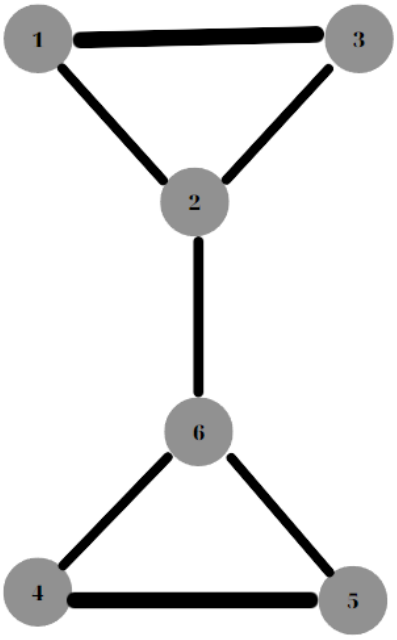
HOMEWORK GRAPH NEURAL NETWORK



Each node represents a user in the social network. Each node has 2 attributes (features) about its gender (male, female, unknown) and hobbies with full description like this:

- Node 1 (gender: male, hobbies: study)
- Node 2 (gender: female, hobbies: football)
- Node 3 (gender: female, hobbies: skateboard)
- Node 4 (gender: male, hobbies: study)
- Node 5 (gender: unknown, hobbies: study)
- Node 6 (gender: male, hobbies: photography)

With the given graph above, please transform it into **1** new hidden representation using Graph Convolutional Network technique. Follow these steps:

- Convert the features into a matrix called H
- Calculate Adjacency Matrix (A~)
- Calculate the Degree Matrix (D~)
- Bias W is manually created
- Apply the GCN formula