GAUSS™

Selected GAUSS Commands by Category

Mathematical Functions

Differentiation and Integration

gradp	Computes the first derivative of a function.
hessp	Computes the second derivative of a function.
intgrat2	Integrates over a 2-dimensions, bounded by user-defined functions.
intgrat3	Integrates over 3-dimensions, bounded by user-defined functions.
intquad1	Integrates over one dimension, using Gauss-Legendre quadrature.
intquad2	Integrates over two dimensions, using Gauss-Legendre quadrature.
intquad3	Integrates over three dimensions, using Gauss-Legendre quadrature.
intsimp	Integrates by Simpson's method.

Eigenvalues

eig	Computes the eigenvalues of a general matrix.
eigh	Computes the eigenvalues of a complex Hermitian or real symmetric matrix.
eighv	Computes the eigenvalues and eigenvectors of a complex Hermitian or real symmetric matrix.
eigv	Computes the eigenvalues and eigenvectors of a general matrix.

Equation Optimization and Solutions

bandcholsol	Solves the system of equations Ax = b for x, given the lower triangle of the Cholesky decomposition of a positive definite banded matrix A
bandsolpd	Solves the system of equations Ax = b for x, where A is a positive definite banded matrix.
eqsolve	Solves a system of nonlinear equations.
ltrisol	Computes the solution of Lx = b where L is a lower triangular matrix.
lusol	Computes the solution of L*U*x = b where L is a lower triangular matrix and U is an upper triangular matrix.
QNewton	Optimizes a function using the BFGS descent algorithm.
QProg	Solves a quadratic programming problem.
sqpSolve	Solves a nonlinear programming problem using a sequential quadratic programming method.
utrisol	Computes the solution of U x = b where U is an upper triangular matrix.

Fourier Transforms

dfft	Computes a discrete 1-D FFT.
dffti	Computes an inverse discrete 1-D FFT.
fft	Computes a 1- or 2-D FFT.
ffti	Computes an inverse 1- or 2-D FFT.
fftm	Computes a multi-dimensional FFT.
fftmi	Computes an inverse multi-dimensional FFT.
fftn	Computes a 1- or 2-D FFT using a prime factor algorithm.
next,nextn, nextevn	Returns allowable matrix dimensions for computing FFT's.
optn,optevn	Returns optimal matrix dimensions for computing FFT's.
rfft	Computes a real 1- or 2-D FFT.
rffti	Computes an inverse real 1- or 2-D FFT.
rfftip	Computes an inverse real 1- or 2-D FFT from a packed format FFT.

rfftn	Computes a real 1- or 2-D FFT using a prime factor algorithm.
rfftnp	Computes a real 1- or 2-D FFT using a prime factor algorithm, returns a packed format FFT.
rfftp	Computes a real 1- or 2-D FFT, returns a packed format FFT.

Fuzzy Conditional Functions

dotfeq	Fuzzy .==
dotfge	Fuzzy .≥
dotfgt	Fuzzy .>
dotfle	Fuzzy .≤
dotflt	Fuzzy .<
dotfne	Fuzzy ./=
feq	Fuzzy ==
fge	Fuzzy ≥
fgt	Fuzzy >
fle	Fuzzy ≤
flt	Fuzzy <
fne	Fuzzy /=

Linear Algebra

balance	Balances a matrix.
band	Extracts bands from a symmetric banded matrix.
bandrv	Creates a symmetric banded matrix, given its compact form.
bandchol	Computes the Cholesky decomposition of a positive definite banded matrix
chol	Computes a Cholesky decomposition, $X = YY$.
choldn	Performs a Cholesky downdate on an upper triangular matrix.
cholsol	Solves a system of equations given the Cholesky factorization of a matrix.
cholup	Performs a Cholesky update on an upper triangular matrix.
cond	Computes the condition number of a matrix.
conj	Returns the complex conjugate of a matrix.
crout	Computes a Crout decomposition, $X = LU$ (real matrices only).
croutp	Computes a Crout decomposition with row pivoting (real matrices only).
det	Computes the determinant of a square matrix.
detl	Computes the determinant of a decomposed matrix.
hess	Computes the upper Hessenberg form of a matrix (real matrices only).
inv	Inverts a matrix.
invpd	Inverts a positive definite matrix.
invswp	Generalized sweep inverse.
lag1	Lags a matrix by one time period.
lagn	Lags a matrix a specified number of time periods.
lu	Computes an LU decomposition with row pivoting (real and complex matrices).
null	Computes an orthonormal basis for a right null space.
null1	Computes the nullity of a matrix.
orth	Computes an orthonormal basis for the column space *x*.
pinv	Generalized pseudo-inverse: Moore-Penrose.
qqr	QR decomposition: returns Q_1 and R.
qqre	QR decomposition: returns Q_1, R, and a permutation vector, E.
qqrep	QR decomposition with pivot control: returns Q_1, R, and a permutation vector, E.
qr	QR decomposition: returns R.

