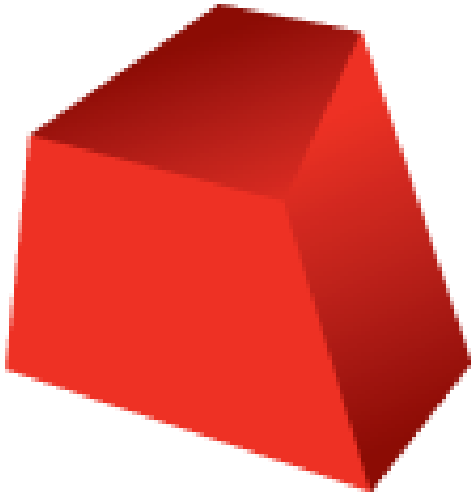


GUROBI

OPTIMIZATION

Gurobi Optimizer – Get the Software

Gurobi Optimizer

Gurobi Optimizer is the Gurobi optimization libraries. In addition to the software, the corresponding README file contains installation instructions. Here is the list of bug fixes for each release.

Current version		64-bit Windows	64-bit Linux	64-bit macOS	64-bit AIX
9.1.0	README	Gurobi-9.1.0-win64.msi	gurobi9.1.0_linux64.tar.gz	gurobi9.1.0_mac64.pkg	gurobi9.1.0_power64.tar.gz
md5 Checksum		69488cc43d46b7398e90f5c334ae04da	628c4e2c6fc34193f9dd5852d34b3e1b	5a1e5dd8393e45f714780368d2be92ab	82414392941b7d58b3b4255b9a6995fb
Old versions					
9.0.3	README	Gurobi-9.0.3-win64.msi	gurobi9.0.3_linux64.tar.gz	gurobi9.0.3_mac64.pkg	gurobi9.0.3_power64.tar.gz
md5 Checksum		5394eff3d8f5d8c16190f9ea5bc70020	832040cce622ba7f267e26645fcd200d	758713ea51b0981928f85d9bd81e6b27	948768b299de3d6c69653c7c0a0ed3a5
8.1.1	README	Gurobi-8.1.1-win64.msi	gurobi8.1.1_linux64.tar.gz	gurobi8.1.1_mac64.pkg	gurobi8.1.1_power64.tar.gz
md5 Checksum		17dfc21f0ed64daaa4bdf7634eab705b	05cbb96072e393bd4ebb1d8b9526ce01	d05a73c0df6622851b4371dc1d292579	3d1a756695d52065eeefc15516d9aac6
8.0.1	README	Gurobi-8.0.1-win64.msi	gurobi8.0.1_linux64.tar.gz	gurobi8.0.1_mac64.pkg	gurobi8.0.1_power64.tar.gz
md5 Checksum		d9363f13daa63b79c0cdaa37ad92e8b6	cfc595ddf9482734bdc0268749093cc4	a02d04ef884e64e7091ef7a7439cfe68	877f94a02e602346ee767b9894df4030

