Improving KeYmaera

Less clicking, more proving

Motivation & Initial Idea

- improve the user-KeYmaera experience

- implement convenience features in KeYmaera

- reduce the amount of clicking

Changes from initial idea

- moved over to KeYmaera 4

- added text interface

Changes in KeYmaera 4

- Client-server architecture

- Web interface

An Example!

$$(A \land B \land B \rightarrow C) \rightarrow C$$

Example: Key File

```
Functions.
  R a.
  R b.
  R c.
End.
Problem.
  (a & b & (b -> c)) -> c
End.
```

Example

An actual demonstration!

Implementation: Initial syntax

- <formula id>/<tactic id>

- ex: succ:0/dl.imply-right

Implementation: Less verbose

- \<formula id>:\<tactic id>

- ex: 1:imply

Implementation: Saturated tactics

- Simple notation: add * to tactic name

- ex: -1:and*

Implementation: Autocomplete

- Three stages of suggestions

- Formula name

- Tactic name (full and short)

- Saturated

Implementation: Multiple tactics

- Separated by newlines or semicolons

- Faster, but requires advanced knowledge

- No autocompletion

Next steps

- Allow multi-formula tactics (ex: axiom close)

- Allow interactive tactics (ex: loop ind)

Summary

- Added text-based interface

- Has autocompletion

- Ability to apply multiple tactics