Language Basics – Operators

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Arithmetic

Arithmetic Operators
+ - * /

Shortcuts
+= -= *= /=

Increment/ Decrement
i++ ++i i-- --i

Modulo
%

No Exponential

Comparisons

< > <= >=

==

!=

&& ||

!

Bitwise Operators

Boolean operators

&& || !

Bitwise operators

& | ^

Bit shift operators

<< >>

Operator Overloading

User defined types just like fundamental types

```
int i = j +3;
Order newOrder =
   oldOrder + newItem;
```

Operator Overloads

Write a function that defines the operator

Usually a member function

Occasionally a free function

Standard Library Has Plenty of Useful Overloads

Invisible

+

<< and >>

++

Operator Overloading

What operators can you overload?

All of them

Even some you've never heard of

Writing an Overload

MyObject < Something

```
bool MyClass::operator<(OtherType something)
```

Can operate on two MyClass objects or different types

Something < MyObject

```
bool operator<(OtherType something,
               MyClass  mc)
```

Free function

Use MyClass public functions

Or be declared a friend

Summary

- C++ has a LOT of operators
- Not all behave the way you think
    - && || shortcut
    - & | ^ bitwise
    - == vs =
- It’s possible to write VERY concise code
- Operator overloading is a very powerful technique that sets C++ apart