例 1.7 Dijkstra 算法实现

算法功能:求解起始点和终止点的最短距离及路径

修改参数:start_code:起点
Adjacent:邻接矩阵"""

```
def Dijkstra(start: int, mgraph: list) -> list:
    '''
    :param start: 起始点
    :param mgraph: 邻接矩阵（注意原图为有向图还是无向图
    :return: 从起始点到各个点的最短距离列表
    '''

    passed = [start]
    nopass = [x for x in range(len(mgraph)) if x != start]
    dis = mgraph[start]

    while len(nopass):
        idx = nopass[0]
        for i in nopass:
            if dis[i] < dis[idx]: idx = i

        nopass.remove(idx)
        passed.append(idx)

        for i in nopass:
            if dis[idx]+mgraph[idx][i]<dis[i]:dis[i]=dis[idx]+mgraph[idx][i]
    return dis


if __name__ == '__main__':
    Inf = float('inf')
    Adjacent = [[0, 4, 2, Inf, Inf, Inf],
                [4, 0, 3, 5, Inf, Inf],
                [2, 3, 0, 8, 10, Inf],
                [Inf, 5, 8, 0, 2, 6],
                [Inf, Inf, 10, 2, 0, 3],
                [Inf, Inf, Inf, 6, 3, 0]]
    start_code=0
    print(Dijkstra(start_code, Adjacent))  # [0, 4, 2, 9, 11, 14]
```