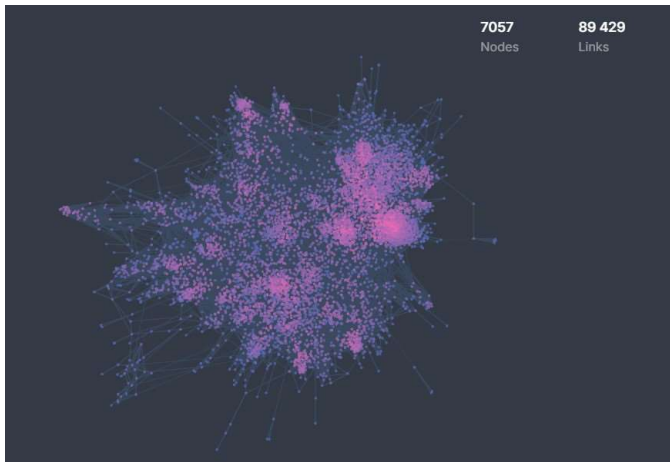Q1)

```
 The number of Nodes are: 7057
 The number of Edges are: 89455
```
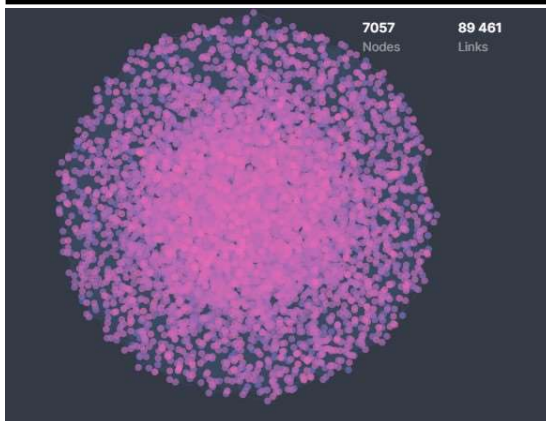
```
The number of nodes are: 7057
The sum of degrees of all nodes are: 178910
