MP-2 Tutorial - 1

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In [1]:
```
pip install pyatom
```

```
Collecting pyatom
  Downloading https://files.pythonhosted.org/packages/e3/1b/ea029151d3ff734277c2adbd20
addd9fee8e7105ec8659ffcb0834a29312/pyatom-0.0.10-py3-none-any.whl
Installing collected packages: pyatom
Successfully installed pyatom-0.0.10
```

In [2]:
```
pip install -i https://pypi.gurobi.com gurobipy
```

```
Looking in indexes: https://pypi.gurobi.com
Collecting gurobipy
  Downloading https://pypi.gurobi.com/gurobipy/gurobipy-9.1.1-cp36-cp36m-manylinux1_x8
6_64.whl (11.1MB)
     |████████████████████████████████| 11.1MB 386kB/s
Installing collected packages: gurobipy
Successfully installed gurobipy-9.1.1
```

In [3]:
```
pip install rsome
```

```
Collecting rsome
  Downloading https://files.pythonhosted.org/packages/a2/2f/c919d3c0ad264b35bec414681e
5da42fe3f39d0adea3ae14552a80e499ee/rsome-0.0.9-py3-none-any.whl
Installing collected packages: rsome
Successfully installed rsome-0.0.9
```

In [4]:
```
import pyatom.lp as lp
import pyatom.grb_solver as grb
```

In [5]:
```
model=lp.Model()
x=model.dvar()
y=model.dvar()
model.max(3*x + 4*y)
model.st(2.5*x + y<=20)
model.st(3*x + 3*y<=30)
model.st(x+2*y<=16)
model.st(x<=3)
model.st(abs(y)<=2)
model.solve(grb)
print(model.get())
print(x.get())
print(y.get())
```

```
Restricted license - for non-production use only - expires 2022-01-13
Being solved by Gurobi...
Solution status: 2
Running time: 0.0004s
17.0
[3.]
[2.]
```

In [6]:
```
from rsome import ro
from rsome import grb_solver as grb
```

In [7]:
```
model=ro.Model('LP model')
x=model.dvar()
y=model.dvar()
model.max(3*x + 4*y)
model.st(2.5*x + y<=20)
model.st(5*x + 3*y<=30)
model.st(abs(y)<=2)
model.solve(grb)
```

```
Being solved by Gurobi...
Solution status: 2
Running time: 0.0006s
```

In [8]:
```
model=lp.Model()
x=model.dvar()
y=model.dvar()
model.max(3*x + 4*y)
model.st(2.5*x + y<=20)
model.st(3*x + 3*y<=30)
model.st(x+2*y<=16)
model.st(x<=3)
model.st(abs(y)<=2)
model.solve(grb)
print(model.get())
print(x.get())
print(y.get())
model.do_math()
```

```
Being solved by Gurobi...
Solution status: 2
Running time: 0.0004s
17.0
[3.]
[2.]
```

Out[8]:
```
Linear program object:
==============================================
Number of variables:          3
Continuous/binaries/integers: 3/0/0
----------------------------------------------
Number of linear constraints: 6
Inequalities/equalities:      6/0
Number of coefficients:       11
```