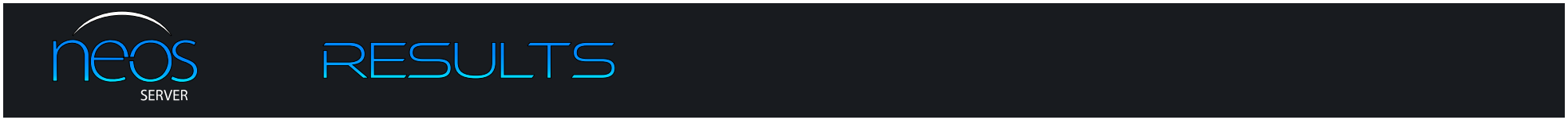


```
************************************************************

   NEOS Server Version 6.0
   Job#     : 12737852
   Password : KoAYsZIX
   User     :
   Solver   : go:BARON:GAMS
   Start    : 2023-02-08 15:42:04
   End      : 2023-02-08 15:42:07
   Host     : prod-sub-1.neos-server.org

   Disclaimer:

   This information is provided without any express or
   implied warranty. In particular, there is no warranty
   of any kind concerning the fitness of this
   information for any particular purpose.

   Announcements:
************************************************************
Executed on prod-exec-6.neos-server.org
GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/08/23 15:42:06 Page 1
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
C o m p i l a t i o n



COMPILATION TIME     =        0.000 SECONDS      2 MB  41.4.0 caab8bc0 LEX-LEG
GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/08/23 15:42:06 Page 2
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
Range Statistics    SOLVE First_Illustrative_Example_Section_3_1 Using NLP From line 297


RANGE STATISTICS (ABSOLUTE NON-ZERO FINITE VALUES)

RHS       [min, max] : [ 2.000E-02, 1.000E+00] - Zero values observed as well
Bound     [min, max] : [        NA,        NA] - Zero values observed as well
Matrix    [min, max] : [ 1.000E+00, 2.000E+00] - Zero values observed as well

GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/08/23 15:42:06 Page 3
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
Model Statistics    SOLVE First_Illustrative_Example_Section_3_1 Using NLP From line 297
```

This is the Output File when the program in file <First_Example_Synthetic_Data_Model_C1.txt> was executed.

Comment written by Dr. E. Triantaphyllou, February 8, 2023.

```
MODEL STATISTICS

BLOCKS OF EQUATIONS          54     SINGLE EQUATIONS           54
BLOCKS OF VARIABLES          60     SINGLE VARIABLES           60
NON ZERO ELEMENTS           207     NON LINEAR N-Z             96
CODE LENGTH                 318     CONSTANT POOL              16


GENERATION TIME      =        0.002 SECONDS      3 MB  41.4.0 caab8bc0 LEX-LEG
GAMS 41.4.0  caab8bc0 Dec 14, 2022          LEX-LEG x86 64bit/Linux - 02/08/23 15:42:06 Page 4
G e n e r a l   A l g e b r a i c   M o d e l i n g   S y s t e m
Solution Report     SOLVE First_Illustrative_Example_Section_3_1 Using NLP From line 297


               S O L V E      S U M M A R Y

     MODEL   First_Illustrative_Example_Section_3_1   OBJECTIVE  Z
     TYPE    NLP                                      DIRECTION  MINIMIZE
     SOLVER  BARON                                    FROM LINE  297

**** SOLVER STATUS     1 Normal Completion
**** MODEL STATUS      2 Locally Optimal
**** OBJECTIVE VALUE                0.2215

 RESOURCE USAGE, LIMIT          1.660 10000000000.000
 ITERATION COUNT, LIMIT         0    2147483647
 EVALUATION ERRORS              0             0

GAMS/BARON       41.4.0 caab8bc0 Dec 14, 2022          LEG x86 64bit/Linux

BARON is a product of The Optimization Firm, LLC. http://www.minlp.com/
Parts of the BARON software were created at the
University of Illinois at Urbana-Champaign.


================================================================================
 BARON version 22.9.30. Built: LNX-64 Fri Sep 30 09:06:37 EDT 2022

 BARON is a product of The Optimization Firm.
 For information on BARON, see https://minlp.com/about-baron

 If you use this software, please cite publications from
 https://minlp.com/baron-publications, such as:

 Khajavirad, A. and N. V. Sahinidis,
 A hybrid LP/NLP paradigm for global optimization relaxations,
 Mathematical Programming Computation, 10, 383-421, 2018.
