Welcome to CSC324!

https://www.cs.toronto.edu/~david/csc324
Administrative matters

lectures -- WF
labs -- M
Administrative matters

assessments: see syllabus
Administrative matters

new programming languages
(start early!)
Administrative matters

academic integrity
Introduction to CSC324

Principles of Programming Languages
user -> creator
Big learning goals

1. Define, analyze, and modify **syntactic** features of a programming language.

2. Define and analyze **semantic** features of a programming language.

3. Write programs that operate on other programs.
And along the way...

Expand your definition of *programming*.
syntax: the form of the elements of a language
grammar: formal set of rules specifying the syntax of a language
Simple arithmetic language (infix)

<expr> ::= NUMBER
         | <expr> <op> <expr>
<op>   ::= +
         | -
         | *
         | /
Simple arithmetic language (prefix)

\[ \texttt{<expr>} \ := \ \texttt{NUMBER} \]
\[ \quad \mid (\texttt{<op>} \ \texttt{<expr>} \ \texttt{<expr>}) \]

\[ \texttt{<op>} \ := \ + \]
\[ \quad \mid - \]
\[ \quad \mid * \]
\[ \quad \mid / \]
expression: a syntactically-valid element of a language
semantics: the meaning of the elements of a language
Computation as evaluation of expressions
The lambda calculus

\[
\text{<expr>} ::= \text{ID} \\
| (\lambda \text{ID} . \text{<expr>}) \\
| (\text{<expr>} \text{<expr>})
\]