

Subject and author index

This is the subject and author index for the *Programming Reference Manual*. Readers interested in topics other than programming should see the combined subject index (and the combined author index) in the *Quick Reference and Index*. The combined index indexes the *Getting Started* manuals, the *User's Guide*, and all the reference manuals except the *Mata Reference Manual*.

Semicolons set off the most important entries from the rest. Sometimes no entry will be set off with semicolons, meaning that all entries are equally important.

* comment indicator, [P] **comments**
 .. class, [P] **class**
 /* */ comment delimiter, [P] **comments**
 // comment indicator, [P] **comments**
 /// comment indicator, [P] **comments**
 ; delimiter, [P] **#delimit**

A

abbreviations,
 unabbreviating command names, [P] **unabcmd**
 unabbreviating variable list, [P] **unab**; [P] **syntax**
accum, **matrix** subcommand, [P] **matrix accum**
add, **return** subcommand, [P] **return**
ado-files, [P] **sysdir**, [P] **version**
 adding comments to, [P] **comments**
 debugging, [P] **trace**
 long lines, [P] **#delimit**
adopath command, [P] **sysdir**
adosize set command, [P] **sysdir**
adosubdir macro extended function, [P] **macro**
 algebraic expressions, functions, and operators, [P] **matrix define**
all macro extended function, [P] **macro**
 alphanumeric variables, see string variables, parsing
 Anderson, E., [P] **matrix eigenvalues**
 appending rows and columns to matrix, [P] **matrix define**
args command, [P] **syntax**
 arithmetic operators, [P] **matrix define**
 arrays, class, [P] **class**
 .Arrdropall built-in class modifier, [P] **class**
 .Arrdropel built-in class modifier, [P] **class**
 .arrindexof built-in class function, [P] **class**
 .arrnels built-in class function, [P] **class**
 .Arrpop built-in class modifier, [P] **class**
 .Arrpush built-in class modifier, [P] **class**
 as error, display directive, [P] **display**
 as input, display directive, [P] **display**
 as result, display directive, [P] **display**
 as text, display directive, [P] **display**
 as txt, display directive, [P] **display**
 ASCII text files, writing and reading, [P] **file**

_asis, display directive, [P] **display**
 assignment, class, [P] **class**
 Automation, [P] **automation**

B

Bai, Z., [P] **matrix eigenvalues**
 BASE directory, [P] **sysdir**
 basis, orthonormal, [P] **matrix svd**
 Baum, C. F., [P] **intro**, [P] **levelsof**
 Beckett, S., [P] **pause**
 Bibby, J. M., [P] **matrix dissimilarity**
 binary files, writing and reading, [P] **file**
 Binder, D. A., [P] **_robust**
 Bischof, C., [P] **matrix eigenvalues**
 Blackford, S., [P] **matrix eigenvalues**
 bootstrap sampling and estimation, [P] **postfile**
 Boyle, J. M., [P] **matrix symeigen**
break command, [P] **break**
 Break key, interception, [P] **break**, [P] **capture**
 built-in, class, [P] **class**
 _by() function, [P] **byable**
 by *varlist*: prefix, [P] **byable**
 byable, [P] **byable**
 by-groups, [P] **byable**
 _byindex() function, [P] **byable**
 _bylastcall() function, [P] **byable**
 _byn1() function, [P] **byable**
 _byn2() function, [P] **byable**

C

c(adopath) c-class value, [P] **creturn**, [P] **sysdir**
 c(adosize) c-class value, [P] **creturn**, [P] **sysdir**
 c(ALPHA) c-class value, [P] **creturn**
 c(alpha) c-class value, [P] **creturn**
 c(autotabgraphs) c-class value, [P] **creturn**
 c(born_date) c-class value, [P] **creturn**
 c(byteorder) c-class value, [P] **creturn**
 c(changed) c-class value, [P] **creturn**
 c(checksum) c-class value, [P] **creturn**
 c(cmdlen) c-class value, [P] **creturn**
 c(console) c-class value, [P] **creturn**
 c(copycolor) c-class value, [P] **creturn**
 c(current_date) c-class value, [P] **creturn**
 c(current_time) c-class value, [P] **creturn**
 c(dirsep) c-class value, [P] **creturn**
 c(dockable) c-class value, [P] **creturn**
 c(dockingguides) c-class value, [P] **creturn**
 c(doublebuffer) c-class value, [P] **creturn**
 c(dp) c-class value, [P] **creturn**
 c(eolchar) c-class value, [P] **creturn**
 c(epsdouble) c-class value, [P] **creturn**
 c(epsfloat) c-class value, [P] **creturn**
 c(eqlen) c-class value, [P] **creturn**
 c(fastscroll) c-class value, [P] **creturn**
 c(filedate) c-class value, [P] **creturn**

