CSE 121 – Lesson 2

Kai Daniels
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Music: 🌸k-pop girlies playlist🌸

sli.do #cse121
Announcements, Reminders

- **Creative Project 0** was due yesterday (Jun 27) @ 11:59 PM
- Programming Assignment 0 released later today (due Wed, July 5th bc holiday)
- IPL is open! - [Schedule and instructions](#) can be found on course website.
- **Just joined CSE 121?** Resubmission policy is your friend! See more in [syllabus](#).

- Reminder: Pre-Class Work and Section work are not graded! (but you should do them anyway 😁)
Recap: Data Types & Expressions

• Types: int, double, String, boolean
• Expressions: Operators
• Beware of precedence! (order of operations)
Data Types in Java

In programming, you’re dealing with data...

• ints (whole numbers)
• doubles (real numbers)
• Strings
• booleans (true or false)
Operators (for numerical & String values)

Numerical:

• + Addition
• - Subtraction
• * Multiplication
• / Division
• % Modulo or “Mod”

Strings

• + Concatenation

Booleans

• ! Logical Not
• && Logical And
• || Logical Or
• <, >, <=, >=, ==, !=
(PCM) Precedence

Parentheses

Multiplication, Modulo, Division

Addition (and Concatenation), Subtraction

If multiple operators at the same level?

Evaluate subexpressions from left to right!
Example

1 + 2 * 3
1 + 6
7

(1 + 2) * 3
3 * 3
9
Work on Expressions/Types Practice Problems

Part 1

- Ed lesson linked from the course calendar
- Work with the folks around you!
- TAs and I will be walking around to help
Questions?
(PCM) Mixing Types

• When mixing types in an expression, Java will convert one type to the other and then perform the operation “normally”

• ints can be converted to doubles

• Both ints and doubles can be converted to Strings
Example 2

2 + 2 + "hello" + 3 * 5 + 10
4 + "hello" + 15 + 10
"4hello" + 15 + 10
"4hello15" + 10
"4hello1510"
Work on Expressions/Types Practice Problems

Part 2

• Ed lesson linked from the course calendar

• Work with the folks around you!

• TAs and I will be walking around to help
Questions?
Boolean Operators

- ! Logical Not
- <> <= >= Relational Operators
- == != Relational Operators (equality)
- && Logical And
- || Logical Or
(PCM) Precedence (updated)

Logical not
Parentheses
Multiplication, Modulo, Division
Addition (and Concatenation), Subtraction
Relational operators
Equality operators
Logical and
Logical or
Example 3

\[1 + 2 \times 3 \neq (1 + 2) \times 3\]

\[1 + 2 \times 3 \neq 3 \times 3\]

\[1 + 6 \neq 3 \times 3\]

\[1 + 6 \neq 9\]

\[7 \neq 9\]

\text{true}
Work on Expressions/Types Practice Problems

Part 3

- Ed lesson linked from the course calendar
- Work with the folks around you!
- TAs and I will be walking around to help
Questions?
Now that we know about different types and data, we can learn about how to store it!

Java allows you to create variables within a program. A variable has

- A type
- A name
- (Potentially) a value it is storing

Declaration:      \texttt{int x;}
Initialization:   \texttt{x = 30;}

Or all in one line:

\texttt{int x = 30;}
Variables

They’re made to be manipulated, modified, re-

```java
int myFavoriteNumber = 7;
int doubleFV = myFavoriteNumber * 2;
myFavoriteNumber = myFavoriteNumber + 3;
```

Notice – this doesn’t really make any
mathematical sense! That’s because, in
Java, = is assignment, not equality!
New Operators!

```javascript
myFavoriteNumber = myFavoriteNumber + 3;
This type of pattern is so common, we have an even shorter way we can write it!

myFavoriteNumber += 3;
```

You can do the same for `-=` , `*=` , `/=` , and `%=`

And there are even shorter versions for `incrementing` and `decrementing`!

```javascript
myFavoriteNumber++; myFavoriteNumber--;```

What do a, b, and c hold after this code is executed?

```c
int a = 10;
int b = 30;
int c = a + b;
c -= 10;
a = b + 5;
b /= 2;
```

A. 10, 30, 40
B. 35, 15, 30
C. 35, 15.5, 30
D. 20, 15, 30