CS 161
Intro to CS I

More Variables, Input, and Conditions
Odds and Ends

• Peer Reviews due Thursday, 11:59pm
  – Use notepad or any text editor to open
• Get Assignment 1 demoed

• Study Sessions LINC 268:
  – Tuesdays: 5-6:30pm
  – Wednesdays: 6-7:30pm
  – Thursdays: 7-8:30pm
Reflections

• What are C++ primitive types?

• What is an acceptable C++ variable name?

• What is an operand?

• What is an lvalue vs. rvalue?
Printing Variables/Reading Into Variables

- **C++: cout**
  - Example:
    ```cpp
    std::cout << "The integer value is: " << value;
    ```
  - What about the newline?

- **C++: cin**
  - Example:
    ```cpp
    std::cin >> value;
    ```
Variables Demo...
rand() demo...
Constants

• What is a constant?

• How do we define a constant?
  – Use of a macro
    • `#define`
    • Placed at top of program
    • No semicolon at end
    • Example: `#define MAX_SIZE 100`
  – Use of `const`
    • Same as declaring variable but const
    • Example: `const int MAX_SIZE = 100;`
Constants Demo...
Additional Operators

• Common operation: fetch/store same variable
  var = var + 2;  // increment variable contents
  var = var * 2;  // double variable contents
  – operator/assignment combination (all ops supported):
    var += 2;
    var *= 2;

• Pre/Post increment/decrement: ++ and --
  – Example: age++ vs. ++age
Demo...
Prediction

• What are conditional statements?

• How do we implement these in C++?
Decisions in Life

• What is a decision?
• When do we make decisions?
• How do we make decisions?
  If it is sunny today
    then I’ll go to the beach and fly a kite
  Else if it is raining today
    then I’ll stay inside and read a book
  Else if it is snowing
    then I’ll go to the mountains to ski
Decisions within Decisions

• What happens if there is no wind at the beach?
• How does this change our decisions?

If it is sunny today
  then I’ll go to the beach
  if it is windy at the beach
    then I’ll fly a kite
  if it is not windy at the beach
    then I’ll walk on the shore
Flow chart for decisions

1. Is it sunny?
   - Yes: Go to beach
   - No: Is it raining?
     - Yes: Read book
     - No: Go outside
     - Yes: Is it windy?
       - Yes: Fly kite
       - No: Walk on beach
Decisions in our programs

- Use an if/else
  
  ```
  if (<expression>) {
    <statement>;
    ...
    <statement>;
  }
  else {
    <statement>;
    ...
  }
  ```
What is the <expression>? 

Could be a relational expression:
  <expression> <relational op> <expression>

• Relational Ops
  == - equal to
  != - not equal to
  < - less than
  > - greater than
  <= - less than or equal to
  >= - greater than or equal to
If/Else Demo...