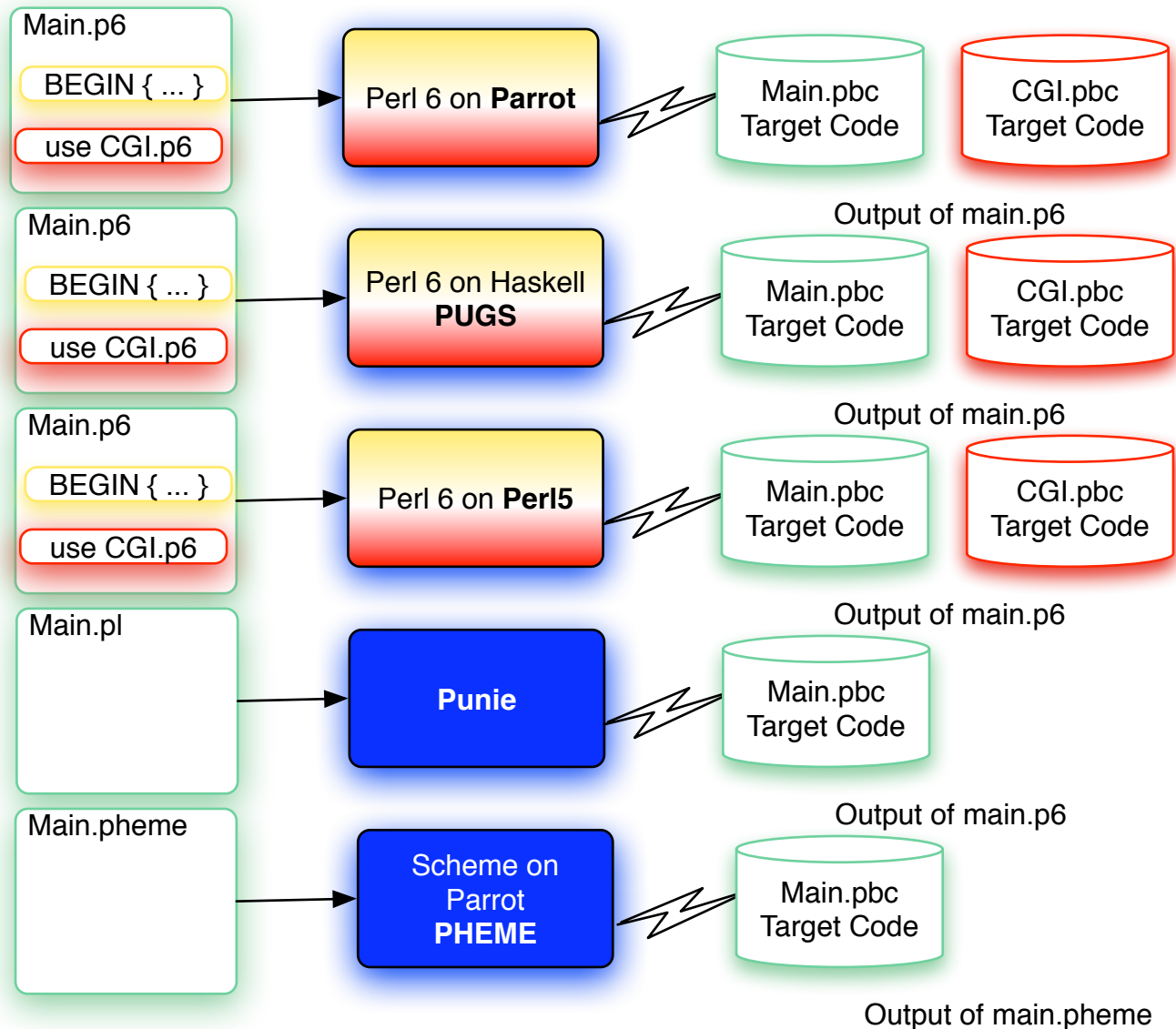


## Perl 6 Compilation Overview



**GOAL 1:**  
Demonstrate the  
**Doctrine of separate compilation**

**Goal 2:**  
Demonstrate the defining feature of Perl  
**Interleaved Parse Execution Cycle**

**GOAL 3:**  
Demonstrate quantity of differentiated  
parsers

**GOAL 4:**  
Demonstrate the benefits of the  
Tree Compiler

**GOAL 5:**  
Demonstrate specifics of the Tree  
Grammar compilation

