

Objectives

- SLogo Design

Nov 19, 2008

Sprenkle - CS209

1

SLogo Sketches

- Draw your SLogo Interfaces
- Map to your classes, as appropriate
- List other associated non-GUI classes

Nov 19, 2008

Sprenkle - CS209

2

Analyzing SLogo Sketches

- Looking for common classes/sketches/design patterns

Nov 19, 2008

Sprenkle - CS209

3

Analysis

- Use Case
 - The user starts the program, types 'fd 50' in the command window, and sees the turtle move in the display window leaving a trail.

Nov 19, 2008

Sprenkle - CS209

4

SLogo Language

- SLogo has a lot of commands
- When a user enters a command, the application needs to execute the command
- Examples
 - FORWARD 50
 - RIGHT 90
 - REPEAT numOrVar [instructionList]

Nov 19, 2008

Sprenkle - CS209

5

Programming Language Syntax

- What does an identifier look like in Java?
- What does an assignment statement look like in Java?
- What can be on the left hand side?
- What can be on the right hand side?
- What does a multiplication look like?
- How do we evaluate arithmetic expressions?

Nov 19, 2008

Sprenkle - CS209

6

Programming Language Design

- Must be unambiguous
 - Programming Language defines a syntax and semantics
- Interpreting programming languages
 - Parse program into tokens
 - Example: `x = 4*3;` →
`<id> <assignment> <num> <mult> <num> <endofstmt>`
 - Validate that tokens are in a valid form
 - Generate executable code

Nov 19, 2008

Sprenkle - CS209

7

A Grammar To Describe Expressions

- Left-recursive grammar


```

<Exp> ::= <Exp> + <Term> |
        <Exp> - <Term> |
        <Term>

<Term> ::= <Term> * <Factor> |
          <Term> / <Factor> |
          <Factor>

<Factor> ::= number | <id> |
           ( <Exp> ) |
           - <Factor>
      
```

Nov 19, 2008

Sprenkle - CS209

8

SLogo Starting Code

- Import an existing project from
 - `/home/courses/cs209/handouts/slogo.tar`

Nov 19, 2008

Sprenkle - CS209

9

Understanding Given Code

- What code is a very basic GUI for SLogo?
 - How do you execute the code?
 - How is the code organized?
 - What design pattern does it match?

Nov 19, 2008

Sprenkle - CS209

10

Understanding the Given Code

- What packages contain a basic LL(1) language parser?

Nov 19, 2008

Sprenkle - CS209

11

Packages/Classes to Know

- `jelan.simple`
 - Simple parser of expressions
 - Mixes together tokens, expressions, parsers
- Tokens
 - `CharTokens` – single-character tokens
 - `IdentifierToken` – represents an identifier
 - `NumberToken` – represents a number
- Factory: `CharTokensFactory`
- Expressions
 - Binary, Unary
 - Example: Addition
- Parser: `ElanParser`
 - Run on `tests/basic_expressions2`

Nov 19, 2008

Sprenkle - CS209

12

ElanParser Close Up

- StreamTokenizer customization
- Parser object
- Parsing the stream

Nov 19, 2008

Sprenkle - CS209

13

For Friday: Project Preparation

- Read over the SLogo (Final Project) specifications again
 - More than on the take-home exam question
- First deliverable is a text document that answers
 - What needs to be completed?
 - What is your plan for completing those tasks?
 - What tasks are you most interested in working on?
 -
- Friday
 - Discuss your plans, questions
 - Discuss tools to help collaboration

Nov 19, 2008

Sprenkle - CS209

14