qre	QR decomposition: returns *R* and a permutation vector, *E*.
qrep	QR decomposition with pivot control: returns *R* and a permutation vector, *E*.
qrsol	Backsolves *Rx = b,* where *R* is an upper triangular matrix
qrtsol	Forward solves *Rx = b*, where *R* is an upper triangular matrix.
qtyr	QR decomposition: returns *R* and *Q'Y*.
qtyre	QR decomposition: returns *R, Q'Y,* and a permutation vector, *E*.
qtyrep	QR decomposition with pivot control: returns *R, Q'Y,* and a permutation vector, *E*.
qyr	QR decomposition: returns *R* and *QY* .
qyre	QR decomposition: returns *R, QY*, and a permutation vector, *E*.
qyrep	QR decomposition with pivot control: returns *R, QY*, and a permutation vector, *E*.
rank	Computes the rank of a matrix.
rcondl	Returns the reciprocal of the condition number of the last decomposed matrix.
rref	Computes the reduced row echelon form of a matrix.
schur	Computes the Schur decomposition of a matrix (real matrices only).
schtoc	Reduces any 2 by 2 blocks on the diagional of the real Schur matrix returned from **schur**. Also updates the transformation matrix.
solpd	Solves a system of positive definite linear equations.
svd	Computes the singular values of a matrix.
svd1	Computes a singular value decomposition so that *x=u*s*v'*
svd2	Computes an svd1 with compact U.
svdcusv	Computes the singular value decomposition of a matrix so that: x = u * s * v' (compact u).
svdusv	Computes the singular value decomposition of a matrix so that: x = u * s * v'.
svds	Computes the singular values of a matrix

Polynomial Operations

polychar	Computes the characteristic polynomial of a square matrix.
polyeval	Evaluates a polynomial with given coefficients.
polyint	Calculates an N^{th} order polynomial interpolation given known point pairs.
polymake	Computes polynomial coefficients from the polynomial roots.
polymat	Returns the sequence powers of a matrix.
polymult	Multiplies two polynomials.
polymroot	Computes the roots of a matrix polynomial from coefficient matrices
polyroot	Computes the roots of a polynomial from coefficients.

Precision Control

base10	Converts a number to *x.xxx* and a power of 10.
ceil	Rounds up
floor	Rounds down
prcsn	Sets computational precision for matrix operations.
round	Rounds to the nearest integer.
trunc	Truncates toward 0.

Random Numbers

rndbeta	Computes random numbers from a beta distribution.
rndcon	Changes the constant of the LC random number generator.
rndgam	Computes random numbers from a gamma distribution.
rndi	Returns random integers, 0 <= y < 2^32.

rndKMbeta	Computes beta pseudo-random numbers using the Kiss-Monster algorithm
rndKMgam	Computes gamma pseudo-random numbers using the Kiss-Monster algorithm
rndKMi	Returns random integers, 0 <= y < 2^32 using the Kiss-Monster algorithm
rndKMn	Computes standard normal pseudo-random numbers using the Kiss-Monster algorithm
rndKMnb	Computes negative binomial pseudo-random numbers using the Kiss-Monster algorithm
rndKMp	Computes Poisson pseudo-random numbers using the Kiss-Monster algorithm
rndKMu	Computes uniform pseudo-random numbers using the Kiss-Monster algorithm
rndKMvm	Computes von Mises pseudo-random numbers using the Kiss-Monster algorithm
rndLCbeta	Computes beta pseudo-random numbers using a linear congruential algorithm
rndLCgam	Computes gamma pseudo-random numbers using a linear congruential algorithm.
rndLCi	Returns random integers, 0 <= y < 2^32 using a linear congruential algorithm.
rndLCn	Computes standard normal pseudo-random numbers using a linear congruential algorithm
rndLCnb	Computes negative binomial pseudo-random numbers using a linear congruential algorithm
rndLCp	Computes Poisson pseudo-random numbers using a linear congruential algorithm
rndLCu	Computes uniform pseudo-random numbers using a linear congruential algorithm
rndLCvm	Computes von Mises pseudo-random numbers using a linear congruential algorithm
rndmult	Changes the multiplier of the LC random number generator.
rndn	Computes random numbers from a Normal distribution.
rndnb	Computes random numbers from a negative binomial distribution.
rndp	Computes random numbers from a Poisson distribution.
rndseed	Changes the seed of the LC random number generator.
rndu	Computes random numbers from a uniform distribution.
rndvm	Computes von Mises pseudo-random numbers

