



P2P Drive

Knight Foundation School of Computing and Information Sciences

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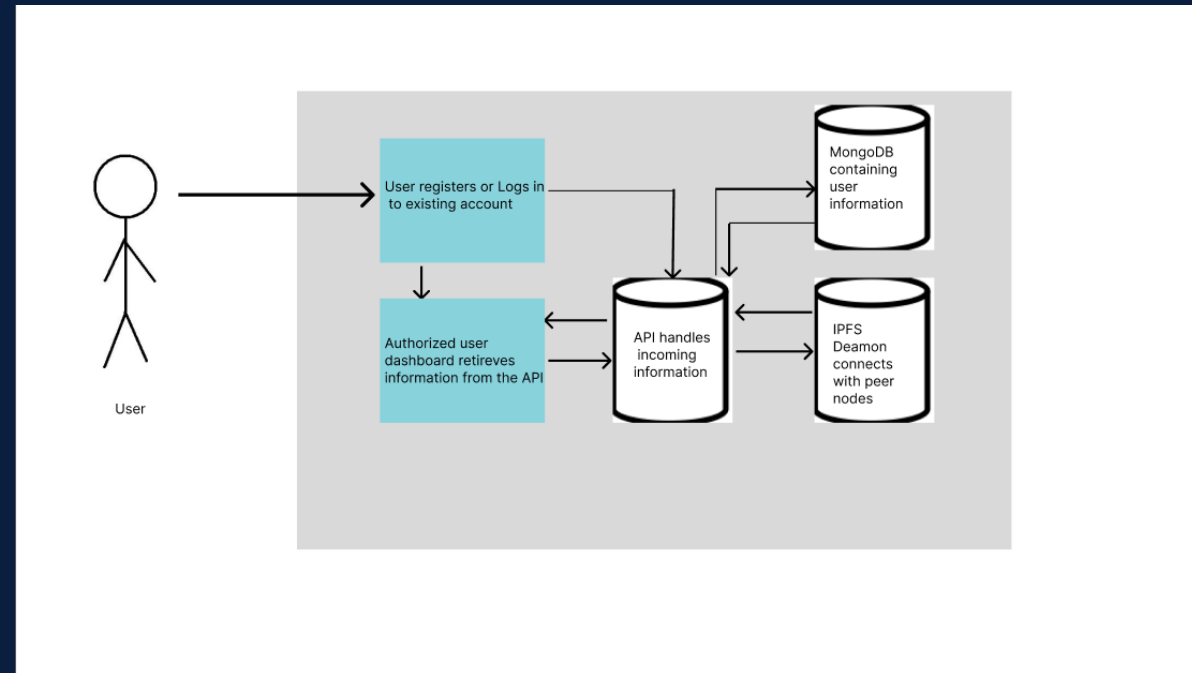


Problem:

- To build an effective peer-to-peer file sharing system, like Google Drive, utilizing Inter Planetary File System (IPFS) technology so that integrity may be assured by using content addressing instead of location addressing.

Solution:

- Designed a decentralized file sharing system for peer-to-peer communication with an encryption level to provide authenticity and security for the user.



