

Examples of Carry and Overflow Flags

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1 Based on

2 4-bit binary addition examples

- TOC: 4-bit binary addition examples
- 4-bit 2's complement numbers
- Carry flag in the unsigned 4-bit addition table
- Overflow flag in the signed 4-bit addition table
- Summary of the 4-bit addition table

- 1 "Self-service Linux: Mastering the Art of Problem Determination",

Mark Wilding

- 1 "Computer Architecture: A Programmer's Perspective", Bryant & O'Hallaron

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Compiling 32-bit program on 64-bit gcc

- `gcc -v`
- `gcc -m32 t.c`
- `sudo apt-get install gcc-multilib`
- `sudo apt-get install g++-multilib`
- `gcc-multilib`
- `g++-multilib`
- `gcc -m32`
- `objdump -m i386`

TOC: 4-bit binary addition examples

- 4-bit 2's complement numbers
- Carry flag in the unsigned 4-bit addition table
- Overflow flag in the signed 4-bit addition table
- Summary of the 4-bit addition table

4-bit binary numbers in decreasing order

unsigned		signed	
1111	15	0111	+7
1110	14	0110	+6
1101	13	0101	+5
1100	12	0100	+4
1011	11	0011	+3
1010	10	0010	+2
1001	9	0001	+1
1000	8	0000	0
0111	7	1111	-1
0110	6	1110	-2
0101	5	1101	-3
0100	4	1100	-4
0011	3	1011	-5
0010	2	1010	-6
0001	1	1001	-7
0000	0	1000	-8

Carry flag in the unsigned 4-bit addition table (1)

	0000 (0)	0001 (1)	0010 (2)	0011 (3)	0100 (4)	0101 (5)	0110 (6)	0111 (7)
0000 (0)	0000 (0)	0001 (1)	0010 (2)	0011 (3)	0100 (4)	0101 (5)	0110 (6)	0111 (7)
0001 (1)	0001 (1)	0010 (2)	0011 (3)	0100 (4)	0101 (5)	0110 (6)	0111 (7)	1000 (8)
0010 (2)	0010 (2)	0011 (3)	0100 (4)	0101 (5)	0110 (6)	0111 (7)	1000 (8)	1001 (9)
0011 (3)	0011 (3)	0100 (4)	0101 (5)	0110 (6)	0111 (7)	1000 (8)	1001 (9)	1010 (10)
0100 (4)	0100 (4)	0101 (5)	0110 (6)	0111 (7)	1000 (8)	1001 (9)	1010 (10)	1011 (11)
0101 (5)	0101 (5)	0110 (6)	0111 (7)	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)
0110 (6)	0110 (6)	0111 (7)	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)
0111 (7)	0111 (7)	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)

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(P1) (P3) Carry Flag (CF) in unsigned 4-bit additions
 (P2) (P4)

Carry flag in the unsigned 4-bit addition table (2)

	0000 (0)	0001 (1)	0010 (2)	0011 (3)	0100 (4)	0101 (5)	0110 (6)	0111 (7)
1000 (8)	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)
1001 (9)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)
1010 (10)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)
1011 (11)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)
1100 (12)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)
1101 (13)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)
1110 (14)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)
1111 (15)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)

(P1) (P3) Carry Flag (CF) in unsigned 4-bit additions
 (P2) (P4)

Carry flag in the unsigned 4-bit addition table (3)

	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)
0000 (0)	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)
0001 (1)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)
0010 (2)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)
0011 (3)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)
0100 (4)	1100 (12)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)
0101 (5)	1101 (13)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)
0110 (6)	1110 (14)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)
0111 (7)	1111 (15)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)

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(P1) (P3) Carry Flag (CF) in unsigned 4-bit additions
 (P2) (P4)

Carry flag in the unsigned 4-bit addition table (4)

