

Corda

Corda is a platform designed to use a distributed ledger and managed financial agreements between different institutions in which each institution maintains its own ledgers, i.e., they use individual agreements between firms, where all data should not be copied to all participants. Also, this platform supports smart contracts that links business logic and business data to ensure that the financial agreements on the platform are according to the law. A Corda smart contract is a function that either accepts or rejects a transaction, and that can be composed from reusable functions. Corda uses the Java Virtual Machine with a custom sandbox as a virtual machine for contract executions and validations. Some key features of the Corda framework to run smart contracts are: (i) recording and managing the evolution of financial agreements, (ii) choreographing workflow, (iii) supporting a variety of consensus mechanisms between firms, (iv) validating transactions, (v) relating human-language legal prose documents with smart contract code, and (vi) restricting access to the data within an agreement. A key concept in Corda is called state object, that is a digital document which records the existence, content and current state of an agreement between two or more parties. In Corda, updates are applied using transactions that consume an existing state object and create a new one. There are two important aspects of consensus in Corda: (i) transaction validity, and (ii) transaction uniqueness.

Corda has some similarities to Bitcoin as: (i) immutable states, (ii) transactions have multiple inputs and outputs, and (iii) a contract does not have storage or the ability to interact with anything. By contrast, Corda can include arbitrary typed data in their states, and transitions invoke not only input contracts but also contracts of the outputs. Also, a Bitcoin script can only be given a fixed set of byte arrays as the input, whereas Corda smart contracts are Turing-complete and can be written in any ordinary programming language that targets the JVM. Finally, Corda does not use proof-of-work or the concept of mining as Bitcoin. Not just with Bitcoin, also Corda has some similarities to Ethereum like the use a virtual machine, EVM vs JVM, or smart contracts. While Ethereum smart contracts refers to an instantiation (like an object in an Object-Oriented Program) of a program that is replicated and maintained by every node, whereas Corda smart contracts refers to a set of functions. In addition, Corda smart contracts do not have mutable storage. Also Ethereum is a platform not only for financial logic, whereas Corda considers non-financial applications to be out of scope.