

CSE 3024

# Web Mining

## LAB ASSESSMENT - 5

**NAME:** Vibhu Kumar Singh

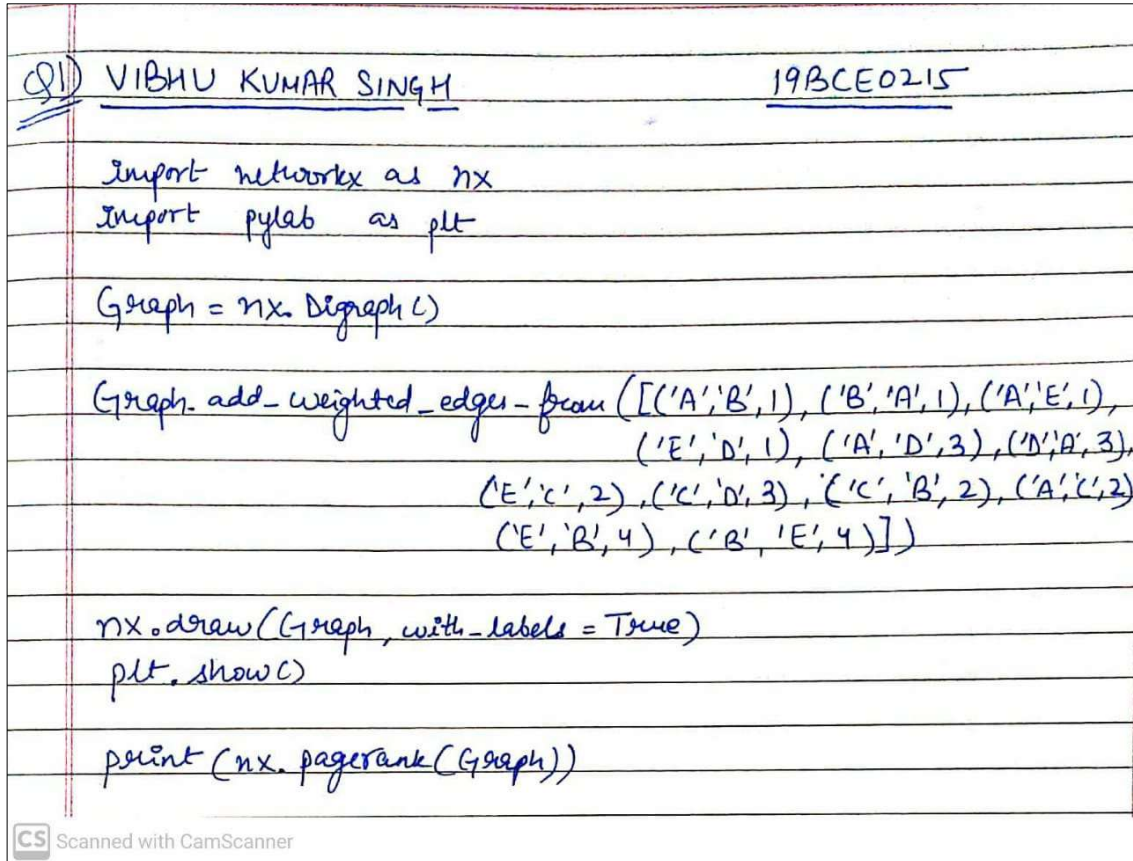
**REG. NO:** 19BCE0215

**TEACHER:** Mr. Hiteshwar Kumar Azad

1. Create a Python programme to implement the Page Rank Algorithm in order to plot a graph and print the page rank for each page.

Ans 1.

HANDWRITTEN CODE:



Q1) VIBHU KUMAR SINGH 19BCE0215

```
import networkx as nx
import pylab as plt

Graph = nx.DiGraph()

Graph.add_weighted_edges_from([('A','B',1), ('B','A',1), ('A','E',1),
                                ('E','D',1), ('A','D',3), ('D','A',3),
                                ('E','C',2), ('C','D',3), ('C','B',2), ('A','C',2),
                                ('E','B',4), ('B','E',4)])

nx.draw(Graph, with_labels=True)
plt.show()

print(nx.pagerank(Graph))
```

CS Scanned with CamScanner

CODE:

```
#NAME: VIBHU KUMAR SINGH
#ROLL NO: 19BCE0215
#WEB MINING

import networkx as nx
import pylab as plt

Graph=nx.DiGraph()

Graph.add_weighted_edges_from([('A','B',1), ('B','A',1), ('A','E',1), ('E','D',1),
                                ('A','D',3), ('D','A',3), ('E','C',2), ('C','D',3),
                                ('C','B',2), ('A','C',2), ('E','B',4), ('B','E',4)])

nx.draw(Graph, with_labels=True)
plt.show()

print(nx.pagerank(Graph))
```

