

## Homework 4

CS 541  
Fall 2005  
Craig A. Rich

Design a language, including a syntax and semantic specification, and construct an interpreter for the language using the Generic Interpreter (*gi*). The language can be a new language or part of an existing language. “Language” should be considered in a broad sense, and is not restricted to programming languages. Projects will be written in the Java programming language and use the *gi* package to automate syntax and semantic analysis. *gi* is documented and available for download as a zip or compressed tar file at

<http://www.csupomona.edu/~carich/gi/>.

- 1 Construct a `gi.Grammar` that specifies the lexical-level syntax (i.e. tokens or terminals) and phrase-level syntax (i.e. nonterminals) of the language.
- 2 Add `gi.Grammar.Semantics` to your `gi.Grammar` that specify the semantics of the language. Construct an interpreter that reads and interprets characters from the standard input stream, according to your language.

### *Using the Cal Poly Pomona Intranet Development Environment*

Sun’s Java Development Kit (JDK) v1.5—including a compiler (`javac`) and interpreter (`java`)—is provided. *gi* v1.2 is installed and readable in my user directory, from which you can import classes directly to construct your interpreter. Include the appropriate directory in your `CLASSPATH` environment variable before compiling and interpreting a source file:

```
% setenv CLASSPATH /dfs/user/carich/gi/gi-1.2/gi-1.2.jar:.  
...  
% javac Language.java  
% java Language < sourcefile
```

### *Using your own Development Environment*

Java is relatively portable, so you can download *gi* and develop your language interpreter in other development environments as well. You will need an environment that supports Java v1.2 or later, since *gi* imports Collection classes (e.g., Sets, Maps) introduced in Java v1.2.