```

```
================================================================================
 This BARON run may utilize the following subsolver(s)
 For LP/MIP/QP: CLP/CBC, ILOG CPLEX
 For NLP: MINOS, SNOPT, External NLP, IPOPT, FILTERSQP

Solution      = 0.221450642475177  found at node 13
Best possible = 0.221428499625
Absolute gap  = 2.21428501773202E-5  optca = 1E-9
Relative gap  = 9.99900019698621E-5  optcr = 0.0001


                       LOWER     LEVEL     UPPER    MARGINAL

---- EQU Equation2      0.020     0.020     0.020    22.208
---- EQU Constrain~       .    -6.561E-8     +INF      0.762
---- EQU Constrain~       .    8.179E-12     +INF      0.910
---- EQU Constrain~       .    -2.540E-6     +INF      1.083
---- EQU Constrain~       .    -4.085E-6     +INF      0.736
---- EQU Constrain~       .    -2.023E-6     +INF      1.603
---- EQU Constrain~       .    2.0225E-6     +INF      1.109
---- EQU Constrain~       .    2.3406E-6     +INF      0.789
---- EQU Constrain~       .    -2.341E-6     +INF      0.962
---- EQU Constrain~       .    -7.656E-6     +INF      0.520
---- EQU Constrain~       .    8.329E-12     +INF      0.736
---- EQU Constrain~       .    -2.469E-6     +INF      1.603
---- EQU Constrain~       .    -2.464E-6     +INF      1.109
---- EQU Constrain~       .    -5.691E-6     +INF      1.560
---- EQU Constrain~       .    -2.464E-6     +INF      1.655
---- EQU Constrain~       .    -2.24E-12     +INF      1.135
---- EQU Constrain~       .    -2.482E-6     +INF      0.762
---- EQU Constrain~       .    7.513E-12     +INF      0.910
---- EQU Constrain~       .    -9.93E-12     +INF      1.083
---- EQU Equation1      1.000     1.000     1.000    -0.444
---- EQU EQ_t1_1          .    -5.647E-7       .       1.000
---- EQU EQ_t1_2          .    -5.651E-7       .       1.000
---- EQU EQ_t1_3          .    -6.654E-7       .       1.000
---- EQU EQ_t1_4          .    -5.649E-7       .       1.000
---- EQU EQ_t2_1          .    -8.835E-7       .       1.000
---- EQU EQ_t2_2          .    -8.841E-7       .       1.000
---- EQU EQ_t2_3          .    -1.041E-6       .       1.000
---- EQU EQ_t2_4          .    -8.844E-7       .       1.000
---- EQU EQ_t3_1          .    -6.905E-7       .       1.000
---- EQU EQ_t3_2          .    -6.905E-7       .       1.000
---- EQU EQ_t3_3          .    -8.133E-7       .       1.000
---- EQU EQ_t3_4          .    -6.902E-7       .       1.000
---- EQU EQ_t4_1          .    -1.377E-6       .       1.000
---- EQU EQ_t4_2          .    -1.378E-6       .       1.000
---- EQU EQ_t4_3          .    -1.622E-6       .       1.000
---- EQU EQ_t4_4          .    -1.378E-6       .       1.000
```

```
---- EQU EQ_t5_1          .     -5.421E-7      .        1.000
---- EQU EQ_t5_2          .     -5.421E-7      .        1.000
---- EQU EQ_t5_3          .     -6.385E-7      .        1.000
---- EQU EQ_t5_4          .     -5.419E-7      .        1.000
---- EQU EQ_t6_1          .     -1.227E-6      .        1.000
---- EQU EQ_t6_2          .     -1.227E-6      .        1.000
---- EQU EQ_t6_3          .     -1.445E-6      .        1.000
---- EQU EQ_t6_4          .     -1.227E-6      .        1.000
---- EQU EQ_tt1           .          .         .    -2.41E-10
---- EQU EQ_tt2           .          .         .    -1.32E-10
---- EQU EQ_tt3           .          .         .    -4.72E-10
---- EQU EQ_tt4           .          .         .    -1.32E-10
---- EQU EQ_tt5           .          .         .    -6.92E-11
---- EQU EQ_tt6           .          .         .    -2.41E-10
---- EQU Objective~       .          .         .        1.000
---- EQU eq1            -INF   -8.02E-12       .       -1.194
---- EQU eq2            -INF   2.407E-11       .       -1.194
---- EQU eq3            -INF   -8.02E-12       .       -0.791

                       LOWER      LEVEL      UPPER     MARGINAL

---- VAR Z              -INF       0.221      +INF         .