- c(filename) c-class value, [P] **return**
 c(flavor) c-class value, [P] **return**
 c(graphics) c-class value, [P] **return**
 c(httpproxy) c-class value, [P] **return**
 c(httpproxyauth) c-class value, [P] **return**
 c(httpproxyhost) c-class value, [P] **return**
 c(httpproxyport) c-class value, [P] **return**
 c(httpproxypw) c-class value, [P] **return**
 c(httpproxyuser) c-class value, [P] **return**
 c(k) c-class value, [P] **return**
 c(level) c-class value, [P] **return**
 c(linegap) c-class value, [P] **return**
 c(linesize) c-class value, [P] **return**
 c(locksplitters) c-class value, [P] **return**
 c(logtype) c-class value, [P] **return**
 c(macgphengine) c-class value, [P] **return**
 c(machine_type) c-class value, [P] **return**
 c(macrolen) c-class value, [P] **return**
 c(matacache) c-class value, [P] **return**
 c(matafavor) c-class value, [P] **return**
 c(matalibs) c-class value, [P] **return**
 c(matalnum) c-class value, [P] **return**
 c(matamofirst) c-class value, [P] **return**
 c(mataoptimize) c-class value, [P] **return**
 c(matastrict) c-class value, [P] **return**
 c(matsize) c-class value, [P] **return**
 c(maxbyte) c-class value, [P] **return**
 c(max_cmdlen) c-class value, [P] **return**
 c(maxdb) c-class value, [P] **return**
 c(maxdouble) c-class value, [P] **return**
 c(maxfloat) c-class value, [P] **return**
 c(maxint) c-class value, [P] **return**
 c(maxiter) c-class value, [P] **return**
 c(max_k_current) c-class value, [P] **return**
 c(max_k_theory) c-class value, [P] **return**
 c(maxlong) c-class value, [P] **return**
 c(max_macrolen) c-class value, [P] **return**
 c(max_matsize) c-class value, [P] **return**
 c(max_N_current) c-class value, [P] **return**
 c(max_N_theory) c-class value, [P] **return**
 c(maxstrvarlen) c-class value, [P] **return**
 c(maxvar) c-class value, [P] **return**
 c(max_width_current) c-class value, [P] **return**
 c(max_width_theory) c-class value, [P] **return**
 c(memory) c-class value, [P] **return**
 c(minbyte) c-class value, [P] **return**
 c(mindouble) c-class value, [P] **return**
 c(minfloat) c-class value, [P] **return**
 c(minint) c-class value, [P] **return**
 c(minlong) c-class value, [P] **return**
 c(min_matsize) c-class value, [P] **return**
 c(mode) c-class value, [P] **return**
 c(Mons) c-class value, [P] **return**
 c(Months) c-class value, [P] **return**
 c(more) c-class value, [P] **return**, [P] **more**
 c(MP) c-class value, [P] **return**
 c(N) c-class value, [P] **return**
 c(namelen) c-class value, [P] **return**
 c(noisily) c-class value, [P] **return**
 c(notifyuser) c-class value, [P] **return**
 c(odbcmgr) c-class value, [P] **return**
 c(os) c-class value, [P] **return**
 c(osdtl) c-class value, [P] **return**
 c(pagesize) c-class value, [P] **return**
 c(persistfv) c-class value, [P] **return**
 c(persistvtopic) c-class value, [P] **return**
 c(pi) c-class value, [P] **return**
 c(pinnable) c-class value, [P] **return**
 c(playsnd) c-class value, [P] **return**
 c(printcolor) c-class value, [P] **return**
 c(processors) c-class value, [P] **return**
 c(processors_lic) c-class value, [P] **return**
 c(processors_mach) c-class value, [P] **return**
 c(processors_max) c-class value, [P] **return**
 c(pwd) c-class value, [P] **return**
 c(rc) c-class value, [P] **capture**, [P] **return**
 c(reventries) c-class value, [P] **return**
 c(revkeyboard) c-class value, [P] **return**
 c(revwindow) c-class value, [P] **return**
 c(rmsg) c-class value, [P] **return**, [P] **rmsg**
 c(rmsg_time) c-class value, [P] **return**
 c(scheme) c-class value, [P] **return**
 c(scrollbufsize) c-class value, [P] **return**
 c(SE) c-class value, [P] **return**
 c(searchdefault) c-class value, [P] **return**
 c(seed) c-class value, [P] **return**
 c(smallestdouble) c-class value, [P] **return**
 c(smoothfonts) c-class value, [P] **return**
 c(smoothsize) c-class value, [P] **return**
 c(stata_version) c-class value, [P] **return**
 c(sysdir_base) c-class value, [P] **return**, [P] **sysdir**
 c(sysdir_oldplace) c-class value, [P] **return**, [P] **sysdir**
 c(sysdir_personal) c-class value, [P] **return**, [P] **sysdir**
 c(sysdir_plus) c-class value, [P] **return**, [P] **sysdir**
 c(sysdir_site) c-class value, [P] **return**, [P] **sysdir**
 c(sysdir_stata) c-class value, [P] **return**, [P] **sysdir**
 c(sysdir_updates) c-class value, [P] **return**, [P] **sysdir**
 c(timeout1) c-class value, [P] **return**
 c(timeout2) c-class value, [P] **return**
 c(tmpdir) c-class value, [P] **return**
 c(trace) c-class value, [P] **return**, [P] **trace**
 c(tracedepth) c-class value, [P] **return**, [P] **trace**
 c(traceexpand) c-class value, [P] **return**, [P] **trace**
 c(tracehilite) c-class value, [P] **return**, [P] **trace**
 c(traceindent) c-class value, [P] **return**, [P] **trace**
 c(tracenumber) c-class value, [P] **return**, [P] **trace**
 c(tracesep) c-class value, [P] **return**, [P] **trace**
 c(type) c-class value, [P] **return**
 c(update_interval) c-class value, [P] **return**
 c(update_prompt) c-class value, [P] **return**