## CODE SCREENSHOT:

```
colab.research.google.com/drive/1JbRf_2HPw3XROZsG7EN8yhBWxvDevise
DSA WebDev RoadMap MDN Colorhunt DevDocs Google Fonts Frontend Mentor Bootstrap Font Awesome
PageRank.ipynb
File Edit View Insert Runtime Tools Help All changes saved
+ Code + Text
#NAME: VIBHU KUMAR SINGH
#ROLL NO: 19BCE0215
#WEB MINING

import networkx as nx
import pylab as plt

Graph=nx.DiGraph()

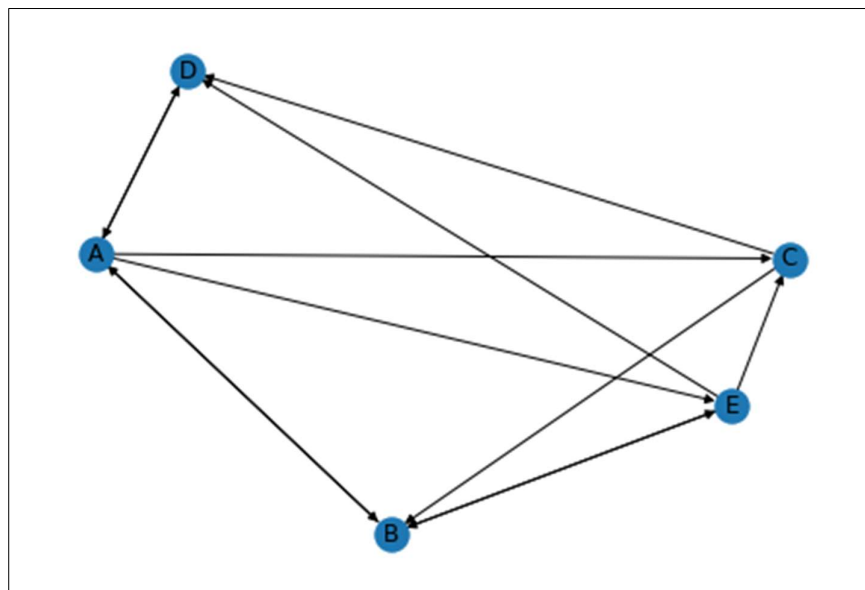
Graph.add_weighted_edges_from([('A','B',1),('B','A',1),('A','E',1),('E','D',1),
                              ('A','D',3),('D','A',3),('E','C',2),('C','D',3),
                              ('C','B',2),('A','C',2),('E','B',4),('B','E',4)])

nx.draw(Graph, with_labels=True)
plt.show()

print(nx.pagerank(Graph))

{'A': 0.24665272801410637, 'B': 0.20305272124624887, 'E': 0.19802663994715256, 'D': 0.21427473737838643, 'C': 0.13799317341410564}
```

## OUTPUT SCREENSHOT:



{'A': 0.24665272801410637, 'B': 0.20305272124624887, 'E': 0.19802663994715256, 'D': 0.21427473737838643, 'C': 0.13799317341410564}

2. Create a Python programme that uses the Networkx Module to implement the Hyperlink Induced Topic Search (HITS) Algorithm and prints the Hub and Authority scores.

Ans 2.

HANDWRITTEN CODE:

(Q2) VIBHU KUMAR SINGH 19BCE0215

```
import networkx as nx
import matplotlib.pyplot as plt

Graph = nx.DiGraph()

Graph.add_edges_from([('A','B'),('B','A'),('A','E'),('E','D'),
                      ('A','D'),('D','A'),('E','C'),('C','D'),('C','B'),
                      ('A','C'),('E','B'),('B','E')])

plt.figure(figsize=(10,10))
nx.draw_networkx(Graph, with_labels=True)

hubs, authorities = nx.hits(Graph, max_iter=50,
                             normalized=True)

print("Hub Scores :", hubs)
print("Authorities Scores :", authorities)
```

