HPC Lab Week 9

Developing a Friend Recommender in Social Network

Objective of this lab is to implement parallel BFS algorithm for computing distance of all the social media user nodes from the given source user node.

To do:

1. Load the social media graph of LastFM Asia Social Network from https://snap.stanford.edu/data/feather-lastfm-social.html. Each node will represent the user (id) and undirected edge represent their "following" relationship.
2. The graph can be stored using any high-level package in Python (libraries such as NetworkX, igraph or py_graph). These libraries provide easy way to generate graph and do operations using built-in functions.
3. Select any random node from the graph. Develop a serial BFS algorithm to compute the distance between the source node to all other nodes of the graph. Create a distance matrix in the end.
4. Nodes with minimum distance (distance of 1 will not be considered as they are immediate followers) will be recommended "to follow" for the chosen node.
5. Develop parallel version of the BFS algorithm and execute. The parallel version can perform data parallel operations to search for neighbours of current level of nodes.
6. In case of program taking longer time to compute the distance for whole graph, restrict the distance to maximum level L (like L = 100)
7. Calculate and compare the time taken by serial and parallel execution of BFS.