- c(update_query) c-class value, [P] **creturn**
- c(use_atsui_graph) c-class value, [P] **creturn**
- c(use_qd_text) c-class value, [P] **creturn**
- c(username) c-class value, [P] **creturn**
- c(varabbrev) c-class value, [P] **creturn**
- c(varkeyboard) c-class value, [P] **creturn**
- c(varlabelpos) c-class value, [P] **creturn**
- c(varwindow) c-class value, [P] **creturn**
- c(version) c-class value, [P] **creturn**, [P] **version**
- c(virtual) c-class value, [P] **creturn**
- c(Wdays) c-class value, [P] **creturn**
- c(Weekdays) c-class value, [P] **creturn**
- c(width) c-class value, [P] **creturn**
- capture command, [P] **capture**
- casewise deletion, [P] **mark**
- c-class command, [P] **creturn**
- cdir, classutil subcommand, [P] **classutil**
- certifying data, [P] **_datasignature**, [P] **signestimationsample**
- _char(#), display directive, [P] **display**
- char
 - define command, [P] **char**
 - list command, [P] **char**
 - rename command, [P] **char**
- char macro extended function, [P] **macro**
- characteristics, [P] **char**
- charset, set subcommand, [P] **smcl**
- checkestimationsample command, [P] **signestimationsample**
- checksums of data, [P] **_datasignature**
- Cholesky decomposition, [P] **matrix define**
- cholesky() matrix function, [P] **matrix define**
- class
 - definition, [P] **class**
 - programming, [P] **class**
 - programming utilities, [P] **classutil**
- class exit command, [P] **class exit**
- .classmv built-in class function, [P] **class**
- .classname built-in class function, [P] **class**
- classutil
 - cdir command, [P] **classutil**
 - describe command, [P] **classutil**
 - dir command, [P] **classutil**
 - drop command, [P] **classutil**
 - which command, [P] **classutil**
- classwide variable, [P] **class**
- clear,
 - ereturn subcommand, [P] **ereturn**; [P] **return**
 - _estimates subcommand, [P] **_estimates**
 - postutil subcommand, [P] **postfile**
 - return subcommand, [P] **return**
 - rsset subcommand, [P] **rsset**
 - sreturn subcommand, [P] **return**; [P] **program**
 - timer subcommand, [P] **timer**
- clearing estimation results, [P] **ereturn**, [P] **_estimates**
- close, file subcommand, [P] **file**
- cluster estimator of variance, [P] **_robust**
- cluster sampling, [P] **_robust**
- Cochran, W. G., [P] **levelsof**
- code, timing, [P] **timer**
- coefficients (from estimation), accessing, [P] **ereturn**, [P] **matrix get**
- coleq macro extended function, [P] **macro**
- coleq, matrix subcommand, [P] **matrix rownames**
- colfullnames macro extended function, [P] **macro**
- collinear variables, removing, [P] **_rmcoll**
- colnames macro extended function, [P] **macro**
- colnames, matrix subcommand, [P] **matrix rownames**
- colnum() matrix function, [P] **matrix define**
- colors, specifying in programs, [P] **display**
- colsof() matrix function, [P] **matrix define**
- _column(#), display directive, [P] **display**
- columns of matrix,
 - appending to, [P] **matrix define**
 - names of, [P] **ereturn**, [P] **matrix define**, [P] **matrix rownames**
 - operators on, [P] **matrix define**
- command
 - arguments, [P] **gettoken**, [P] **syntax**, [P] **tokenize**
 - parsing, [P] **gettoken**, [P] **syntax**, [P] **tokenize**
- commands,
 - aborting, [P] **continue**
 - repeating automatically, [P] **byable**, [P] **continue**, [P] **foreach**, [P] **forvalues**, [P] **while**
 - unabbreviating names of, [P] **unabcmd**
- comments, adding to programs, [P] **comments**
- compatibility of Stata programs across releases, [P] **version**
- compound double quotes, [P] **macro**
- condition statement, [P] **if**
- confirm
 - existence command, [P] **confirm**
 - file command, [P] **confirm**
 - format command, [P] **confirm**
 - matrix command, [P] **confirm**
 - names command, [P] **confirm**
 - number command, [P] **confirm**
 - scalar command, [P] **confirm**
 - variable command, [P] **confirm**
- console,
 - controlling scrolling of output, [P] **more**
 - obtaining input from, [P] **display**
- constrained estimation, programming, [P] **makecns**
- constraint macro extended function, [P] **macro**
- constraint matrix, creating and displaying, [P] **makecns**
- context, class, [P] **class**
- _continue, display directive, [P] **display**
- continue command, [P] **continue**
- Cook, R. D., [P] **_predict**
- .copy built-in class function, [P] **class**
- copy macro extended function, [P] **macro**
- corr() matrix function, [P] **matrix define**
- correlation, matrices, [P] **matrix define**

covariance matrix of estimators, [P] **ereturn**, [P] **matrix get**
 Cox, G. M., [P] **levelsof**
 Cox, N. J., [P] **levelsof**, [P] **matrix define**
 create, **setset** subcommand, [P] **setset**
 create_**cspline**, **setset** subcommand, [P] **setset**
 create_**xmedians**, **setset** subcommand, [P] **setset**
creturn list command, [P] **creturn**
 cross-product matrices, [P] **matrix accum**
cutil, see **classutil**

D

data,
 characteristics of, see characteristics
 checksums of, [P] **signestimationsample**
 current, [P] **creturn**
 preserving, [P] **preserve**
 data label macro extended function, [P] **macro**
 data signature, [P] **_datasignature**, [P] **signestimationsample**
_datasignature command, [P] **_datasignature**
 date and time, [P] **creturn**
 debugging, [P] **trace**; [P] **discard**, [P] **pause**
.Declare built-in class modifier, [P] **class**
 declare, class, [P] **class**
 define,
 char subcommand, [P] **char**
 matrix subcommand, [P] **matrix define**
 program subcommand, [P] **program**, [P] **program properties**
#delimit command, [P] **#delimit**
 delimiter
 for comments, [P] **comments**
 for lines, [P] **#delimit**
 Demmel, J., [P] **matrix eigenvalues**
 describe, **classutil** subcommand, [P] **classutil**
 destructors, class, [P] **class**
det() matrix function, [P] **matrix define**
 determinant of matrix, [P] **matrix define**
diag() matrix function, [P] **matrix define**
diag0cnt() matrix function, [P] **matrix define**
 diagonals of matrices, [P] **matrix define**
 dialog
 box, [P] **dialog programming**, [P] **window programming**
 programming, [P] **dialog programming**, [P] **window programming**
 dir,
 classutil subcommand, [P] **classutil**
 _estimates subcommand, [P] **_estimates**
 macro subcommand, [P] **macro**
 matrix subcommand, [P] **matrix utility**
 postutil subcommand, [P] **postfile**
 program subcommand, [P] **program**
 _return subcommand, [P] **_return**
 setset subcommand, [P] **setset**
 dir macro extended function, [P] **macro**

directories and paths, [P] **creturn**
 directory, class, [P] **classutil**
 discard command, [P] **discard**
 display command, [P] **display**; [P] **macro display**, **ereturn** subcommand, [P] **ereturn display** formats, [P] **macro display** macro extended function, [P] **display** displaying
 macros, [P] **macro**
 matrix, [P] **matrix utility**
 output, [P] **display**, [P] **quietly**, [P] **smcl**, [P] **tabdisp**
 scalar expressions, [P] **display**, [P] **scalar**
 dissimilarity
 matrices, [P] **matrix dissimilarity**
 measures, [P] **matrix dissimilarity**
 dissimilarity, **matrix** subcommand, [P] **matrix dissimilarity**
 distance matrices, [P] **matrix dissimilarity**
 DLL, [P] **plugin**
 do-files, [P] **break**, [P] **include**, [P] **version**
 adding comments to, [P] **comments**
 long lines, [P] **#delimit**
 Dongarra, J. J., [P] **matrix eigenvalues**, [P] **matrix symeigen**
 double quotes, [P] **macro**
 drop,
 classutil subcommand, [P] **classutil**
 _estimates subcommand, [P] **_estimates**
 macro subcommand, [P] **macro**
 matrix subcommand, [P] **matrix utility**
 program subcommand, [P] **program**
 _return subcommand, [P] **_return**
 setset subcommand, [P] **setset**
 dropping programs, [P] **discard**
.dta file suffix, technical description, [P] **file formats .dta**
 Du Croz, J., [P] **matrix eigenvalues**
_dup(#), display directive, [P] **display**
.dynamicmv built-in class function, [P] **class**

