

HW2-report

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Problem 1.

a. When pivot choose 'mrc' :

n_max=13

```
inprog(c, A_ub=A, b_ub=b, bounds=(0, None), method='revised simplex', options={'pivot' : "mrc"})

n is:", count)

[4] 1.9s Python
... The maximum n is: 13
```

When pivot choose 'bland' :

n_max=10

```
inprog(c, A_ub=A, b_ub=b, bounds=(0, None), method='revised simplex', options={'pivot' : "bland"})

um n is:", count)

[5] 0.1s Python
... The maximum n is: 10
/> An exception has occurred, use %tb to see the full traceback.
```

Conclusion:

Use simplex method ,use mrc pivot will get **bigger** feasible solution.

Problem 2.

When options choose dantzig:

Minnum:1.570312971592117

```
:= (0, None), method='highs-ds', options={'simplex_dual_edge_weight_strategy' : 'dantzig'})
```

✓ 0.6s Python

c:\Users\user\miniconda3\envs\py\lib\site-packages\scipy\optimize_linprog.py:618:
OptimizeWarning: Option simplex_dual_edge_weight_strategy is dantzig, but only values in
{'steepest-devex', 'dantzig', None, 'devex', 'steepest'} are allowed. Using default: None.
sol = _linprog_highs(lp, solver=highs_solvers[meth],
1.570312971592117

When options choose devex:

Minnum:1.570312971592117

```
inds=(0, None), method='highs-ds', options={'simplex_dual_edge_weight_strategy' : "devex"})
```

✓ 0.3s Python

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When options choose steepest:

Minnum:1.570312971592117

```
:= (0, None), method='highs-ds', options={'simplex_dual_edge_weight_strategy' : "steepest"})
```

✓ 0.2s Python

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Conclusion:

三種 options 對比結果相同

做法：提取 A and b,

由于 s.t. $Ax \geq b$, max & min cTx

So, 将 $A \& b$ 变成 $-A \& -b$, 代入公式即可