

CSCI 334:  
Principles of Programming Languages

Lecture 18: Variables

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**Williams**

Topics

Nuget  
Variables  
Implementing variables  
Project activity

Your to-dos

1. No quiz this week.
2. Project checkpoint #1, **due Sunday 11/27**  
(partner lab)
3. (last chance before break) office hours today;  
come talk about your project if you want

Final project timeline

1. Minimal working version, **due Sun 11/27**
2. Mostly working version, **due Sun 12/4**
3. Language specification doc, **due Sun 12/11**
4. Project + video presentation, **due Sun 12/18**

Arpeggify

Nuget

Variables

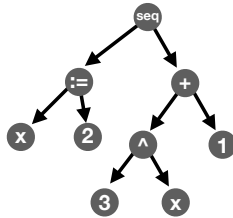
## Variables

A **variable** is a named placeholder for a value in an expression. At runtime, when a value is **assigned** to a variable, that **variable name is bound to the value** within the variable's scope. When a variable is **used** in an expression, the bound value is **substituted** into the expression when the expression is evaluated.

We'll talk about **scope** in the next lecture.

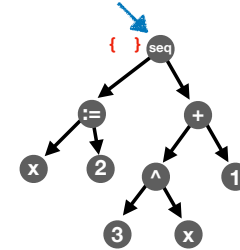
## Example

$x := 2$   
 $3^x + 1$



## Example

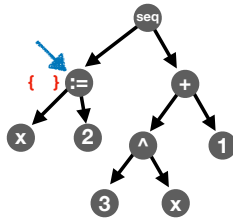
$x := 2$   
 $3^x + 1$



{ } is an "environment"

## Example

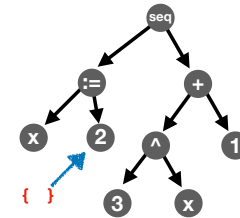
$x := 2$   
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## Example

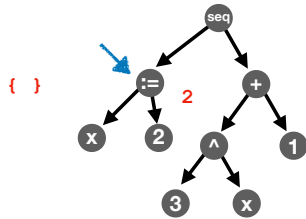
$x := 2$   
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### Example

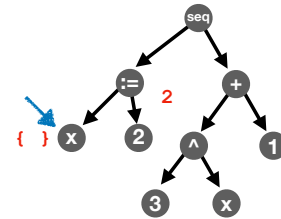
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### Example

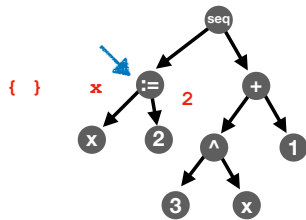
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### Example

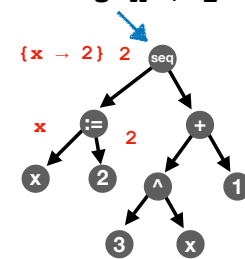
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### Example

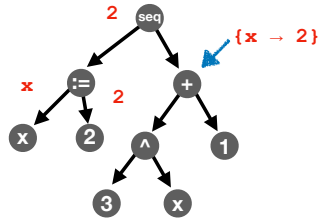
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## Example

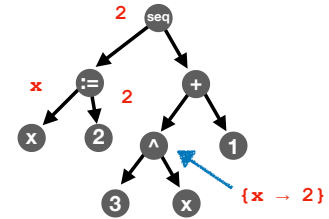
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## Example

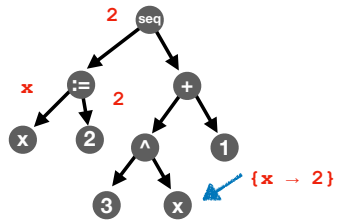
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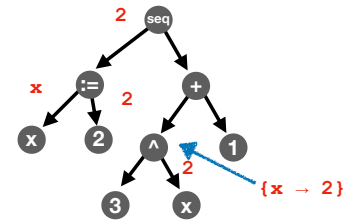
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## Example

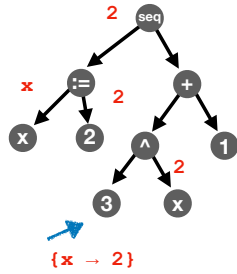
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## Example

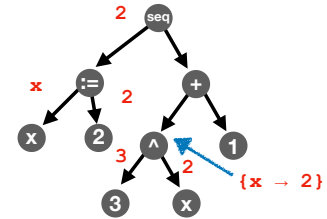
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## Example

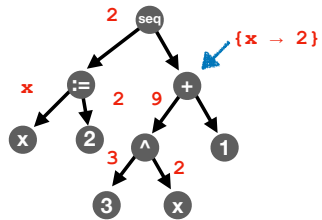
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## Example

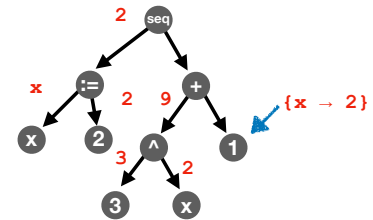
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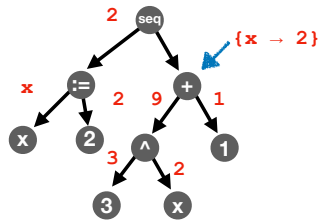
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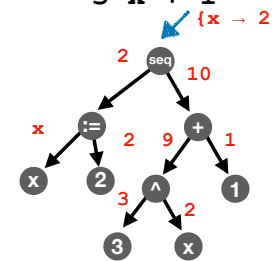
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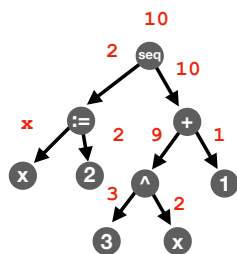
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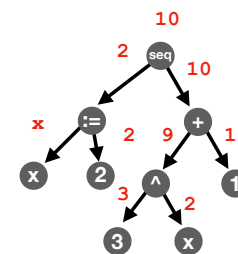
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## Example

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Cool, huh?

**Every** CS major should know this.

How does it work?

## Recap & Next Class

Today:

Variables

Next class:

Testing