E

e() scalars, macros, matrices, functions, [P] **ereturn**, [P] **_estimates**, [P] **return**
 e(functions) macro extended function, [P] **macro**
 e(macros) macro extended function, [P] **macro**
 e(matrices) macro extended function, [P] **macro**
 e(sample) function, [P] **ereturn**, [P] **return**
 e(scalars) macro extended function, [P] **macro**
 e-class command, [P] **program**, [P] **return**
 eigenvalues, [P] **matrix eigenvalues**, [P] **matrix symeigen**
 eigenvalues and eigenvectors, [P] **matrix svd**, [P] **matrix symeigen**
 eigenvalues, **matrix** subcommand, [P] **matrix eigenvalues**
 e1() matrix function, [P] **matrix define**

else command, [P] **if**
 ending a Stata session, [P] **exit**
 environment macro extended function, [P] **macro**
 environment variables (Unix), [P] **macro**
 equation names of matrix, [P] **matrix rownames**; [P] **ereturn**, [P] **matrix define**
ereturn
 clear command, [P] **ereturn**; [P] **return**
 display command, [P] **ereturn**
 list command, [P] **ereturn**
 local command, [P] **ereturn**; [P] **return**
 matrix command, [P] **ereturn**; [P] **return**
 post command, [P] **ereturn**, [P] **makecns**; [P] **return**
 repost command, [P] **ereturn**; [P] **return**
 scalar command, [P] **ereturn**; [P] **return**
error
 handling, [P] **capture**, [P] **confirm**, [P] **error**
 messages and return codes, [P] **error**, [P] **rmsg**, *also*
 see error handling
 error command, [P] **error**
estat, [P] **estat programming**
_estimates
 clear command, [P] **_estimates**
 dir command, [P] **_estimates**
 drop command, [P] **_estimates**
 hold command, [P] **_estimates**
 unhold command, [P] **_estimates**
estimation
 commands, [P] **ereturn**, [P] **_estimates**
 accessing stored information from, [P] **matrix get**
 allowing constraints in, [P] **makecns**
 eliminating stored information from, [P] **discard**
 obtaining predictions after, [P] **_predict**
 obtaining robust estimates, [P] **_robust**
 saving results from, [P] **_estimates**
 results,
 clearing, [P] **ereturn**, [P] **_estimates**
 listing, [P] **ereturn**, [P] **_estimates**
 saving, [P] **ereturn**, [P] **_estimates**
 estimators, covariance matrix of, [P] **ereturn**, [P] **matrix get**
existence, **confirm** subcommand, [P] **confirm**
exit class program, [P] **class exit**
exit, **class** subcommand, [P] **class exit**
exit command, [P] **capture**, [P] **exit**
 exiting Stata, see **exit** command
 expand factor varlists, [P] **fvexpand**
 expressions, [P] **matrix define**
 extended macro functions, [P] **char**, [P] **display**, [P] **macro**, [P] **macro lists**, [P] **rserset**

F

factor variables, [P] **fvexpand**, [P] **intro**, [P] **matrix rownames**, [P] **_rmcoll**, [P] **syntax**, [P] **unab**
file
 close command, [P] **file**

file, *continued*
 open command, [P] **file**
 query command, [P] **file**
 read command, [P] **file**
 seek command, [P] **file**
 serserread command, [P] **rserset**
 serserwrite command, [P] **rserset**
 set command, [P] **file**
 write command, [P] **file**
file, **confirm** subcommand, [P] **confirm**
file, find in path, [P] **findfile**
file format, Stata, [P] **file formats .dta**
files,
 opening, [P] **window programming**
 reading ASCII text or binary, [P] **file**
 saving, [P] **window programming**
 temporary, [P] **macro**, [P] **preserve**, [P] **scalar**
 writing ASCII text or binary, [P] **file**
findfile command, [P] **findfile**
 finding file in path, [P] **findfile**
 Fisher, R. A., [P] **levelsof**
 Flannery, B. P., [P] **matrix symeigen**
fopen, **window** subcommand, [P] **window programming**
foreach command, [P] **foreach**
format, **confirm** subcommand, [P] **confirm**
format macro extended function, [P] **macro**
 formatting contents of macros, [P] **macro**
forvalues command, [P] **forvalues**
 Frankel, M. R., [P] **_robust**
fsave, **window** subcommand, [P] **window programming**
 Fuller, W. A., [P] **_robust**
functions
 extended macro, [P] **char**, [P] **display**, [P] **macro**, [P] **macro lists**, [P] **rserset**
 matrix, [P] **matrix define**
fvexpand command, [P] **fvexpand**
fvunab command, [P] **unab**

G

g2 inverse of matrix, [P] **matrix define**, [P] **matrix svd**
 Gail, M. H., [P] **_robust**
 Garbow, B. S., [P] **matrix symeigen**
generalized
 inverse of matrix, [P] **matrix define**, [P] **matrix svd**
 method of moments (GMM), [P] **matrix accum**
get () matrix function, [P] **matrix define**, [P] **matrix get**
gettoken command, [P] **gettoken**
Global, class prefix operator, [P] **class**
global command, [P] **macro**
glsaccum, **matrix** subcommand, [P] **matrix accum**
 Gould, W. W., [P] **_datasignature**, [P] **_robust**, [P] **intro**, [P] **matrix mkmat**, [P] **postfile**
 graphical user interface, [P] **dialog programming**
 Greenbaum, A., [P] **matrix eigenvalues**

Greene, W. H., [P] **matrix accum**
 GUI programming, [P] **dialog programming**

H

hadamard() matrix function, [P] **matrix define**
 Hamilton, J. D., [P] **matrix eigenvalues**
 Hammarling, S., [P] **matrix eigenvalues**
 Heinecke, K., [P] **matrix mkmat**
 heteroskedasticity, robust variances, see **robust hold**,
 _estimates subcommand, [P] **_estimates**
 _return subcommand, [P] **_return**
 Huber, P. J., [P] **_robust**
 Huber/White/sandwich estimator of variance, see **robust**,
 Huber/White/sandwich estimator of variance