Scientific Functions

abs	Returns the absolute value of an argument.
arccos	Computes an inverse cosine.
arcsin	Computes an inverse sine.
atan	Computes an inverse tangent.
atan2	Computes an angle given a point x,y.
besselj	Computes a Bessel function, first kind.
bessely	Computes a Bessel function, second kind.
cos	Computes a cosine.
cosh	Computes a hyperbolic cosine.
curve	Computes a one-dimensional smoothing curve.
exp	Computes the exponential function of x.
fmod	Computes the floating point remainder of x/y
gamma	Computes the gamma function's value.
gammaii	Computes the inverse incomplete gamma function
ln	Computes the natural log of each element.
lnfact	Computes the natural log of the factorial function.
log	Computes $\log_{10}$ of each element.
mbesselei, mbesselei0, mbesselei1, mbesseli, mbesseli0, mbesseli1	Computes modified and exponentially scaled modified Bessels of the first kind of the n-th order.
pi	Returns π.

sin	Computes a sine.
sinh	Computes the hyperbolic sine.
sqrt	Computes the square root of each element.
tan	Computes a tangent.
tanh	Computes a hyperbolic tangent.
tocart	Converts from polar to cartesian coordinates.
topolar	Converts from cartesian to polar coordinates.

Series and Sequence Functions

recserar	Computes an autoregressive recursive series.
recsercp	Computes a recursive series involving products.
recserrc	Computes a recursive series involving division.
seqa	Creates an additive sequence.
seqm	Creates a multiplicative sequence.

Statistical Functions

acf	Computes sample autocorrelations.
conv	Computes the convolution of two vectors.
corrm	Computes a correlation matrix from a moment matrix.
corrvc	Computes a correlation matrix from a variance-covariance matrix.
corrx	Computes a correlation matrix from a data matrix
crossprd	Computes cross products of sets of 3x1 vectors
design	Creates a design matrix of 0's and 1's.
dstat	Computes descriptive statistics of a data set or matrix.
loess	Computes the coefficients of a locally weighted regression.
meanc	Computes the mean value of each column of a matrix.
median	Computes the median of each column of a matrix.
moment	Computes a cross-product matrix, the same as *x'x*.
momentd	Computes a moment matrix from a data set.
ols	Computes a least squares regression using a data set or a matrix.
olsqr	Computes OLS coefficients using a QR decomposition.
olsqr2	Computes OLS coefficients, residuals, and predicted values using a QR decomposition.
pacf	Computes sample partial autocorrelations.
princomp	Computes the principal components of a matrix.
spline	Computes a two-dimensional interpolatory spline.
stdc	Computes the standard deviations of each column of a matrix.
toeplitz	Computes a Toeplitz matrix from a column vector.
vcm	Computes a variance-covariance matrix from a moment matrix.
vcx	Computes a variance-covariance matrix from a data matrix.

Statistical Distributions

cdfbeta	Computes the integral of a beta function.
cdfbvn	Computes the lower tail of a bivariate Normal cdf.
cdfchic	Computes the complement of a chi-square cdf.
cdfchii	Computes chi-square critical values, given probabilities and degrees of freedom
cdfchinc	Computes an integral from a noncentral ch-square
cdffc	Computes the complement of the cdf of an *F* distribution.
cdffnc	Computes a noncentral *F* distribution integral.
cdfgam	Computes an incomplete gamma function integral.

cdfmvn	Computes a multivariate Normal cdf.
cdfn	Computes the cdf of a Normal distribution
cdfn2	Computes a Normal distribution integral.
cdfnc	Computes the complement of the cdf of a Normal distribution (upper tail).
cdftc	Computes the complement of the cdf of a *t*-distribution.
cdftnc	Computes a noncentral *t*-distribution integral.
cdftvn	Computes the lower tail of a trivariate Normal cdf.
erf	Computes a Gaussian error function.
erfc	Computes the complement of a Gaussian error function.
lncdfbvn	Computes the natural log of a bivariate Normal cdf.
lncdfbvn2	Returns log of cdfbvn of a bounded rectangle
lncdfmvn	Computes the natural log of a multivariate Normal cdf.
lncdfn	Computes the natural log of a Normal cdf.
lncdfn2	Computes the natural log of a Normal density integral.
lncdfnc	Computes the natural log of the complement of a Normal cdf.
lnpdfmvn	Computes multivariate Normal log-probabilities.
lnpdfmvt	Computes multivariate Student's t log-probabilities
lnpdfn	Computes Normal log-probabilities.
pdfn	Computes the standard Normal probability density function.
quantile	Computes quantiles from data in a matrix, given specified probabilities
quantiled	Computes quantiles from data in a dataset, given specified probabilities