	1000 (8)	1001 (9)	1010 (10)	1011 (11)	1100 (12)	1101 (13)	1110 (14)	1111 (15)
1000 (8)	0000 CF (16+0)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)	0111 CF (16+7)
1001 (9)	0001 CF (16+1)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)	0111 CF (16+7)	1000 CF (16+8)
1010 (10)	0010 CF (16+2)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)	0111 CF (16+7)	1000 CF (16+8)	1001 CF (16+9)
1011 (11)	0011 CF (16+3)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)	0111 CF (16+7)	1000 CF (16+8)	1001 CF (16+9)	1010 CF (16+10)
1100 (12)	0100 CF (16+4)	0101 CF (16+5)	0110 CF (16+6)	0111 CF (16+7)	1000 CF (16+8)	1001 CF (16+9)	1010 CF (16+10)	1011 CF (16+11)
1101 (13)	0101 CF (16+5)	0110 CF (16+6)	0111 CF (16+7)	1000 CF (16+8)	1001 CF (16+9)	1010 CF (16+10)	1011 CF (16+11)	1100 CF (16+12)
1110 (14)	0110 CF (16+6)	0111 CF (16+7)	1000 CF (16+8)	1001 CF (16+9)	1010 CF (16+10)	1011 CF (16+11)	1100 CF (16+12)	1101 CF (16+13)
1111 (15)	0111 CF (16+7)	1000 CF (16+8)	1001 CF (16+9)	1010 CF (16+10)	1011 CF (16+11)	1100 CF (16+12)	1101 CF (16+13)	1110 CF (16+14)

(P1) (P3) Carry Flag (CF) in unsigned 4-bit additions
 (P2) (P4)

Overflow flag in the signed 4-bit addition table (1)

	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)
0000 (0)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)
0001 (+1)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)	1000 (-8) OF
0010 (+2)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)	1000 (-8) OF	1001 (-7) OF
0011 (+3)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)	1000 (-8) OF	1001 (-7) OF	1010 (-6) OF
0100 (+4)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)	1000 (-8) OF	1001 (-7) OF	1010 (-6) OF	1011 (-5) OF
0101 (+5)	0101 (+5)	0110 (+6)	0111 (+7)	1000 (-8) OF	1001 (-7) OF	1010 (-6) OF	1011 (-5) OF	1100 (-4) OF
0110 (+6)	0110 (+6)	0111 (+7)	1000 (-8) OF	1001 (-7) OF	1010 (-6) OF	1011 (-5) OF	1100 (-4) OF	1101 (-3) OF
0111 (+7)	0111 (+7)	1000 (-8) OF	1001 (-7) OF	1010 (-6) OF	1011 (-5) OF	1100 (-4) OF	1101 (-3) OF	1110 (-2) OF

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(P1) (P3) Overflow Flag (OF) in signed 4-bit additions
 (P2) (P4)

Overflow flag in the signed 4-bit addition table (2)

	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)	0111 (+7)
1000 (-8)	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)
1001 (-7)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)
1010 (-6)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)
1011 (-5)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)
1100 (-4)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)
1101 (-3)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)
1110 (-2)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)
1111 (-1)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)

(P1) (P3) Overflow Flag (OF) in signed 4-bit additions
 (P2) (P4)

Overflow flag in the signed 4-bit addition table (3)

	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)
0000 (0)	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)
0001 (+1)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)
0010 (+2)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)
0011 (+3)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)
0100 (+4)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)
0101 (+5)	1101 (-3)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)
0110 (+6)	1110 (-2)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)
0111 (+7)	1111 (-1)	0000 (0)	0001 (+1)	0010 (+2)	0011 (+3)	0100 (+4)	0101 (+5)	0110 (+6)

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(P1) (P3) Overflow Flag (OF) in signed 4-bit additions
(P2) (P4)

Overflow flag in the signed 4-bit addition table (4)

