In [1]:
```
import sys, os
import docplex.mp
from docplex.mp.model import Model
```

In [2]:
```
path = 'D:\SISTEMAS\SEMESTRE-2020-2\Pesquisa Operacional\Lista1'
os.chdir(path)
```

In [3]:
```
modelo = Model(name='Lista_1_Questao_1')
```

In [4]:
```
A1 = modelo.integer_var(name='B717')
A2 = modelo.integer_var(name='B737')
A3 = modelo.integer_var(name='MD11')
```

In [5]:
```
# Restrições
modelo.add_constraint(A1 >= 15)
modelo.add_constraint(A2 >= 10)
modelo.add_constraint(A3 >= 0)
modelo.add_constraint(5.1*A1 + 3.6*A2 + 6.8*A3 <= 220)
modelo.add_constraint(A1 + 3/4*A2 + 5/3*A3 <= 40)
modelo.add_constraint(A1 <= 20)
modelo.add_constraint(A2 <= 15)
modelo.add_constraint(A3 <= 5)
```

Out[5]:
```
docplex.mp.LinearConstraint[](MD11,LE,5)
```

In [6]:
```
# Função Objetiva
modelo.maximize((330-5.1)*A1 + (300-3.6)*A2 + (420-6.8)*A3)
```

In [12]:
```
print(330-5.1, 300-3.6, 420-6.8)
```

```
324.9 296.4 413.2
```

In [7]:
```
modelo.print_information()
```

```
Model: Lista_1_Questao_1
 - number of variables: 3
   - binary=0, integer=3, continuous=0
 - number of constraints: 8
   - linear=8
 - parameters: defaults
 - objective: maximize
 - problem type is: MILP
```

In [8]:
```
otimizacao = modelo.solve()
modelo.print_solution()
```

```
objective: 13010.000
  B717=20
  B737=15
  MD11=5
```

In [9]:
```
modelo.parameters.lpmethod = 4
modelo.solve(url=None, key=None, log_output=True)
```

```
Version identifier: 20.1.0.0 | 2020-11-11 | 9bedb6d68
CPXPARAM_Read_DataCheck                          1
CPXPARAM_LPMethod                                4

Root node processing (before b&c):
  Real time             =    0.00 sec. (0.00 ticks)
Parallel b&c, 4 threads:
  Real time             =    0.00 sec. (0.00 ticks)
  Sync time (average)   =    0.00 sec.
  Wait time (average)   =    0.00 sec.
                          ------------
Total (root+branch&cut) =    0.00 sec. (0.00 ticks)
```

Out[9]: docplex.mp.solution.SolveSolution(obj=13010,values={B717:20,B737:15,MD11..

In [16]:
```
%notebook "D:\SISTEMAS\SEMESTRE-2020-2\Pesquisa Operacional\Lista1\Questao_1.ipynb"
```