

NAG Library Chapter Contents

E04 – Minimizing or Maximizing a Function

E04 Chapter Introduction

Routine Name	Mark of Introduction	Purpose
E04ABA	20	nagf_opt_one_var_func Minimum, function of one variable using function values only
E04ABF	6	nagf_opt_one_var_func_old Minimum, function of one variable using function values only
E04BBA	20	nagf_opt_one_var_deriv Minimum, function of one variable, using first derivative
E04BBF	6	nagf_opt_one_var_deriv_old Minimum, function of one variable, using first derivative
E04CBF	22	nagf_opt_uncon_simplex Unconstrained minimization using simplex algorithm, function of several variables using function values only
E04DGA	20	nagf_opt_uncon_conjgrd_comp Unconstrained minimum, preconditioned conjugate gradient algorithm, function of several variables using first derivatives (comprehensive)
E04DGF	12	nagf_opt_uncon_conjgrd_comp_old Unconstrained minimum, preconditioned conjugate gradient algorithm, function of several variables using first derivatives (comprehensive)
E04DJA	20	nagf_opt_uncon_conjgrd_option_file Supply optional parameter values for E04DGF/E04DGA from external file
E04DJF	12	nagf_opt_uncon_conjgrd_option_file_old Supply optional parameter values for E04DGF/E04DGA from external file
E04DKA	20	nagf_opt_uncon_conjgrd_option_string Supply optional parameter values to E04DGF/E04DGA
E04DKF	12	nagf_opt_uncon_conjgrd_option_string_old Supply optional parameter values to E04DGF/E04DGA
E04FCF	7	nagf_opt_lsq_uncon_mod_func_comp Unconstrained minimum of a sum of squares, combined Gauss–Newton and modified Newton algorithm using function values only (comprehensive)
E04FYF	18	nagf_opt_lsq_uncon_mod_func_easy Unconstrained minimum of a sum of squares, combined Gauss–Newton and modified Newton algorithm using function values only (easy-to-use)
E04GBF	7	nagf_opt_lsq_uncon_quasi_deriv_comp Unconstrained minimum of a sum of squares, combined Gauss–Newton and quasi-Newton algorithm using first derivatives (comprehensive)
E04GDF	7	nagf_opt_lsq_uncon_mod_deriv_comp Unconstrained minimum of a sum of squares, combined Gauss–Newton and modified Newton algorithm using first derivatives (comprehensive)

E04GYF	18	nagf_opt_lsq_uncon_quasi_deriv_easy Unconstrained minimum of a sum of squares, combined Gauss–Newton and quasi-Newton algorithm, using first derivatives (easy-to-use)
E04GZF	18	nagf_opt_lsq_uncon_mod_deriv_easy Unconstrained minimum of a sum of squares, combined Gauss–Newton and modified Newton algorithm using first derivatives (easy-to-use)
E04HCF	6	nagf_opt_check_deriv Check user’s routine for calculating first derivatives of function
E04HDF	6	nagf_opt_check_deriv2 Check user’s routine for calculating second derivatives of function
E04HEF	7	nagf_opt_lsq_uncon_mod_deriv2_comp Unconstrained minimum of a sum of squares, combined Gauss–Newton and modified Newton algorithm, using second derivatives (comprehensive)
E04HYF	18	nagf_opt_lsq_uncon_mod_deriv2_easy Unconstrained minimum of a sum of squares, combined Gauss–Newton and modified Newton algorithm, using second derivatives (easy-to-use)
E04JCF	23	nagf_opt_bounds_bobyqa_func Minimum by quadratic approximation, function of several variables, simple bounds, using function values only
E04JYF	18	nagf_opt_bounds_quasi_func_easy Minimum, function of several variables, quasi-Newton algorithm, simple bounds, using function values only (easy-to-use)
E04KDF	6	nagf_opt_bounds_mod_deriv_comp Minimum, function of several variables, modified Newton algorithm, simple bounds, using first derivatives (comprehensive)
E04KYF	18	nagf_opt_bounds_quasi_deriv_easy Minimum, function of several variables, quasi-Newton algorithm, simple bounds, using first derivatives (easy-to-use)
E04KZF	18	nagf_opt_bounds_mod_deriv_easy Minimum, function of several variables, modified Newton algorithm, simple bounds, using first derivatives (easy-to-use)
E04LBF	6	nagf_opt_bounds_mod_deriv2_comp Minimum, function of several variables, modified Newton algorithm, simple bounds, using first and second derivatives (comprehensive)
E04LYF	18	nagf_opt_bounds_mod_deriv2_easy Minimum, function of several variables, modified Newton algorithm, simple bounds, using first and second derivatives (easy-to-use)
E04MFA	20	nagf_opt_lp_solve LP problem (dense)
E04MFF	16	nagf_opt_lp_solve_old LP problem (dense)
E04MGA	20	nagf_opt_lp_option_file Supply optional parameter values for E04MFF/E04MFA from external file
E04MGF	16	nagf_opt_lp_option_file_old Supply optional parameter values for E04MFF/E04MFA from external file
E04MHA	20	nagf_opt_lp_option_string Supply optional parameter values to E04MFF/E04MFA
E04MHF	16	nagf_opt_lp_option_string_old Supply optional parameter values to E04MFF/E04MFA