License Details

Information and installation instructions

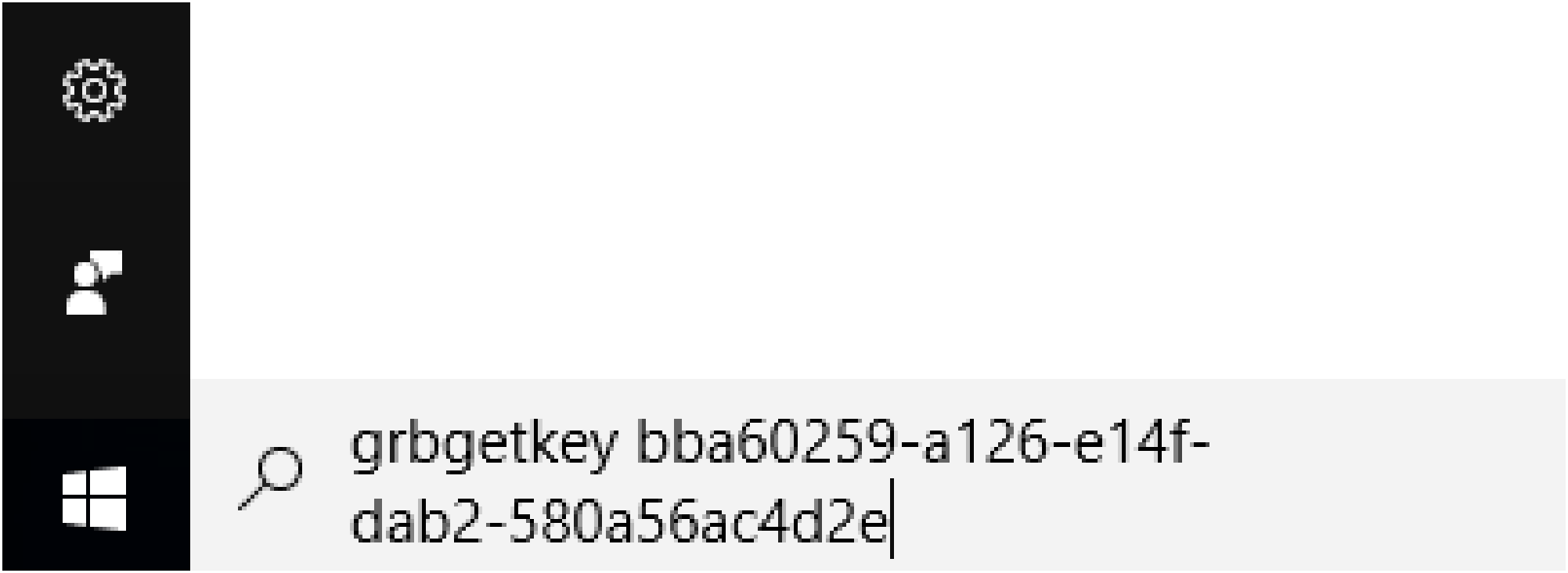
License ID	516013
Date issued	2020-10-28T22:25:41
Purpose	Trial
License Type	TRIAL
Key Type	TRIAL
Version	9
Expiration Date	2021-04-26
Distributed Limit	0
Host Name	
Host ID	

Installation

To install this license on a computer where Gurobi Optimizer is installed, copy and paste the following command to the Start/Run menu (Windows only) or a command/terminal prompt (any system):

```
grbgetkey 83af988a-196c-11eb-865d-0a7c4f30bdbe
```

The `grbgetkey` command requires an active internet connection. If your computer has no internet access, or you get no response or an error message such as "Unable to contact key server", Please click here for additional instructions.


grbgetkey bba60259-a126-e14f-
dab2-580a56ac4d2e

$c' x$

$-c'x$

$x + 2y + 3z \leq 4$

x

y

z

Anaconda Installers

Windows

Python 3.8

64-Bit Graphical Installer (466 MB)

32-Bit Graphical Installer (397 MB)

MacOS

Python 3.8

64-Bit Graphical Installer (462 MB)

64-Bit Command Line Installer (454 MB)

Linux

Python 3.8

64-Bit (x86) Installer (550 MB)

64-Bit (Power8 and Power9) Installer (290 MB)

Supercharge your data science efforts with Anaconda.

