38	1			0	1				
39	1			0	1				
40	0			0	0				
41	1			1	0				
42	1			1	0				
43	0			1	1				
44	1			1	0				
45	0			1	1				
46	1			1	0				
47	0			0	0				
48	1			1	0				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	9
2	1	1	0	

Sr. No	Key	L5	R5	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	0	1	0	1	1	0	1
2	0	0	1	0	0	0	0	0	

3	1	1	0	9
4	1	1	1	
5	1	1	1	F
6	1	1	1	
7	1	0	1	
8	1	1	1	
9	0	0	0	7
10	1	1	1	
11	0	0	1	
12	1	1	1	
13	0	0	1	F
14	1	1	1	
15	0	0	1	
16	1	0	1	
17	0	0	1	C
18	0	0	1	
19	0	1	0	
20	0	1	0	
21	1	1	1	D
22	1	1	1	
23	1	1	0	
24	1	1	1	
25	1	1	1	9
26	1	1	0	
27	1	1	0	
28	1	1	1	
29	0	0	1	B
30	1	1	0	
31	0	0	1	
32	1	1	1	
33	0	0	1	8
34	1	1	0	
35	0	1	0	
36	1	1	0	
37	1	1	0	7
38	1	1	1	
39	1	1	1	
40	1	1	1	
41	1	1	1	D
42	1	1	1	
43	1	0	0	
44	1	0	1	
45	0	0	0	

3	0	0	0	1	1	1	0	0	**1**
4	1	1	1	0	1	1	0	1	
5	1	1	1	1	0	1	0	1	**E**
6	1	1	0	1	0	0	0	1	
7	1	1	0	1	0	0	0	1	
8	1	1	1	1	0	0	1	0	
9	0	0	1	0	0	0	1	1	**B**
10	1	0	0	0	1	1	0	0	
11	1	1	0	1	0	1	0	1	
12	1	1	1	1	0	0	0	1	
13	1	1	0	1	0	1	1	0	**1**
14	1	1	1	1	0	0	1	0	
15	1	0	0	0	1	0	0	0	
16	1	0	0	0	1	1	1	1	
17	1	1	1	1	0	1	0	1	**E**
18	1	1	0	0	1	1	0	1	
19	0	1	0	1	1	0	0	1	
20	0	0	1	0	0	0	0	0	
21	1	1	0	1	0	0	0	1	**F**
22	1	1	1	0	1	1	0	1	
23	0	0	1	0	0	0	1	1	
24	1	1	1	1	0	0	0	1	
25	1	0	0	0	1	0	0	0	**5**
26	0	0	1	1	1	0	1	1	
27	0	0	0	0	0	0	0	0	
28	1	1	1	0	1	0	0	1	
29	0	1	0	1	0	0	1	0	**0**
30	1	1	0	0	0	0	1	0	
31	1	1	0	1	0	0	1	0	
32	1	0	1	0	1	0	0	0	
33	1			1	0				
34	0			1	1				
35	0			1	1				
36	0			0	0				
37	0			1	1				
38	1			0	1				
39	1			1	0				
40	1			0	1				
41	1			1	0				
42	1			0	1				
43	0			1	1				
44	1			0	1				
45	0			0	0				

46	0	0	1	5
47	0	1	0	
48	0	0	1	
49	1	1		
50	0	0		
51	1	1		
52	0	0		
53	1	1		
54	0	0		
55	1	0		
56	0	1		

46	1			0	1				
47	0			1	1				
48	1			0	1				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	0	5
2	1	1	1	
3	1	1	0	
4	1	1	1	
5	1	0	1	B
6	1	1	0	
7	0	0	1	
8	1	1	1	
9	0	0	0	7
10	1	1	1	
11	0	0	1	
12	1	1	1	
13	0	0	1	F
14	1	0	1	
15	0	0	1	
16	0	0	1	
17	0	1	1	C
18	0	1	1	
19	1	1	0	
20	1	1	0	
21	1	1	1	D
22	1	1	1	
23	1	1	0	
24	1	1	1	
25	1	1	0	1
26	1	1	0	
27	1	1	0	
28	1	1	1	

