

Jack programs

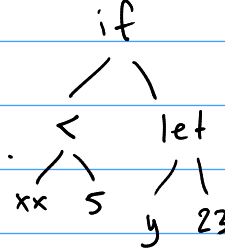
```
if (xx < 5) { // foo
    let y = 23;
}
```

```
"if (xx < 5) { // foo\n    let y = 23;\n}"
```

Token stream

[if, (, xx, <, 5, ...]

tokens = smallest independent units of input.

Abstract Syntax Tree (AST)VM programs

```

push local 0
push constant 5
lt
if-goto

```

tokenization

lexing

lexical analysis

scanning

parsing

code generation.

10/11 A

10

11

B
C
D

Today: tokenization for a simple example language

- variables
- integers
- +, -, *, /
- parens
- let
- Comments.

e.g.

```

let x5 = y + 99; // comment
let z = (x5 + 3) * (y - 7);

```

Annotations:
 - let: keyword
 - x5: variables / identifier
 - y: variables / identifier
 - 99: int
 - z: variables / identifier
 - (x5 + 3): variables / identifier
 - (y - 7): variables / identifier
 - ;: symbols