16.216: ECE Application Programming

Spring 2013

Lecture 7: Key Questions
February 6, 2013

1. What are the basic binary arithmetic operators supported by C?

2. Explain the modulus operator (%).

3. What determines the type of a binary operation's result?

4. What is the difference between division of integers and floating-point types?

5. Explain the operation of the unary negation operator (e.g., `-x`).

6. **Example:** Evaluate each of the following expressions, including the type (`int` or `double`) in your answer.

a. `19/3`

b. `3/19`

c. `19%3`

d. `3%19`

e. `5 + 7/2`

f. `5.0 + 7/2`

g. `5 + 7.0/2`

h. `5 * 3 % 3 / 6 + 14 + 10 / 2`

i. `5 * (3 % 3) / 6 + 14.0 + 10/3`

7. Explain the basic form of an `if` statement.

8. Describe how the expression in `if (<expression>)` is evaluated and show how conditions are evaluated, including multiple conditions in the same expression.

9. Describe how the statement—the actual code to be executed if the condition is true—is written for an `if` statement.

10. Show how multiple if statements can be nested together (`if/else if/else`).

11. **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;
}
```