Pugs (programming)

Pugs is a compiler and interpreter for the Raku programming language, started on February 1, 2005, by Audrey Tang. (At the time, Raku was known as Perl 6.)

Pugs development is now placed on hiatus,[1] with most Raku implementation efforts now taking place on Rakudo.

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Overview

The Pugs project aimed to bootstrap Perl 6 by implementing the full Perl 6 specification, as detailed in the Synopses (https://web.archive.org/web/20050222013737/http://dev.perl.org/perl6/synopsis/). It is written in Haskell, specifically targeting the Glasgow Haskell Compiler.

Pugs includes two main executables:

- *Pugs* is the interpreter with an interactive shell.
- *Pugscc* can compile Perl 6 programs into Haskell code, Perl 5, JavaScript, or Parrot virtual machine's PIR assembly.

Pugs is free software, distributable under the terms of either the GNU General Public License or the Artistic License.[2] These are the same terms as Perl.

Version numbering

The major/minor version numbers of Pugs converges to 2π (being reminiscent of TeX and METAFONT, which use a similar scheme); each significant digit in the minor version represents a successfully completed milestone. The third digit is incremented for each release. The current milestones are:

- 6.0: Initial release.
- 6.2: Basic IO and control flow elements; mutable variables; assignment.
- 6.28: Classes and traits.
- 6.283: Rules and Grammars.
- 6.2831: Type system and linking.

- 6.28318: Macros.
- 6.283185: Port Pugs to Perl 6, if needed.

Perl 5 compatibility

As of version 6.2.6, Pugs also has the ability to embed Perl 5 and use CPAN modules installed on the system. The example below demonstrates the use of the popular Perl DBI module to manage a database:

```
#!/usr/bin/pugs
use v6;
use perl5:DBI;

my $dbh = DBI.connect('dbi:SQLite:dbname=test.db');
$dbh.do("CREATE TABLE Test (Project, Pumpking)");

my $sth = $dbh.prepare("INSERT INTO Test VALUES (?, ?)");
$sth.execute(<PGE Patrick>);
$sth.execute(<Pugs Audrey>);
$sth.execute(<Parrot Leo>);

my $res = $dbh.selectall_hashref('SELECT * FROM Test', 'Pumpking');
# Just another Pugs hacker
say "Just another $res<Audrey><Project> hacker";
```

Development model

Several factors have been suggested as reasons for Pugs's progress:

- Haskell's static typing can make it easier for program bugs to be detected at compile time. Haskell code is also often thought to be concise. The Parsec library [1] (https://web.archive.org/web/20060807052639/http://www.cs.uu.nl/~daan/parsec.html), a monadic combinatorial parser written entirely in Haskell, simplifies parsing. Because Haskell is a purely functional language, making the functional code interact with the real world (inputs/outputs and time-driven environment) requires thought. To achieve this, Pugs makes extensive use of monads.
- Pugs's use of test-driven methodology (a tenet of Extreme Programming). This methodology dictates that every module should have test code, even before the modules are implemented. Advocates of this methodology argue that it improves software quality. However, the project often silenced failed regression tests before releases, removing much of the benefit of test-driven development.
- Tang's liberal granting of the commit bit. Pugs development is currently based around a Subversion repository, and access is freely given - especially to people wishing to write tests. Because of this, a huge library of tests has accumulated. Other Perl 6 implementations rely on many tests developed for Pugs as an executable specification for Perl 6.
- Tang's communication style; her journal (linked below) attracted many people to the project.

Despite these factors, progress on the Haskell implementation stalled in late 2006, as personal issues kept Audrey from devoting as much time to the project as she had in 2005.

Many Pugs contributors have since moved on to implement Perl6-inspired systems as CPAN modules on Perl 5, such as the Moose project.

References

1. http://pugs.blogs.com/pugs/2010/04/how-to-implement-perl-6-in-10.html

2. Pugs Apocryphon 1 (http://svn.pugscode.org/pugs/docs/01Overview.html)

External links

- Official website (http://www.pugs.com)
- pugscode.org - Pugs homepage (https://web.archive.org/web/20050221223310/http://www.pugscode.org/)
- Pugs Journal (http://pugs.blogs.com)
- -Ofun: Optimizing for Fun (http://www.onlamp.com/pub/wlg/7996)
- Perl6::Pugs on CPAN (https://metacpan.org/module/Perl6::Pugs)
- Kudos from Perl 6 Design Team (http://www.nntp.perl.org/group/perl.perl6.language/19263)