The average degree of the graph: 25.352132634263853
```
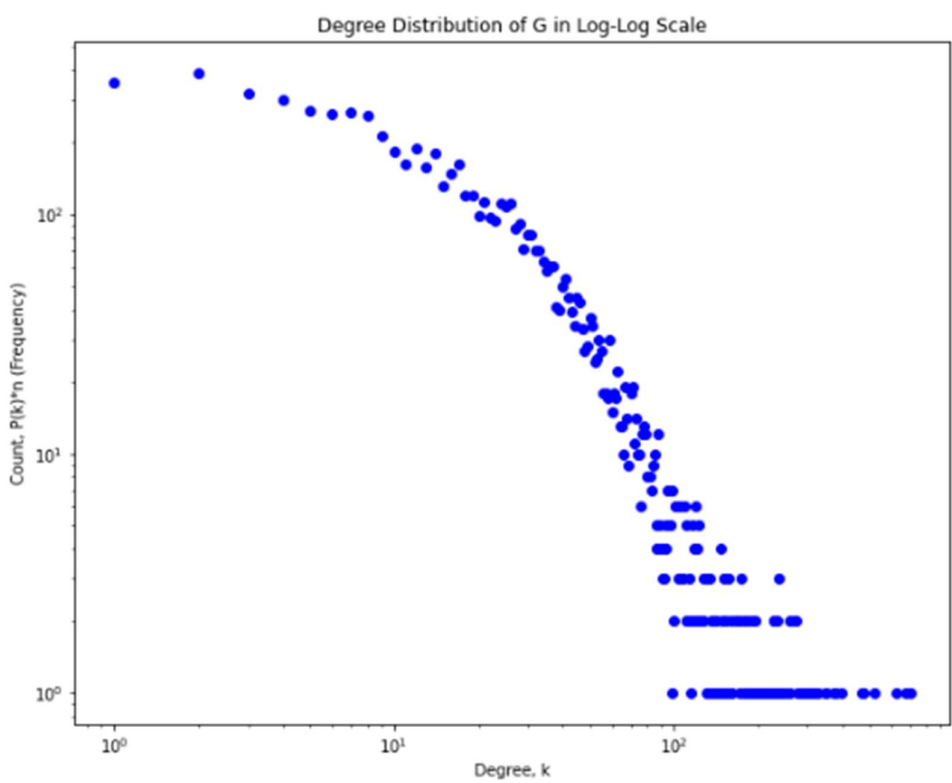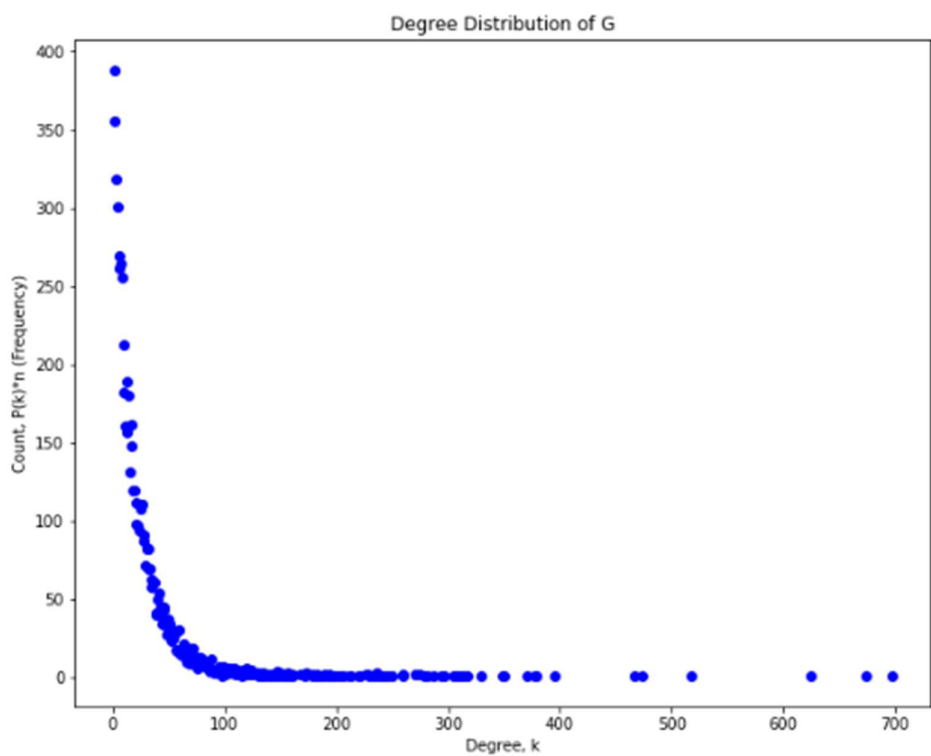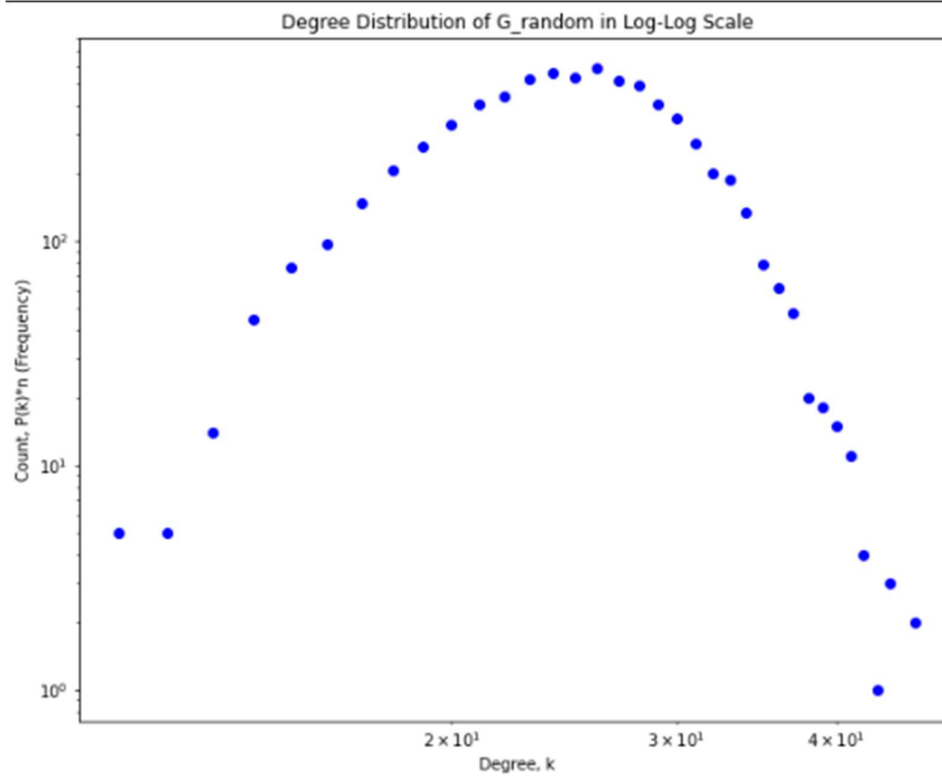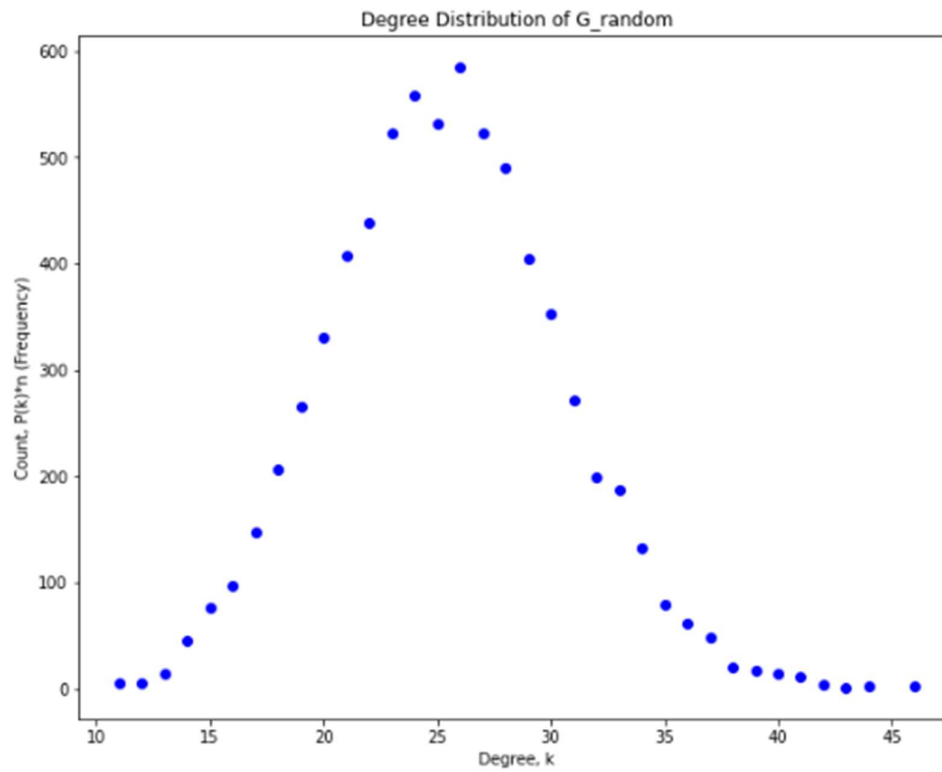

