WebQA

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Overview

• **Purpose**
  - Quality assurance for dynamic web application
  - “Unit Tests for web pages”

• **Syntax/Semantics**
  - Object oriented
  - Dynamically typed
  - Statically scoped
  - Ruby-ish syntax and semantics
Features

- Basic types and operations
- List and dictionaries (arrays and hash tables)
- if/else/while/for
- User defined functions
- Regular expressions
- Iterators
- Assertions
- Website lookup
Tutorial

- Overview Used Books @ Columbia
- Demo
Implementation

- Line numbers (Errors and assertions)
- Run time type checks
- Multi-line statements
Test strategy: features, errors, algorithms

Python test framework

86 Tests
0001-0009 Basic data types
0010-0019 Basic operations
0030-0039 Basic data type methods
0040-0049 Assignment
0100-0109 Conditionals
0110-0129 Loops
0200-0299 User-defined functions
0300-0399 Execution order
0600-0699 Errors
0700-0799 Assertions
0900-0999 Algorithms
1000-1099 Web operations
1101-1199 Web tests

Per-file coverage

<table>
<thead>
<tr>
<th>coverage</th>
<th>file</th>
</tr>
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<tbody>
<tr>
<td>82%</td>
<td>assignments.ml</td>
</tr>
<tr>
<td>-%</td>
<td>class.ml</td>
</tr>
<tr>
<td>-%</td>
<td>exceptions.ml</td>
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<tr>
<td>75%</td>
<td>floc.ml</td>
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<tr>
<td>100%</td>
<td>html.ml</td>
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<tr>
<td>89%</td>
<td>interpret.ml</td>
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<tr>
<td>68%</td>
<td>messages.ml</td>
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<td>methods.ml</td>
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<tr>
<td>67%</td>
<td>operations.ml</td>
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<tr>
<td>96%</td>
<td>printer.ml</td>
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<tr>
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<td>stringHash.ml</td>
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<tr>
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<td>toplevel.ml</td>
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<tr>
<td>80%</td>
<td>web.ml</td>
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</tbody>
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Lessons learned

- **Project**
  - Starting early paid off
  - Scheduling meetings is NP-complete...

- **O'Caml**
  - Type inference is extremely helpful
  - Write-only language
  - Debugging is hard, but almost not needed

- **Testing**
  - Test driven development is helpful