



School: Campus:
Academic Year: Subject Name: Subject Code:
Semester: Program: Branch: Specialization:
Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment : Store with IPFS – Decentralized File Upload

Objective/Aim:

To learn how to upload and access files using IPFS (InterPlanetary File System), understand decentralized storage, and observe how content-addressed data is shared without central servers.

Apparatus/Software Used:

- Laptop/PC
- IPFS (via <https://web3.storage> or <https://infura.io>)
- Browser or command-line IPFS client
- Internet

Theory/Concept:

What is IPFS?

IPFS is a **peer-to-peer, decentralized file system** that allows users to store and share files via **content-addressing** (using CIDs – Content Identifiers).

Key Concepts:

- **CID (Content Identifier):** Unique hash generated from file content.
- **Decentralized Storage:** Files are stored across many nodes, not on a single server.
- **Persistence:** Files must be pinned to stay on the network (via pinning services like Pinata or web3.storage).

How it works:

- Files are broken into chunks and hashed.
- Each chunk has a unique CID.
- Files can be retrieved using their CID from any IPFS node or public gateway (like <https://ipfs.io/ipfs/<CID>>).

Procedure:

1. Visit <https://web3.storage> and create a free account.
2. Upload any file (e.g., .txt, .png, .pdf) via the dashboard.
3. After upload, copy the generated CID.
4. Access your file using a gateway URL like:
https://ipfs.io/ipfs/<your_CID>
5. Test retrieving the file from different browsers and devices.

<input type="checkbox"/>	NAME	CID	SIZE	CREATION DATE	FILE ID
<input type="checkbox"/>	RESUME_TEMPLATE_5 (1).docx	bafkr...be7im 	119.21 KB	7/30/2025	 

Observation Table:

Feature	IPFS
Definition	A peer-to-peer decentralized file system using content addressing
Control	Controlled by users across a distributed network
Data Ownership	Users own and manage their own data
Examples	IPFS, Filecoin, web3.storage, Pinata
Privacy	High privacy; data is not monetized by centralized platforms
Accessibility	Accessible via CIDs and public IPFS gateways
Security	Secured using cryptographic hashing and distributed design
Censorship	Resistant to censorship due to its decentralized nature
Scalability	Faces some scalability challenges but is evolving with new protocols

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No.

Signature of the Faculty: