CS150 Intro to CS I

Fall 2015

Chapter 4
Making Decisions

- Reading: Chapter 4 (4.1 pp. 149-154; 4.2 pp. 154-162; 4.3 pp. 162-165)

- Good Problems to Work: pp.153-154[4.1, 4.2]; p.162[4.5, 4.7, 4.9], p.165[4.10, 4.11]

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Conditionals

- So far, we can Input, Output and Calculate

- How can we explore relationships between data?

- How can our program only do certain things sometimes?

Decisions

- Relational Expressions allow our program to *make a decision*
  - ➢ based on the **data** in the program

- What are some decisions we might want our program to make?

Relational Operators

Operator	Meaning
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
==	Equal to
!=	Not equal to

- All operators are binary

- Each operator is left associative. What does this mean?

Operator Precedence (highest to lowest)

Unary plus & minus	+ -	Left associative
Multiplication, division, and modulus	* / %	Left associative
Addition & subtraction	+ -	Left associative
Relational operators	< <= > >=	Left associative
Relational operators	== !=	Left associative
Assignment	=	Right associative

The if Statement

- We execute each statement in our program in order
- What **if** we only want to execute a statement sometimes?
- The **if** statement
- Single-alternative **if**

```
if ( condition )
{
    //statements
}
```

Practice

```
int age;
const int VOTING_AGE = 18;

cout << "Enter your age:";
cin >> age;

if (age >= VOTING_AGE)
{
  cout << age << " >= " << VOTING_AGE;
  cout << " You can vote!" << endl;
}
```
What values of age need to be entered to fully test this code?

Practice

Write a C++ program segment that allows the user the ability to enter 3 exam scores one at a time. If the average exam score is higher than 60, output "You Passed"; otherwise output "You Failed". Sum the scores as they are entered.

1. What variables (including their types) are needed in this program segment?

Hint: If the variable count contains the value 0, what is the value of count after executing the statement count = count + 1;

2. What do you need to do conditionally?

3. What data is necessary to use in the condition?

Problem

Your local bookstore has asked you to write a program to help them determine the cost of shipping of customer orders.

1.   If the order is $30 or less then shipping will cost $5

2.   If the order is over $30 then shipping will be $3.

Write a C++ program to solve this problem

Problem Modification

The bookstore has now changed it's shipping policy so that

1. If the order is $30 or less, shipping is $5

2. If the order is over $30 but less than $50, shipping is $3

3. If the order is $50 or more then shipping is $2

What would we need to change in the program?