

A few things to know about XPP syntax, conventions, and quirks

Here are a few things to be aware of when using XPP:

1. XPP scripts have a `.ode` file extension.
2. There is a command `maxstor` that is used to tell XPP how many data points can be stored in memory when solving an initial value problem, and the default value of `maxstor` is 5000. So if, for example, you plan to use a numerical method to solve an IVP using a time step size of `dt = 0.01`, you would not be able to generate the solution beyond time $t = 50$. To allow for more data storage, you must set a new value for `maxstor` in the `.ode` file for your equation(s). To set its value to 100000, the syntax would be `@ maxstor=100000`. *See also remark on Spacing below!*
3. XPP has a default setting that causes it to stop computing if any variable ever exceeds 100 in magnitude. If you are working with an equation for which variables can or should exceed that maximum, there are two ways to proceed. One is to use the `bound` command in your `.ode` file; for example, the command `@ bound=20000` allows XPP to continue computing the solution of an initial value problem as long as no variable exceeds 20000 in magnitude. You can also change the value of `bound` from within XPP: from the main menu, select `nUmeric`s and then `B`ounds. You will then be prompted (near the top of the XPP window) to enter a new value for `bound`.

4. For a list of other XPP options, see

<http://www.math.pitt.edu/~bard/xpp/help/xppopt.html>

5. It is faster to navigate the XPP menus using the keyboard, not the mouse! Notice that each menu option contains a letter that is capitalized. Typing a letter selects the corresponding menu option, often opening a sub-menu with a list of new options (and new letters). Try to acclimate to common keystroke combinations such as `W` then `F`, or `I` then `G`. There are, however, cases in which you will need to use the mouse, particularly when pop-up windows appear which prompt you to enter information. When that happens, you will often need to use the mouse to click on buttons such as “Close” or “Go”, or “OK”.
6. Following upon the previous item: If you ever need to back out of a submenu, use the `Esc` key.
7. For a list of reserved XPP commands (including special types of functions like trigonometric, exponential, Bessel, etc...), see

<http://www.math.pitt.edu/~bard/xpp/help/xppodes.html#functs>

8. *Spacing*: When you declare a parameter and set its default value in a `.ode` file, do NOT include any spaces between the parameter name, the equal sign, and the value. For example, `par beta=0.1` will work whereas `par beta = 0.1` will not. On the other hand, whenever you use the `@` symbol to set things like `xhi`, `xlo`, `ylo`, `yhi`, `maxstor`, `bound`, `dt`, `total`, and so on, be sure to include a space after the `@` symbol.
9. Probably one of the most effective ways to learn XPP syntax is to learn by example. Some guided examples appear at

`http://www.math.pitt.edu/~bard/xpp/help/xppexample.html`

or you can download lots more examples at

`http://www.math.pitt.edu/~bard/xpp/odes/`

10. Our first two examples in Chapter 1 (the Riccati and van der Pol equations) and their documentation will get you up to speed on the basics, so please try those out now.