	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)	1111 (-1)
1000 (-8)	0000 (0) OF	0001 (+1) OF	0010 (+2) OF	0011 (+3) OF	0100 (+4) OF	0101 (+5) OF	0110 (+6) OF	0111 (+7) OF
1001 (-7)	0001 (+1) OF	0010 (+2) OF	0011 (+3) OF	0100 (+4) OF	0101 (+5) OF	0110 (+6) OF	0111 (+7) OF	1000 (-8)
1010 (-6)	0010 (+2) OF	0011 (+3) OF	0100 (+4) OF	0101 (+5) OF	0110 (+6) OF	0111 (+7) OF	1000 (-8)	1001 (-7)
1011 (-5)	0011 (+3) OF	0100 (+4) OF	0101 (+5) OF	0110 (+6) OF	0111 (+7) OF	1000 (-8)	1001 (-7)	1010 (-6)
1100 (-4)	0100 (+4) OF	0101 (+5) OF	0110 (+6) OF	0111 (+7) OF	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)
1101 (-3)	0101 (+5) OF	0110 (+6) OF	0111 (+7) OF	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)
1110 (-2)	0110 (+6) OF	0111 (+7) OF	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)
1111 (-1)	0111 (+7) OF	1000 (-8)	1001 (-7)	1010 (-6)	1011 (-5)	1100 (-4)	1101 (-3)	1110 (-2)

(P1) (P3) Overflow Flag (OF) in signed 4-bit additions
 (P2) (P4)

TOC: Summary of the 4-bit addition table

- Unsigned 4-bit addition table
- Signed 4-bit addition table
- The 4-bit binary addition table
- The carry flag table
- The overflow flag table
- The carry and overflow flag table

Unsigned 4-bit addition table

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	C0
2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	C0	C1
3	3	4	5	6	7	8	9	10	11	12	13	14	15	C0	C1	C2
4	4	5	6	7	8	9	10	11	12	13	14	15	C0	C1	C2	C3
5	5	6	7	8	9	10	11	12	13	14	15	C0	C1	C2	C3	C4
6	6	7	8	9	10	11	12	13	14	15	C0	C1	C2	C3	C4	C5
7	7	8	9	10	11	12	13	14	15	C0	C1	C2	C3	C4	C5	C6
8	8	9	10	11	12	13	14	15	C0	C1	C2	C3	C4	C5	C6	C7
9	9	10	11	12	13	14	15	C0	C1	C2	C3	C4	C5	C6	C7	C8
10	10	11	12	13	14	15	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
11	11	12	13	14	15	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
12	12	13	14	15	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
13	13	14	15	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
14	14	15	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
15	15	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14

C : Carry Flag

Signed 4-bit addition table

	0	1	2	3	4	5	6	7	-8	-7	-6	-5	-4	-3	-2	-1
0	0	1	2	3	4	5	6	7	-8	-7	-6	-5	-4	-3	-2	-1
1	1	2	3	4	5	6	7	<u>-8o</u>	-7	-6	-5	-4	-3	-2	-1	0
2	2	3	4	5	6	7	<u>-8o</u>	<u>-7o</u>	-6	-5	-4	-3	-2	-1	0	1
3	3	4	5	6	7	<u>-8o</u>	<u>-7o</u>	<u>-6o</u>	-5	-4	-3	-2	-1	0	1	2
4	4	5	6	7	<u>-8o</u>	<u>-7o</u>	<u>-6o</u>	<u>-5o</u>	-4	-3	-2	-1	0	1	2	3
5	5	6	7	<u>-8o</u>	<u>-7o</u>	<u>-6o</u>	<u>-5o</u>	<u>-4o</u>	-3	-2	-1	0	1	2	3	4
6	6	7	<u>-8o</u>	<u>-7o</u>	<u>-6o</u>	<u>-5o</u>	<u>-4o</u>	<u>-3o</u>	-2	-1	0	1	2	3	4	5
7	7	<u>-8o</u>	<u>-7o</u>	<u>-6o</u>	<u>-5o</u>	<u>-4o</u>	<u>-3o</u>	<u>-2o</u>	-1	0	1	2	3	4	5	6
<u>-8</u>	<u>-8</u>	<u>-7</u>	<u>-6</u>	<u>-5</u>	<u>-4</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	<u>0o</u>	<u>1o</u>	<u>2o</u>	<u>3o</u>	<u>4o</u>	<u>5o</u>	<u>6o</u>	<u>7o</u>
<u>-7</u>	<u>-7</u>	<u>-6</u>	<u>-5</u>	<u>-4</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	0	<u>1o</u>	<u>2o</u>	<u>3o</u>	<u>4o</u>	<u>5o</u>	<u>6o</u>	<u>7o</u>	<u>-8</u>
<u>-6</u>	<u>-6</u>	<u>-5</u>	<u>-4</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	0	1	<u>2o</u>	<u>3o</u>	<u>4o</u>	<u>5o</u>	<u>6o</u>	<u>7o</u>	<u>-8</u>	<u>-7</u>
<u>-5</u>	<u>-5</u>	<u>-4</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	0	1	2	<u>3o</u>	<u>4o</u>	<u>5o</u>	<u>6o</u>	<u>7o</u>	<u>-8</u>	<u>-7</u>	<u>-6</u>
<u>-4</u>	<u>-4</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	0	1	2	3	<u>4o</u>	<u>5o</u>	<u>6o</u>	<u>7o</u>	<u>-8</u>	<u>-7</u>	<u>-6</u>	<u>-5</u>
<u>-3</u>	<u>-3</u>	<u>-2</u>	<u>-1</u>	0	1	2	3	4	<u>5o</u>	<u>6o</u>	<u>7o</u>	<u>-8</u>	<u>-7</u>	<u>-6</u>	<u>-5</u>	<u>-4</u>
<u>-2</u>	<u>-2</u>	<u>-1</u>	0	1	2	3	4	5	<u>6o</u>	<u>7o</u>	<u>-8</u>	<u>-7</u>	<u>-6</u>	<u>-5</u>	<u>-4</u>	<u>-3</u>
<u>-1</u>	<u>-1</u>	0	1	2	3	4	5	6	<u>7x</u>	<u>-8</u>	<u>-7</u>	<u>-6</u>	<u>-5</u>	<u>-4</u>	<u>-3</u>	<u>-2</u>