Q2)

```
The number of Nodes are: 7057
The number of Edges are: 89462
```

```
The number of nodes are: 7057
The sum of degrees of all nodes are: 178924
The average degree of the graph: 25.35411648009069
```

Q3)

Degree Distribution of G

Degree Distribution of G in Log-Log Scale

Degree Distribution of G_random
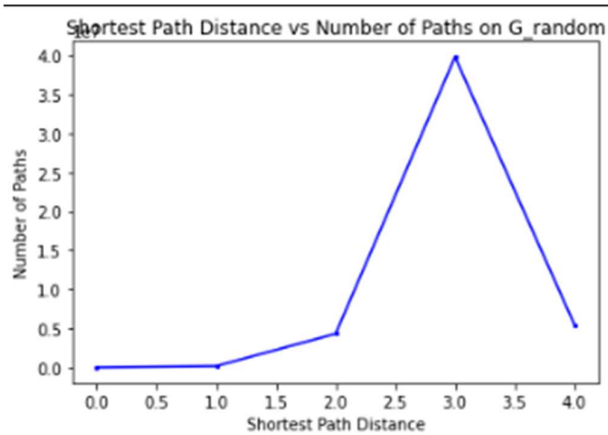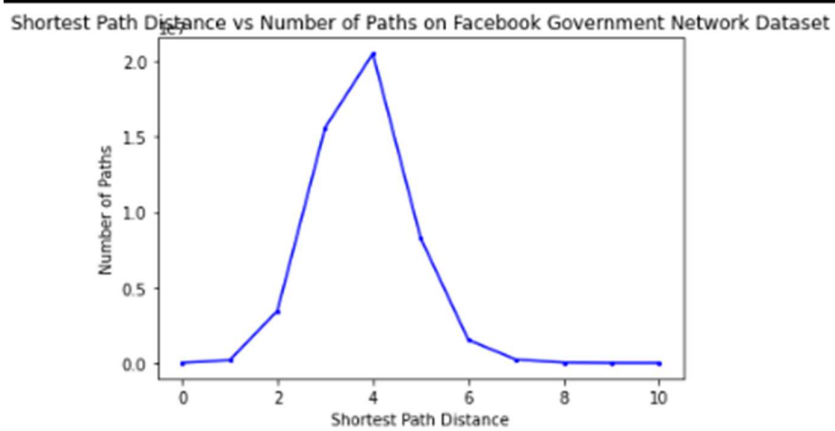

Degree Distribution of G_random in Log-Log Scale

Comparing the Log-Log scale of G and G_random, we can see that G_random was not good at emulating the government pages network in terms of degree distribution. The G_random degree

distribution looks closer to a normal distribution whereas the actual network graph G has an exponentially decreasing degree distribution.