Sr. No	Key	L6	R6	EP box	XOR	S Box	Straigh	XOR	Hex.
1	0	0	0	0	0	1	1	1	8
2	1	1	0	0	1	1	1	0	
3	0	0	0	0	0	0	0	0	
4	1	1	1	0	1	0	1	0	
5	1	1	1	1	0	1	1	0	1
6	0	0	1	1	1	0	0	0	
7	1	0	1	1	0	1	0	0	
8	1	1	0	1	0	1	0	1	
9	0	1	1	1	1	0	1	0	0
10	1	0	0	1	0	1	0	0	
11	1	0	1	0	1	1	0	0	
12	1	1	1	1	0	0	1	0	
13	1	0	0	0	1	1	1	1	B
14	1	1	0	1	0	1	1	0	
15	1	0	0	0	1	0	1	1	
16	1	0	1	1	0	1	1	1	
17	1	1	1	1	0	0	1	0	6
18	1	0	1	0	1	1	1	1	
19	0	0	1	1	1	0	1	1	
20	0	1	0	0	0	0	1	0	
21	1	0	1	0	1	1	0	0	3
22	1	1	1	0	1	0	1	0	
23	0	1	1	1	1	0	0	1	
24	1	1	1	1	0	1	0	1	
25	0	0	0	1	1	0	0	0	3
26	0	1	1	1	1	1	1	0	
27	0	0	0	1	1	1	1	1	
28	1	1	1	1	0	0	0	1	

29	0	0	1	B
30	1	1	0	
31	0	0	1	
32	1	1	1	
33	0	1	1	E
34	1	1	1	
35	1	1	1	
36	1	1	0	
37	1	1	0	7
38	1	1	1	
39	1	1	1	
40	1	1	1	
41	1	0	1	8
42	1	0	0	
43	0	0	0	
44	0	0	0	
45	0	1	0	5
46	0	0	1	
47	1	1	0	
48	0	0	1	
49	1	1		
50	0	0		
51	1	1		
52	0	0		
53	1	0		
54	0	1		
55	0	0		
56	1	1		

29	1	0	0	0	1	1	0	0	**5**
30	0	0	0	1	1	1	1	1	
31	1	0	0	0	1	1	0	0	
32	1	1	0	1	0	0	0	1	
33	1			1	0				
34	1			1	0				
35	1			1	0				
36	0			0	0				
37	0			1	1				
38	1			0	1				
39	1			1	0				
40	1			0	1				
41	1			1	0				
42	0			0	0				
43	0			1	1				
44	0			0	0				
45	0			0	0				
46	1			0	1				
47	0			0	0				
48	1			0	1				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	0	5
2	1	1	1	
3	1	0	0	
4	1	1	1	
5	0	0	1	9
6	1	1	0	
7	0	0	0	
8	1	1	1	
9	0	0	1	F
10	1	1	1	
11	0	0	1	

Sr. No	Key	L7	R7	EP box	XOR	S Box	Straigh	XOR	Hex.
1	0	0	1	1	1	1	1	1	**E**
2	1	0	0	1	0	0	1	1	
3	0	0	0	0	0	0	1	1	
4	1	1	0	0	1	0	1	0	
5	1	1	0	0	1	1	0	1	**B**
6	0	1	0	0	0	0	1	0	
7	0	1	0	0	0	1	0	1	
8	1	0	1	0	1	1	1	1	
9	1	1	0	0	1	0	1	0	**7**
10	1	0	0	0	1	1	1	1	
11	1	1	0	1	0	1	0	1	

12	1	0	1	
13	0	0	1	D
14	0	0	1	
15	0	1	0	
16	0	1	1	
17	1	1	1	E
18	1	1	1	
19	1	1	1	
20	1	1	0	
21	1	1	1	D
22	1	1	1	
23	1	1	0	
24	1	1	1	
25	1	1	0	7
26	1	1	1	
27	1	1	1	
28	1	1	1	
29	0	0	1	A
30	1	1	0	
31	0	1	1	
32	1	1	0	
33	1	1	0	6
34	1	1	1	
35	1	1	1	
36	1	1	0	
37	1	1	0	5
38	1	1	1	
39	1	0	0	
40	1	0	1	
41	0	0	1	8
42	0	0	0	
43	0	1	0	
44	0	0	0	
45	1	1	0	5
46	0	0	1	
47	1	1	0	
48	0	0	1	
49	1	1		
50	0	0		
51	1	0		
52	0	1		
53	0	0		
54	1	1		

12	1	1	0	0	1	1	0	1	
13	1	0	1	1	0	0	1	1	**A**
14	1	0	0	0	1	1	0	0	
15	0	0	1	0	0	1	1	1	
16	1	1	1	0	1	1	1	0	
17	1	1	0	0	1	1	0	1	**9**
18	1	1	1	1	0	0	1	0	
19	1	1	1	0	1	0	1	0	
20	0	0	0	1	1	1	1	1	
21	1	1	0	0	1	1	0	1	**B**
22	1	1	0	1	0	0	1	0	
23	0	1	1	1	1	0	0	1	
24	1	1	1	0	1	1	0	1	
25	0	0	0	1	1	1	0	0	**5**
26	1	1	0	0	1	0	0	1	
27	1	0	1	1	0	1	0	0	
28	1	1	1	1	0	0	0	1	
29	1	0	0	0	1	0	0	0	**5**
30	0	0	1	0	0	0	1	1	
31	1	0	0	0	1	1	0	0	
32	0	0	1	0	0	0	1	1	
33	0			0	0				
34	1			1	0				
35	1			1	0				
36	0			0	0				
37	0			1	1				
38	1			0	1				
39	0			0	0				
40	1			1	0				
41	1			1	0				
42	0			0	0				
43	0			1	1				
44	0			0	0				
45	0			1	1				
46	1			0	1				
47	0			1	1				
48	1			1	0				

