Forth and IDEs

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Integrated Development Environment (IDE)

- Editor (aka IDE) is the hub
  - Invokes compiler
  - Processes error messages
  - Runs program
  - Debugging interface
  - Crossreferencing

- No choice of editor
- Gforth supports Emacs (and vi) as IDE

Language Server Protocol (LSP)

- Interface between language systems and IDEs

- Traditional development: $O(|\text{languages}| \times |\text{IDEs}|)$

- LSP development: $O(|\text{languages}| + |\text{IDEs}|)$

- Editor choice: any editor that supports LSP

- Future work: Add LSP support to Forth systems
Traditional Forth approach

- Forth command line is the hub
- Show source code of word or edit it with your favourite editor
  Load program
  Run program
  Debugging
  Crossreferencing
  Documentation
  Show generated code
  Show other system state

Demo

Implementation Cost

<table>
<thead>
<tr>
<th>64-bit Gforth right after startup</th>
<th>size (KB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dictionary</td>
<td>548</td>
</tr>
<tr>
<td>native code</td>
<td>751</td>
</tr>
<tr>
<td>locate</td>
<td>32</td>
</tr>
<tr>
<td>where</td>
<td>619</td>
</tr>
<tr>
<td>backtrace</td>
<td>548</td>
</tr>
</tbody>
</table>
Conclusion

• Many languages: editor as hub

• Forth: command line as hub
  works with your favourite editor

• `locate`  
  `where`  
  `backtrace`  
  `help`  
  `see`

• also covers system code