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(57) Abstract :

The invention relates to a decentralized cloud storage system comprising distributed nodes (101), an encryption module (102), a blockchain ledger (103), a redundancy manager (104), and a retrieval interface (105). The system employs multi-layer cryptographic techniques including homomorphic encryption and zero-knowledge proofs to ensure confidentiality, authenticity, and tamper resistance. Data is fragmented, encrypted, and redundantly stored across nodes, with blockchain-based auditing guaranteeing transparency. The invention ensures secure, resilient, and scalable storage suitable for diverse applications, including IoT, healthcare, finance, and edge computing environments.

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