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discrete mathematics project(dijkstra alogorithm in python programming language)

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In [164]:
```
#import libraries
from numpy import inf,NaN
import pandas as pd
import numpy as np
from IPython.display import Image
```

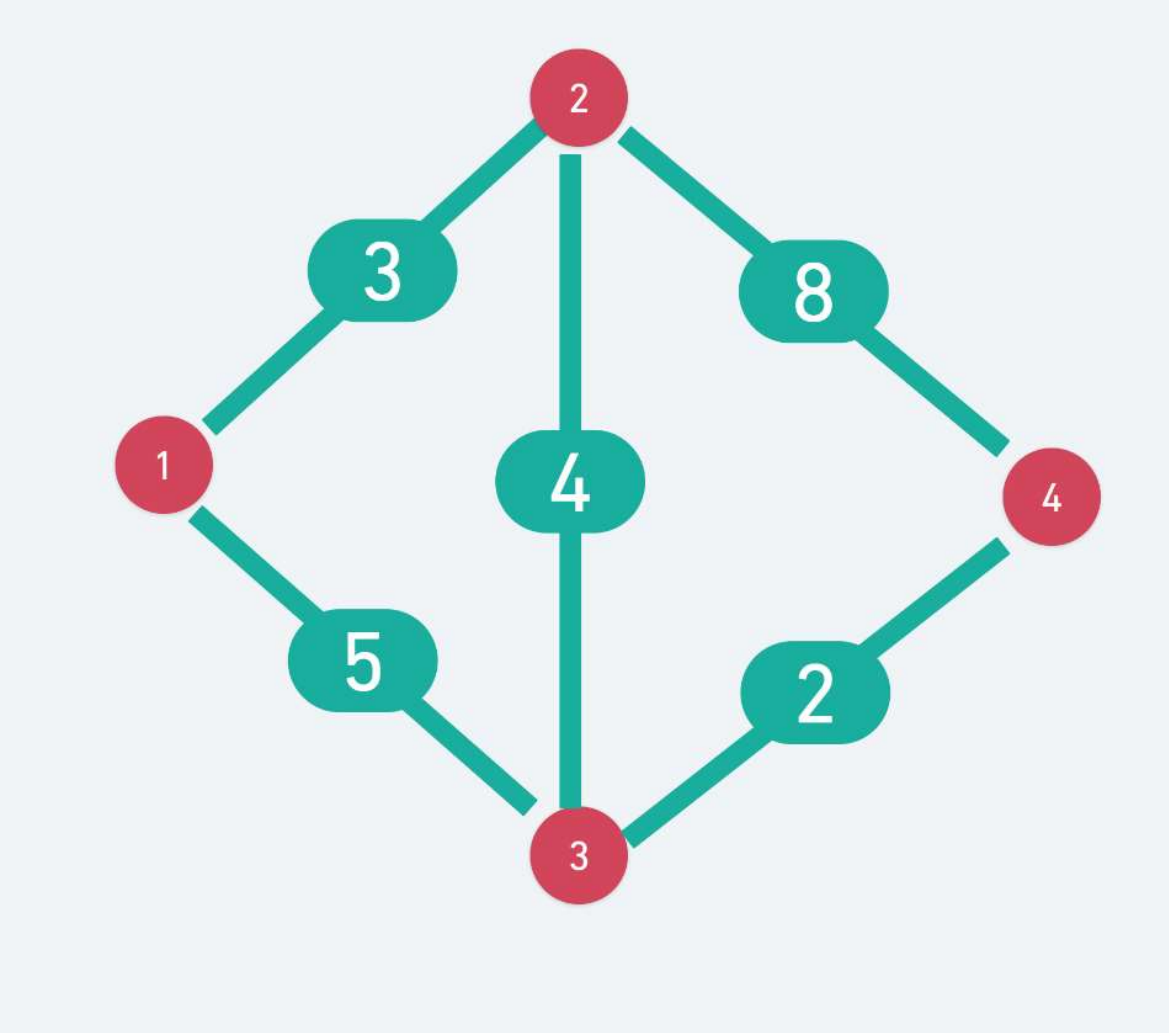
In [162]:
```
#1
def dijkstra(a,z,W,L):
    #2
    L[a] = 0
    #3,4
    L[L.index != a] = inf
    #5,6,7
    T = list(L.index)
    #8
    while z in T:
        #9
        v = T[0]
        minimum = L[T[0]]
        for i in T:
            if L[i]<=minimum:
                v = i
        #10
        T.remove(v)
        #11
        adj_v = []
        for i in T:
            if W[i][v] != 0:
                adj_v.append(i)
        #12
        for i in adj_v:
            if L[i]>L[v]+W[v][i]:
                L[i] = L[v]+W[v][i]
    #13,14
    return L[z]
```

as an example

In [161]:
```
#L
L = pd.Series([NaN,NaN,NaN,NaN],index = ["a","b","c","d"])
#W
w = pd.DataFrame([[0,3,5,0],[3,0,4,8],[5,4,0,2],[0,8,2,0]],index = ["a","b","
```

In [166]:
```
Image("test.png")
```

Out[166]:



In [163]:
```
#result
dijkstra("a","d",matrix,L)
```

Out[163]:
```
7.0
```