

Bit and Shift Operations  
Lab/Practice Exercises

October 22, 2004

Calculate the value of the following binary numbers.

1. 0 1 0 1 1 0 1 1
2. 1 1 1 1 1 1 1 1
3. 1 0 0 0 0 0 0 0
4. 0 0 0 0 0 0 0 1
5. 0 0 0 0 0 1 0 1
6. 0 0 0 0 1 0 1 1

Using the following 4 bit binary numbers, and assume a word size of 4 bits (instead of the standard 32 bits used for the int operands of these operators), perform the following bitwise operations.

Shift Left

1. 1 0 1 1 << 1
2. 1 0 1 1 << 2
3. 1 0 1 1 << 3
4. 1 0 0 0 << 2
5. 1 0 1 0 << 1
6. 1 1 1 1 << 3

Shift Right

1. 1 0 1 1 >>> 1

2. 1011 >>> 2

3. 1011 >>> 3

4. 1000 >>> 2

5. 1010 >>> 1

6. 1111 >>> 3

Bitwise AND ( & )

<u>1010</u>	<u>1100</u>	<u>1011</u>	<u>0101</u>
<u>1100</u>	<u>1100</u>	<u>1000</u>	<u>0011</u>

Bitwise OR ( | )

<u>1010</u>	<u>1100</u>	<u>1011</u>	<u>0101</u>
<u>1100</u>	<u>1100</u>	<u>1000</u>	<u>0011</u>

Bitwise XOR ( ^ )

<u>1010</u>	<u>1100</u>	<u>1011</u>	<u>0101</u>
<u>1100</u>	<u>1100</u>	<u>1000</u>	<u>0011</u>

Bitwise Negation ( ~ )

<u>1010</u>	<u>1100</u>	<u>1011</u>	<u>0101</u>
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