

# About Emacs Bookmode

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## 1. An overview of emacs bookmode.

This mode allows regions in the editor to be marked sensitive to mouse click. Regions can be marked for evaluation by Maxima, Maple, Mathematica, Pari-gp, Splus, dfplot, octave, xplot, ghostview, xv, LaTeX, elisp and sh. Click the right mouse button (or double click the left mouse button) on a marked region runs the underlying program which will then possibly inserts the result into the buffer or brings up a display. Marked regions can be edited just as regular text.

The major advantage of bookmode is that it provides a uniform interface for various programs, in particular for different computer algebra systems. It is especially suitable for writing computer lab projects since it requires no knowledge of the underlying program from the students.

Marked regions are highlighted in different colors on a color display, or in inverse video on a monochrome display. Here are some examples.

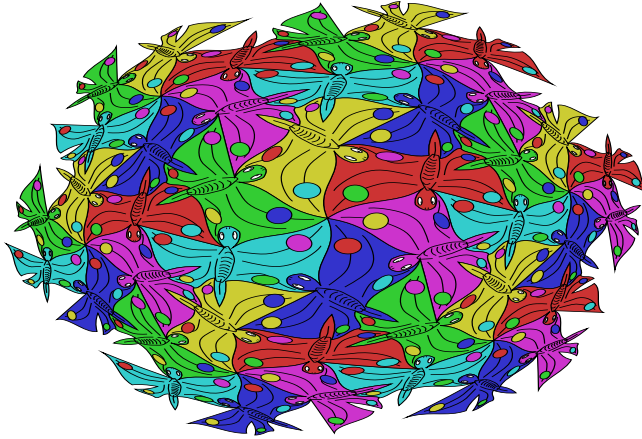
This region is marked as a postscript insert, `postscript insert` Click on it will pop up a menu. You can either view it or replace with another postscript file by choosing the appropriate menu items.

This region is marked as an image insert, `that's me`.

The next region is marked for Maple evaluation, `diff( x^2+cos(x),x)` returns `2 x - sin(x)` Click on it will compute the derivative and put the answer in the RESULT box. The answer will be highlighted in blue. If you edit the maple input after the evaluation, the answer box will automatically be helighted in light-blue (or pink) indicating that the answer is not up to-date.

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\* Translated from bk to L<sup>A</sup>T<sub>E</sub>X by bk2tex version 1.1



\*\*\*\*

Fig. postscript insert

This region is marked for Pari-gp evaluation, `prime(12345)` produces `132241`  
Click on it will insert the 12345th prime into the pink result box.

This region is marked for Maxima evaluation, `integrate(1/(1+x^3),x)` evaluates to `RESULT`  
Click on it will compute the anti-derivative of  $1/(1+x^3)$  and insert the answer in the `RESULT` box.

This region is marked for dfplot evaluation. `ode{d[x,t]=y,d[y,t]=-sin(x)+0.1*y}`  
produces `<*/tmp/zoudfplot2.ps*` Click on it will bring up a plot window.  
Click the middle mouse button on the plot window computes the orbit of the point under the cursor, typing any character closes the plot window and records the last plot in the `RESULT` box (a temp file name)

The next region is marked for xplot evaluation, `sur{[exp(-(x^2+y^2))][x=-2,2][y=-2,2]}`  
gives `<*/tmp/zouzplot3.ps*` click on it will again pop up a plot window. Press the quit button on the plot window quit the plotting program and record the plot in a temp file.

Bookmode has a nice printing function which generates nice postscript outputs. This function is available under the menu-bar "Book". It is capable of inserting one page postscript inserts and some of the postscript figures generated by Maxima, Maple, dfplot and xplot. For example, if you choose to use it now, it will send this document to your printer, with all three postscript figures included. (I can print it for you also)

If you want to see some sample of bookmode documents, please go back to the main menu and try a few of our lab projects.

Figs /tmp/zoudfplot2.ps and /tmp/zouzplot3.ps

## 2. Start emacs in bookmode

Bookmode requires emacs 19. You need to run it on a color X display in order to be useful, although you can use it with a vt100 terminal.

To create a document in bookmode, it is very important that you start emacs in this mode. This can be achieved by either run `emacs19 file_name.bk` or run `emacs19` and use `C-x C-f` to find a file with suffix `.bk`.

## 3. How to mark a region sensitive to mouse click?

There are quite a few different book marks for a region. The common used ones are:

book-mark-for-maxima-eval

book-mark-for-maple-eval

book-mark-for-gp-eval

book-mark-for-Splus-eval

book-mark-for-mathematica-eval

book-mark-for-shell-eval

book-mark-for-elisp-eval

xplot-eval

dfplot-eval

octave-eval

shell-eval-region

book-postscript-insert

You can mark a region using either the **Edit** menu-bar or with key strokes. To mark a region using the **Edit** menu-bar, just highlight the region with the left button and choose the appropriate menu item from the **Book-Edit** menu-bar. However, for most emacs users, using key strokes is much more convenient than using the menu-bar for editing.

## How to select a REGION in emacs?

A region is the text between the current MARK POINT and the current POINT (or CURSOR)

To select a region,

1. move the cursor to the beginning (or end) of the region you want to mark, set the mark point by entering **C-SPC** (control space) or (**C-@**).
2. move the cursor to the end (or beginning) of the region.

## To mark a region sensitive to mouse click

1. select the region.
2. enter **C-c p** to mark for-maple-eval  
or enter **C-c m** to mark this region for-maxima-eval.  
or enter **C-c g** to mark for-gp-eval  
or enter **C-c C-c s** to mark for-Splus-eval  
or enter **C-c a** to mark for-mathematica-eval  
or enter **C-c s** to mark for-shell-eval  
or enter **C-cC-c d** to mark for dfplot-eval  
or enter **C-cC-c x** to mark for xplot-eval  
or enter **C-c l** to mark for-elisp-eval  
or enter **C-c s** to mark for-shell-eval  
or enter **C-cC-c p** to mark for-postscript-insert  
or enter **C-c u** to remove all marks on region.

When marking a region for shell-eval or elisp-eval or you'll be prompted in the echo area for inputs (an elisp command or a shell command or a file name).

Remarks:

1. If you want the result of shell-eval to be inserted into your document when executed, use the keystrokes **C-u C-c s** to mark the region for shell-eval-insert.

2. Due to the auto-completion mechanism, you must use `C-q SPC` (quote space) for spaces if there are any white spaces in your command. For example, if your command is `xv John.gif`, you should enter `xvC-qSPCJohn.gif`

#### 4. Get quick help.

In book mode, entering `C-h m` will display a short help on bookmode. In particular, it displays all the special key bindings for this mode.

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#### 5. Maple and bookmode

Since Maple is the most popular CAS in this department, we have implemented four simple functions for Maple plots. Using them, most maple plots can be automatically inserted into bookmode documents. These functions are:

`setups()` output the next plot in postscript.

`setupx11()` output the next plot to X11.

`psdisplay(args)` display `args` using postscript.

`x11display(args)` display `args` using X11.

Here is an example:

```
sample_plot:=plot(sin,-10..10):
x11display(sample_plot); psdisplay(sample_plot);
```

returns **RESULT**

When this command is executed, it displays the sine curve in a plot window and also saves it in a file in `/tmp`. If you print this document after executing this command, the plot will be automatically inserted into this document.