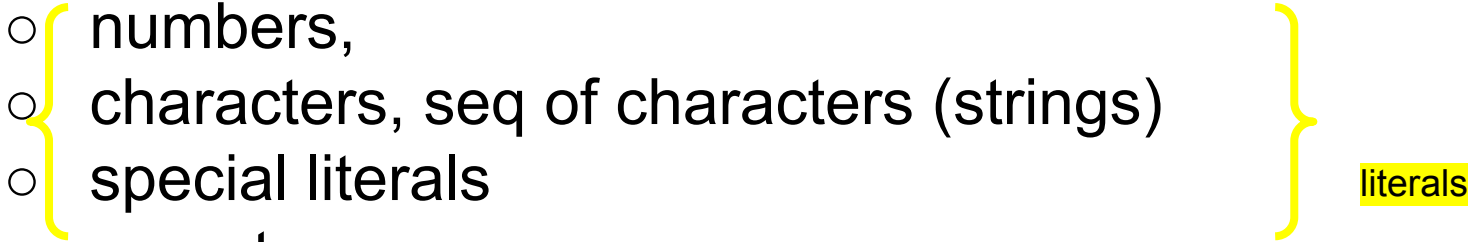# Tinker Academy

AP Computer Science Prep (Java Programming)
Lecture 5 - Java Fundamentals 2 (Operators)

Winter 2015

Lecture 5 - Java Fundamentals 2

Compilation Process
- Java source code split into "token" sequence
- Tokens are either
  - numbers,
  - characters, seq of characters (strings)
  - special literals
  - operators
  - language keywords
  - identifiers
  - punctuation, comments, whitespace

literals

Operators

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Arithmetic Operators (AP Java Subset 2014)		
Operator	Operation	Example
+	Addition	// Variable a has the value 2 int a = 1 + 1;
-	Subtraction	//Variable a has the value 0 int a = 1 - 1;
*	Multiplication	// Variable a has the value 1 int a = 1 * 1;
/	Division	int a = 3 / 2; // (Integer Division) Answer will be 1 a = 3 / 2.0 // (Number Division) Answer will be 1.5
%	Modulus (Remainder)	int a = 3 % 2 // (Answer will be 1) a = 2 % 2 // (Answer will be 0) a = 1 % 2 // (Answer will be 1)

x = qc + r
x is the number
c is the modulus
r must be non neg

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Assignment Operators (AP Java Subset 2014)		
Operator	Operation	Example
=	Assignment	// a is assigned the value 2 int a = 2;
+=	Combined addition + assignment	// a is assigned the value 4 int a; a += 4;
*=	Combined multiplication + assignment	// a is assigned the value 12 int a; a *= 3;
/=	Combined division + assignment	// a is assigned the value 3 int a; a /= 4;
%=	Combined modulus + assignment	// a is assigned the value 0 int a; a %= 3;

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Relational Operators (AP Java Subset 2014)		
Operator	Operation	Example
==	Equals	// Variable a is true boolean a = 2 == 2;
!=	Not Equals	// Variable a is false boolean a = 2 != 2;
<	Less Than	// Variable a is false boolean a = 2 < 2;
<=	Less Than Or Equal	// Variable a is true boolean a = 2 <= 2;
>	Greater Than	// Variable a is false boolean a = 2 > 2;
>=	Greater Than Or Equal	// Variable a is true boolean a = 2 >= 2;

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Increment/Decrement Operators (AP Java Subset 2014)		
Operator	Operation	Example

++	Postfix increment	// Variable a is 1
		int a;
		a++;

--	Postfix decrement	// Variable a is -1 int a; a--;

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Logical Operators (AP Java Subset 2014)		
Operator	Operation	Example
&&	AND	// a is false boolean a = 2 > 1 AND 3 < 2;
||	OR	// a is true boolean a = 2 > 1 AND 3 < 2;
!	NOT	// a is false boolean a = !(2 > 1);

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String Operators (AP Java Subset 2014)		
Operator	Operation	Example
+	Concatenate Strings	// Variable a is "Hello World" String a = "Hello" + " " + "World";

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Special Operators		
Operator	Operation	Example
new	Creates new objects	// Variable a is an Object Object a = new Object();