

Title

intro — Introduction to programming manual

Description

This entry describes this manual and what has changed since Stata 11.

Remarks

In this manual, you will find

- matrix-manipulation commands, which are available from the Stata command line and for ado-programming (for advanced matrix functions and a complete matrix programming language, see the *Mata Reference Manual*)
- commands for programming Stata, and
- commands and discussions of interest to programmers.

This manual is referred to as [P] in cross-references and is organized alphabetically.

If you are new to Stata's programming commands, we recommend that you first read the chapter about programming Stata in the *User's Guide*; see [U] **18 Programming Stata**. After you read that chapter, we recommend that you read the following sections from this manual:

[P] program	Define and manipulate programs
[P] sortpreserve	Sorting within programs
[P] byable	Making programs byable
[P] macro	Macro definition and manipulation

You may also find the subject table of contents helpful; it immediately follows the table of contents.

We also recommend the Stata NetCourses[®]. At the time this introduction was written, our current offerings of Stata programming NetCourses included

NC-151 Introduction to Stata programming
NC-152 Advanced Stata programming

You can learn more about NetCourses and view the current offerings of NetCourses by visiting <http://www.stata.com/netcourse/>.

Stata also offers public training courses. Visit <http://www.stata.com/training/public.html> for details.

To learn about writing your own maximum-likelihood estimation commands, read the book *Maximum Likelihood Estimation with Stata*; see <http://www.stata-press.com/books/ml4.html>. To view other Stata Press titles, see <http://www.stata-press.com>.

What's new

1. **Saved results r() and e() can be marked hidden or historical**, which means they do not show when the user types `return list` or `ereturn list` unless the user also specifies option `all`. See [P] **return**.

2. **Estimation commands now store in `r()` as well as `e()`.** `r()` values are stored at estimation time and after replaying. Stored are
- `r(level)`, a scalar containing the confidence level for the CIs.
 - `r(label#)`, a macro containing the label displayed with the #th coefficient, such as “(base)”, “(omitted)”, or “(empty)”.
 - `r(table)`, a matrix containing all the data displayed in the coefficient table. The matrix is the coefficient table, transposed; each column contains coefficients and associated statistics. To understand the matrix, do the following:

```
. sysuse auto, clear
. regress mpg weight displ
. matrix list r(table)
```

See [P] **ereturn**.

3. **ereturn display offers new options for controlling the look of the coefficient table.**
- Options `noomitted`, `vsquish`, `noemptycells`, `baselevels`, and `allbaselevels` control row spacing and display of omitted variables and base and empty cells.
 - Formatting display options `cformat(%fmt)`, `pformat(%fmt)`, and `sformat(%fmt)` control the formats of numbers in the coefficient table.
 - `ereturn display` now respects the width of the Results window. This feature may be turned off by new display option `nolstretch`.

See [R] **estimation options**.

4. **Matrices can be in tables with equation names only** using new options `coleqonly` and `roweqonly`. See [P] **matlist**.
5. **matrix accum allows option `absorb()`** to accumulate deviations from the mean within groups. See [P] **matrix accum**.
6. **Version control for random-number generators** is now determined when the seed is set, not when the generator function is used; see [P] **version**. New `ereturn` result `c(version_rng)` records the version number currently in effect for random-number generators; see [P] **ereturn**.
7. **fvrevar has new option `stub()`**, which generates `stub + index` variables rather than temporary variables. See [R] **fvrevar**.
8. **mprobit now posts base outcome equation to `e(b)`**. See [R] **mprobit**.
9. **Default time for network timeouts was reduced.** `timeout1` has been reduced from 120 seconds to 30, and `timeout2` has been reduced from 300 seconds to 180. See [R] **netio**.

There are other new additions to Stata that will be of interest to programmers, but because they are also of interest to others, they are documented in [U] **1.3 What’s new**.

References

- Baum, C. F. 2009. *An Introduction to Stata Programming*. College Station, TX: Stata Press.
- Gould, W. W., J. S. Pitblado, and B. P. Poi. 2010. *Maximum Likelihood Estimation with Stata*. 4th ed. College Station, TX: Stata Press.

Also see

[U] **18 Programming Stata**

[U] **1.3 What's new**

Maximum Likelihood Estimation with Stata

An Introduction to Stata Programming

[R] **intro** — Introduction to base reference manual