# Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering

Semester: (Spring, Year: 2025), B.Sc. in CSE (Day)

# LAB PROJECT PROPOSAL

Course Title: Algorithm Lab

Course Code: CSE 208

Section: 232-D9

## Student Details

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Lab Date: 26-02-2025

Submission Date: 04-03-2025

Course Teacher’s Name: Farjana Akter Jui

## TITLE OF THE PROJECT PROPOSAL

Social Network Friend Recommendation System

## PROBLEM DOMAIN & MOTIVATIONS

In social networking platforms like Facebook and LinkedIn, users often struggle to find new friends or professional connections efficiently. A Social Network Friend Recommendation System can help users discover potential connections based on mutual friends, shared interests, and graph-based algorithms.

✅ Mo1 – Improve social network engagement by suggesting relevant friend connections.

✅ Mo2 – Implement Graph Traversal Algorithms (BFS/DFS) to find and recommend friends.

✅ Mo3 – Provide an efficient algorithm for analyzing large-scale user networks.

## OBJECTIVES/AIMS

The aim of this project is to develop an intelligent Friend Recommendation System that suggests new connections based on Graph Algorithms.

📌 Ob1 – Implement a Graph Data Structure where users are nodes and friendships are edges.

📌 Ob2 – Use Breadth-First Search (BFS) and Depth-First Search (DFS) for friend recommendations.

📌 Ob3 – Rank friend suggestions based on the number of mutual connections.

📌 Ob4 – Optimize friend suggestions using additional factors like interaction frequency (optional).

## TOOLS & TECHNOLOGIES

This project will be developed using:

🛠 Programming Language: Java (JDK 17 or later)

🛠 Graph Implementation: Java Collections (HashMap, HashSet, ArrayList)

🛠 Graph Algorithms: BFS & DFS (Implemented using Queue and Stack)

🛠 Database (Optional): MySQL / PostgreSQL (For storing users & friend connections)

🛠 Backend Framework (Optional): Spring Boot (If making a web-based system)

🛠 Frontend (Optional UI): JavaFX / Swing (For graphical representation)

🛠 Graph Visualization (Optional): JGraphT Library (For drawing the social network)

## CONCLUSION

The Social Network Friend Recommendation System will enhance user experience by suggesting relevant friend connections based on Graph Algorithms (BFS & DFS). By implementing efficient graph traversal techniques, this project will demonstrate how algorithms can be applied in real-world social networking applications.