5

4

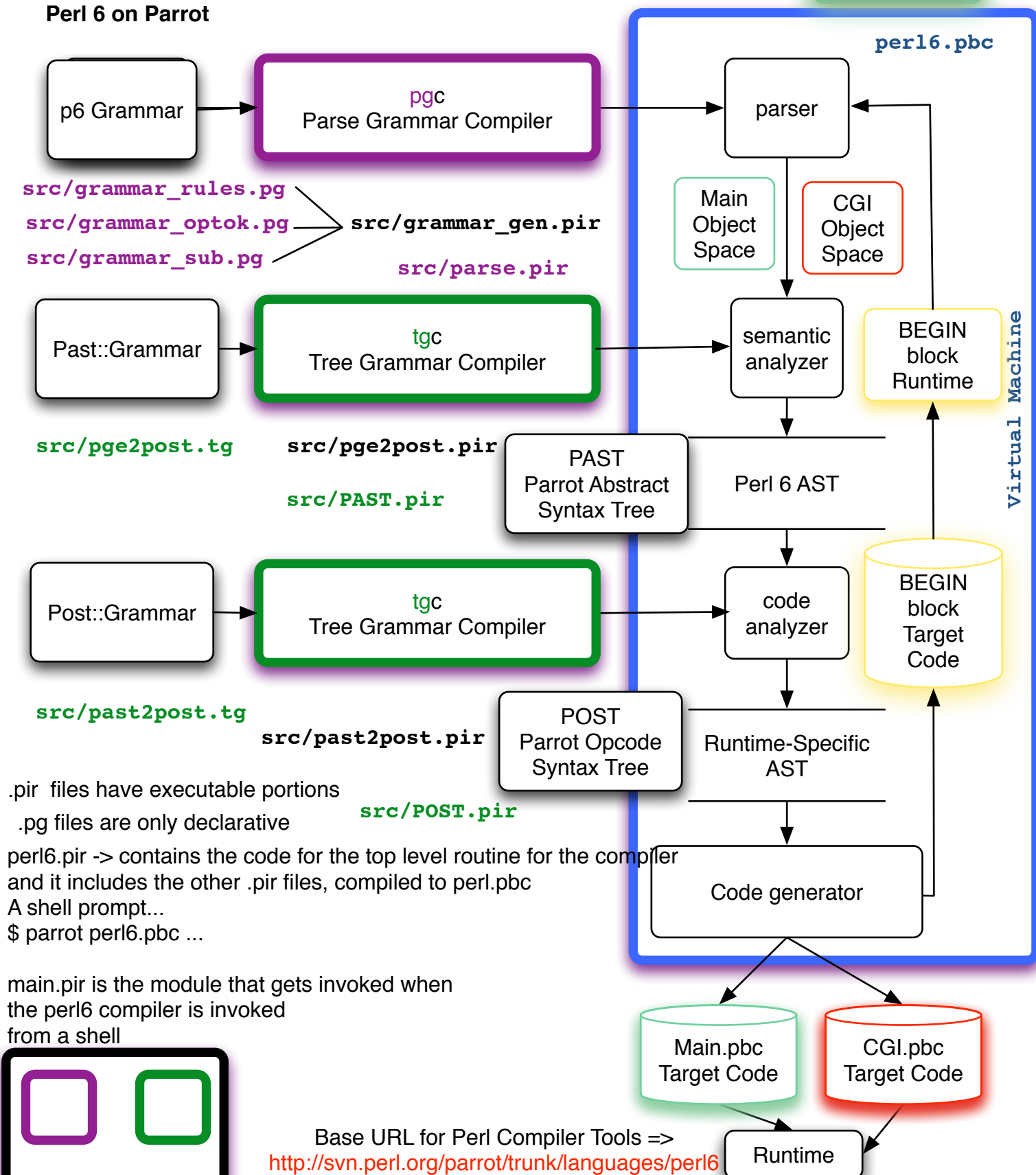
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Main.p6

BEGIN { ... }

use CGI.pm

## Perl 6 on Parrot



.pir files have executable portions

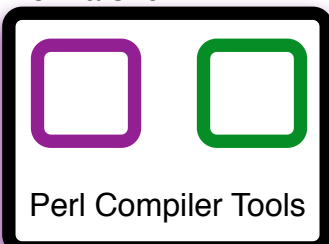
.pg files are only declarative

perl6.pir -> contains the code for the top level routine for the compiler  
and it includes the other .pir files, compiled to perl.pbc

A shell prompt...