Get Started

jupyter iPython Notebook Example (autosaved)

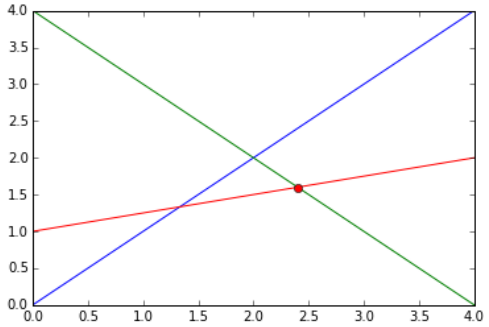
File Edit View Insert Cell Kernel Help Python 2

Code Cell Toolbar: None

In [45]:
```
from gurobipy import *
m = Model()
v0 = m.addVar()
v1 = m.addVar()
m.update()
m.addConstr(v0 - v1 <= 4) # Constraint 1
m.addConstr(v0 + v1 <= 4) # Constraint 2
m.addConstr(-0.25*v0 + v1 <= 1) # Constraint 3
m.setObjective(v1, GRB.MAXIMIZE) # Objective: maximize v1
m.params.outputflag = 0
m.optimize()
```

```
Plot the optimal solution...
```

In [46]:
```
import matplotlib.pyplot as pyplot
pyplot.plot([0,4], [0,4]) # Constraint 1
pyplot.plot([4,0], [0,4]) # Constraint 2
pyplot.plot([0,4], [1,2]) # Constraint 3
pyplot.plot([v0.x], [v1.x], 'ro') # Plot the optimal vertex
pyplot.show()
```



In [ ]:

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

/home/spyder

/opt/gurobi910/linux64/examples/python/untitled1.py

```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Mon Nov  2 13:07:00 2020

@author: gurobi
"""
```

Console 1/A

```
Python 3.8.6 -- IPython 7.19.0

In [1]: import gurobipy as gp

In [2]: model = gp.read('/opt/gurobi910/linux64/examples/data/p0033')
Using license file /home/heinz/gurobi.lic
Read MPS format model from file /opt/gurobi910/linux64/examples/data/p0033.mps
Reading time = 0.00 seconds
P0033: 16 rows, 33 columns, 98 nonzeros

In [3]: model.optimize()
Gurobi Optimizer version 9.1.0 build v9.1.0rc0 (linux64)
Thread count: 4 physical cores, 4 logical processors, using up to 4 threads
Optimize a model with 16 rows, 33 columns and 98 nonzeros
Model fingerprint: 0xc84dd1e1
Variable types: 0 continuous, 33 integer (0 binary)
Coefficient statistics:
  Matrix range     [1e+00, 4e+02]
  Objective range  [5e+01, 5e+02]
  Bounds range     [1e+00, 1e+00]
  RHS range        [1e+00, 3e+03]
Found heuristic solution: objective 3828.0000000
Presolve removed 5 rows and 14 columns
Presolve time: 0.00s
Presolved: 11 rows, 19 columns, 71 nonzeros
Found heuristic solution: objective 3089.0000000
Variable types: 0 continuous, 19 integer (16 binary)

Root relaxation: objective 2.839492e+03, 10 iterations, 0.00 seconds

    Nodes    |    Current Node    |     Objective Bounds      |     Work
 Expl Unexpl |  Obj  Depth IntInf | Incumbent    BestBd   Gap | It/Node Time

     0     0 2839.49184    0    3 3089.00000 2839.49184  8.08%     -    0s
     0     0 2941.40000    0    1 3089.00000 2941.40000  4.78%     -    0s
     0     0 2952.00000    0    1 3089.00000 2952.00000  4.44%     -    0s
     0     0 3045.27500    0    5 3089.00000 3045.27500  1.42%     -    0s
     0     0 3089.00000    0    7 3089.00000 3089.00000  0.00%     -    0s

Cutting planes:
  Gomory: 3
  MIR: 1

Explored 1 nodes (24 simplex iterations) in 0.05 seconds
Thread count was 4 (of 4 available processors)

Solution count 2: 3089 3828

Optimal solution found (tolerance 1.00e-04)
Best objective 3.089000000000e+03, best bound 3.089000000000e+03, gap 0.0000%

In [4]:
```

IPython console | Files | Help | Variable explorer | Plots | History

LSP Python: ready Line 8, Col 1 UTF-8 LF RW Mem 9%

Spyder (Python 3.8)