55	0	0		
56	1	1		

No. of Shifts = 1 bit

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	D
2	1	0	1	
3	0	1	0	
4	1	0	1	
5	0	1	1	F
6	1	0	1	
7	0	1	1	
8	1	0	1	
9	0	1	1	A
10	1	0	0	
11	0	0	1	
12	0	0	0	
13	0	0	1	C
14	0	1	1	
15	1	1	0	
16	1	1	0	
17	1	1	1	B
18	1	1	0	
19	1	1	1	
20	1	1	1	
21	1	1	1	C
22	1	1	1	
23	1	1	0	
24	1	1	0	
25	1	1	0	3
26	1	1	0	
27	1	1	1	
28	1	1	1	
29	0	1	0	6
30	1	1	1	
31	1	1	1	
32	1	1	0	
33	1	1	1	B
34	1	1	0	
35	1	1	1	
36	1	1	1	
37	1	1	1	

Sr. No	Key	L8	R8	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	1	1	0	1	0	1	A
2	1	0	1	1	0	1	0	0	
3	0	0	1	1	1	1	1	1	
4	1	0	0	1	0	1	0	0	
5	1	0	1	0	1	1	1	1	C
6	1	0	0	1	0	1	1	1	
7	1	0	1	0	1	0	0	0	
8	1	1	1	1	0	1	1	0	
9	1	0	0	0	1	1	1	1	F
10	0	0	1	1	1	1	1	1	
11	1	0	1	1	0	1	1	1	
12	0	0	1	0	0	1	1	1	
13	1	1	1	1	0	0	1	0	2
14	1	0	0	0	1	1	0	0	
15	0	1	1	1	1	1	0	1	
16	0	1	0	1	1	0	1	0	
17	1	0	1	1	0	1	1	1	9
18	0	1	0	1	1	0	1	0	
19	1	1	0	1	0	0	1	0	
20	1	0	1	1	0	1	1	1	
21	1	0	1	0	1	0	0	0	0
22	1	0	0	1	0	0	0	0	
23	0	1	1	0	0	1	1	0	
24	0	1	1	1	1	1	1	0	
25	0	0	0	0	0	0	0	0	0
26	0	0	1	1	1	1	0	0	
27	1	1	0	0	1	0	1	0	
28	1	1	1	0	1	0	1	0	
29	0	0	0	1	1	1	0	0	3
30	1	1	1	1	0	1	1	0	
31	1	0	0	1	0	0	1	1	
32	0	1	1	1	1	0	0	1	
33	1			0	1				
34	0			1	1				
35	1			1	0				
36	1			0	1				
37	1			1	0				

38	1	0	0	8
39	0	0	0	
40	0	0	0	
41	0	0	1	F
42	0	1	1	
43	1	0	1	
44	0	1	1	
45	1	0	0	7
46	0	1	1	
47	1	0	1	
48	0	1	1	
49	1	0		
50	0	0		
51	1	1		
52	1	0		
53	0	1		
54	1	0		
55	0	1		
56	1	0		

38	0			0	0				
39	0			1	1				
40	0			0	0				
41	1			1	0				
42	1			0	1				
43	1			1	0				
44	1			0	1				
45	0			1	1				
46	1			0	1				
47	1			1	0				
48	1			1	0				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	D
2	0	0	1	
3	1	1	0	
4	0	0	1	
5	1	1	1	E
6	0	0	1	
7	1	1	1	
8	0	0	0	
9	1	0	1	A
10	0	0	0	
11	0	0	1	
12	0	1	0	
13	0	1	1	E
14	1	1	1	
15	1	1	1	
16	1	1	0	
17	1	1	1	B
18	1	1	0	
19	1	1	1	
20	1	1	1	

Sr. No	Key	L9	R9	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	1	1	0	0	0	1	8
2	1	1	0	1	0	1	1	0	
3	0	1	1	0	0	0	1	0	
4	1	0	0	1	0	0	0	0	
5	1	1	1	0	1	0	1	0	0
6	1	0	1	1	0	1	0	0	
7	1	1	0	0	1	1	1	0	
8	0	1	0	1	1	0	1	0	
9	1	0	1	1	0	0	0	0	0
10	0	1	1	0	0	1	1	0	
11	1	1	1	0	1	0	1	0	
12	0	1	1	1	1	0	1	0	
13	1	1	0	0	1	1	0	1	9
14	1	0	0	1	0	0	0	0	
15	1	1	1	1	0	1	1	0	
16	0	0	0	1	1	0	1	1	
17	1	1	1	1	0	1	1	0	3
18	0	0	0	0	0	0	0	0	
19	1	0	0	1	0	0	1	1	
20	1	1	1	0	1	1	0	1	