Finance Functions

AmericanBinomCall	American binomial method Call.
AmericanBinomCall_Greeks	American binomial method call Delta, Gamma, Theta, Vega, and Rho.
AmericanBinomCall_ImpVol	Implied volatilities for American binomial method calls.
AmericanBinomPut	American binomial method Put.
AmericanBinomPut_Greeks	American binomial method put Delta, Gamma, Theta, Vega, and Rho.
AmericanBinomPut_ImpVol	Implied volatilities for American binomial method puts.
AmericanBSCall	American Black and Scholes Call.
AmericanBSCall_Greeks	American Black and Scholes call Delta, Gamma, Omega, Theta, and Vega.
AmericanBSCall_ImpVol	Implied volatilities for American Black and Scholes calls.
AmericanBSPut	American Black and Scholes Put.
AmericanBSPut_Greeks	American Black and Scholes put Delta, Gamma, Omega, Theta, and Vega.
AmericanBSPut_ImpVol	Implied volatilities for American Black and Scholes puts.
annualTradingDays	Compute the number of trading days in a given year.
elapsedTradingDays	Compute the number of trading days between two dates inclusively.
EuropeanBinomCall	European binomial method call.
EuropeanBinomCall_Greeks	European binomial method call Delta, Gamma, Theta, Vega and Rho.
EuropeanBinomCall_ImpVol	Implied volatilities for European binomial method calls.
EuropeanBinomPut	European binomial method Put.
EuropeanBinomPut_Greeks	European binomial method put Delta, Gamma, Theta, Vega, and Rho.
EuropeanBinomPut_ImpVol	Implied volatilities for European binomial method puts.
EuropeanBSCall	European Black and Scholes Call.

EuropeanBSCall_Greeks	European Black and Scholes call Delta, Gamma, Omega, Theta, and Vega.
EuropeanBSCall_ImpVol	Implied volatilities for European Black and Scholes calls.
EuropeanBSPut	European Black and Scholes Put.
EuropeanBSPut_Greeks	European Black and Scholes put Delta, Gamma, Omega, Theta, and Vega.
EuropeanBSPut_ImpVol	Implied volatilities for European Black and Scholes puts.
getNextTradingDay	Returns the next trading day.
getNextWeekDay	Returns the next day that is not on a weekend.
getPreviousTradingDay	Returns the previous trading day.
getPreviousWeekDay	Returns the previous day that is not on a weekend.

Time and Date Functions

date	Returns the current system date.
datestr	Formats a date as "mm/dd/yy".
datestring	Formats a date as "mm/dd/yyyy".
datestrymd	Formats a date as "yyyymmdd".
dayinyr	Returns the day number of a date.
dayofweek	Returns the day of week.
dtdate	Creates a matrix in DT scalar format.
dtday	Creates a matrix in DT scalar format containing only the year, month and day. Time of day information is zeroed out.
dttime	Creates a matrix in DT scalar format containing only the hour, minute and second. The date information is zeroed out.
dttodtv	Converts DT scalar format to DTV vector format.
dttostr	Converts a matrix containing dates in DT scalar format to a string array.
dttoutc	Converts DT scalar format to UTC scalar format.
dtvnormal	Normalizes a date and time (DTV) vector.
dtvtodt	Converts DT vector format to DT scalar format.
etdays	The difference between two times in days.
ethsec	The difference between two times in 100ths of a second.
etstr	Converts elapsed time to a string.
hsec	Returns the elapsed time since midnight, in 100ths of a second.
strtodt	Converts a string array of dates to a matrix in DT scalar format.
time	Returns the current system time.
timedt	Returns the system date and time in DT scalar format.
timestr	Formats time as "hh:mm:ss".
timeutc	Returns the number of seconds since January 1, 1970 Greenwhich Mean Time.
todaydt	Returns the system date in DT scalar format. The time returned is always midnight (00:00:00), the beginning of the returned day.
utctodt	Converts UTC scalar format to DT scalar format.
utctodtv	Converts UTC scalar format to DTV vector format.

Matrix Manipulation

Creating Vectors and Matrices

editm	A simple matrix editor.
eye	Creates an identity matrix.

let	Creates a matrix from a list of constants.
medit	A full-screen spreadsheet-like matrix editor.
ones	Creates a matrix of ones.
vget	Extracts a matrix or string from a data buffer constructed with **vput**.
vlist	Lists the contents of a data buffer constructed with **vput**.
vnamecv	Returns the names of the elements of a data buffer constructed with **vput** .
vput	Inserts a matrix or string into a data buffer.
vread	Reads a string or matrix from a data buffer constructed with **vput**.
vtypecv	Return the types of the elements of a data buffer constructed with **vput**.
zeros	Creates a matrix of zeros.

Loading and Storing Matrices

loadd	Loads a matrix from a data set.
loadm	Loads a matrix from an ASCII or matrix file.
save	Saves a matrix to a matrix file.
saved	Saves a matrix to a data set.

