CS101 PROJECT-2

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We are provided with a **Social Impression Network**. We should plot the graph and study its various properties.

We are expected to plot a directed graph. To create the graph, firstly, I manually made changes in the file since all the entries were not in the same format (some were in the form of email ID while some were in the form name+entry no.). Each entry was converted in the form of an entry number. Doing so, it became easier to plot the graph. I have attached that file in the project submissions. If A is impressed by B, we will add a directed edge from A to B. In this way, a graph is plotted where nodes are the entry numbers of students while edges represent the impressions.

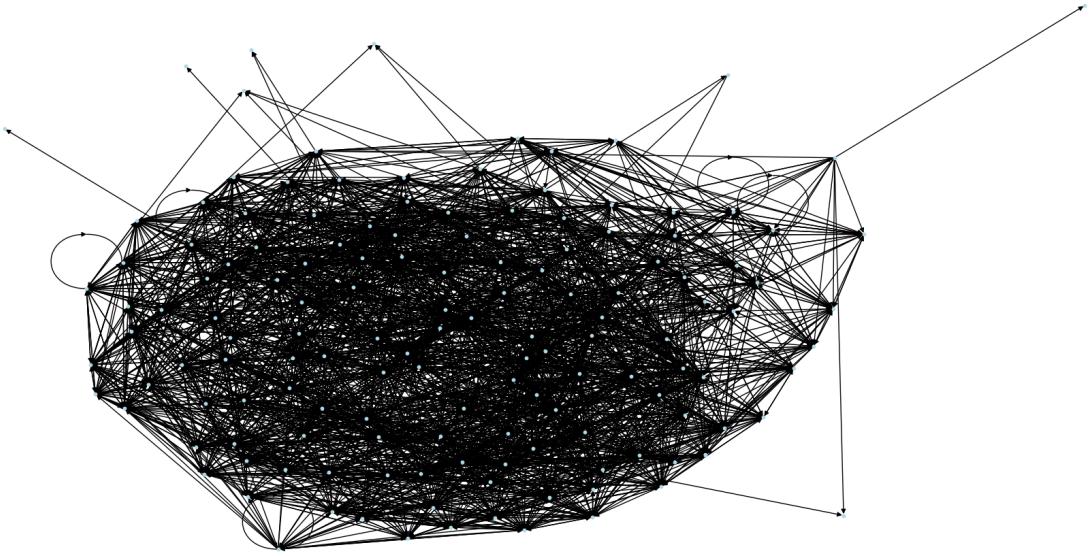

Figure 1: PLOTTED GRAPH

QUESTION I -

Pagerank Using Random Walk

Problem statement : Choose the top leader by running a random walk on the graph with teleportation.

Logic : As explained in one of the videos, in the random walk method we first select a random node and give it one coin (Coin represents one point). Then we select one of its neighbours, the one it is pointing to and give it a coin too. If we go on following this process at a point, we can find a node that isn't pointing to anyone. In this case, we should select a random node and start newly from that node. We may face one more hurdle i.e. we get stuck in a loop. To avoid this, random teleportation with a probability of 0.15 is used. Every time, we may jump to a new node randomly with a probability of 15 %.

Hence, after distributing 100000 (approx.) coins, we may determine the pagerank by observing the number of coins each node has. The one with the most coins is our top leader.

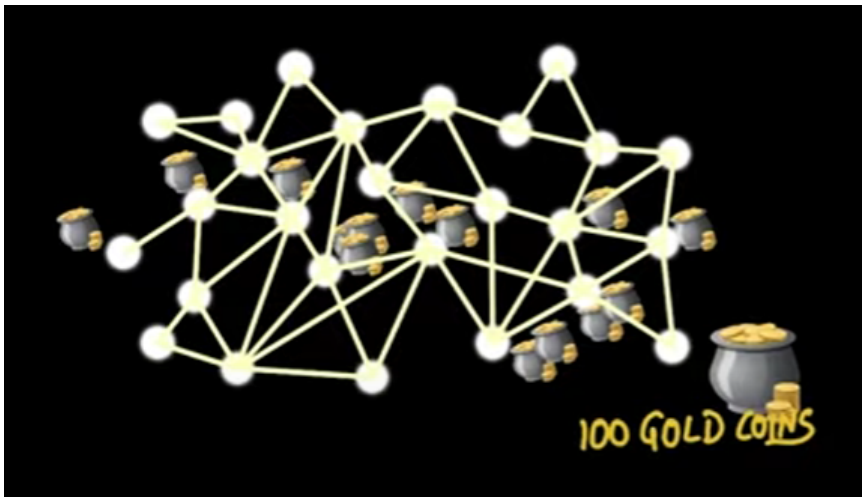

Figure 2: Random walk with coin dropping