\$ parrot perl6.pbc ...

main.pir is the module that gets invoked when  
the perl6 compiler is invoked  
from a shell



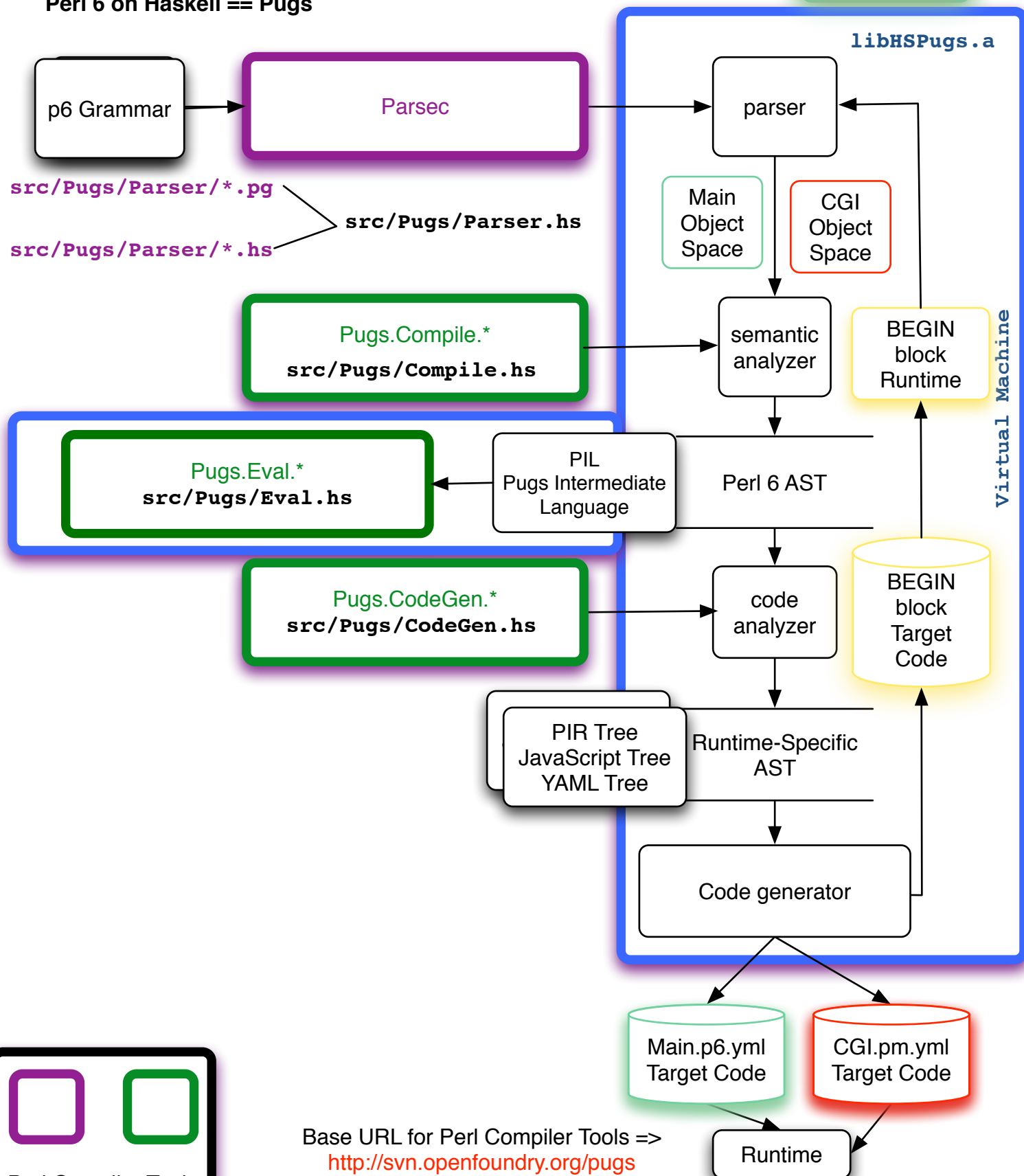
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Main.p6

