

Setup

Using XLE at Stanford
Linguistics 233B
22 January 2002

- Open the following file in an editor (e.g., emacs) and follow the directions

```
/afs/ir/class/linguist233b/setup
```

- You may also have to give the command

```
kinit -t
```

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Contents of /afs/ir/class/linguist233b/setup

```
## .cshrc
# Augment your "set path"; it should read as follows, where "...
# indicates anything that's there already

set path=($site_path ... /afs/ir/data/linguistics/XLE/bin
/afs/ir/class/symsys139p/bin)

setenv XLEPATH /afs/ir/data/linguistics/XLE

;; .emacs
# Add the following line
(load-library "/afs/ir/data/linguistics/XLE/emacs/lfg-mode")

## .xlerc
# You'll need two versions of this ...

# Make a file in your your home (~) directory called ".xlerc"; add
# this line to it:
create-parser /afs/ir/class/linguist233b/grammar/glueclass-english.lfg
```

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Contents of /afs/ir/class/linguist233b/setup (cont.)

```
## ~/glue
# Make a directory in your home directory called "glue"

# In the directory ~/glue, add a symbolic link to the prolog image
ln -s /afs/ir/class/linguist233b/prolog/glue_image ~/glue/glue_image

# In the directory ~/glue, add a symbolic link to the syntactic grammar
ln -s /afs/ir/class/linguist233b/grammar/glueclass-english.lfg
~/glue/glueclass-english.lfg

# In the directory ~/glue, copy over the .xlerc file IN THE CLASS
# PROLOG DIRECTORY
cp /afs/ir/class/linguist233b/prolog/.xlerc ~/glue/.xlerc
```

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- To run XLE at the prompt, type:

```
xle
```

- To parse a sentence, type

```
parse "David yawned"
```

- Do not use punctuation, and capitalization matters
- Four windows will pop up
- You will mainly work with the windows on the left

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- It is much more useful to run XLE in emacs

- You need to use emacs, version 20

- Run emacs 20 by typing this at the prompt

```
emacs20 &
```

- If you want emacs to have a white background, do this instead

```
emacs20 -bg white &
```

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Running XLE in Emacs (cont.)

- In emacs, invoke XLE by typing `M-x run-new-xle`, that is

```
ESC-x run-new-xle
```

- You should see something like this:

```
XLE loaded from /afs/ir/data/linguistics/XLE/bin/xle.
XLEPATH = /afs/ir/data/linguistics/XLE.
Copyright (c) 1993-2001 by the Xerox Corporation. All rights reserved.
This software is made available AS IS, and Xerox Corporation makes no
warranty about the software, its performance or its conformity to any
specification.
XLE release of Oct 22, 2001 13:44.
Type 'help' for more information.
loading /afs/ir/class/linguist233b/grammar/glueclass-english.lfg...
Grammar has 13 rules with 40 states, 48 arcs, and 53 disjuncts (53 I
MORPHOLOGYCONFIGFILE = /afs/ir/data/linguistics/XLE/bin/default-mor

Morph transducer files relative to /afs/ir/data/linguistics/XLE/bin,

0.11 CPU seconds
/afs/ir/class/linguist233b/grammar/glueclass-english.lfg loaded
%
```

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Running XLE in Emacs (cont.)

- You can parse things at the the ‘%’ prompt

```
% parse ``David yawned''
```

- Four windows will pop up, just like before

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Using Prolog

- You will use Prolog for the semantic lexicon you will write
- The semantic parser and prover are also written in Prolog
- If you don't know any Prolog, don't worry — you don't need to know much for this course

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- In the same emacs as XLE, type `C-x 2` to split the window into 2 panes; this is `Control-x 2`
- Pick one pane, click in it and type `M-x shell` (remember `M-x` is `ESC-x`)
- This starts a shell. Change to your glue directory if you're not already there
- At the prompt, type `./glue_image` to start Prolog

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Running Prolog (cont.)

- You should see something like this

```
epicl1:~/glue> ./glue_image
{restoring /afs/ir.stanford.edu/users/a/s/asudeh/glue/glue_image...
{/afs/ir.stanford.edu/users/a/s/asudeh/glue/glue_image restored in
90 msec 886664 bytes}
SICStus 3.8.6 (sparc-solaris-5.7): Thu Apr  5 21:46:51 MET DST 2001
Licensed to csl.i.stanford.edu
| ?-
```

- At the Prolog prompt `| ?-`, type `go.` and hit `return`
- The prompt should change to `%%Ready...`

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Parsing a sentence and obtaining its semantics

- Reparse the sentence "David yawned"
- In the bottom left window, find the menu labeled `command`, click on it and click on `Prove Semantics`

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- In your Prolog window, you should see something like

Curry-Howard premises:

```
Word David (from lexical entry at line 59):
david:
sigma(1)$e
```

```
Word yawned (from lexical entry at line 65):
yawn:
sigma(1)$e-*sigma(0)$t
Chart Construction Time (ms):
0
```

```
Meaning Extraction Time (ms):
0
```

MEANING:

```
[yawn,david]
```

```
Number of interpretations 1
%% Ready...
```

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Stopping Prolog

- If you every need to stop whatever Prolog is doing, type

```
Ctrl-C Ctrl-C
```

- The prompt should disappear, and you should get something like

```
Prolog interruption (h for help)?
```

- At this point, you can type a (for “abort”), and you should get

```
{Execution aborted}
| ?-
```

- To completely exit Prolog, at the prompt type `halt`.

```
| ?- halt.
```

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```
lex_sem('David', david, 'N', name).
sem_template(name, _Name, LogicalConstant, true,
```

```
    sigma(^) -~> LogicalConstant
```

```
    ).
```

```
lex_sem(yawned, yawn, 'V', v_intrans).
sem_template(v_intrans, _Verb, Pred, true,
```

```
    &(X, sigma(p:[^,'SUBJ']) -~> X
```

```
    -* sigma(^) +~> [Pred, X])
```

```
    ).
```

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XLE notation: Syntax

- Sample rule:

```
VP --> V: ^ = !; NP: (^ OBJ) = !.
```

- Need semicolon after annotated category.
- Need period at end of rule.
- “^=!” (↑=↓) can be omitted if it is the only annotation.

- Sample lexical entry:

```
Chris N * (^ PRED) = 'Chris'
          (^ NUM) = sg.
```

- XLE documentation is available by typing “documentation” to XLE.
- To exit XLE, type `exit` at the prompt

```
% exit
```

```
Process XLE finished
```

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