# Simulation of a P2P Cryptocurrency Network : Design Document

Input :
n: number of peers in the network
z0: percentage of slow peers
z1: percentage of low CPU peers
ttx: mean inter-arrival time between transactions
I: average time taken to mine a block

Initialize Peers and Connected Graph
Add initial Transaction_Gen, Block_Gen Events for each Peer.

Populate Transactions and visualize Blockchain, Results

simulate

Simulation Done

If already received:  return
Else, then push into pending_txns
Add Transaction_Rec Event into its EventList by computing the Latency

Until simulation is complete
( # Blocks in BlockChain < blockLimit)

Block_Gen

Create a new Block by adding feasible txns from pending_txns, add coinbase txn, and update balances at the Block
Update pending_txns, pushed_txns, long_Block from Blockchain and bcTree
Add Next Block_Gen Event into EventList
call sendBlockNeighbors

Transaction_Rec

Block_Rec

Transaction_Gen

If already received : return

Compute Latency and create Block_Rec event to its neighbors as receivers

else

Choose a neighbor randomly and create a transaction of random_amount > balance
Add Next Transaction_Gen Event
Add Transaction_Rec Event into its EventList by computing the Latency

Check for its Parent

Parent Not Present

If Present

Parent Present

Check for Orphans to adopt

Add Into Orphan Blocks and return

Check the Longest Chain in the BlockChain. If Found New Long_Block, Update BlockChain.Long_Block

Process Current Block and Update BlockChain.bcTree, BlockChain.arrivalTime

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