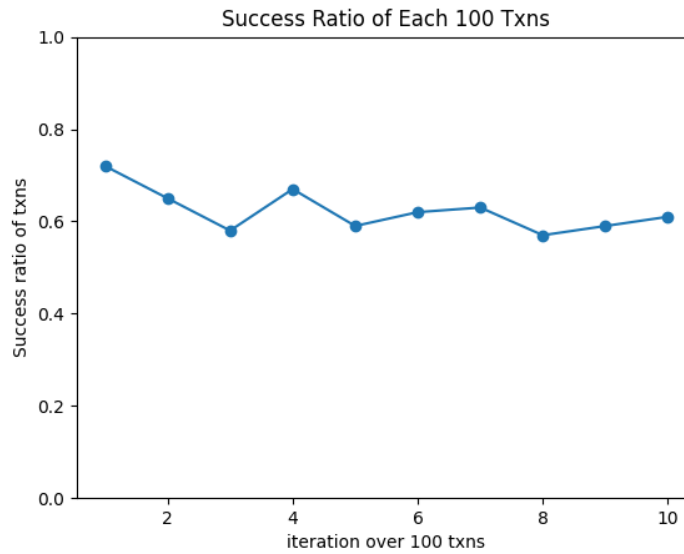# Blockchain Assignment 3

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1 Analysis

1.1 Observation

Keeping the noise aside, we saw an overall decrease in the number of successful transactions as the number of transactions increased with the minimum occurring near 800 transactions.

1.2 Result

Definition 1.1 (Channel Liquidity) *channel liquidity refers to the amount of funds available in a payment channel between two users*

The decrease in the ratio of successful transactions with the increasing number of transactions can majorly be associated with **decrease** in channel liquidity of our **payment channel network**.

As transactions occur between 2 nodes, it results in the **shift of the balance** of the payment channel. As a result, it can become more difficult for users to find available channels with **sufficient liquidity** to send payments. When a user initiates a payment, the Lightning Network protocol attempts to find the most efficient and low-cost route through the network to complete the transaction.

If there is not enough channel liquidity available on the route, the payment may fail to complete. This can result in a decrease in the number of successful transactions on the network.

In addition to individual payment channels, **overall network liquidity** can also affect the number of transactions that are able to be processed. If there is low overall liquidity in the Lightning Network, it can become more difficult to find available channels with sufficient funds to complete payments, resulting in a decrease in the number of successful transactions.