File Edit Search Source Run Debug Consoles Projects Tools View Help

/opt/gurobi910/linux64/examples/python/mip1.py

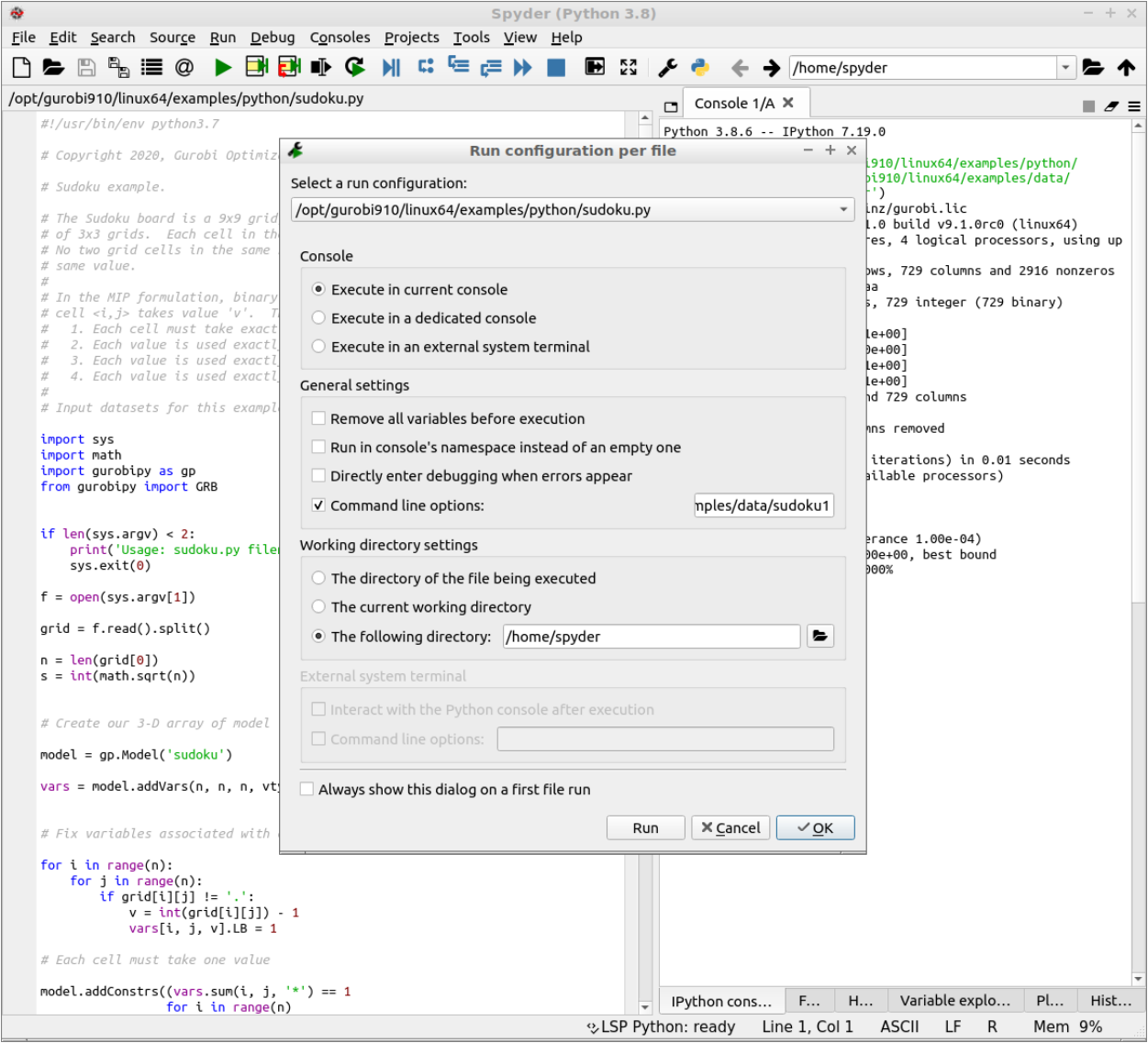
```
#!/usr/bin/env python3.7

# Copyright 2020, Gurobi Optimization, LLC

# This example formulates and solves the following simple MIP model:
#  maximize
#        x +   y + 2 z
#  subject to
#        x + 2 y + 3 z <= 4
#        x +   y       >= 1
#        x, y, z binary

import gurobipy as gp
from gurobipy import GRB

try:

    # Create a new model
    m = gp.Model("mip1")

    # Create variables
    x = m.addVar(vtype=GRB.BINARY, name="x")
    y = m.addVar(vtype=GRB.BINARY, name="y")
    z = m.addVar(vtype=GRB.BINARY, name="z")

    # Set objective
    m.setObjective(x + y + 2 * z, GRB.MAXIMIZE)

    # Add constraint: x + 2 y + 3 z <= 4
    m.addConstr(x + 2 * y + 3 * z <= 4, "c0")

    # Add constraint: x + y >= 1
    m.addConstr(x + y >= 1, "c1")

    # Optimize model
    m.optimize()

    for v in m.getVars():
        print('%s %g' % (v.varName, v.x))

    print('Obj: %g' % m.objVal)

except gp.GurobiError as e:
    print('Error code ' + str(e.errno) + ': ' + str(e))

except AttributeError:
    print('Encountered an attribute error')
```

