TareaSimplexDual

January 27, 2018

1 Simplex Dual

In [1]:
```
import pandas as pd
```

In [2]:
```
original = pd.DataFrame([{'z':1, 'A':-160, 'B':-120, 'C':-80,
                          's1':0, 's2':0, 's3':0, 's4':0, 's5':0, 'RHS': 0}
                         {'z':0, 'A':-1, 'B':-1, 'C':-1,
                          's1':1,'s2':0,'s3':0, 's4':0, 's5':0, 'RHS': -100
                         {'z':0, 'A':-1, 'B':0, 'C':0,
                          's1':0, 's2':1, 's3':0, 's4':0, 's5':0, 'RHS': -1
                         {'z':0, 'A':0, 'B':-1, 'C':0,
                          's1':0, 's2':0, 's3':1, 's4':0, 's5':0, 'RHS': -1
                         {'z':0, 'A':0, 'B':0, 'C':1,
                          's1':0, 's2':0, 's3':0, 's4':1, 's5':0, 'RHS': 40
                         {'z':0, 'A':1, 'B':1, 'C':1,
                          's1':0, 's2':0, 's3':0, 's4':0, 's5':1, 'RHS': 10
                         index=['z', 's1', 's2', 's3', 's4', 's5'],
                         columns=['z','A','B','C','s1','s2','s3','s4','s5',

# Show
original
```

Out[2]:

	z	A	B	C	s1	s2	s3	s4	s5	RHS
z	1	-160	-120	-80	0	0	0	0	0	0
s1	0	-1	-1	-1	1	0	0	0	0	-1000
s2	0	-1	0	0	0	1	0	0	0	-150
s3	0	0	-1	0	0	0	1	0	0	-100
s4	0	0	0	1	0	0	0	1	0	400
s5	0	1	1	1	0	0	0	0	1	1000

In [3]:
```
# Copiamos para trabajar
wip = original.copy()

# Primera iteración
wip.iloc[1] *= -1
wip.iloc[0] += wip.iloc[1] * 80
wip.iloc[4] += wip.iloc[1] * -1
wip.iloc[5] += wip.iloc[1] * -1
```

```
        # Cambia variables del pivote
        a = list(wip.columns)
        a[3] = 's1'
        wip.columns = a
        a = list(wip.index)
        a[1] = 'C'
        wip.index = a
        # Show
        wip
```

Out[3]:

	z	A	B	s1	s1	s2	s3	s4	s5	RHS
z	1	-80	-40	0	-80	0	0	0	0	80000
C	0	1	1	1	-1	0	0	0	0	1000
s2	0	-1	0	0	0	1	0	0	0	-150
s3	0	0	-1	0	0	0	1	0	0	-100
s4	0	-1	-1	0	1	0	0	1	0	-600
s5	0	0	0	0	1	0	0	0	1	0

In [4]:
```
        # Segunda iterción
        wip.iloc[4] *= -1
        wip.iloc[0] += wip.iloc[4] * 40
        wip.iloc[1] += wip.iloc[4] * -1
        wip.iloc[3] += wip.iloc[4]

        # Cambia variables del pivote
        a = list(wip.columns)
        a[2] = 's4'
        wip.columns = a
        a = list(wip.index)
        a[4] = 'B'
        wip.index = a

        # Show
        wip
```

Out[4]:

	z	A	s4	s1	s1	s2	s3	s4	s5	RHS
z	1	-40	0	0	-120	0	0	-40	0	104000
C	0	0	0	1	0	0	0	1	0	400
s2	0	-1	0	0	0	1	0	0	0	-150
s3	0	1	0	0	-1	0	1	-1	0	500
B	0	1	1	0	-1	0	0	-1	0	600
s5	0	0	0	0	1	0	0	0	1	0

In [5]:
```
        # Tercera iterción
        wip.iloc[2] *= -1
        wip.iloc[0] += wip.iloc[2] * 40
        wip.iloc[3] += wip.iloc[2] * -1
        wip.iloc[4] += wip.iloc[2] * -1
```

```
# Cambia variables del pivote
a = list(wip.columns)
a[1] = 's4'
wip.columns = a
a = list(wip.index)
a[2] = 'A'
wip.index = a

# Show
wip
```

Out[5]:

	z	s4	s4	s1	s1	s2	s3	s4	s5	RHS
z	1	0	0	0	-120	-40	0	-40	0	110000
C	0	0	0	1	0	0	0	1	0	400
A	0	1	0	0	0	-1	0	0	0	150
s3	0	0	0	0	-1	1	1	-1	0	350
B	0	0	1	0	-1	1	0	-1	0	450
s5	0	0	0	0	1	0	0	0	1	0

Valor mínimo = 110,000
A = 150
B = 450
C = 400

In [ ]: