With LINDO API, you can easily create your own optimization applications. It allows you to plug the powerful linear, integer, nonlinear and global solver right into customized applications that you have written.

- **Fast, Easy Application Development** - The LINDO API makes it easy for you to seamlessly integrate optimization into your own application. It comes with clear, comprehensive documentation and examples to help you get running quickly.

- **Powerful Solvers** - LINDO API provides you with an arsenal of powerful solvers to tackle a wide variety of problems. It allows experienced users to control the algorithms and solver parameters to customize the solution strategy to individual applications to achieve optimal control and speed.

  - **Linear Solvers** - The LINDO API is available with three state of the art solvers for linear models.
    - **Primal and Dual Simplex Solvers** - Included in the base version, these solvers incorporate numerous enhancements for maximum speed and robustness.
    - **Barrier Solver** - This optional solver provides an alternative means of solving linear models. Depending upon the size and structure of a particular model, the Barrier solver may be significantly faster than the Simplex solvers on large linear models.

  - **Integer Solver** - LINDO API includes an integer solver that works in conjunction with the linear, nonlinear and quadratic solvers. For linear models, you have the ability to tailor the solution strategy and apply different classes of cuts to ensure maximum speed on particular problem structures.

  - **Nonlinear Solvers** - LINDO API is the first full-featured callable solver to offer general nonlinear capabilities. LINDO API includes a number of ways to find locally or globally optimal solutions to nonlinear models.
    - **General Nonlinear Solver** - For nonlinear programming models, the primary underlying technique used by LINDO API's optional Nonlinear Solver is based upon a Generalized Reduced Gradient (GRG) algorithm. The Nonlinear Solver also incorporates Successive Linear Programming (SLP) and takes advantage of sparsity for improved speed and more efficient memory usage.
    - **Global Solver** - Unlike traditional nonlinear solvers that can get stuck at suboptimal, local solutions, the global solver finds the proven global solutions to non-convex nonlinear programs or mixed-integer nonlinear programs.
    - **Multistart Capability** - This feature can be a powerful tool for finding good solutions more quickly. It intelligently generates and investigates different starting points in the solution space.
    - **Quadratic Solver** - The QP Solver can automatically detect and solve models in which the objective function and/or some constraints include quadratic terms. By taking advantage of the quadratic structure, these models can be solved much more quickly. The Quadratic solver can even handle quadratic models with binary and general integer restrictions.
    - **Conic Solver** - The Conic option LINDO API includes a Conic solver to efficiently solve Second Order Cone Problems (SOCP). By expressing certain nonlinear models as SOCPs, the Conic solver can be
used to solve the model substantially faster than the general nonlinear solver.

→ **STOCHASTIC PROGRAMMING CAPABILITIES**
LINDO API allows modeling and optimization for models with uncertain elements via multistage stochastic linear, nonlinear and integer stochastic programming (SP).

♦ **COMPREHENSIVE SET OF ROUTINES** - LINDO API provides the flexibility and functionality that you will need. It includes dozens of routines to formulate, solve, query, and modify your problems.

♦ **EXTENSIVE DOCUMENTATION AND HELP** - LINDO API provides all of the tools you will need to get up and running quickly. You get the LINDO API User Manual that includes detailed function definitions for all routines. Also included in the manual is a discussion to assist you in writing your own applications.

♦ **ANALYZE INFEASIBLE AND UNBOUNDED MODELS** - LINDO API includes tools that allow you to pinpoint what has caused a model to be infeasible or unbounded. The tools isolate a portion of the original model as the source of the problem.

♦ **CREATE WEB AND INTRANET APPLICATIONS** - The LINDO API is thread safe to allow you to create web and network applications that handle multiple user sessions concurrently.

♦ **LINEARIZATION** - Linearization can automatically convert many non-smooth functions and operators (e.g., if, max, and absolute value) to a series of linear, mathematically equivalent expressions. Many non-smooth models may be entirely linearized. This allows the linear solver to quickly find a global solution to what would otherwise been an intractable problem.

♦ **.NET INTERFACE** - LINDO API includes C# and VB.NET interfaces that allow LINDO API to be used in .NET’s distributed computing environment (including Windows Forms, ADO.NET, and ASP.NET).

### MOST RECENT ENHANCEMENTS

♦ **STOCHASTIC SOLVER IMPROVEMENTS INCLUDE**
→ Extended API functionality to support Chance-Constrained Programs (CCP).
→ Improved methods to induce correlations among stochastic parameters.

♦ **LP SOLVER IMPROVEMENTS INCLUDE**
→ Sprint option to efficiently solve “skinny” LP’s, having millions of variables.

♦ **MIP SOLVER IMPROVEMENTS INCLUDE**
→ Significant improvements in heuristics for quickly finding good integer solutions.
→ Improved identification of special structures, as in multi-period models, and exploit to achieve significant reductions in solve times.

♦ **GLOBAL SOLVER IMPROVEMENTS INCLUDE**
→ Improved heuristics for finding a good feasible solution quickly.
→ User can identify a constraint as being convex, if the global solver might not otherwise be able to identify it as convex. This can speed up proof of global optimality.
→ Improved ability to identify constraints that can reformulated as second order cone (SOC) constraints and thus be solved by fast SOC solver.

♦ **OTHER SOLVERS, MATH LIBRARY AND UTILITIES**
→ More than two dozen new math functions to support various PDF, CDF, and Inverse-CDF of probability distributions.
→ New solver based on Benders decomposition to solve large-scale LPs with relatively small number of linking columns. MILPs whose integer variables appear only in linking columns can also be tackled with this solver.
→ Callable routine to identify (almost) lower triangular matrix structure.