

## Conditionals

- So far, we can Input, Output and Calculate
- How can we explore relationships between data?

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• How can our program only do things *sometimes*?

# Decisions!

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- Relational Expressions allow our program to make a decision
  - based on the data in the program
- What are some decisions we might want out program to make?

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```
Relational Expression
• Relational expression: an expression that
uses a Relational Operator
• its value is a Boolean value (True or False)
int height = 32;
int minHeight = 34;
bool bVal;
bVal = height > minHeight;
bVal = height == minHeight;
```

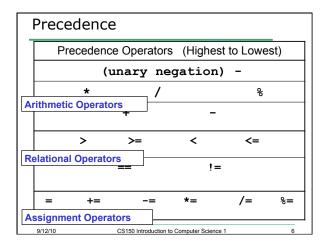
bVal = height >= (minHeight - 2);

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Relational Operators		
Operator	Meaning	
>	Greater than	
<	Less than	
>=	Greater than or equal to	
<=	Less than or equal to	
==	Equal to	
!=	Not equal to	
<ul> <li>All are binary operators</li> </ul>		
<ul> <li>Left to right associativity</li> </ul>		
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# const Declarations

```
    Constant declaration
```

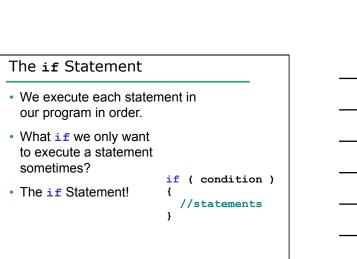
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const double PI = 3.14;

- const double RADIUS = 5.4;
- Constant declarations are fixed and cannot be changed

Practice	
What is the value of the following Relational	
Expressions?	Relational Operators work on Integers, Floating point
<pre>int width = 99;</pre>	numbers, and Characters.
const int HEIGHT = 42;	
bool bVal;	
bVal = width > HEIGHT;	
<pre>bVal = -width &lt;= HEIGHT;</pre>	
bVal = width != HEIGHT;	
bVal = width == (width + 1);	
$\frac{1}{9(120)}$ yal = width == width + 1;	



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### Practice

- For the problem below:
  - o what data will you need?
  - what will you need to do conditionally?
    what data will you use in your decision?
- Calculate the average grade for all three exams in a course. Print a message stating if the student passed the course.

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"You passed!"

"You failed!"

## Example

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• Your local bookstore has asked you to write a program to help them determine the cost of shipping of customer orders. If the order is \$30 or less then shipping will cost \$5, if the order is over \$30 then shipping will be \$3.

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• Write the program to solve this problem