21	1	1	1	E
22	1	1	1	
23	1	1	1	
24	1	1	0	
25	1	1	0	2
26	1	1	0	
27	1	1	1	
28	1	0	0	
29	1	1	0	7
30	1	1	1	
31	1	1	1	
32	1	1	1	
33	1	1	1	A
34	1	1	0	
35	1	1	1	
36	1	0	0	
37	1	0	1	D
38	0	0	1	
39	0	0	0	
40	0	1	1	
41	0	0	1	F
42	1	1	1	
43	0	0	1	
44	1	1	1	
45	0	0	0	3
46	1	1	0	
47	0	0	1	
48	1	0	1	
49	0	1		
50	0	0		
51	1	1		
52	0	0		
53	1	1		
54	0	0		
55	1	1		
56	0	1		

21	1	1	0	0	1	0	0	1	**F**
22	1	0	0	1	0	1	1	1	
23	1	1	0	0	1	1	0	1	
24	0	1	0	1	1	1	0	1	
25	0	0	0	0	0	1	0	0	**0**
26	0	1	0	1	1	1	1	0	
27	1	0	0	0	1	1	0	0	
28	0	1	0	0	0	1	1	0	
29	0	0	0	1	1	1	1	1	**C**
30	1	1	0	0	1	0	0	1	
31	1	0	1	1	0	1	0	0	
32	1	1	1	0	1	0	1	0	
33	1			0	1				
34	0			0	0				
35	1			0	1				
36	0			0	0				
37	1			0	1				
38	1			0	1				
39	0			0	0				
40	1			0	1				
41	1			0	1				
42	1			0	1				
43	1			0	1				
44	1			0	1				
45	0			0	0				
46	0			1	1				
47	1			1	0				
48	1			1	0				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	F
2	0	0	1	
3	1	1	1	

Sr. No	Key	L10	R10	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	1	0	1	0	0	1	**D**
2	1	0	0	1	0	1	1	1	
3	1	1	0	0	1	1	1	0	

4	0	0	1	
5	1	1	1	E
6	0	0	1	
7	1	0	1	
8	0	0	0	
9	0	0	1	B
10	0	1	0	
11	0	1	1	
12	1	1	1	
13	1	1	1	E
14	1	1	1	
15	1	1	1	
16	1	1	0	
17	1	1	0	2
18	1	1	0	
19	1	1	1	
20	1	1	0	
21	1	1	1	E
22	1	1	1	
23	1	1	1	
24	1	1	0	
25	1	1	0	2
26	1	0	0	
27	1	1	1	
28	0	0	0	
29	1	1	1	F
30	1	1	1	
31	1	1	1	
32	1	1	1	
33	1	1	1	A
34	1	0	0	
35	1	0	1	
36	0	0	0	
37	0	0	1	D
38	0	1	1	
39	0	0	0	
40	1	1	1	
41	0	0	0	5
42	1	1	1	
43	0	0	0	
44	1	1	1	
45	0	0	0	3
46	1	0	0	

4	1	0	0	0	1	1	1	1	
5	1	1	0	0	1	1	1	0	**2**
6	1	1	0	0	1	1	1	0	
7	1	0	0	0	1	1	1	1	
8	0	0	0	0	0	1	0	0	
9	1	1	0	0	1	1	0	1	**D**
10	0	1	0	0	0	0	0	1	
11	1	1	0	0	1	1	1	0	
12	1	1	0	0	1	1	0	1	
13	1	0	1	0	1	1	1	1	**C**
14	1	0	0	0	1	0	1	1	
15	1	1	0	0	1	0	1	0	
16	0	0	1	0	0	0	0	0	
17	0	1	0	0	0	0	1	0	**5**
18	0	0	0	1	1	1	1	1	
19	1	0	1	0	1	1	0	0	
20	0	1	1	1	1	1	0	1	
21	1	0	1	0	1	1	1	1	**B**
22	1	0	1	0	1	0	0	0	
23	1	0	1	1	0	1	1	1	
24	0	0	1	0	0	0	1	1	
25	0	0	0	1	1	1	1	1	**F**
26	0	0	0	0	0	0	1	1	
27	1	0	0	0	1	0	1	1	
28	0	0	0	1	1	1	1	1	
29	1	0	1	1	0	1	0	0	**4**
30	1	0	1	1	0	1	1	1	
31	1	1	0	1	0	1	1	0	
32	1	1	0	1	0	1	1	0	
33	1			1	0				
34	0			1	1				
35	1			1	0				
36	0			0	0				
37	1			1	0				
38	1			0	1				
39	0			0	0				
40	1			0	1				
41	0			0	0				
42	1			1	0				
43	0			0	0				
44	1			1	0				
45	0			1	1				
46	0			0	0				