I

I() matrix function, [P] **matrix define**
 identifier, class, [P] **class**
 identity matrix, [P] **matrix define**
if exp, [P] **syntax**
 if programming command, [P] **if**
 Ikebe, Y., [P] **matrix symeigen**
 immediate commands, [P] **display**
 implied context, class, [P] **class**
in range modifier, [P] **syntax**
in smcl, **display** directive, [P] **display**
 include command, [P] **include**
 information matrix, [P] **matrix get**
 inheritance, [P] **class**
 initialization, class, [P] **class**
 input, **matrix** subcommand, [P] **matrix define**
 input, obtaining from console in programs, see **console**,
 obtaining input from
 instance, class, [P] **class**
.instancemv built-in class function, [P] **class**
 instance-specific variable, [P] **class**
 inv() matrix function, [P] **matrix define**
 inverse of matrix, [P] **matrix define**, [P] **matrix svd**
 invsym() matrix function, [P] **matrix define**
.isa built-in class function, [P] **class**
.isofclass built-in class function, [P] **class**
 issymmetric() matrix function, [P] **matrix define**

J

J() matrix function, [P] **matrix define**
 Jann, B., [P] **mark**

K

Kaufman, L., [P] **matrix dissimilarity**
 Kennedy Jr., W., [P] **_robust**
 Kent, J. T., [P] **_robust**, [P] **matrix dissimilarity**
 Kish, L., [P] **_robust**

Klema, V. C., [P] **matrix symeigen**
 Kolev, G. I., [P] **scalar**
 Kronecker product, [P] **matrix define**

L

label macro extended function, [P] **macro**
 label values, [P] **macro**
 language syntax, [P] **syntax**
 length macro extended function, [P] **macro**
 level command and value, [P] **macro**
 levelsof command, [P] **levelsof**
 limits,
 numerical and string, [P] **creturn**
 system, [P] **creturn**
 Lin, D. Y., [P] **_robust**
 linear combinations, forming, [P] **matrix score**
 lines, long, in do-files and ado-files, [P] **#delimit**
 list,
 char subcommand, [P] **char**
 creturn subcommand, [P] **creturn**
 ereturn subcommand, [P] **ereturn**
 macro subcommand, [P] **macro**
 matrix subcommand, [P] **matrix utility**
 program subcommand, [P] **program**
 sysdir subcommand, [P] **sysdir**
 timer subcommand, [P] **timer**
 list macro extended function, [P] **macro lists**
 list manipulation, [P] **macro lists**
 listing
 estimation results, [P] **ereturn**, [P] **_estimates**
 macro expanded functions, [P] **macro lists**
 values of a variable, [P] **levelsof**
 local
 ++ command, [P] **macro**
 – command, [P] **macro**
 command, [P] **macro**
 local,
 ereturn subcommand, [P] **ereturn**
 return subcommand, [P] **return**
 sreturn subcommand, [P] **return**
 Local, class prefix operator, [P] **class**
 long lines in ado-files and do-files, [P] **#delimit**
 looping, [P] **continue**, [P] **foreach**, [P] **forvalues**, [P]
 while
lvalue, class, [P] **class**

M

Mac, pause, [P] **sleep**
 MacKinnon, J. G., [P] **_robust**
 macro
 dir command, [P] **macro**
 drop command, [P] **macro**
 list command, [P] **macro**
 shift command, [P] **macro**

- macro substitution, [P] **macro**
 class, [P] **class**
- macros, [P] **macro**; [P] **creturn**, [P] **scalar**, [P] **syntax**,
 also see **e()**
- macval() macro expansion function, [P] **macro**
- makecns command, [P] **makecns**
- manage, window subcommand, [P] **window**
programming
- Mardia, K. V., [P] **matrix dissimilarity**
- mark command, [P] **mark**
- markin command, [P] **mark**
- marking observations, [P] **mark**
- markout command, [P] **mark**
- marksample command, [P] **mark**
- matcproc command, [P] **makecns**
- mathematical functions and expressions, [P] **matrix**
define
- matlist command, [P] **matlist**
- matmissing() matrix function, [P] **matrix define**
- matname command, [P] **matrix mkmat**
- mat_put_err command, [P] **matrix get**
- matrices, [P] **matrix**
 accessing internal, [P] **matrix get**
 accumulating, [P] **matrix accum**
 appending rows and columns, [P] **matrix define**
 Cholesky decomposition, [P] **matrix define**
 coefficient matrices, [P] **ereturn**
 column names, see matrices, row and column names
 constrained estimation, [P] **makecns**
 copying, [P] **matrix define**, [P] **matrix get**, [P]
matrix mkmat
 correlation, [P] **matrix define**
 covariance matrix of estimators, [P] **ereturn**, [P]
matrix get
 cross-product, [P] **matrix accum**
 determinant, [P] **matrix define**
 diagonals, [P] **matrix define**
 displaying, [P] **matlist**, [P] **matrix utility**
 dissimilarity, [P] **matrix dissimilarity**
 distances, [P] **matrix dissimilarity**
 dropping, [P] **matrix utility**
 eigenvalues, [P] **matrix eigenvalues**, [P] **matrix**
symeigen
 eigenvectors, [P] **matrix symeigen**
 elements, [P] **matrix define**
 equation names, see matrices, row and column
 names
 estimation results, [P] **ereturn**, [P] **_estimates**
 functions, [P] **matrix define**
 identity, [P] **matrix define**
 input, [P] **matrix define**
 inversion, [P] **matrix define**, [P] **matrix svd**
 Kronecker product, [P] **matrix define**
 labeling rows and columns, see matrices, row and
 column names
 linear combinations with data, [P] **matrix score**
 listing, [P] **matlist**, [P] **matrix utility**
- matrices, *continued*
 namespace and conflicts, [P] **matrix**, [P] **matrix**
define
 number of rows and columns, [P] **matrix define**
 operators such as addition, [P] **matrix define**
 orthonormal basis, [P] **matrix svd**
 partitioned, [P] **matrix define**
 performing constrained estimation, [P] **makecns**
 posting estimation results, [P] **ereturn**, [P]
_estimates
 renaming, [P] **matrix utility**
 row and column names, [P] **ereturn**, [P] **matrix**
define, [P] **matrix mkmat**, [P] **matrix rownames**
 rows and columns, [P] **matrix define**
 saving matrix, [P] **matrix mkmat**
 scoring, [P] **matrix score**
 similarity, [P] **matrix dissimilarity**
 store variables as matrix, [P] **matrix mkmat**
 submatrix extraction, [P] **matrix define**
 submatrix substitution, [P] **matrix define**
 subscripting, [P] **matrix define**
 sweep operator, [P] **matrix define**
 temporary names, [P] **matrix**
 trace, [P] **matrix define**
 transposing, [P] **matrix define**
 variables, make into matrix, [P] **matrix mkmat**
 zero, [P] **matrix define**
- matrix() pseudofunction, [P] **matrix define**
- matrix,
 confirm subcommand, [P] **confirm**
 ereturn subcommand, [P] **ereturn**
 return subcommand, [P] **return**
- matrix
 accum command, [P] **matrix accum**
 coleq command, [P] **matrix rownames**
 colnames command, [P] **matrix rownames**
 commands, introduction, [P] **matrix**
 define command, [P] **matrix define**
 dir command, [P] **matrix utility**
 dissimilarity command, [P] **matrix dissimilarity**
 drop command, [P] **matrix utility**
 eigenvalues command, [P] **matrix eigenvalues**
 glsaccum command, [P] **matrix accum**
 input command, [P] **matrix define**
 list command, [P] **matrix utility**
 opaccum command, [P] **matrix accum**
 rename command, [P] **matrix utility**
 roweq command, [P] **matrix rownames**
 rownames command, [P] **matrix rownames**
 score command, [P] **matrix score**
 svd command, [P] **matrix svd**
 symeigen command, [P] **matrix symeigen**
 vecaccum command, [P] **matrix accum**
- matsize, [P] **creturn**, [P] **macro**
- matuniform() matrix function, [P] **matrix define**
- McKenney, A., [P] **matrix eigenvalues**