E04MXF	24	nagf_opt_miqp_mps_read Reads MPS data file defining LP, QP, MILP or MIQP problem
E04MZF	18	nagf_opt_qpconvex1_sparse_mps Converts MPSX data file defining LP or QP problem to format required by E04NKF/E04NKA Note: this routine is scheduled for withdrawal at Mark 26, see Advice on Replacement Calls for Withdrawn/Superseded Routines for further information.
E04NCA	20	nagf_opt_lsq_lincon_solve Convex QP problem or linearly-constrained linear least squares problem (dense)
E04NCF	12	nagf_opt_lsq_lincon_solve_old Convex QP problem or linearly-constrained linear least squares problem (dense)
E04NDA	20	nagf_opt_lsq_lincon_option_file Supply optional parameter values for E04NCF/E04NCA from external file
E04NDF	12	nagf_opt_lsq_lincon_option_file_old Supply optional parameter values for E04NCF/E04NCA from external file
E04NEA	20	nagf_opt_lsq_lincon_option_string Supply optional parameter values to E04NCF/E04NCA
E04NEF	12	nagf_opt_lsq_lincon_option_string_old Supply optional parameter values to E04NCF/E04NCA
E04NFA	20	nagf_opt_qp_dense_solve QP problem (dense)
E04NFF	16	nagf_opt_qp_dense_solve_old QP problem (dense)
E04NGA	20	nagf_opt_qp_dense_option_file Supply optional parameter values for E04NFF/E04NFA from external file
E04NGF	16	nagf_opt_qp_dense_option_file_old Supply optional parameter values for E04NFF/E04NFA from external file
E04NHA	20	nagf_opt_qp_dense_option_string Supply optional parameter values to E04NFF/E04NFA
E04NHF	16	nagf_opt_qp_dense_option_string_old Supply optional parameter values to E04NFF/E04NFA
E04NKA	20	nagf_opt_qpconvex1_sparse_solve LP or QP problem (sparse)
E04NKF	18	nagf_opt_qpconvex1_sparse_solve_old LP or QP problem (sparse)
E04NLA	20	nagf_opt_qpconvex1_sparse_option_file Supply optional parameter values for E04NKF/E04NKA from external file
E04NLF	18	nagf_opt_qpconvex1_sparse_option_file_old Supply optional parameter values for E04NKF/E04NKA from external file
E04NMA	20	nagf_opt_qpconvex1_sparse_option_string Supply optional parameter values to E04NKF/E04NKA
E04NMF	18	nagf_opt_qpconvex1_sparse_option_string_old Supply optional parameter values to E04NKF/E04NKA
E04NPF	21	nagf_opt_qpconvex2_sparse_init Initialization routine for E04NQF

E04NQF	21	nagf_opt_qpconvex2_sparse_solve LP or QP problem (suitable for sparse problems)
E04NRF	21	nagf_opt_qpconvex2_sparse_option_file Supply optional parameter values for E04NQF from external file
E04NSF	21	nagf_opt_qpconvex2_sparse_option_string Set a single option for E04NQF from a character string
E04NTF	21	nagf_opt_qpconvex2_sparse_option_integer_set Set a single option for E04NQF from an integer argument
E04NUF	21	nagf_opt_qpconvex2_sparse_option_double_set Set a single option for E04NQF from a real argument
E04NXF	21	nagf_opt_qpconvex2_sparse_option_integer_get Get the setting of an integer valued option of E04NQF
E04NYF	21	nagf_opt_qpconvex2_sparse_option_double_get Get the setting of a real valued option of E04NQF
E04PCF	24	nagf_bnd_lin_lsq Computes the least squares solution to a set of linear equations subject to fixed upper and lower bounds on the variables. An option is provided to return a minimal length solution if a solution is not unique
E04UCA	20	nagf_opt_nlp1_solve Minimum, function of several variables, sequential QP method, nonlinear constraints, using function values and optionally first derivatives (comprehensive)
E04UCF	12	nagf_opt_nlp1_solve_old Minimum, function of several variables, sequential QP method, nonlinear constraints, using function values and optionally first derivatives (comprehensive)
E04UDA	20	nagf_opt_nlp1_option_file Supply optional parameter values for E04UCF/E04UCA or E04UFF/E04UFA from external file
E04UDF	12	nagf_opt_nlp1_option_file_old Supply optional parameter values for E04UCF/E04UCA or E04UFF/E04UFA from external file
E04UEA	20	nagf_opt_nlp1_option_string Supply optional parameter values to E04UCF/E04UCA or E04UFF/E04UFA
E04UEF	12	nagf_opt_nlp1_option_string_old Supply optional parameter values to E04UCF/E04UCA or E04UFF/E04UFA
E04UFA	20	nagf_opt_nlp1_rcomm Minimum, function of several variables, sequential QP method, nonlinear constraints, using function values and optionally first derivatives (reverse communication, comprehensive)
E04UFF	18	nagf_opt_nlp1_rcomm_old Minimum, function of several variables, sequential QP method, nonlinear constraints, using function values and optionally first derivatives (reverse communication, comprehensive)
E04UGA	20	nagf_opt_nlp1_sparse_solve NLP problem (sparse)
E04UGF	19	nagf_opt_nlp1_sparse_solve_old NLP problem (sparse)
E04UHA	20	nagf_opt_nlp1_sparse_option_file Supply optional parameter values for E04UGF/E04UGA from external file

