**IPFS - InterPlanetary File System**

1) What is IPFS?

IPFS (InterPlanetary File System) is a peer-to-peer distributed file system that seeks to connect all computing devices with the same system of files. It's a protocol and network designed to create a content-addressable, versioned, and decentralized method of storing and sharing files.

2) Why Use IPFS?

* Decentralized storage: No central server.
* Content-addressable: Files are found by their hash.
* Efficient: Reduces duplication and bandwidth usage.
* Permanent: Once a file is on IPFS, it stays as long as a node hosts it.

3) How IPFS Works

IPFS breaks files into smaller blocks and distributes them across the network. Each file and all blocks within it are given a unique hash. When a file is requested, IPFS looks for nodes that store the blocks with the matching hash and retrieves them.

4) IPFS vs Traditional Web

Traditional Web (HTTP): Location-based addressing, central servers.

IPFS: Content-based addressing, distributed nodes.

This shift improves security, reliability, and performance of file delivery.

5) How to Use IPFS

1. Install IPFS from https://ipfs.io.
2. Initialize IPFS: `ipfs init`
3. Add a file: `ipfs add filename.txt` - returns a unique hash.
4. Access file: Use `ipfs cat <hash>` or through a public gateway like `https://ipfs.io/ipfs/<hash>`.

6) Applications of IPFS

* Decentralized web hosting
* Content sharing and distribution
* Secure data archiving
* Blockchain data storage