Console 1/A

```
Python 3.8.6 -- IPython 7.19.0

In [1]: runfile('/opt/gurobi910/linux64/examples/python/mip1.py',
wdir='/opt/gurobi910/linux64/examples/python')
Using license file /home/heinz/gurobi.lic
Gurobi Optimizer version 9.1.0 build v9.1.0rc0 (linux64)
Thread count: 4 physical cores, 4 logical processors, using up to 4
threads
Optimize a model with 2 rows, 3 columns and 5 nonzeros
Model fingerprint: 0xf43f5bdf
Variable types: 0 continuous, 3 integer (3 binary)
Coefficient statistics:
  Matrix range     [1e+00, 3e+00]
  Objective range  [1e+00, 2e+00]
  Bounds range     [1e+00, 1e+00]
  RHS range        [1e+00, 4e+00]
Found heuristic solution: objective 2.0000000
Presolve removed 2 rows and 3 columns
Presolve time: 0.00s
Presolve: All rows and columns removed

Explored 0 nodes (0 simplex iterations) in 0.02 seconds
Thread count was 1 (of 4 available processors)

Solution count 2: 3

Optimal solution found (tolerance 1.00e-04)
Best objective 3.000000000000e+00, best bound 3.000000000000e+00, gap
0.0000%
x 1
y 0
z 1
Obj: 3

In [2]:
```

IPython console | Files | Help | Variable explorer | Plots | History

LSP Python: ready | Line 1, Col 1 | ASCII | LF | R | Mem 9%


Spyder (Python 3.8)
File Edit Search Source Run Debug Consoles Projects Tools View Help
/home/spyder
/opt/gurobi910/linux64/examples/python/sudoku.py
Console 1/A
Python 3.8.6 -- IPython 7.19.0
Run configuration per file
Select a run configuration:
/opt/gurobi910/linux64/examples/python/sudoku.py
Console
Execute in current console
Execute in a dedicated console
Execute in an external system terminal
General settings
Remove all variables before execution
Run in console's namespace instead of an empty one
Directly enter debugging when errors appear
Command line options:
Working directory settings
The directory of the file being executed
The current working directory
The following directory:
/home/spyder
External system terminal
Interact with the Python console after execution
Command line options:
Always show this dialog on a first file run
Run
Cancel
OK
IPython cons...
F...
H...
Variable explo...
Pl...
Hist...
LSP Python: ready
Line 1, Col 1
ASCII
LF
R
Mem 9%

-1