Notebook

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# Lab Assignment #2 Database Design and Implementation


# if no module found, install using this command: !pip i
import networkx as nx


#if no module found, install using this command: !pip in
import matplotlib.pyplot as plt


# create graph to represent the social network of studen
G = nx.Graph()


# student list
students = ["Alice", "Bob", "Charlie", "David", "Eve", "

# add students as nodes to the graph
G.add_nodes_from(students)


print(students)
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['Alice', 'Bob', 'Charlie', 'David', 'Eve', 'Frank',
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# list of connections between students, represents a con
connection = [
    ("Alice", "Bob"),
    ("Alice", "Charlie"),
    ("Bob","Charlie" ),
    ("Charlie", "David"),
    ("Charlie", "Eve"),
    ("David","Eve"),
    ("Eve", "Frank"),
    ("Frank", "Grace"),
    ("Grace","Eve")
]
# add connections as edges to the graph
G.add_edges_from(connection)



print(connection)
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[('Alice', 'Bob'), ('Alice', 'Charlie'), ('Bob', 'Ch
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# print basic information about the graph
print("Nodes of the graph:", G.nodes())
print("Edges of the graph:", G.edges())
print("Number of nodes:", G.number_of_nodes())
print("Number of edges:", G.number_of_edges())
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Nodes of the graph: ['Alice', 'Bob', 'Charlie', 'Dav
Edges of the graph: [('Alice', 'Bob'), ('Alice', 'Ch
Number of nodes: 7
Number of edges: 9
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# visualize network
nx.draw(G, with_labels=True, font_weight='bold', node_co
plt.title("Social Network Graph Model")
plt.show()
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# cerntality means a network is directly connected to many
degree_centrality = nx.degree_centrality(G)
print("\nDegree Centrality:")
for student, centrality in degree_centrality.items():
  print(f"{student}: {centrality: .2f}")
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# serve as a key broker between many other nodes (betweene
betweenness_centrality = nx.betweenness_centrality(G)
print("\nBetweeness Centrality:")
for student, centrality in betweenness_centrality.items()
  print(f"{student}: {centrality: .2f}")
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Betweeness Centrality:
Alice:  0.00
Bob:  0.00
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