Q4)

Shortest Path Distance vs Number of Paths on Facebook Government Network Dataset

Shortest Path Distance vs Number of Paths on G_random

It looks like G_random has a shorter average path length than the actual government pages network G. Since the peak of the graph is at 3 for G_random compared to 4 for G.
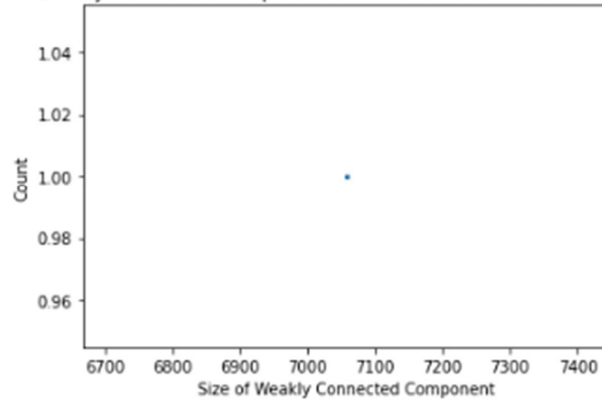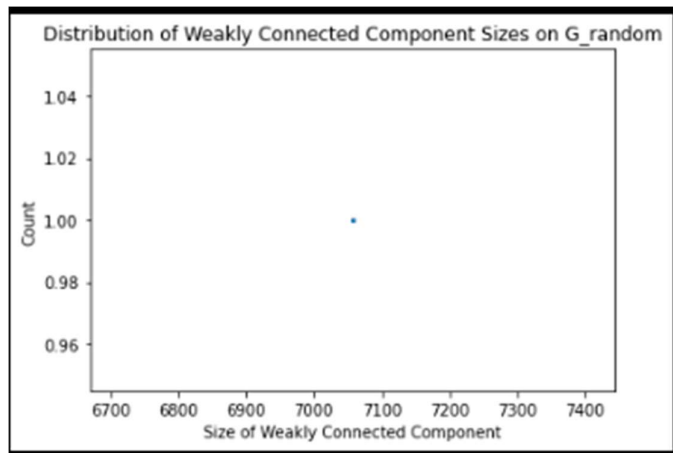
Q5)

Average Clustering Coefficient vs Degree on Facebook Government Network Dataset

Average Clustering Coefficient vs Degree on G_random
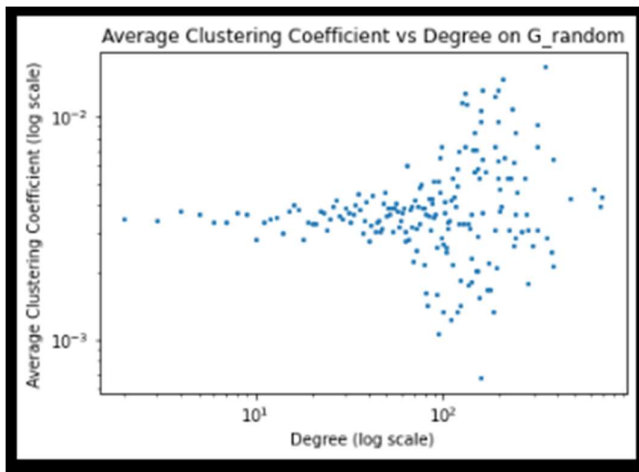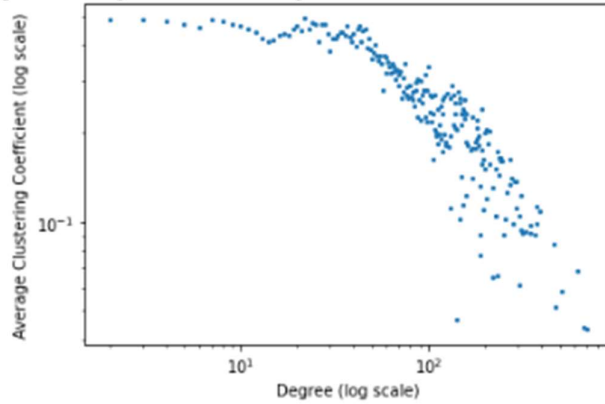
Q6)

Distribution of Weakly Connected Component Sizes on Facebook Government Network Dataset

Distribution of Weakly Connected Component Sizes on G_random

I don't believe I've done this question correctly, I was unable to use weakly_connected_components as it raised the error NetworkXNotImplemented (If G is undirected.) It advised me to use connected_components instead which gave me ans of one