CS Scanned with CamScanner

CODE:

```
#NAME: VIBHU KUMAR SINGH
#ROLL NO: 19BCE0215
#WEB MINING

import networkx as nx
import matplotlib.pyplot as plt

Graph = nx.DiGraph()

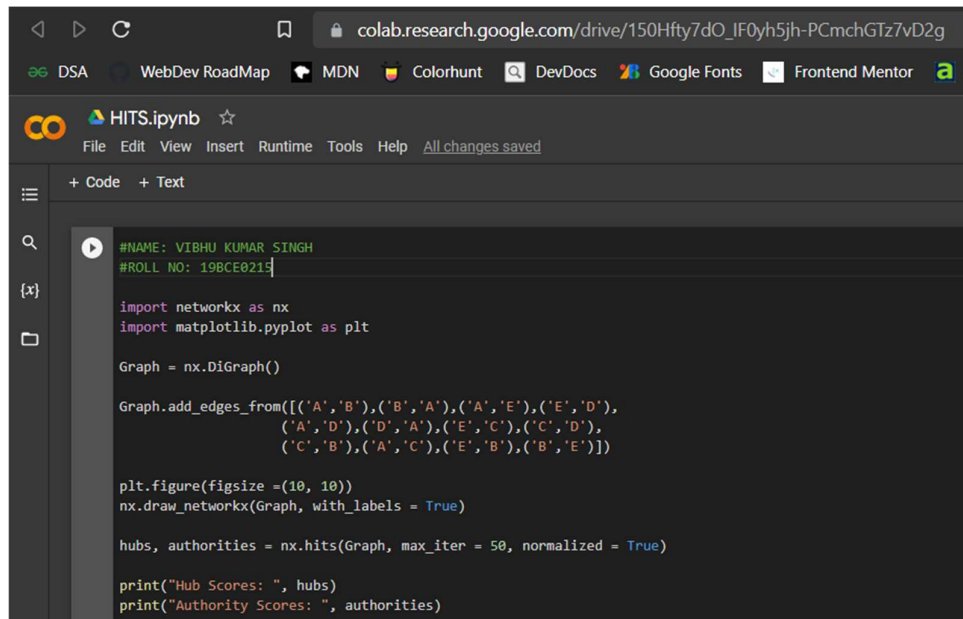
Graph.add_edges_from([('A','B'),('B','A'),('A','E'),('E','D'),
                      ('A','D'),('D','A'),('E','C'),('C','D'),
                      ('C','B'),('A','C'),('E','B'),('B','E')])
```

```
plt.figure(figsize =(10, 10))
nx.draw_networkx(Graph, with_labels = True)

hubs, authorities = nx.hits(Graph, max_iter = 50, normalized = True)

print("Hub Scores: ", hubs)
print("Authority Scores: ", authorities)
```

### CODE SCREENSHOT:



```
#NAME: VIBHU KUMAR SINGH
#ROLL NO: 19BCE0213

import networkx as nx
import matplotlib.pyplot as plt

Graph = nx.DiGraph()

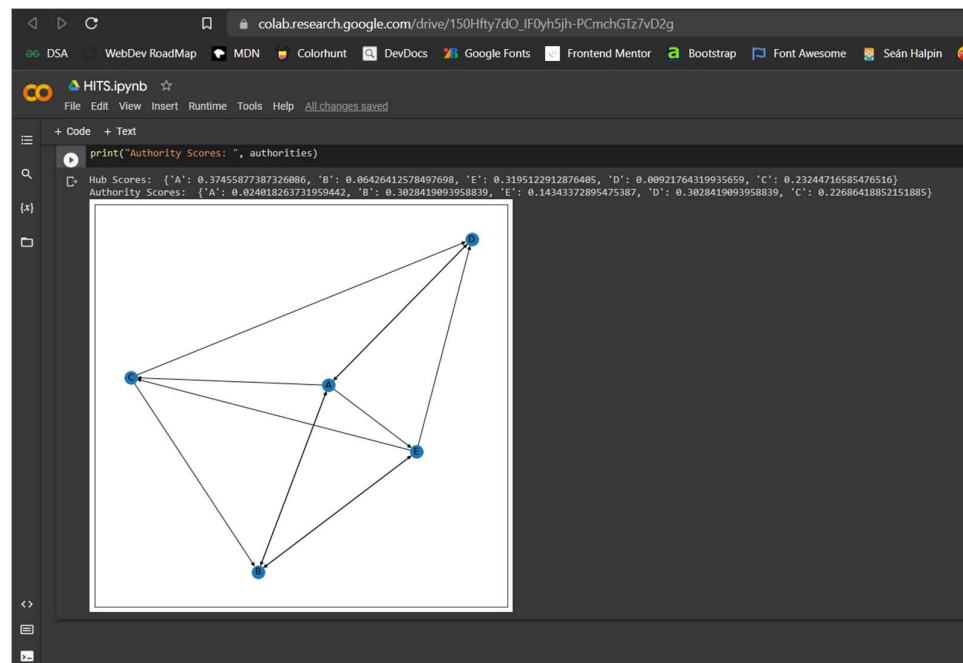
Graph.add_edges_from([('A','B'),('B','A'),('A','E'),('E','D'),
                     ('A','D'),('D','A'),('E','C'),('C','D'),
                     ('C','B'),('A','C'),('E','B'),('B','E')])

plt.figure(figsize =(10, 10))
nx.draw_networkx(Graph, with_labels = True)

hubs, authorities = nx.hits(Graph, max_iter = 50, normalized = True)

print("Hub Scores: ", hubs)
print("Authority Scores: ", authorities)
```

### OUTPUT SCREENSHOT:



Hub Scores: {'A': 0.37455877387326086, 'B': 0.06426412578497698, 'E': 0.3195122912876405, 'D': 0.00921764319935659, 'C': 0.23244716585476516}

Authority Scores: {'A': 0.024018263731959442, 'B': 0.3028419093958839, 'E': 0.14343372895475387, 'D': 0.3028419093958839, 'C': 0.22686418852151885}