

16.216: ECE Application Programming

Fall 2012

Lecture 8: Key Questions

September 21, 2012

1. **Example:** Given an unsigned int, n , and a number, b , how would you:
 - a. Clear all bits of n ?
 - b. Clear the lower 16 bits of n (mask out lower bits)?
 - c. Flip all bits of n ?
 - d. Flip bit b of n ?
 - e. Set bit b of n (i.e., make sure bit b is 1)?
 - f. Clear bit b of n (i.e., make sure bit b is 0)?

2. Describe how, in general, you perform the operations below on a bit or range of bits:
- a. Setting bit(s) (desired bit(s) = 1, all others unchanged)

- b. Clearing bit(s) (desired bit(s) = 0, all others unchanged)

- c. Flipping bit(s) (desired bit(s) change from $0 \rightarrow 1$ or $1 \rightarrow 0$, all others unchanged)

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7. **Example:** What does the following code print?

```
int main() {  
    int x = 3;  
    int y = 7;  
  
    if (x > 2)  
        x = x - 2;  
    else  
        x = x + 2;  
  
    if ((y % 2) == 1)  
    {  
        y = -x;  
        if ((x != 0) && (y != -1))  
            y = 0;  
    }  
    printf("x = %d, y = %d\n", x, y);  
    return 0;  
}
```

8. Discuss how to use `if` statements to check that a value falls within a desired range.

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