47	0	1	1	3
48	0	0	1	
49	1	1		
50	0	0		
51	1	1		
52	0	0		
53	1	1		
54	0	1		
55	1	1		
56	1	1		

47	1			0	1				
48	1			1	0				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	E
2	0	0	1	
3	1	1	1	
4	0	0	0	
5	1	0	1	A
6	0	0	0	
7	0	0	1	
8	0	1	0	
9	0	1	1	B
10	1	1	0	
11	1	1	1	
12	1	1	1	
13	1	1	1	E
14	1	1	1	
15	1	1	1	
16	1	1	0	
17	1	1	0	6
18	1	1	1	
19	1	1	1	
20	1	1	0	
21	1	1	1	E
22	1	1	1	
23	1	1	1	
24	1	0	0	
25	1	1	0	6
26	0	0	1	
27	1	1	1	
28	0	0	0	
29	1	1	1	

Sr. No	Key	L11	R11	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	1	0	1	0	1	0	1
2	1	0	1	1	0	1	0	0	
3	1	0	0	1	0	0	0	0	
4	0	0	1	0	0	0	1	1	
5	1	0	0	1	0	0	1	1	9
6	0	0	0	0	0	1	0	0	
7	1	0	1	1	0	0	0	0	
8	0	0	0	0	0	0	1	1	
9	1	0	1	0	1	0	0	0	1
10	0	0	1	1	1	1	0	0	
11	1	0	0	0	1	1	0	0	
12	1	0	1	1	0	0	1	1	
13	1	1	1	0	1	0	0	1	A
14	1	0	1	1	0	1	0	0	
15	1	0	0	1	0	0	1	1	
16	0	1	0	0	0	1	1	0	
17	0	0	0	1	1	1	1	1	A
18	1	0	1	1	0	0	0	0	
19	1	1	0	1	0	0	0	1	
20	0	1	1	1	1	0	1	0	
21	1	1	1	1	0	1	1	0	7
22	1	1	0	0	1	1	0	1	
23	1	1	1	0	1	0	0	1	
24	0	1	1	0	0	0	0	1	
25	0	0	1	0	0	0	0	0	1
26	1	0	1	0	1	1	0	0	
27	1	0	1	1	0	0	0	0	
28	0	0	1	0	0	0	1	1	
29	1	1	0	1	0	1	1	0	

30	1	1	1	F
31	1	1	1	
32	1	0	1	
33	1	0	1	C
34	0	0	1	
35	0	0	0	
36	0	1	0	
37	0	0	0	5
38	1	1	1	
39	0	0	0	
40	1	1	1	
41	0	0	0	5
42	1	1	1	
43	0	0	0	
44	1	0	1	
45	0	1	0	6
46	0	0	1	
47	1	1	1	
48	0	0	0	
49	1	1		
50	0	0		
51	1	1		
52	0	1		
53	1	1		
54	1	1		
55	1	1		
56	1	1		

30	1	1	1	1	0	0	1	0	0
31	1	0	0	1	0	1	0	0	
32	1	0	0	1	0	1	0	0	
33	1			0	1				
34	1			1	0				
35	0			1	1				
36	0			1	1				
37	0			1	1				
38	1			1	0				
39	0			1	1				
40	1			1	0				
41	0			1	1				
42	1			0	1				
43	0			1	1				
44	1			0	1				
45	0			1	1				
46	1			0	1				
47	1			0	1				
48	0			1	1				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	1	1	E
2	0	0	1	
3	1	0	1	
4	0	0	0	
5	0	0	1	8
6	0	1	0	
7	0	1	0	
8	1	1	0	
9	1	1	1	F
10	1	1	1	
11	1	1	1	
12	1	1	1	

Sr. No	Key	L12	R12	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	1	0	0	1	1	1	0	0
2	1	1	0	0	1	0	1	0	
3	1	0	0	0	1	1	0	0	
4	0	1	1	0	0	0	1	0	
5	1	0	1	1	0	1	0	0	3
6	0	0	0	1	1	1	0	0	
7	0	1	0	1	1	1	0	1	
8	0	0	1	1	1	0	1	1	
9	1	1	0	0	1	0	1	0	1
10	1	1	0	0	1	1	1	0	
11	1	0	0	1	0	0	0	0	
12	1	1	1	0	1	0	0	1	

