

## 109. Warshall Algorithm

AIM: To Solve the Warshall Algorithm

PROGRAM:

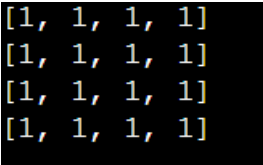
```
def warshall(graph):  
    n = len(graph)  
    for k in range(n):  
        for i in range(n):  
            for j in range(n):  
                graph[i][j] = graph[i][j] or (graph[i][k] and graph[k][j])  
    return graph
```

```
graph = [[0, 1, 0, 0],  
         [0, 0, 1, 0],  
         [0, 0, 0, 1],  
         [1, 0, 0, 0]]
```

```
result = warshall(graph)
```

```
for row in result:  
    print(row)
```

OUTPUT:



```
[1, 1, 1, 1]  
[1, 1, 1, 1]  
[1, 1, 1, 1]  
[1, 1, 1, 1]
```

TIME COMPLEXITY:  $O(V^3)$