o : Overflow Flag

The 4-bit binary addition table

	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0001	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000
0010	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001
0011	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010
0100	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011
0101	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100
0110	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101
0111	0111	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110
1000	1000	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111
1001	1001	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000
1010	1010	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001
1011	1011	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010
1100	1100	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011
1101	1101	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100
1110	1110	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101
1111	1111	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110

The carry flag table

	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000																
0001																C
0010															C	C
0011														C	C	C
0100												C	C	C	C	C
0110											C	C	C	C	C	C
0111										C	C	C	C	C	C	C
1000									C	C	C	C	C	C	C	C
1001								C	C	C	C	C	C	C	C	C
1010							C	C	C	C	C	C	C	C	C	C
1011						C	C	C	C	C	C	C	C	C	C	C
1100				C	C	C	C	C	C	C	C	C	C	C	C	C
1101			C	C	C	C	C	C	C	C	C	C	C	C	C	C
1110		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1111	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

C : Carry Flag

The overflow flag table

	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000																
0001								0								
0010							0	0								
0011						0	0	0								
0100					0	0	0	0								
0101				0	0	0	0	0								
0110			0	0	0	0	0	0								
0111		0	0	0	0	0	0	0								
1000									0	0	0	0	0	0	0	0
1001									0	0	0	0	0	0	0	0
1010									0	0	0	0	0	0		
1011									0	0	0	0	0			
1100									0	0	0	0				
1101									0	0	0					
1110									0	0						
1111									0							

O : Overflow Flag

The carry and overflow flag table

	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000																
0001								O								C
0010							O	O								C
0011						O	O	O						C	C	C
0100					O	O	O	O					C	C	C	C
0101				O	O	O	O	O				C	C	C	C	C
0110			O	O	O	O	O	O			C	C	C	C	C	C
0111		O	O	O	O	O	O	O		C	C	C	C	C	C	C
1000									CO	CO	CO	CO	CO	CO	CO	CO
1001								C	CO	CO	CO	CO	CO	CO	CO	C
1010							C	C	CO	CO	CO	CO	CO	CO	C	C
1011						C	C	C	CO	CO	CO	CO	CO	C	C	C
1100					C	C	C	C	CO	CO	CO	CO	C	C	C	C
1101				C	C	C	C	C	CO	CO	CO	C	C	C	C	C
1110			C	C	C	C	C	C	CO	CO	C	C	C	C	C	C
1111	C	C	C	C	C	C	C	C	CO	C	C	C	C	C	C	C

C : Carry Flag O : Overflow Flag