Size, Ranking, and Range

cols	Returns the number of columns in a matrix.
colsf	Returns the number of columns in an open data set.
counts	Returns the number of elements of a vector falling in specified ranges.
countwts	Returns the weighted count of elements of a vector falling in specified ranges.
cumprodc	Computes the cumulative products of each column of a matrix.
cumsumc	Computes the cumulative sums of each column of a matrix.
indexcat	Returns the indices of elements falling within a specified range.
indcv	Checks one character vector against another and returns the indices of the elements of the first vector in the second vector.
indnv	Checks one numeric vector against another and returns the indices of the elements of the first vector in the second vector.
maxc	Returns the largest element in each column of a matrix.
maxindc	Returns the row number of the largest element in each column of a matrix.
minc	Returns the smallest element in each column of a matrix.
minindc	Returns the row number of the smallest element in each column of a matrix.
prodc	Computes the product of each column of a matrix.
rankindx	Returns the rank index of Nx1 vector. (Rank order of elements in vector.)
rows	Returns the number of rows in a matrix.
rowsf	Returns the number of rows in an open data set.
sumc	Computes the sum of each column of a matrix.

Sparse Matrix Functions

denseSubmat	Returns a dense submatrix of a sparse matrix.
isSparse	Tests whether a matrix is a sparse matrix.
sparseCols	Returns the number of columns in a sparse matrix.
sparseEye	Creates a sparse identity matrix.
sparseFD	Converts a dense matrix to a sparse matrix.
sparseFP	Converts a packed matrix to a sparse matrix.
sparseHConcat	Horizontally concatenates sparse matrices.
sparseNZE	Returns the number of nonzero elements in a sparse matrix.
sparseOnes	Generates a sparse matrix of ones and zeros.

sparseRows	Returns the number of rows in a sparse matrix.
sparseSet	Resets sparse library globals.
sparseSolve	Solves $Ax = B$ for x where A is a sparse matrix.
sparseSubmat	Returns a sparse submatrix of a sparse matrix.
sparseTD	Multiplies a sparse matrix by a dense matrix.
sparseTrTD	Multiplies a sparse matrix transposed by a dense matrix.
sparseVConcat	Vertically concatenates sparse matrices.

Miscellaneous Matrix Manipulation

complex	Creates a complex matrix from two real matrices.
delif	Deletes rows from a matrix using a logical expression.
diag	Extracts the diagonal of a matrix.
diagrv	Puts a column vector into the diagonal of a matrix.
exctsmpl	Creates a random subsample of data set, with replacement.
imag	Returns the imaginary part of a complex matrix.
intrsect	Returns the intersection of two vectors.
lowmat	Returns the main diagonal and lower triangle.
lowmat1	Returns a main diagonal of 1's and the lower triangle.
real	Returns the real part of a complex matrix.
reshape	Reshapes a matrix to new dimensions.
rev	Reverses the order of rows of a matrix.
rotater	Rotates the rows of a matrix, wrapping elements as necessary.
selif	Selects rows from a matrix using a logical expression.
setdif	Returns elements of one vector that are not in another.
shiftr	Shifts the rows of a matrix, filling in holes with a specified value.
submat	Extracts a submatrix from a matrix.
trimr	Trims rows from the top or bottom of a matrix.
union	Returns the union of two vectors.
upmat	Returns the main diagonal and upper triangle.
upmat1	Returns a main diagonal of 1's and the upper triangle.
vec	Stacks columns of a matrix to form a single column.
vech	Reshapes the lower triangular portion of a symmetric matrix into a column vector.
vecr	Stacks rows of a matrix to form a single column.
xpnd	Expands a column vector into a symmetric matrix.

String Handling

chrs	Converts ASCII values to a string.
cvtos	Converts a character vector to a string.
fgets	Reads a line of text from a file.
fgetsat	Reads lines of text from a file into a string array.
fgetst	Reads a line of text from a file.
fopen	Opens a file
fputs, fputst	Writes strings to a file.
ftocv	Converts an NxK matrix to a character matrix.
ftos	Converts a floating point scalar to a string.
ftostrC	Converts a matrix to a string array using a C language format specification.
getf	Loads an ASCII or binary file into a string.
loads	Loads a string file (.fst file).

lower	Converts a string to lowercase.
parse	Parses a string, returning a character vector of tokens.
putf	Writes a string to a disk file.
stocv	Converts a string to a character vector
stof	Converts a string to floating point numbers.
strindx	Finds the starting location of one string in another string.
strlen	Returns the length of a string.
strput	Lays a substring over a string.
strrindx	Finds the starting location of one string in another string, searching from the end to the start of the string.
strsect	Extracts a substring of a string.
strsplit	Splits an Nx1 string vector into an NxK string array of the individual tokens.
strsplitPad	Splits a string vector into a string array of the individual tokens. Pads on the right with null strings.
strtof	Converts a string array to a numeric matrix.
strtofcplx	Converts a string array to a complex numeric matrix.
token	Extracts the leading token from a string.
upper	Changes a string to uppercase.
vals	Converts a string to ASCII values.
varget	Accesses the global variable named by a string.
vargetl	Accesses the local variable named by a string.
varput	Assigns a global variable named by a string.
varputl	Assigns a local variable named by a string.

