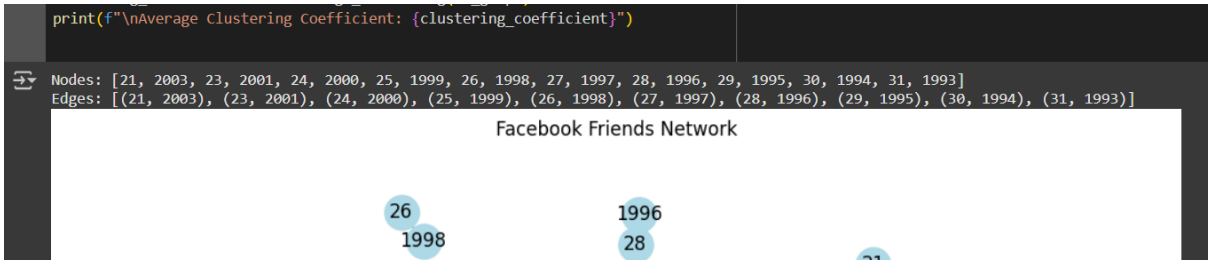
EXPERIMENT NO – 06

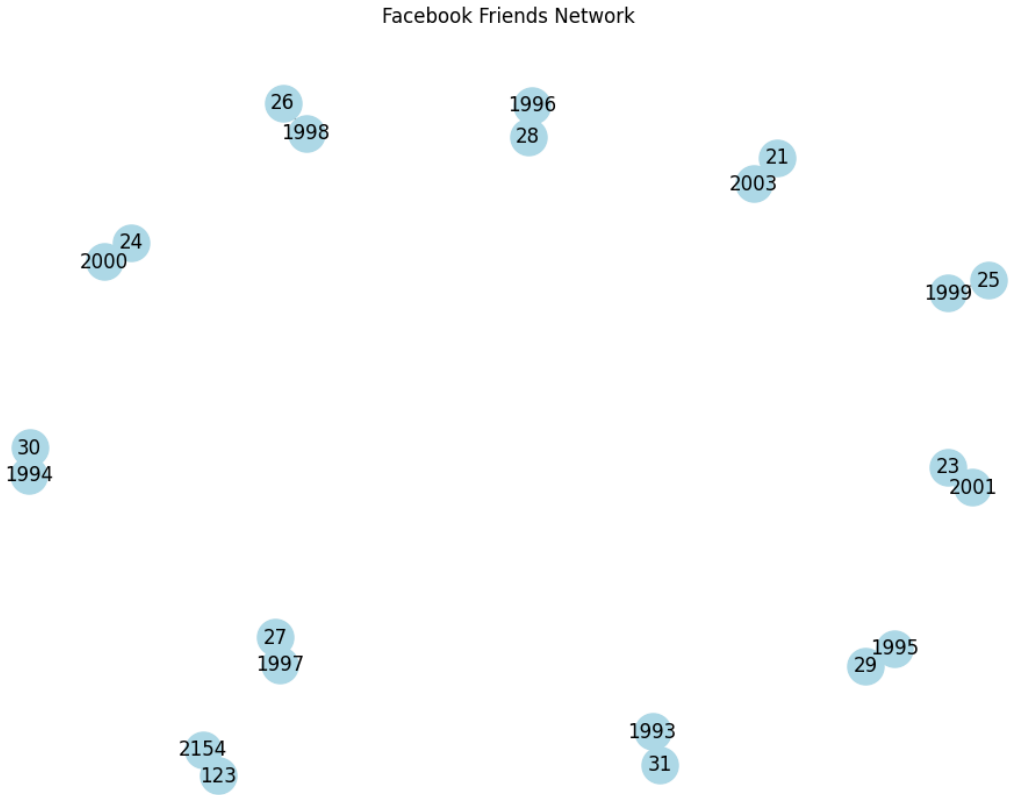
CODE :

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

# Load dataset
df = pd.read_csv("pseudo_facebook.csv")

# Create a graph using 'age' and 'dob_year' as nodes
fb_graph = nx.from_pandas_edgelist(df, source="age", target="dob_year")

# Display graph details
print("Nodes:", fb_graph.nodes())
print("Edges:", fb_graph.edges())

# Add a new edge to the graph
fb_graph.add_edge("123", "2154")

# Visualize the Facebook-like network
plt.figure(figsize=(10, 7))
nx.draw(fb_graph, with_labels=True, node_color="lightblue", edge_color="gray",
node_size=500)
plt.title("Facebook Friends Network")
plt.show()

# Degree centrality
degree_centrality = nx.degree_centrality(fb_graph)
sorted_centrality = sorted(degree_centrality.items(), key=lambda x: x[1], reverse=True)

print("\nMost Influential Nodes by Degree Centrality:")
for node, centrality in sorted_centrality[:5]:  # Top 5 influential nodes
    print(f"Node: {node}, Centrality: {centrality}")

# Closeness centrality
closeness_centrality = nx.closeness_centrality(fb_graph)
sorted_closeness = sorted(closeness_centrality.items(), key=lambda x: x[1], reverse=True)

print("\nTop 5 Nodes by Closeness Centrality:")
for node, closeness in sorted_closeness[:5]:
    print(f"Node: {node}, Closeness: {closeness}")

# Bridges in the network
if nx.has_bridges(fb_graph):
    bridges = list(nx.bridges(fb_graph))
    print(f"\nTotal Bridges in Network: {len(bridges)}")
else:
```

```
    print("\nNo bridges found in the network.")

# Display clustering coefficient
clustering_coefficient = nx.average_clustering(fb_graph)
print(f"\nAverage Clustering Coefficient: {clustering_coefficient}")
```

OUTPUT





```
Most Influential Nodes by Degree Centrality:
Node: 21, Centrality: 0.047619047619047616
Node: 2003, Centrality: 0.047619047619047616
Node: 23, Centrality: 0.047619047619047616
Node: 2001, Centrality: 0.047619047619047616
Node: 24, Centrality: 0.047619047619047616

Top 5 Nodes by Closeness Centrality:
Node: 21, Closeness: 0.047619047619047616
Node: 2003, Closeness: 0.047619047619047616
Node: 23, Closeness: 0.047619047619047616
Node: 2001, Closeness: 0.047619047619047616
Node: 24, Closeness: 0.047619047619047616

Total Bridges in Network: 11

Average Clustering Coefficient: 0.0
```