CS101 Project2 Q1

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1 Introduction

In Q1 we need to choose the top leader by running a random walk on the graph with teleportation. Taking inspiration from the PageRank method, we run a random walk on the graph. For this we choose a node from the graph uniformly at random and drop a gold coin. Then we see the nodes to which it is connected (by outgoing edges), again we choose one out of those uniformly at random and go there and drop a gold coin at this new node. This way we repeat this process for say 1 million times to average out the answer though it is not necessary that this will always yield the correct answer i.e. we might have to increase the iterations. As we keep on increasing the iterations we see our answer converging and we declare the node with most gold coins as the top leader. An edge case can be when the node (at some point in the random walk) does not have any outgoing edges so in such case we select a new node uniformly at random from all the nodes and again continue with our random walk algo. This is known as Teleportation which is also mentioned in the question.