Data Handling

Data Sets

close	Closes an open data set (.dat file).
closeall	Closes all open data sets.
create	Creates and opens a data set.
datalist	List selected variables from a data set.
eof	Tests for end of file.
fcheckerr	Gets the error status of a file.
fclearerr	Gets the error status of a file, then clears it.
fflush	Flushes a file's output buffer
fseek	Positions the file pointer in a file.
ftell	Gets the position of the file pointer in a file.
getnr	Compute number of rows to read per iteration for a program that reads data from a disk file in a loop.
iscplxf	Returns whether a data set is real or complex.
loadd	Loads a small data set.
nametype	Provides support for programs following the upper/lowercase convention in GAUSS data sets.
open	Opens an existing data set.
readr	Reads rows from an open data set.
saved	Creates small data sets.
seekr	Moves the pointer to specified location in an open data set.
typef	Returns the element size (2, 4, or 8 bytes) of data in open data set.
writer	Writes a matrix to an open data set.

Data Set Variable Names

getname	Returns a column vector of variable names in a data set.
getnamef	Returns a string array of variable names in a data set.
indcv	Returns column numbers of variables within a data set.
indices	Retrieves column numbers and names from a data set.
indices2	Similar to indices, but matches columns with names for dependent and independent variables.
makevars	Decomposes a matrix to create column vectors.
mergevar	Concatenates column vectors to create a larger matrix.
setvars	Creates globals using the names in a data set.
vartype	Returns a column vector of variable types (numeric/character) in a data set.
vartypef	Returns a column vector of variable types (numeric/character) in a data set.

Data Coding

code	Codes the data in a vector by applying a logical set of rules to assign each data value to a category.
dummy	Creates a dummy matrix, expanding vector values to rows with ones in columns corresponding to true categories and zeros elsewhere.
dummybr	Similar to dummy. The highest category is bounded on the right.
dummydn	Similar to dummy. The highest category is unbounded on the right. A specified column of dummies is dropped.
ismiss	Returns a 1 if a matrix has any missing values, 0 otherwise.
miss	Changes specified values in a matrix to the missing value code.
missex	Changes elements in a matrix to missing values using logical expression.
missrv	Changes missing value codes to specified values.
msym	Sets the symbol to be interpreted as the missing value code
packr	Deletes rows with missing values.
recode	Similar to code, but leaves the original data in place if no condition is met.
scalmiss	Tests whether a scalar is the missing value code.
subscat	Simpler version of recode, but uses ascending bins instead of logical conditions.
substute	Similar to recode, but operates on matrices.

Sorting and Merging

intrleav	Produces one large sorted data file from two smaller sorted files having the same keys.
mergeby	Produces one large sorted data file from two smaller sorted files having a single key column in common.
sortc	Quick-sorts rows of matrix based on a numeric key.
sortcc	Quick-sorts rows of matrix based on a character key.
sortd	Sorts a dataset on a key column.
sorthc	Heap-sorts rows of a matrix based on a numeric key.
sorthcc	Heap-sorts rows of a matrix based on a character key.
sortind	Returns a sorted index of a numeric vector.
sortindc	Returns a sorted index of a character vector.
sortmc	Sorts rows of matrix on the basis of multiple columns.
uniqindx	Returns a sorted unique index of a vector.
unique	Removes duplicate elements of a vector.

Program Control

Branching and Looping

break	Jump out the bottom of a **do** or **for** loop
continue	Jump to the top of a **do** or **for** loop
do until/endo	Loop if FALSE.
do while/endo	Loop if TRUE.
for/endfor	Loop with an integer counter.
goto	Unconditional branching
if/endif	Conditional branching.
pop	Retrieve **goto** arguments

Compiling

compile	Compiles and saves a program to a .gcg file.
load, loadf, loadk, loadm, loadp, loads	Load from a disk file.
save	Saves the compiled image of a procedure to disk.
saveall	Saves the contents of the current workspace to a file.
use	Loads previously compiled code

Execution Control

end	Terminates a program and closes all files.
pause	Pauses for the specified time.
run	Runs a program in a text file.
sleep	Sleeps for the specified time.
stop	Stops a program and leave files open.
system	Quits and returns to the OS.

Libraries

declare	Initializes variables at compile time.
dlibrary	Dynamically links and unlinks shared libraries
dllcall	Calls functions in shared libraries
external	External symbol definitions.
lib	Builds or updates a GAUSS library.
library	Sets up the list of active libraries.

Subroutines and Procedures

call	Calls a function and discards return values.
endp	Terminates a procedure definition.
fn	Allows user to create one-line functions.
gosub	Branch to a subroutine.
keyword	Begins the definition of a keyword procedure.
local	Declares variables local to a procedure.
pop	Retrieve **gosub** arguments.
proc	Begins the definition of multi-line procedure.
retp	Returns from a procedure.

return	Return from subroutine.

