

RUNNING PARI/GP ON WINDOWS

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The quickest way to run PARI/GP on Windows is to install the precompiled binary, available from the official [download page](#). However, this is a basic version that loses out on some features, including customizations (like colours), access to the latest development versions, gp code speedup with GP2C, and the ability to run or create extra packages written in C using the PARI library. Instead, the optimal way to run PARI/GP on Windows computers is through **Windows Subsystem for Linux** (WSL). This tutorial is a guide to the installation and maintenance of PARI/GP on WSL. Only very basic notions of Linux syntax are assumed.

1. OPERATING SYSTEMS

The installation should work on any version of Windows since WSL was introduced, i.e. Windows 10 and above. This includes both x86 and ARM architecture, where it has been extensively tested. Running on a 32-bit computer will work, but is not recommended.

2. WINDOWS SUBSYSTEM FOR LINUX

WSL imitates a Linux system, and allows you to take advantage of many features and capabilities without having to install a whole new operating system. Directions for the install can be found here: <https://learn.microsoft.com/en-us/windows/wsl/install>. You can choose to install either WSL1 or WSL2: see <https://learn.microsoft.com/en-us/windows/wsl/compare-versions> for a comparison. In general, Microsoft recommends WSL2, however, I recommend WSL1 for use with PARI/GP for a few reasons. If you want to store code in Windows directories, then you have to access them using the “/mnt/” folder in WSL. This is much slower on WSL2 than WSL1, so your programs take about 50% longer to run. You can instead host your files in the Linux system, and this makes it better, but it still remains slower than WSL1 (at least in my testing; I do not know why). On WSL1, I don’t find any noticeable difference between storing your files on the Windows or Linux systems.

You also need to choose a Linux distribution: I recommend Ubuntu or Debian. These instructions are written for users on these distributions. The first time you launch WSL, it will install and configure, and you need to choose a username and password. Once this is done, type the following command:

```
sudo apt update
```

You will need your password to execute this command (“sudo” is akin to administrator privileges), as well as internet access. This command updates your system on the most recent versions of available packages. You are now set up! You can launch WSL from the terminal, or even from the command line with the command `wsl.exe`. (Analogously, if you are in WSL, you can access the Windows command line with `cmd.exe`.)

Note that any files stored on the Linux system are easily accessible from Windows File Explorer. On the left bar, you should see a new tab for “Linux”, and then subfolders for each distribution you have. Inside of those, the equivalent of “My Documents” would be “/home/USERNAME”. From the command line for WSL, you can access this area with the command `cd ~` (`cd` is for “change directory”, and `~` is a shortcut for the default home directory).

3. INSTALLING PARI/GP FROM SOURCE

Installing the current version will take about 5 minutes. Open up WSL, and navigate to the directory where you want the source files installed; I suggest your home directory (i.e. `~`). Next, execute the following commands (don’t copy the comments, which come after `#`):

```
sudo apt-get install build-essential #C compiler and related items
sudo apt-get install libreadline-dev #Enables readline
sudo apt-get install libgmp3-dev #GMP library
```

Date: May 18, 2026.

```
sudo apt-get install bison #Needed to use PARI with git
git clone https://pari.math.u-bordeaux.fr/git/pari.git #Clone PARI from the source
cd pari #Enter the directory formed
./Configure #Configures the setup on your computer
sudo make install #builds and installs PARI/GP
```

PARI/GP is now ready to go! You can call `gp` from anywhere in WSL, and it will open up a session.

4. VERSION CONTROL

Following the above instructions installs the development branch of PARI/GP, which is revised almost daily. Using git makes it easy to update to newer versions when they are available, or perhaps switch to the most recent stable version. These are stored as git branches “origin/pari-2.X”, where X is an odd integer. As of May 2026, the most recent release is “origin/pari-2.17”.

To check out and change branches, navigate to the installation folder (i.e. inside the folder “pari”), and run:

```
git branch -r #List all available branches; use arrow keys to navigate, q to end
git branch pari-2.17 origin/pari-2.17 #Track the remote branch origin/pari-2.17 locally
git checkout pari-2.17 #Switch to that branch
```

This downloads the most recent stable release of pari-2.17. It only updates the source code used to generate the installation, so you need to re-configure and re-compile, i.e. call

```
./Configure
sudo make install
```

This will take a couple of minutes, since you start from scratch.

On the other hand, if you stay in one branch, updating is easy and quick. Each stable major release is on an approximately 2 year cycle, with usually around 5 minor bugfix patches. The development version is updated almost daily. In order to collect these updates, you only need to navigate to your installation folder and call

```
git pull #Update your local branch
sudo make install
```

This usually runs quite quickly, as many of the files are unchanged and do not need to be rebuilt.

5. ADVANCED INSTALLATION OPTIONS

You can configure PARI with `./Configure --tune` instead. This tunes the values of certain constants to your specific setup, and will make PARI/GP faster! This tuning takes about 30 minutes on my setup.

For even more speed, you can download the updated version of GMP from source, tune the configuration (before tuning PARI/GP), and install it. Unfortunately, I have run into issues with this tuning on WSL that make it fail at a certain point. It seems to be an issue related to the clock and synchronization, but I don’t know how to fix it.

6. CUSTOMIZING PARI/GP

There are a good number of display customizations that are available to you (that are inaccessible in the Windows binary). To set them, you need to create a `gprc` preferences file. Navigate to your home folder in WSL (`cd ~`), and call `sudo vim .gprc` to create a `.gprc` file. You can then insert your preferences, as laid out in the file “pari/misc/gprc.dft” (press `i` to be able to type, and “`ESC :wq`” to save and quit). Personally, I choose the following options:

```
lines = 40
colors = "brightfg"
prompt = "(%H:%M) gp > "
timer = 1
histfile = "gp_history.txt"
breakloop = 1
```

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