13	1	1	1	E
14	1	1	1	
15	1	1	1	
16	1	1	0	
17	1	1	0	7
18	1	1	1	
19	1	1	1	
20	1	1	1	
21	1	1	1	E
22	1	0	1	
23	1	1	1	
24	0	0	0	
25	1	1	0	4
26	0	0	1	
27	1	1	0	
28	0	0	0	
29	1	1	1	D
30	1	0	1	
31	1	0	0	
32	0	0	1	
33	0	0	1	C
34	0	1	1	
35	0	0	0	
36	1	1	0	
37	0	0	0	5
38	1	1	1	
39	0	0	0	
40	1	1	1	
41	0	0	1	C
42	1	0	1	
43	0	1	0	
44	0	0	0	
45	1	1	1	E
46	0	0	1	
47	1	1	1	
48	0	0	0	
49	1	1		
50	0	1		
51	1	1		
52	1	1		
53	1	1		
54	1	1		
55	1	1		

13	1	1	1	1	0	1	1	0	**3**
14	1	1	0	0	1	1	1	0	
15	1	0	1	0	1	1	1	1	
16	0	0	0	0	0	1	1	1	
17	0	0	1	1	1	1	0	0	**6**
18	1	1	0	1	0	1	0	1	
19	1	0	1	1	0	0	1	1	
20	1	1	0	1	0	0	1	0	
21	1	1	0	0	1	1	0	1	**9**
22	1	0	1	1	0	1	0	0	
23	1	1	1	0	1	0	1	0	
24	0	1	1	1	1	1	0	1	
25	0	1	0	0	0	0	0	1	**A**
26	1	1	0	1	0	0	1	0	
27	0	1	0	0	0	0	0	1	
28	0	1	1	1	1	0	1	0	
29	1	0	0	0	1	0	1	1	**C**
30	1	1	0	0	1	0	0	1	
31	0	0	0	0	0	1	0	0	
32	1	0	0	0	1	0	0	0	
33	1			1	0				
34	1			1	0				
35	0			1	1				
36	0			0	0				
37	0			1	1				
38	1			0	1				
39	0			0	0				
40	1			0	1				
41	1			1	0				
42	1			0	1				
43	0			1	1				
44	0			0	0				
45	1			0	1				
46	1			0	1				
47	1			0	1				
48	0			0	0				

56	1	1		

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	1	0	1	E
2	0	0	1	
3	0	0	1	
4	0	1	0	
5	0	1	0	4
6	1	1	1	
7	1	1	0	
8	1	1	0	
9	1	1	1	F
10	1	1	1	
11	1	1	1	
12	1	1	1	
13	1	1	1	F
14	1	1	1	
15	1	1	1	
16	1	1	1	
17	1	1	0	7
18	1	1	1	
19	1	1	1	
20	1	0	1	
21	1	1	1	A
22	0	0	0	
23	1	1	1	
24	0	0	0	
25	1	1	1	C
26	0	0	1	
27	1	1	0	
28	0	0	0	
29	1	0	1	C
30	0	0	1	
31	0	0	0	
32	0	1	0	
33	0	0	1	D
34	1	1	1	
35	0	0	0	
36	1	1	1	
37	0	0	0	4
38	1	1	1	

Sr. No	Key	L13	R13	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	0	0	0	1	1	0	0	6
2	1	0	0	0	1	0	1	1	
3	1	0	0	0	1	1	1	1	
4	0	1	0	0	0	0	1	0	
5	0	1	0	0	0	1	0	1	E
6	1	0	0	0	1	1	1	1	
7	0	0	1	0	0	1	1	1	
8	0	1	1	0	0	1	1	0	
9	1	0	0	0	1	0	1	1	A
10	1	0	0	1	0	0	0	0	
11	1	0	0	1	0	0	1	1	
12	1	1	1	0	1	1	1	0	
13	1	1	0	1	0	0	1	0	0
14	1	0	0	0	1	1	0	0	
15	1	1	1	0	1	0	1	0	
16	1	0	1	0	1	0	0	0	
17	0	1	0	1	1	1	0	1	D
18	1	0	1	0	1	0	1	1	
19	1	1	1	1	0	0	1	0	
20	1	0	0	0	1	1	1	1	
21	1	0	1	0	1	1	0	0	5
22	0	1	0	1	1	0	0	1	
23	1	1	0	1	0	1	1	0	
24	0	1	1	0	0	1	0	1	
25	1	0	1	1	0	1	0	0	2
26	1	0	0	0	1	1	0	0	
27	0	0	1	1	1	0	1	1	
28	0	1	0	1	1	1	1	0	
29	1	0	1	0	1	0	0	0	1
30	1	0	1	1	0	1	0	0	
31	0	0	0	0	0	1	0	0	
32	0	0	0	1	1	0	1	1	
33	1			0	1				
34	1			0	1				
35	0			1	1				
36	1			1	0				
37	0			1	1				
38	1			1	0				

