**Task 2:**

1. **comparison table**

| **Blockchain Name** | **Type** | **Consensus Mechanism** | **Permission Model** | **TPS / Speed** | **Smart Contract Support** | **Token Support** |
| --- | --- | --- | --- | --- | --- | --- |
| **Ethereum** | Public | Proof of Stake (PoS) | Open | ~15–30 TPS (L1), 1000+ via L2 | Yes (Solidity, Vyper) | ETH (native) |
| **Hyperledger Fabric** | Private | Pluggable (e.g., Raft, Kafka) | Permissioned | 1000+ TPS (depending on setup) | Yes (Chaincode - Go, Java, JS) | No native token |
| **Quorum** | Consortium | Istanbul BFT / Raft | Permissioned | ~100–1000+ TPS | Yes (Solidity, EVM-based) | ETH-compatible |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Blockchain Name** | |  | | --- | | **Typical Use Case** |  |  | | --- | |  | | **Notable Technical Feature** |
| **Ethereum** | |  | | --- | | Decentralized apps, NFTs, DeFi |  |  | | --- | |  | | Large dev community, Layer-2 scaling |
| **Hyperledger Fabric** | Enterprise data sharing, internal ops | Modular architecture, private channels |
| **Quorum** | |  | | --- | | Inter-bank transfers, regulated finance |  |  | | --- | |  | | Private transactions, fast finality |

1. **Short Report (150–200 words):**

This comparison highlights three major blockchain platforms across public, private, and consortium types.

**Ethereum**, a public blockchain, is widely adopted for decentralized applications (dApps) due to its open participation model, robust smart contract support, and native token (ETH). However, it suffers from relatively lower throughput (15–30 TPS on Layer-1), requiring Layer-2 solutions for scalability.

**Hyperledger Fabric** is a private blockchain designed for enterprise use. It offers high performance and flexibility with pluggable consensus and supports smart contracts ("chaincode") in multiple languages. Fabric lacks native token support but excels in data privacy through features like private channels and strict access control.

**Quorum**, a consortium blockchain derived from Ethereum, is optimized for enterprise and banking needs. It supports EVM-compatible smart contracts and offers better performance and privacy features than public Ethereum. It allows regulated financial entities to collaborate while maintaining confidentiality.

**Platform Choices:**

* For a **decentralized app**, **Ethereum** is ideal due to its open nature and large ecosystem.
* For a **supply chain among known partners**, **Hyperledger Fabric** is preferred for its permissioned control and data privacy.
* For an **inter-bank financial application**, **Quorum** is the best fit due to its high TPS, private transactions, and Ethereum compatibility.

These choices reflect a balance between decentralization, performance, and regulatory needs.