E04UHF	19	nagf_opt_nlp1_sparse_option_file_old Supply optional parameter values for E04UGF/E04UGA from external file
E04UJA	20	nagf_opt_nlp1_sparse_option_string Supply optional parameter values to E04UGF/E04UGA
E04UJF	19	nagf_opt_nlp1_sparse_option_string_old Supply optional parameter values to E04UGF/E04UGA
E04UQA	20	nagf_opt_lsq_gencon_deriv_option_file Supply optional parameter values for E04USF/E04USA from external file
E04UQF	14	nagf_opt_lsq_gencon_deriv_option_file_old Supply optional parameter values for E04USF/E04USA from external file
E04URA	20	nagf_opt_lsq_gencon_deriv_option_string Supply optional parameter values to E04USF/E04USA
E04URF	14	nagf_opt_lsq_gencon_deriv_option_string_old Supply optional parameter values to E04USF/E04USA
E04USA	20	nagf_opt_lsq_gencon_deriv Minimum of a sum of squares, nonlinear constraints, sequential QP method, using function values and optionally first derivatives (comprehensive)
E04USF	14	nagf_opt_lsq_gencon_deriv_old Minimum of a sum of squares, nonlinear constraints, sequential QP method, using function values and optionally first derivatives (comprehensive)
E04VGF	21	nagf_opt_nlp2_sparse_init Initialization routine for E04VHF
E04VHF	21	nagf_opt_nlp2_sparse_solve General sparse nonlinear optimizer
E04VJF	21	nagf_opt_nlp2_sparse_jacobian Determine the pattern of nonzeros in the Jacobian matrix for E04VHF
E04VKF	21	nagf_opt_nlp2_sparse_option_file Supply optional parameter values for E04VHF from external file
E04VLF	21	nagf_opt_nlp2_sparse_option_string Set a single option for E04VHF from a character string
E04VMF	21	nagf_opt_nlp2_sparse_option_integer_set Set a single option for E04VHF from an integer argument
E04VNF	21	nagf_opt_nlp2_sparse_option_double_set Set a single option for E04VHF from a real argument
E04VRF	21	nagf_opt_nlp2_sparse_option_integer_get Get the setting of an integer valued option of E04VHF
E04VSF	21	nagf_opt_nlp2_sparse_option_double_get Get the setting of a real valued option of E04VHF
E04WBF	20	nagf_opt_init Initialization routine for E04DGA, E04MFA, E04NCA, E04NFA, E04UFA, E04UGA and E04USA
E04WCF	21	nagf_opt_nlp2_init Initialization routine for E04WDF
E04WDF	21	nagf_opt_nlp2_solve Solves the nonlinear programming (NP) problem
E04WEF	21	nagf_opt_nlp2_option_file Supply optional parameter values for E04WDF from external file

E04WFF	21	nagf_opt_nlp2_option_string Set a single option for E04WDF from a character string
E04WGF	21	nagf_opt_nlp2_option_integer_set Set a single option for E04WDF from an integer argument
E04WHF	21	nagf_opt_nlp2_option_double_set Set a single option for E04WDF from a real argument
E04WKF	21	nagf_opt_nlp2_option_integer_get Get the setting of an integer valued option of E04WDF
E04WLF	21	nagf_opt_nlp2_option_double_get Get the setting of a real valued option of E04WDF
E04XAA	20	nagf_opt_estimate_deriv Estimate (using numerical differentiation) gradient and/or Hessian of a function
E04XAF	12	nagf_opt_estimate_deriv_old Estimate (using numerical differentiation) gradient and/or Hessian of a function
E04YAF	7	nagf_opt_lsq_check_deriv Check user's routine for calculating Jacobian of first derivatives
E04YBF	7	nagf_opt_lsq_check_hessian Check user's routine for calculating Hessian of a sum of squares
E04YCF	11	nagf_opt_lsq_uncon_covariance Covariance matrix for nonlinear least squares problem (unconstrained)