Compiling PARI from the GIT repository

B. Allombert and A. Page

IMB
CNRS/Université de Bordeaux

23/06/2025

Introduction

This talk focuses on the current development version of the PARI library (2.18.*), available from our GIT repository, see

https://pari.math.u-bordeaux.fr/anongit.html

The text of this talk is available in the files sources.* in

https://pari.math.u-bordeaux.fr/Events/LIBPARI2025/talks/

Windows users

You need to use the "Windows subsystem for Linux", see
https://pari.math.u-bordeaux.fr/PDF/PARIwithWindows.pdf
and follow the Linux instructions.

Mac OS users

You need to have XCode and brew installed.

Linux

To install all the packages required to build pari from source:
Debian/Ubuntu

```
sudo apt-get build-dep pari
sudo apt-get install libreadline-dev libgmp-dev \
     git bison flex automake autoconf
```

Fedora

```
sudo dnf install readline-devel gmp-devel \
     git bison perl flex automake autoconf
```

From source with GIT

Clone the PARI repository with GIT ($\sim$ 150MB).

```
git clone https://pari.math.u-bordeaux.fr/git/pari.git
cd pari
```

PARI compilation

```
./Configure --prefix=GPDIR --mt=pthread
make -j4 gp
make doc
make statest-all
make install
make install-bin-sta
GPDIR/bin/gp
```

PARI compilation, debugging version

```
./Configure --prefix=GPDIR.dbg -g
make -j4 gp.dbg
make install -C Olinux-x86_64.dbg
make install-lib-dyn -C Olinux-x86_64.dbg
```

Optional PARI packages

To install optional PARI packages from

`https://pari.math.u-bordeaux.fr/packages.html`

```
wget https://pari.math.u-bordeaux.fr/\
pub/pari/packages/galdata.tgz
tar xf galdata.tgz
wget https://pari.math.u-bordeaux.fr/\
pub/pari/packages/elldata.tgz
tar xf elldata.tgz
wget https://pari.math.u-bordeaux.fr/\
pub/pari/packages/galpol.tgz
tar xf galpol.tgz
wget https://pari.math.u-bordeaux.fr/\
pub/pari/packages/seadata.tgz
tar xf seadata.tgz
```

Optional PARI packages

```
wget https://pari.math.u-bordeaux.fr/\
pub/pari/packages/nflistdata.tgz
tar xf nflistdata.tgz
make install-data
```

GP configuration

Create and customize `~/.gprc`. Add

```
histfile = "~/.gp_history"
colors = "lightbg" \\ or "darkbg"
lines = 40
parisizemax = 4G \\ or the maximum amount of memory
                 \\ GP can use (important)
threadsizemax = 1G
read "~/.gprc.gp"
```

Create an empty file `~/.gprc.gp`

GP2C compilation

With GIT (and automake, autoconf):

```
git clone https://pari.math.u-bordeaux.fr/git/gp2c.git
cd gp2c
./autogen.sh
```

Without GIT: download GP2C from https://pari.math.u-bordeaux.fr/download.html#gp2c

```
tar xf gp2c-0.0.14.tar.gz
cd gp2c-0.0.14
```

GP2C compilation

```
./configure --prefix=$PWD/../GPDIR \
     --with-paricfg=../GPDIR/lib/pari/pari.cfg \
     --with-paricfg-dbg=../GPDIR.dbg/lib/pari/pari.cfg
make check
make install
cd ..
GPDIR/bin/gp2c -v
```

Updating GIT

To update GIT to the most recent revision:

```
git fetch
git rebase origin/master
./Configure -l
make install
```

Changelog

You can see the latest commits with

```
git log
```

Adding a C file to libpari

1. Put your file in `src/basemath/file.c`
2. Do `Configure -l`
3. Do `git add src/basemath/file.c`
4. Do `make gp`