Lab 4 Assignment

In order to improve the Lab 3 by exchanging transactions instead of messages, in this we will implement the transactions format will follow the UTXO model (Unspent Transaction Output Model).

In this model, a **transaction**, is identified by a Hash and maintains a list of inputs and a list of outputs.

An **input** has a :
- preTxHash: The hash of the previous transaction.
- outIndex: The index of the output of the previous transaction that will be consumed.
- A Signature: The signature of the public key of the owner of the referred output (coin).

An **output** is defined by:
- An index: Wish is used to identify that output.
- A value: How many Satoshi are in that output.
- A public Key: The public key of the output holder.

Implement the mechanisms that allow to verify the following validation rules of a transaction:
- No two inputs in the same transaction are refereeing to the same output.
- The outputs claimed by a transaction have not been spent yet.
- The signatures on each input of a transaction are valid.
- All of the output values are non-negative.
- The sum of the input values is greater than or equal to the sum of its output values.

P.S.: There are no restriction on the data structure and the design decisions.