39	0	0	0	4
40	1	0	0	
41	0	1	1	C
42	0	0	1	
43	1	1	0	
44	0	0	0	
45	1	1	1	D
46	0	0	1	
47	1	1	0	
48	0	1	1	
49	1	1		
50	1	1		
51	1	1		
52	1	1		
53	1	1		
54	1	1		
55	1	1		
56	1	0		

39	0			0	0				
40	0			1	1				
41	1			0	1				
42	1			1	0				
43	0			0	0				
44	0			1	1				
45	1			1	0				
46	1			0	1				
47	0			0	0				
48	1			0	1				

No. of Shifts = 2 bits

Sr. No	Binary	L-Shift	PC2	Round
1	0	0	1	E
2	0	1	1	
3	0	1	1	
4	1	1	0	
5	1	1	0	6
6	1	1	1	
7	1	1	1	
8	1	1	0	
9	1	1	1	F
10	1	1	1	
11	1	1	1	
12	1	1	1	
13	1	1	1	F
14	1	1	1	
15	1	1	1	
16	1	1	1	
17	1	1	0	7
18	1	0	1	
19	1	1	1	
20	0	0	1	
21	1	1	0	

Sr. No	Key	L14	R14	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	0	0	1	0	0	1	1	8
2	1	0	1	0	1	1	0	0	
3	1	0	1	1	0	1	0	0	
4	0	0	0	1	1	0	0	0	
5	0	0	1	0	0	1	1	1	A
6	1	0	1	1	0	0	0	0	
7	1	1	1	0	1	0	0	1	
8	0	1	0	1	1	0	1	0	
9	1	0	1	1	0	0	0	0	2
10	1	0	0	1	0	1	0	0	
11	1	0	1	0	1	1	1	1	
12	1	1	0	1	0	0	1	0	
13	1	0	0	0	1	0	1	1	A
14	1	0	0	1	0	0	0	0	
15	1	1	0	0	1	0	0	1	
16	1	1	0	1	0	1	1	0	
17	0	0	1	0	0	1	1	1	E
18	1	1	1	0	1	0	0	1	
19	1	1	0	0	1	1	0	1	
20	1	0	1	0	1	0	0	0	
21	0	1	0	0	0	0	1	0	

22	0	0	0	3
23	1	1	1	
24	0	0	1	
25	1	1	1	C
26	0	0	1	
27	1	0	0	
28	0	0	0	
29	0	0	1	A
30	0	1	0	
31	0	0	1	
32	1	1	0	
33	0	0	1	D
34	1	1	1	
35	0	0	0	
36	1	1	1	
37	0	0	0	6
38	1	0	1	
39	0	1	1	
40	0	0	0	
41	1	1	1	E
42	0	0	1	
43	1	1	1	
44	0	0	0	
45	1	1	1	D
46	0	1	1	
47	1	1	0	
48	1	1	1	
49	1	1		
50	1	1		
51	1	1		
52	1	1		
53	1	1		
54	1	0		
55	1	0		
56	0	0		

22	0	0	1	0	0	0	0	0	3
23	1	0	0	0	1	1	1	1	
24	1	1	1	1	0	0	0	1	
25	1	1	0	0	1	1	1	0	0
26	1	0	0	1	0	1	0	0	
27	0	1	1	1	1	0	1	0	
28	0	0	0	0	0	0	0	0	
29	1	1	0	1	0	1	0	1	9
30	0	1	0	0	0	1	1	0	
31	1	0	0	1	0	0	0	0	
32	0	0	1	0	0	1	1	1	
33	1			1	0				
34	1			0	1				
35	0			1	1				
36	1			0	1				
37	0			1	1				
38	1			0	1				
39	1			0	1				
40	0			1	1				
41	1			0	1				
42	1			0	1				
43	1			0	1				
44	0			0	0				
45	1			0	1				
46	1			0	1				
47	0			1	1				
48	1			0	1				

No. of Shifts = 1 bit

Sr. No	Binary	L-Shift	PC2	Round
1	0	1	1	B
2	1	1	0	
3	1	1	1	
4	1	1	1	

Sr. No	Key	L15	R15	EP box	XOR	S Box	Straigh	XOR	Hex.
1	1	0	1	1	0	0	0	0	4
2	0	1	0	1	1	1	0	1	
3	1	1	0	0	1	1	1	0	
4	1	0	0	0	1	1	0	0	

