Task Overview:

Choose one platform from each category:

- **Public Blockchain:** (e.g., Ethereum, Bitcoin, Solana)
- **Private Blockchain:** (e.g., Hyperledger Fabric, R3 Corda in private mode)
- **Consortium Blockchain:** (e.g., R3 Corda, Quorum, IBM Food Trust)

1. **Create a comparison table or markdown sheet** with the following columns for each platform:

Blockchain Name	Type	Consensus Mechanism	Permission Model	Speed / Throughput (TPS)	Smart Contract Support	Token Support	Typical Use Case	Notable Technical Feature
Ethereum	Public	Proof of Stake (Gasper)	Open	~15 TPS (62.34 Max TPS)	Yes (Solidity, Vyper)	Native (ETH, ERC tokens)	Decentralized apps, DeFi, NFTs	Decentralized, robust smart contracts
Hyperledger Fabric	Private	Pluggable (Raft, Kafka)	Permissioned	1000+ TPS	Yes (Go, Java, Node.js)	No native but supports tokens via SDK	Supply chain, enterprise automation	Modular, pluggable consensus, privacy

R3 Corda	Consortium	Notary Nodes	Permissioned	~1000 TPS	Yes (Kotlin, Java)	No native but supports tokens	Inter-bank, finance, regulated industries	Privacy, selective data sharing, scalability

2. Report: Technical Comparison and Platform Suitability

Technical Capabilities Comparison

- Ethereum is a public, open blockchain with a robust Proof-of-Stake consensus (Gasper), enabling decentralized trust and censorship resistance. It offers strong smart contract capabilities (Solidity, Vyper), native token standards (ETH, ERC-20, ERC-721), and is the foundation for most decentralized applications (dApps). However, its throughput is limited (~15 TPS), which can be a bottleneck for high-volume enterprise use cases.
- Hyperledger Fabric is a private, permissioned blockchain designed for enterprise needs, supporting modular and pluggable consensus (Raft, Kafka). It excels in transaction speed (1,000+ TPS), privacy, and fine-grained access control. Smart contracts (chaincode) can be written in mainstream languages (Go, Java, Node.js), and tokenization is possible via SDKs, though there's no native cryptocurrency. Its architecture is ideal for business automation and supply chain where privacy and performance are paramount.
- R3 Corda is a consortium/permissioned DLT platform tailored for financial and regulated industries. It uses notary nodes for consensus, ensuring only relevant parties see transaction data, maximizing privacy and scalability. Smart contracts (CorDapps) are written in Java/Kotlin, and tokenization is supported through extensions. Corda achieves high throughput (1,000+ TPS per node), and its selective data sharing is crucial for inter-bank or multi-party regulated environments.

Platform Suitability

- **Decentralized App:** *Ethereum* is the best fit due to its open, censorship-resistant nature, global reach, and mature smart contract ecosystem.
- **Supply Chain Network Among Known Partners:** *Hyperledger Fabric* is ideal, offering high throughput, modular privacy, and permissioned access, which are essential for trusted enterprise networks.
- **Inter-bank Financial Application:** *R3 Corda* is purpose-built for this use case, providing privacy, regulatory compliance, and high throughput with selective data sharing among known institutions

Justification

- Ethereum's public, decentralized architecture and rich smart contract environment make it the clear choice for trustless, global dApps.
- Hyperledger Fabric's modular, permissioned design and enterprise-grade performance are unmatched for supply chains where privacy, speed, and access control are vital.
- R3 Corda's unique notary-based consensus, privacy-first architecture, and financial industry alignment make it the premier choice for inter-bank and regulated financial applications, ensuring both confidentiality and scalability.