

## Chapter 15 Using Conditionals

Conditionals are statements that control the execution of other statements

### If Statements

- Several kinds, if, if-then, if-then-else, if-then-else-if

#### Plain if-then statements

- Write the nominal path through the code first, then write the unusual cases
  - o Make sure the rare cases don't obscure the normal path of execution
- Make sure you are branching correctly on equality
  - o < instead of <= can lead to off-by-one errors
- **Put the normal case in the if**
  - o **Put unusual case in the else**
  - o **ALL NOMINAL CASES FIRST**
  - o **ALL ERROR CASES AFTER**
- A classis General Motors analyst found that 50-80% of if statements should have had an accompanying else clause
  - o Code an else just to show it was thought about
  - o Also be sure to test the else clause for correctness
- Check for reverses in the if and else clauses

#### Chains of if-then-else Statements

- Aka elif
- Simplify complicated tests with Boolean function calls
  - o isSomeTest()
- Put most common cases first
- Make sure that all cases are covered
  - o Code final else with an error message for cases that are unplanned

### Case statements

#### Choosing the Most Effective Ordering of Cases

- Order cases alphabetically or numerically
- Put the normal case first
- Order cases by frequency
- Tips:
  - o Keep actions of each case simple
    - Code for each case should be short
  - o Don't make up phony variables to be able to use the case statement
  - o Use the default (final else) case ONLY to detect legitimate defaults
  - o Use the default clause to detect errors