5	1	1	1	E
6	1	1	1	
7	1	1	1	
8	1	1	0	
9	1	1	1	D
10	1	1	1	
11	1	1	0	
12	1	1	1	
13	1	1	0	3
14	1	1	0	
15	1	1	1	
16	1	1	1	
17	1	0	0	7
18	0	1	1	
19	1	0	1	
20	0	1	1	
21	1	0	0	7
22	0	1	1	
23	1	0	1	
24	0	1	1	
25	1	0	0	6
26	0	0	1	
27	0	0	1	
28	0	0	0	
29	0	1	1	9
30	1	0	0	
31	0	1	0	
32	1	0	1	
33	0	1	1	F
34	1	0	1	
35	0	1	1	
36	1	0	1	
37	0	0	1	C
38	0	1	1	
39	1	0	0	
40	0	1	0	
41	1	0	0	3
42	0	1	0	
43	1	0	1	
44	0	1	1	
45	1	1	1	A
46	1	1	0	
47	1	1	1	

5	1	1	1	0	1	0	0	1	**E**
6	1	1	0	1	0	0	0	1	
7	1	1	1	0	1	0	0	1	
8	0	0	0	1	1	0	0	0	
9	1	1	0	0	1	0	0	1	**F**
10	1	0	0	1	0	1	1	1	
11	0	1	1	0	0	1	0	1	
12	1	0	0	0	1	0	1	1	
13	0	0	1	0	0	0	0	0	**1**
14	0	0	0	0	0	1	0	0	
15	1	0	1	0	1	1	0	0	
16	1	0	0	1	0	0	1	1	
17	0	1	1	0	0	0	1	0	**4**
18	1	1	1	1	0	0	0	1	
19	1	0	1	0	1	0	0	0	
20	1	1	0	1	0	1	1	0	
21	0	0	0	0	0	0	0	0	**3**
22	1	1	0	1	0	0	1	0	
23	1	0	1	0	1	0	1	1	
24	1	1	1	1	0	0	0	1	
25	0	0	0	0	0	1	0	0	**0**
26	1	0	0	1	0	1	0	0	
27	1	1	0	1	0	1	1	0	
28	0	0	0	1	1	0	0	0	
29	1	0	1	0	1	0	0	0	**6**
30	0	0	0	0	0	1	1	1	
31	0	0	0	0	0	0	1	1	
32	1	1	1	0	1	0	1	0	
33	1			0	1				
34	1			1	0				
35	1			1	0				
36	1			0	1				
37	1			1	0				
38	1			0	1				
39	0			0	0				
40	0			0	0				
41	0			0	0				
42	0			1	1				
43	1			0	1				
44	1			1	0				
45	1			0	1				
46	0			0	0				
47	1			1	0				

48	1	1	0	
49	1	1		
50	1	1		
51	1	1		
52	1	1		
53	1	0		
54	0	0		
55	0	0		

48	0			1	1				

R16L16 ->	4	E	F	1	4	3	0	6	8	A	2	A	E	3	0	9

IP INVERSE							
40	8	48	16	56	24	64	32
39	7	47	15	55	23	63	31
38	6	46	14	54	22	62	30
37	5	45	13	53	21	61	29
36	4	44	12	52	20	60	28
35	3	43	11	51	19	59	27
34	2	42	10	50	18	58	26
33	1	41	9	49	17	57	25

S.No	R16L16	IP Inv.	Hex.
1	0	0	1
2	1	0	
3	0	0	
4	0	1	
5	1	1	E
6	1	1	
7	1	1	
8	0	0	
9	1	1	E
10	1	1	
11	1	1	
12	1	0	
13	0	1	D
14	0	1	
15	0	0	
16	1	1	
17	0	0	4
18	1	1	

19	0	0	4
20	0	0	
21	0	0	1
22	0	0	
23	1	0	
24	1	1	
25	0	1	E
26	0	1	
27	0	1	
28	0	0	
29	0	0	2
30	1	0	
31	1	1	
32	0	0	
33	1	0	1
34	0	0	
35	0	0	
36	0	1	
37	1	0	0
38	0	0	
39	1	0	
40	0	0	
41	0	0	3
42	0	0	
43	1	1	
44	0	1	
45	1	1	8
46	0	0	
47	1	0	
48	0	0	
49	1	0	5
50	1	1	
51	1	0	
52	0	1	
53	0	1	C
54	0	1	
55	1	0	
56	1	0	
57	0	1	9
58	0	0	
59	0	0	
60	0	1	
61	1	1	

62	0	0	**8**
63	0	0	
64	1	0	

Ciphertext :- 1EED41E210385C98

Char :	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Compl :	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0

Cipher :	1	E	E	D	4	1	E	2	1	0	3	8	5	C	9	8
Compl :	**E**	**1**	**1**	**2**	**B**	**E**	**1**	**D**	**E**	**F**	**C**	**7**	**A**	**3**	**6**	**7**

Complement of Ciphertext -> Original Ciphertext -> E112BE1DEFC7A367

	Original	**Complement**
Key	12341234 12341234	EDCBEDCBEDCBEDCB
Plaintext	12345678ABCDEF12	EDCBA987543210ED
Ciphertext	E112BE1DEFC7A367	**1EED41E210385C98**