OS Functions

cdir	Returns the current directory.
ChangeDir	Changes the current directory in program.
chdir	Changes the current directory interactively.
dfree	Returns the free space on disk.
dos	Provides access to the operating system from within **GAUSS**.
envget	Gets an environment string.
exec	Executes an executable program file.
fileinfo	Takes a file specification, returns the names and information of files that match.
files	Takes a file specification, returns the names of files that match.
filesa	Takes a file specification, returns the names of files that match.
getpath	Returns an expanded filename including the drive and path.
shell	Shells to the OS.

Workspace Management

clear	Sets matrices equal to 0.
clearg	Sets global symbols to 0.
coreleft	Returns the amount, in bytes, of free workspace memory.
delete	Deletes specified global symbols.
hasimag	Examines a matrix for nonzero imaginary parts.
iscplx	Returns whether a matrix is real or complex.
maxvec	Returns the maximum allowed vector size.
new	Clears the current workspace.
show	Displays the global symbol table.
sysstate	Gets or sets general system parameters.
type	Returns the type of an argument (matrix or string).
typecv	Returns types of symbols

Error Handling and Debugging

#linesoff	Omits line number and file name records from a program.
#lineson	Includes line number and file name records in a program.
debug	Executes a program under the source level debugger.
disable	Disables the invalid operation interrupt of coprocessor.
enable	Enables the invalid operation interrupt of the coprocessor.
error	Creates a user-defined error code.
errorlog	Sends an error message to the screen and a log file.
fstrerror	Returns the cause of the most recent file I/O error
ndpchk	Examines the status of the coprocessor.
ndpclex	Clears coprocessor exception flags.
ndpcntrl	Sets and gets the coprocessor control word.
scalerr	Tests for a scalar error code.
trace	Traces program execution for debugging.
trap	Controls trapping of program errors.
trapchk	Examines the trap flag.

Console I/O

con	Requests console input, create a matrix.
cons	Requests console input, create a string.
key	Gets the next key from the keyboard buffer. If the buffer is empty, returns a 0.
keyw	Gets the next key from the keyboard buffer. If the buffer is empty, waits for a key.
wait	Waits for a keystroke.
waitc	Flushes buffer, then waits for a keystroke.

Output Functions

Text Output

cls	Clears the window.
color	Sets pixel, text, background colors.
comlog	Controls interactive command logging.
csrcol	Gets the column position of the cursor on the window.
csrlin	Gets the row position of the cursor on the window.
ed	Accesses an alternate editor.
edit	Edits a file with the GAUSS editor.
flush	Flushes a file's output buffer
format	Defines the format of matrix printing.
formatcv	Sets the character data format used by **printfmt**.
formatnv	Sets the numeric data format used by **printfmt**.
header	Prints a header for a report
locate	Positions the cursor on the window.
lpos	Returns the print head position in the printer buffer.
lprint	Prints an expression to the printer.
lprint [[on|off]]	Switches auto printer mode on and off.
lpwidth	Specifies printer width.
lshow	Prints the global symbol table on the printer.
output	Redirects print statements to auxiliary output.
outwidth	Sets the line width of auxiliary output.
plot	Plots elements of two matrices in text mode.
plotsym	Controls the data symbol used by plot.
print	Prints to the window.
print [[on|off]]	Turns auto window print on and off.
printdos	Prints a string for special handling by the OS.
printfm	Prints matrices using a different format for each column.
printfmt	Print character, numeric, or mixed matrix using a default format controlled by the globals **__fmtnv** and **__fmtcv**.
screen [[on|off]]	Directs/suppresses print statements to the window.
screen out	Dumps a snapshot of the window to auxiliary output.
scroll	Scrolls a section of the window.
tab	Positions the cursor on the current line.

Spreadsheet Input/Output

import	Imports numerous spreadsheet formats to a matrix in memory
importf	Imports numerous spreadsheet formats to a GAUSS dataset
export	Exports a GAUSS matrix to a spreadsheet, database or ASCII file.

exportf	Exports a GAUSS dataset to a spreadsheet, database or ASCII file.

Window Graphics

color	Sets color.
graph	Sets pixels.
line	Draws lines.
setvmode	Sets video mode.

Graphics

Graph Types

bar	Generates a bar graph.
box	Graphs data using the box graph percentile method.
contour	Graphs contour data.
draw	Supplies additional graphic elements to graphs.
hist	Computes and graphs a frequency histogram.
histf	Graphs a histogram given a vector of frequency counts.
histp	Graphs a percent frequency histogram of a vector.
loglog	Graphs X,Y using logarithmic X and Y axes.
logx	Graphs X,Y using a logarithmic X axis.
logy	Graphs X,Y using a logarithmic Y axis.
surface	Graphs a 3-D surface.
xy	Graphs X,Y using the Cartesian coordinate system.
xyz	Graphs X, Y, Z using a 3-D Cartesian coordinate system.