BEGIN { ... }

use CGI.pm

## Perl 6 on Haskell == Pugs



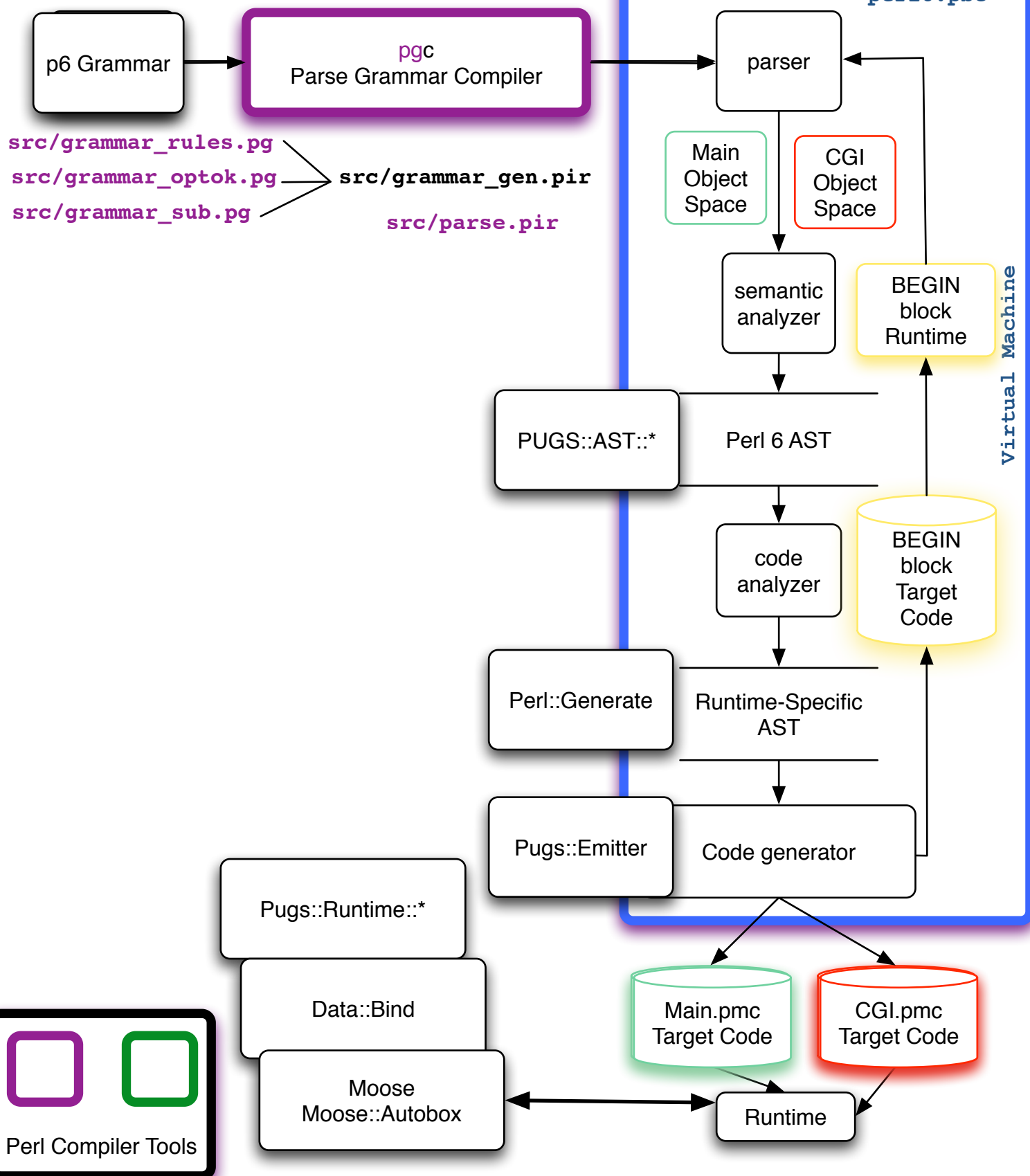
Perl Compiler Tools

Main.p6

BEGIN { ... }

use CGI.pm

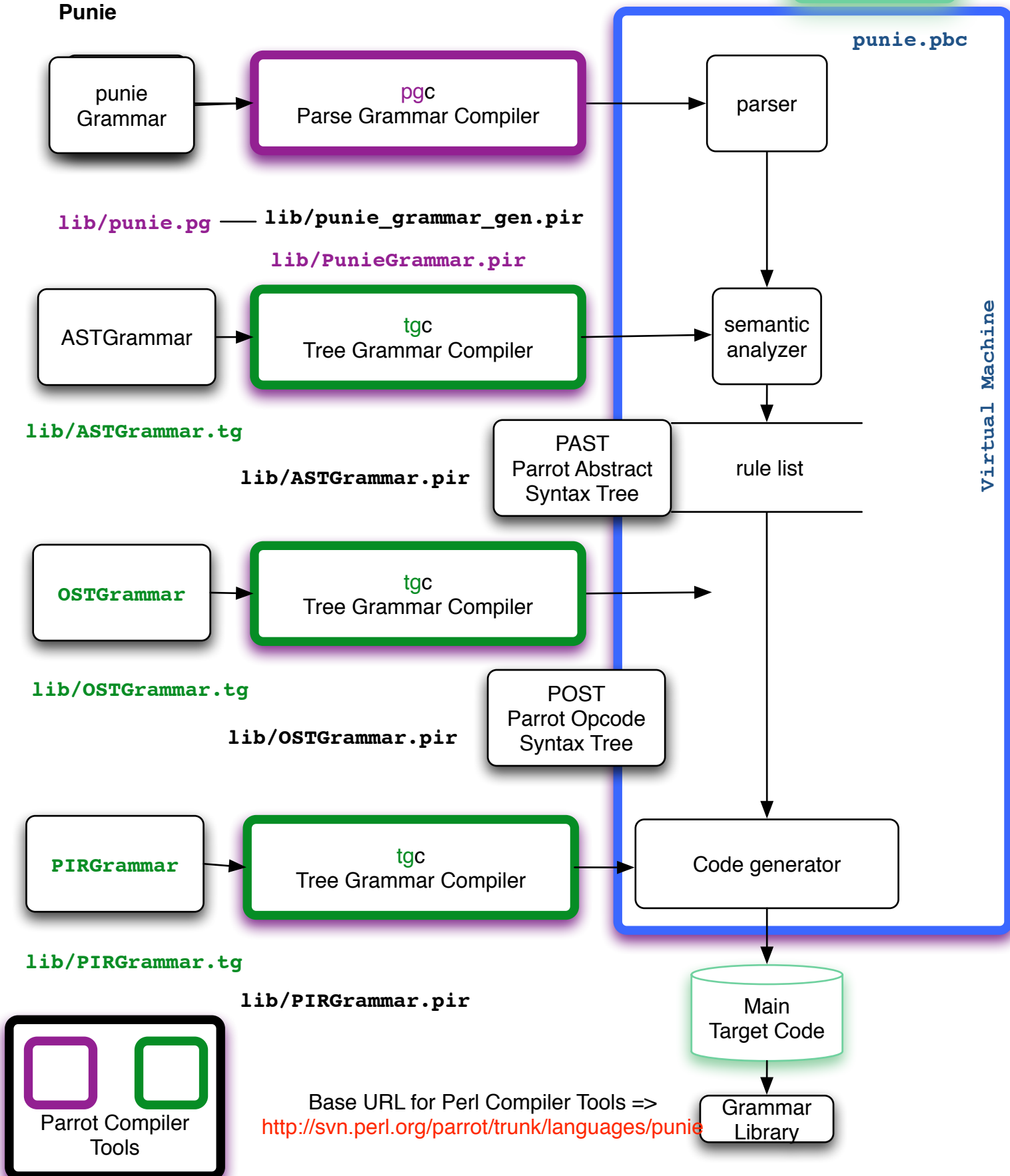
## Perl 6 on Perl 5



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grammar.tg

## Punie



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source  
[.pHEME]