member
 programs, [P] **class**
 variables, [P] **class**
 memory, reducing utilization, [P] **discard**
 memory settings, [P] **creturn**
 menu, window subcommand, [P] **window programming**
 menus, programming, [P] **dialog programming**, [P]
 window programming
 messages and return codes, see error messages and
 return codes
 mkmatrix command, [P] **matrix mkmatrix**
 Moler, C. B., [P] **matrix symeigen**
 Monte Carlo simulations, [P] **postfile**
 more command and parameter, [P] **macro**, [P] **more**
 mreldif() matrix function, [P] **matrix define**

N

names
 conflicts, [P] **matrix**, [P] **matrix define**, [P] **scalar**
 matrix row and columns, [P] **ereturn**, [P] **matrix**
 define, [P] **matrix rownames**
 names, confirm subcommand, [P] **confirm**
 namespace and conflicts, matrices and scalars, [P]
 matrix, [P] **matrix define**
 n-class command, [P] **program**, [P] **return**
 .new built-in class function, [P] **class**
 Newey–West standard errors, [P] **matrix accum**
 _newline(#), display directive, [P] **display**
 nobreak command, [P] **break**
 noisily prefix, [P] **quietly**
 nopreserve option, [P] **nopreserve option**
 novarabbrev command, [P] **varabbrev**
 nullmatrix() matrix function, [P] **matrix define**
 number, confirm subcommand, [P] **confirm**
 numeric list, [P] **numlist**, [P] **syntax**
 numlist command, [P] **numlist**

O

object, [P] **class**
 object-oriented programming, [P] **class**
 .objkey built-in class function, [P] **class**
 .objtype built-in class function, [P] **class**
 observations, marking, [P] **mark**
 off, timer subcommand, [P] **timer**
 OLDPLACE directory, [P] **sysdir**
 OLE Automation, [P] **automation**
 on, timer subcommand, [P] **timer**
 opaccum, matrix subcommand, [P] **matrix accum**
 open, file subcommand, [P] **file**
 operators, [P] **matrix define**
 options, in a programming context, [P] **syntax**, [P]
 unab
 orthonormal basis, [P] **matrix svd**

output,
 displaying, [P] **display**, [P] **smcl**
 suppressing, [P] **quietly**
 output, set subcommand, [P] **quietly**
 output settings, [P] **creturn**
 overloading, class program names, [P] **class**

P

paging of screen output, controlling, [P] **more**
 Park, H. J., [P] **_robust**
 parsing, [P] **syntax**; [P] **gettoken**, [P] **numlist**, [P]
 tokenize
 partitioned matrices, [P] **matrix define**
 paths and directories, [P] **creturn**
 pause command, [P] **pause**
 pausing until key is pressed, [P] **more**
 permname macro extended function, [P] **macro**
 personal command, [P] **sysdir**
 PERSONAL directory, [P] **sysdir**
 Piantadosi, S., [P] **_robust**
 piece macro extended function, [P] **macro**
 Pitblado, J., [P] **_robust**, [P] **intro**
 plugin, loading, [P] **plugin**
 plugin option, [P] **plugin**, [P] **program**
 PLUS directory, [P] **sysdir**
 polymorphism, [P] **class**
 post command, [P] **postfile**
 post, ereturn subcommand, [P] **ereturn**, [P] **makecns**
 postclose command, [P] **postfile**
 postestimation command, [P] **estat programming**
 postfile command, [P] **postfile**
 postutil
 clear command, [P] **postfile**
 dir command, [P] **postfile**
 _predict command, [P] **_predict**
 predict command, [P] **ereturn**, [P] **_estimates**
 predictions, obtaining after estimation, [P] **_predict**
 preserve command, [P] **preserve**
 preserving user's data, [P] **preserve**
 Press, W. H., [P] **matrix symeigen**
 program
 define command, [P] **plugin**, [P] **program**, [P]
 program properties
 dir command, [P] **program**
 drop command, [P] **program**
 list command, [P] **program**
 program properties, [P] **program properties**
 programming, [P] **syntax**
 dialog, [P] **dialog programming**
 estat, [P] **estat programming**
 Mac, [P] **window programming**
 menus, [P] **window programming**
 Windows, [P] **window programming**
 programs,
 adding comments to, [P] **comments**
 debugging, [P] **trace**

programs, *continued*
 dropping, [P] **discard**
 looping, [P] **continue**
 properties, [P] **program properties**
 properties macro extended function, [P] **macro**
 push, window subcommand, [P] **window programming**

Q

query, file subcommand, [P] **file**
 quietly prefix, [P] **quietly**
 quitting Stata, see **exit** command
 quotes to expand macros, [P] **macro**