---- VAR a1               .        0.255      +INF    -2.90E-12
---- VAR a2               .        0.255      +INF    1.525E-12
---- VAR a3               .        0.235      +INF    1.273E-12
---- VAR a4               .        0.255      +INF         .
---- VAR X1_1             .        1.097      +INF    -1.37E-12
---- VAR X1_2             .        1.018      +INF    -8.29E-11
---- VAR X1_3             .        1.020      +INF    -7.52E-11
---- VAR X1_4             .        0.861      +INF         .
---- VAR X2_1             .        1.094      +INF         .
---- VAR X2_2             .        0.859      +INF         .
---- VAR X2_3             .        1.102      +INF         .
---- VAR X2_4             .        0.937      +INF         .
---- VAR X3_1             .        1.100      +INF         .
---- VAR X3_2             .        0.944      +INF         .
---- VAR X3_3             .        0.939      +INF         .
---- VAR X3_4             .        1.022      +INF    -2.19E-12
---- VAR X4_1             .        0.858      +INF         .
---- VAR X4_2             .        1.093      +INF         .
---- VAR X4_3             .        1.101      +INF         .
---- VAR X4_4             .        0.937      +INF         .
---- VAR X5_1             .        0.856      +INF    1.298E-12
---- VAR X5_2             .        0.934      +INF         .
---- VAR X5_3             .        1.184      +INF    1.542E-12
---- VAR X5_4             .        1.013      +INF    -1.76E-10
---- VAR X6_1             .        0.862      +INF         .
---- VAR X6_2             .        1.019      +INF    -8.71E-11
---- VAR X6_3             .        1.020      +INF    -7.88E-11
```

```
---- VAR X6_4            .        1.097     +INF       .
---- VAR t1_1            .        0.009     +INF  9.669E-10
---- VAR t1_2            .    3.3316E-4     +INF  3.0924E-8
---- VAR t1_3            .    3.9228E-4     +INF  2.6200E-8
---- VAR t1_4            .        0.019     +INF  4.225E-10
---- VAR t2_1            .        0.009     +INF  1.0352E-9
---- VAR t2_2            .        0.020     +INF  4.003E-10
---- VAR t2_3            .        0.010     +INF  8.641E-10
---- VAR t2_4            .        0.004     +INF  2.4218E-9
---- VAR t3_1            .        0.010     +INF  8.906E-10
---- VAR t3_2            .        0.003     +INF  3.0497E-9
---- VAR t3_3            .        0.004     +INF  2.5770E-9
---- VAR t3_4            .    4.8337E-4     +INF  2.0452E-8
---- VAR t4_1            .        0.020     +INF  4.004E-10
---- VAR t4_2            .        0.009     +INF  1.0353E-9
---- VAR t4_3            .        0.010     +INF  8.640E-10
---- VAR t4_4            .        0.004     +INF  2.4219E-9
---- VAR t5_1            .        0.021     +INF  3.758E-10
---- VAR t5_2            .        0.004     +INF  2.1571E-9
---- VAR t5_3            .        0.034     +INF  1.988E-10
---- VAR t5_4            .    1.5914E-4     +INF  7.6295E-8
---- VAR t6_1            .        0.019     +INF  4.224E-10
---- VAR t6_2            .    3.5347E-4     +INF  3.0915E-8
---- VAR t6_3            .    4.1619E-4     +INF  2.6200E-8
---- VAR t6_4            .        0.009     +INF  9.676E-10
---- VAR ee           -INF        0.020     +INF       .
---- VAR tt1             .        0.029     +INF  2.414E-10
---- VAR tt2             .        0.043     +INF  1.318E-10
---- VAR tt3             .        0.017     +INF  4.717E-10
---- VAR tt4             .        0.043     +INF  1.319E-10
---- VAR tt5             .        0.059     +INF  6.920E-11
---- VAR tt6             .        0.029     +INF  2.414E-10


**** REPORT SUMMARY :        0     NONOPT
                             0 INFEASIBLE
                             0  UNBOUNDED
                             0     ERRORS


EXECUTION TIME       =        1.689 SECONDS      3 MB  41.4.0 caab8bc0 LEX-LEG


USER: NEOS Server License prod-exec-6.neos-server.orgS221207/0001AB-GEN
      mac@d0:94:66:89:89:0f                                    DCE1890
      License for teaching and research at degree granting institutions


**** FILE SUMMARY
```

```
Input      /var/lib/condor/execute/dir_155274/gamsexec/MODEL.gms
Output     /var/lib/condor/execute/dir_155274/gamsexec/solve.lst
```