Blockchain Platform Comparison & Analysis(Task-2)

Blockchain Platform Comparison Table:-

Attribute	Ethereum	Hyperledger Fabric	R3 Corda
Type	Public	Private	Consortium
Consensus Mechanism Used	Proof of Stake (PoS)	Pluggable (e.g., Raft, Kafka)	Notary-based (Raft/BFT)
Permission Model	Open	Permissioned	Permissioned
Speed / Throughput	~30 TPS (Layer 1)	~3,000 TPS	~1,000+ TPS
Smart Contract Support	Yes, Solidity	Yes, Go/Java/Node.js	Yes, Kotlin/Java
Token Support	Yes (ETH - native)	No	No
Typical Use Case	Decentralized apps (DApps), DeFi	Enterprise supply chains, medical data	Inter-bank settlements, finance
Notable Technical Feature	Smart contracts, Layer 2 scalability	Modular architecture, private channels	UTXO model, point-to-point architecture

Short Report:-

Ethereum, Hyperledger Fabric, and R3 Corda represent different blockchain categories, each with distinct capabilities.

Ethereum, a public blockchain, supports open participation and powerful smart contracts via the Ethereum Virtual Machine (EVM). However, it has limited speed on Layer 1, though Layer 2 scaling solutions help improve throughput.

Hyperledger Fabric, a private blockchain, offers high throughput (1000+ TPS), modular design, and fine-grained access control, making it ideal for enterprise use where security and speed are essential. Its chaincode system supports common programming languages and runs smart contracts in a controlled environment.

R3 Corda, a consortium blockchain, is tailored for regulated industries like finance. It focuses on privacy through point-to-point communication, making it ideal for transactions between trusted parties. While not optimized for open apps, it supports smart contracts and ensures legal compliance.

Platform Choices:

- For a **decentralized app**, **Ethereum** is the best due to openness, token support, and strong community tools.
- For a **supply chain network among known partners**, **Hyperledger Fabric** is ideal due to permissioned control and high throughput.
- For an **inter-bank financial application**, **R3 Corda** is preferred for its privacy model and regulatory alignment.