R

r() scalars, macros, matrices, functions, [P] **discard**,
 [P] **return**
 r(functions) macro extended function, [P] **macro**
 r(macros) macro extended function, [P] **macro**
 r(matrices) macro extended function, [P] **macro**
 r(scalars) macro extended function, [P] **macro**
 rc (return codes), see error messages and return codes
 _rc built-in variable, [P] **capture**
 r-class command, [P] **program**, [P] **return**
 read, file subcommand, [P] **file**
 reading console input in programs, see console,
 obtaining input from
 .ref built-in class function, [P] **class**
 references, class, [P] **class**
 .ref_n built-in class function, [P] **class**
 regression (in generic sense), see estimation commands
 accessing coefficients and std. errors, [P] **matrix get**
 Reinsch, C., [P] **matrix symeigen**
 release marker, [P] **version**
 releases, compatibility of Stata programs across, [P]
version
 rename,
 char subcommand, [P] **char**
 matrix subcommand, [P] **matrix utility**
 repeating commands, [P] **continue**, [P] **foreach**, [P]
forvalues
 replay() function, [P] **ereturn**, [P] **_estimates**
 repost, **ereturn** subcommand, [P] **return**
 _request(*macname*), display directive, [P] **display**
 reset_id, **set** subcommand, [P] **set**
 restore command, [P] **preserve**
 restore, **_return** subcommand, [P] **_return**
 results,
 clearing, [P] **ereturn**, [P] **_estimates**, [P] **_return**
 listing, [P] **ereturn**, [P] **_estimates**, [P] **_return**
 returning, [P] **_return**, [P] **return**
 saving, [P] **ereturn**, [P] **_estimates**, [P] **postfile**, [P]
_return, [P] **return**
 _return
 dir command, [P] **_return**
 drop command, [P] **_return**

_return, *continued*
 hold command, [P] **_return**
 restore command, [P] **_return**
 return
 add command, [P] **return**
 clear command, [P] **return**
 local command, [P] **return**
 matrix command, [P] **return**
 scalar command, [P] **return**
 return codes, [P] **rmsg**, see error messages and return
 codes
 returning results, [P] **return**
 class programs, [P] **class**
 _rmcoll command, [P] **_rmcoll**
 _rmdcoll command, [P] **_rmcoll**
 rmsg, [P] **creturn**, [P] **error**
 set subcommand, [P] **rmsg**
 _robust command, [P] **_robust**
 robust, Huber/White/sandwich estimator of variance, [P]
_robust
 Rogers, W. H., [P] **_robust**
 Rousseeuw, P. J., [P] **matrix dissimilarity**
 roweq macro extended function, [P] **macro**
 roweq, **matrix** subcommand, [P] **matrix rownames**
 rowfullnames macro extended function, [P] **macro**
 rownames macro extended function, [P] **macro**
 rownames, **matrix** subcommand, [P] **matrix**
rownames
 rownumb() **matrix** function, [P] **matrix define**
 rows of matrix
 appending to, [P] **matrix define**
 names, [P] **ereturn**, [P] **matrix define**, [P] **matrix**
rownames
 operators, [P] **matrix define**
 rowsof() **matrix** function, [P] **matrix define**
 Royall, R. M., [P] **_robust**
 rvalue, class, [P] **class**

S

s() saved results, [P] **return**
 s(macros) macro extended function, [P] **macro**
 sandwich/Huber/White estimator of variance, see robust,
 Huber/White/sandwich estimator of variance
 save estimation results, [P] **ereturn**, [P] **_estimates**
 saved results, [P] **_return**, [P] **return**
 saving results, [P] **ereturn**, [P] **_estimates**, [P] **postfile**,
 [P] **_return**, [P] **return**
 scalar,
 confirm subcommand, [P] **confirm**
ereturn subcommand, [P] **ereturn**
return subcommand, [P] **return**
 scalar command and scalar() pseudofunction, [P]
scalar
 scalars, [P] **scalar**
 namespace and conflicts, [P] **matrix**, [P] **matrix**
define
 Schnell, D., [P] **_robust**

- s-class command, [P] **program**, [P] **return**
- scope, class, [P] **class**
- score, matrix subcommand, [P] **matrix score**
- scoring, [P] **matrix score**
- scrolling of output, controlling, [P] **more**
- seek, file subcommand, [P] **file**
- setset
- clear command, [P] **setset**
 - create command, [P] **setset**
 - create_cspline command, [P] **setset**
 - create_xmedians command, [P] **setset**
 - dir command, [P] **setset**
 - drop command, [P] **setset**
 - reset_id command, [P] **setset**
 - set command, [P] **setset**
 - sort command, [P] **setset**
 - summarize command, [P] **setset**
 - use command, [P] **setset**
- setsetread, file subcommand, [P] **setset**
- setsetwrite, file subcommand, [P] **setset**
- set,
- file subcommand, [P] **file**
 - setset subcommand, [P] **setset**
 - sysdir subcommand, [P] **sysdir**
- set
- adosize command, [P] **sysdir**
 - charset command, [P] **smcl**
 - more command, [P] **more**
 - output command, [P] **quietly**
 - rmsg command, [P] **rmsg**
 - trace command, [P] **trace**
 - tracedepth command, [P] **trace**
 - traceexpand command, [P] **trace**
 - tracehilite command, [P] **trace**
 - traceindent command, [P] **trace**
 - tracenumber command, [P] **trace**
 - tracesep command, [P] **trace**
- settings,
- efficiency, [P] **creturn**
 - graphics, [P] **creturn**
 - memory, [P] **creturn**
 - network, [P] **creturn**
 - output, [P] **creturn**
 - program debugging, [P] **creturn**
 - trace, [P] **creturn**
- shared object, [P] **class**, [P] **plugin**
- shift, macro subcommand, [P] **macro**
- signature of data, [P] **_datasignature**, [P] **signestimationsample**
- signestimationsample command, [P] **signestimationsample**
- similarity
- matrices, [P] **matrix dissimilarity**
 - measures, [P] **matrix dissimilarity**
- simulations, Monte Carlo, [P] **postfile**
- singular value decomposition, [P] **matrix svd**
- SITE directory, [P] **sysdir**
- _skip(#), display directive, [P] **display**
- Slaymaker, E., [P] **file**
- sleep command, [P] **sleep**
- S_ macros, [P] **creturn**, [P] **macro**
- SMCL, [P] **smcl**
- Smith, B. T., [P] **matrix symeigen**
- Sorensen, D., [P] **matrix eigenvalues**
- sort order, [P] **byable**, [P] **macro**, [P] **sortpreserve**
- sort, setset subcommand, [P] **setset**
- sortedby macro extended function, [P] **macro**
- sortpreserve option, [P] **sortpreserve**
- source code, view, [P] **viewsource**
- sreturn
- clear command, [P] **return**
 - local command, [P] **return**
- Sribney, W. M., [P] **_robust**, [P] **intro**, [P] **matrix mkmat**
- standard errors,
- accessing, [P] **matrix get**
 - robust, see **robust**
- Stata,
- data file format, technical description, [P] **file formats .dta**
 - exiting, see **exit** command
 - pause, [P] **sleep**
- STATA directory, [P] **sysdir**
- Stata Markup and Control Language, [P] **smcl**
- Stewart, G. W., [P] **matrix svd**
- stopbox, window subcommand, [P] **window programming**
- string variables, parsing, [P] **gettoken**, [P] **tokenize**
- substr macro extended function, [P] **macro**
- subscripting matrices, [P] **matrix define**
- Sullivan, G., [P] **_robust**
- summarize, setset subcommand, [P] **setset**
- Super, class prefix operator, [P] **class**
- .superclass built-in class function, [P] **class**
- suppressing terminal output, [P] **quietly**
- svd, matrix subcommand, [P] **matrix svd**
- svmat command, [P] **matrix mkmat**
- svmarkout command, [P] **mark**
- sweep() matrix function, [P] **matrix define**
- symeigen, matrix subcommand, [P] **matrix symeigen**
- syntax command, [P] **syntax**
- syntax of Stata's language, [P] **syntax**
- sysdir
- list command, [P] **sysdir**
 - macro extended function, [P] **macro**
 - set command, [P] **sysdir**
- system
- limits, [P] **creturn**
 - parameters, [P] **creturn**
 - values, [P] **creturn**