Axes Control and Scaling

_paxes	Turns axes on or off.
_pcross	Controls where axes intersect.
_pgrid	Controls major and minor grid lines.
_pticout	Controls the direction of tick marks on axes.
_pxpmax	Controls the precision of numbers on the X axis.
_pxsci	Controls the use of scientific notation on the X axis.
_pypmax	Controls the precision of numbers on the Y axis.
_pysci	Controls the use of scientific notation on the Y axis.
_pzpmax	Controls yhe precision of numbers on the Z axis.
_pzsci	Controls the use of scientific notation on the Z axis.
scale	Scales the X,Y axes for 2-D plots.
scale3d	Scales the X,Y, and Z axes for 3-D plots.
xtics	Scales the X axis and control tick marks.
ytics	Scales the Y axis and control tick marks.
ztics	Scales the Z axis and control tick marks.

Text, Labels, Titles, and Fonts

_paxht	Controls the size of axis labels
_pdate	Dates string contents and control.
_plegctl	Sets the location and size of the plot legend.
_plegstr	Specifies legend text entries.
_pmsgctl	Controls a message's position.

_pmsgstr	Specifies message text.
_pnum	Axes numeric label control and orientation.
_pnumht	Controls the size of axes numeric labels
_ptitlht	Controls the main title size.
asclabel	Defines character labels for tick marks.
fonts	Loads fonts for labels, titles, messages and the legend.
title	Specifies the main title for a graph.
xlabel	X axis label.
ylabel	Y axis label.
zlabel	Z axis label.

Main Curve Lines and Symbols

_pboxctl	Controls the box plotter.
_pboxlim	Outputs a percentile matrix from the box plotter.
_pcolor	Controls the line color for main curves.
_plctrl	Controls the main curve and the frequency of data symbols.
_pltype	Controls line style for main curves.
_plwidth	Controls line thickness for main curves.
_pstype	Controls the symbol type for main curves.
_psymsiz	Controls the symbol size for main curves.
_pzclr	Z level color control for contour and surface.

Extra Lines and Symbols

_parrow	Creates arrows.
_parrow3	Creates arrows for 3-D graphs.
_perrbar	Plots error bars.
_pline	Plots extra lines and circles.
_pline3d	Plots extra lines for 3-D graphs.
_psym	Plots extra symbols.
_psym3d	Plots extra symbols for 3-D graphs.

Graphic Panel, Page, and Plot Control

_pageshf	Shifts the graph for printer output.
_pagesiz	Controls graph size for printer output.
_plotshf	Controls the plot area position.
_plotsiz	Controls the plot area size.
_protate	Rotates the graph 90 degrees.
axmargin	Controls axes margins and plot size.
begwind	Graphic panel initialization procedure.
endwind	End graphic panel manipulation, display graphs.
getwind	Gets the current graphic panel number.
loadwind	Loads a graphic panel configuration from a file.
makewind	Creates a graphic panel with the specified size and position.
margin	Controls graph margins.
nextwind	Sets to the next available graphic panel number.
savewind	Saves the graphic panel configuration to a file.
setwind	Sets to the specified graphic panel number.
window	Creates tiled graphic panels of equal size.

Output Options

_pscreen	Controls graphics output to the window.
_psilent	Controls the final beep.
_ptek	Controls the creation and name of graphics.tkf file.
_pzoom	Specifies zoom parameters.
graphprt	Generates a print and conversion file.
pqgwin	Sets the graphics viewer mode.
setvwrmode	Sets the graphics viewer mode.
tkf2ps	Converts a tkf file to a postscript file
tkf2eps	Converts a tkf file to an encapsulated postscript file

Miscellaneous

_pbox	Draws a border around a graphic panel/window.
_pcrop	Controls the cropping of graphics data outside axes area.
_pframe	Draws a frame around 2-D, 3-D plots.
_pmcolor	Controls the colors for axes, title, x and y labels, date, box, and background.
graphset	Resets all PQG globals to default values.
rerun	Displays the most recently created graph.
view	Sets the 3-D observer position in workbox units.
viewxyz	Sets the 3-D observer position in plot coordinates.
volume	Sets the length, width, and height ratios of the 3-D workbox.

Compiler Control

#define	Defines a case-insensitive text-replacement or flag variable.
#definecs	Defines a case-sensitive text-replacement or flag variable.
#else	Alternate clause for **#if...#else...#endif** code block.
#endif	End of **#if...#else...#endif** code block.
#ifdef	Compiles code block if a variable has been #**define**'d.
#ifdos	Compiles code block if running DOS.
#iflight	Compiles code block if running GAUSS Light.
#ifndef	Compiles code block if a variable has not been #**define**'d.
#ifos2win	Compiles code block if running OS/2 or Windows.
#ifunix	Compiles code block if running UNIX.
#include	Includes code from another file in program.
#linesoff	Compiles a program without line number and file name records.
#lineson	Compiles a program with line number and file name records.
#srcfile	Inserts a source filename record at this point (currently used when doing data loop translation).
#srcline	Inserts source file line number record at this point (currently used when doing dataloop translations.)
#undef	Undefines a text-replacement or flag variable.