## PHEME (Parrot based Scheme)

**lib/pHEME\_compiler.pir**

pHEME  
Grammar

**pgc**  
Parse Grammar Compiler

parser

**pHEME.pbc**

**lib/pHEME.g** — **lib/pHEME\_grammar\_gen.pir**

**lib/PhemeGrammar.pir** **lib/PhemeGrammar.pbc**

**lib/PhemeSymbols.pir** **lib/PhemeSymbols.pbc**

1

AST Grammar

**tge**  
Tree Grammar Engine

semantic  
analyzer

**lib/pge2past.tg**

**../../../../compilers/past/PAST.pir**

PAST  
Parrot Abstract  
Syntax Tree

rule list

OST Grammar

**tge**  
Tree Grammar Engine

**lib/past2post.tg**

**lib/POST.pir**

POST  
Parrot Opcode  
Syntax Tree

Symbol detection

PIR Grammar

**tge**  
Tree Grammar Engine

Code generator

**lib/post2pir.tg**

Main  
Target Code

Interpreted  
code

1

**lib/PhemeSymbols.pbc**  
**lib/PhemeObjects.pir**

Base URL for Perl Compiler Tools =>

<http://svn.perl.org/parrot/trunk/languages/pHEME>

1

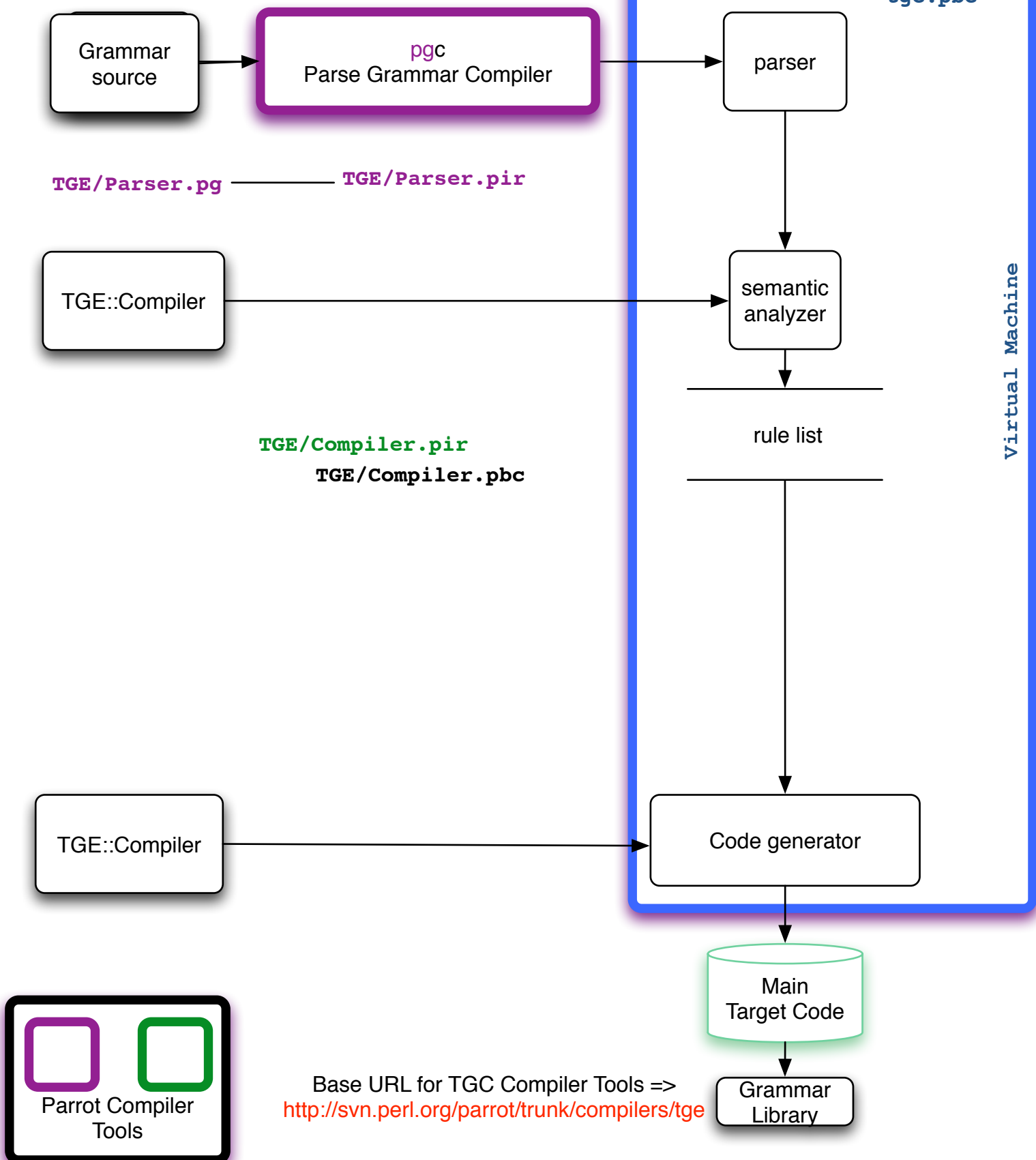
Parrot Compiler  
Tools

Virtual Machine

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grammar.tg

## Tree Grammar Compilation



Base URL for TGC Compiler Tools =>  
<http://svn.perl.org/parrot/trunk/compilers/tgc>

## Tree Grammar Compiler Benefits

### AST to OST operations by project

Allison Randal: Punie

1. Reordering nested subroutines outside any containing subroutine
2. Simplifying complex expressions into a series of single operator expressions
3. Simplifying the handling of conditionals, such as if ... then ... else

chromatic: PHEME

1. Find names of functions
2. Within functions, find variable names for functions