T

tabdisp command, [P] **tabdisp**

tables
 N-way, [P] **tabdisp**
 of statistics, [P] **tabdisp**

Tan, W. Y., [P] **_robust**

tempfile command, [P] **macro**

tempfile macro extended function, [P] **macro**

tempname, class, [P] **class**

tempname command, [P] **macro**, [P] **matrix**, [P] **scalar**

tempname macro extended function, [P] **macro**

temporary
 files, [P] **macro**, [P] **preserve**, [P] **scalar**
 names, [P] **macro**, [P] **matrix**, [P] **scalar**
 variables, [P] **macro**

tempvar command, [P] **macro**

tempvar macro extended function, [P] **macro**

terminal
 obtaining input from, [P] **display**
 suppressing output, [P] **quietly**

Teukolsky, S. A., [P] **matrix symeigen**

time of day, [P] **creturn**

timer
 clear command, [P] **timer**
 list command, [P] **timer**
 off command, [P] **timer**
 on command, [P] **timer**

time-series
 analysis, [P] **matrix accum**
 unabbreviating varlists, [P] **unab**

timing code, [P] **timer**

TMPDIR Unix environment variable, [P] **macro**

tokenize command, [P] **tokenize**

trace() matrix function, [P] **matrix define**

trace of matrix, [P] **matrix define**

trace, set subcommand, [P] **creturn**, [P] **trace**

tracedepth, set subcommand, [P] **creturn**, [P] **trace**

traceexpand, set subcommand, [P] **creturn**, [P] **trace**

tracehilite, set subcommand, [P] **creturn**, [P] **trace**

traceindent, set subcommand, [P] **creturn**, [P] **trace**

tracenumber, set subcommand, [P] **creturn**, [P] **trace**

tracesep, set subcommand, [P] **creturn**, [P] **trace**

transposing matrices, [P] **matrix define**

tsnorm macro extended function, [P] **macro**

tsunab command, [P] **unab**

Tukey, J. W., [P] **if**

type macro extended function, [P] **macro**

U

unab command, [P] **unab**

unabbreviate
 command names, [P] **unabcmd**
 variable list, [P] **syntax**, [P] **unab**

unabcmd command, [P] **unabcmd**

.uname built-in class function, [P] **class**

unhold, **_estimates** subcommand, [P] **_estimates**

Unix, pause, [P] **sleep**

UPDATES directory, [P] **sysdir**

use, **setset** subcommand, [P] **setset**

user interface, [P] **dialog programming**

using data, [P] **syntax**

V

value label macro extended function, [P] **macro**

value labels, [P] **macro**

Van Kerm, P., [P] **postfile**

varabbrev command, [P] **varabbrev**

variable
 labels, [P] **macro**
 types, [P] **macro**
 class, [P] **class**

variable abbreviation, [P] **varabbrev**

variable, **confirm** subcommand, [P] **confirm**

variable label macro extended function, [P] **macro**

variables,
 characteristics of, [P] **char**, [P] **macro**
 list values of, [P] **levelsof**
 temporary, [P] **macro**
 unabbreviating, [P] **syntax**, [P] **unab**

variance
 Huber/White/sandwich estimator, see **robust**
 nonconstant, see **robust**

variance-covariance matrix of estimators, [P] **ereturn**,
 [P] **matrix get**

varlist, [P] **syntax**

vec() matrix function, [P] **matrix define**

vecaccum, matrix subcommand, [P] **matrix accum**

vecdiag() matrix function, [P] **matrix define**

vectors, see **matrices**

version command, [P] **version**
 class programming, [P] **class**

version control, see **version** command

Vetterling, W. T., [P] **matrix symeigen**

view source code, [P] **viewsource**

viewsource command, [P] **viewsource**

W

Weesie, J., [P] **matrix define**

Wei, L. J., [P] **_robust**

weight, [P] **syntax**

which, class, [P] **classutil**

which, **classutil** subcommand, [P] **classutil**

while command, [P] **while**

White, H., [P] **_robust**

White/Huber/sandwich estimator of variance, see **robust**

Wilkinson, J. H., [P] **matrix symeigen**

window
 fopen command, [P] **window programming**
 fsave command, [P] **window programming**
 manage command, [P] **window programming**
 menu command, [P] **window programming**
 push command, [P] **window programming**
 stopbox command, [P] **window programming**

Windows metafiles programming, [P] **automation**
Windows, pause, [P] **sleep**
Windows programming, [P] **automation**
Winter, N. J. G., [P] **levelsof**
word macro extended function, [P] **macro**
write, file subcommand, [P] **file**
writing and reading ASCII text and binary files, [P] **file**

Y

Yates, F., [P] **levelsof**

Z

zero matrix, [P] **matrix define**