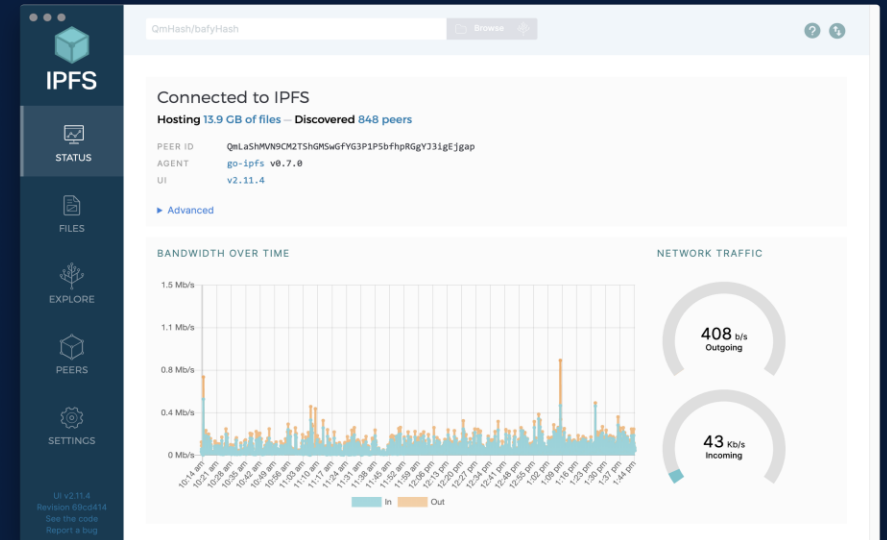


What is IPFS?

- A decentralized system for accessing files, websites, data, and applications.
- IPFS uses content addressing instead of location addressing.
- Content identifiers (CID) are used to point to material in IPFS.

```
/ipfs/bafybeiaysi4s6lnjev27ln5icwm6tueaw2vdykrtjkwiphekeywqhcjze/wiki/Aardvark
```

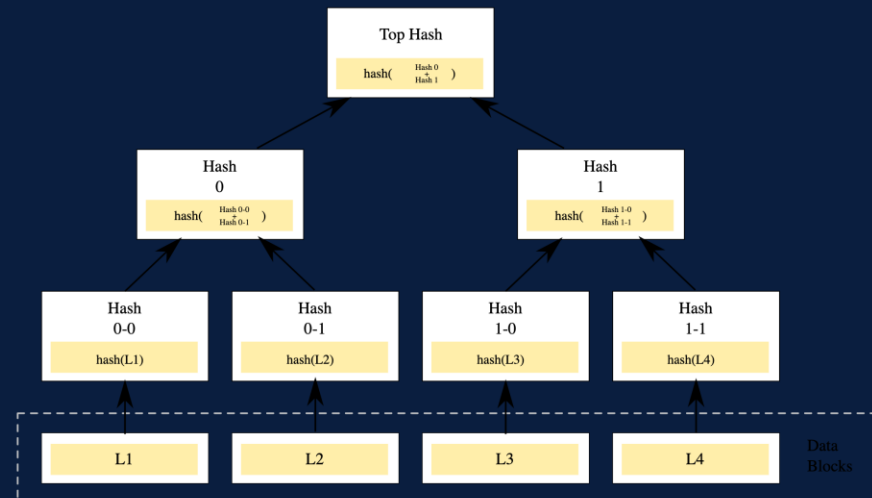
```
ipfs
X > ipfs daemon
Initializing daemon...
go-ipfs version: 0.9.0
Repo version: 11
System version: amd64/linux
Golang version: go1.16.5
2021/06/23 12:13:35 failed to sufficiently increase receive buffer size (was: 160 kiB, wanted:
048 kiB, got: 320 kiB). See https://github.com/lucas-clemente/quic-go/wiki/UDP-Receive-Buffer-S
ze for details.
Swarm listening on /ip4/127.0.0.1/tcp/4001
Swarm listening on /ip4/127.0.0.1/udp/4001/quic
Swarm listening on /ip4/169.254.147.19/tcp/4001
Swarm listening on /ip4/169.254.147.19/udp/4001/quic
Swarm listening on /ip4/169.254.227.196/tcp/4001
Swarm listening on /ip4/169.254.227.196/udp/4001/quic
Swarm listening on /ip4/169.254.85.219/tcp/4001
Swarm listening on /ip4/169.254.85.219/udp/4001/quic
Swarm listening on /ip4/192.168.1.106/tcp/4001
Swarm listening on /ip4/192.168.1.106/udp/4001/quic
Swarm listening on /ip6:::1/tcp/4001
```





How does IPFS receive and return files?

- A file gets splits into a Merkle DAG representation of the content with CID.
- Each block of the Merkle DAG representation of the contents sent to a distinct peers in the IPFS network
- IPFS stores which peer has which block in a Distributed Hash Table. Said DHT is then later used when retrieving the content.



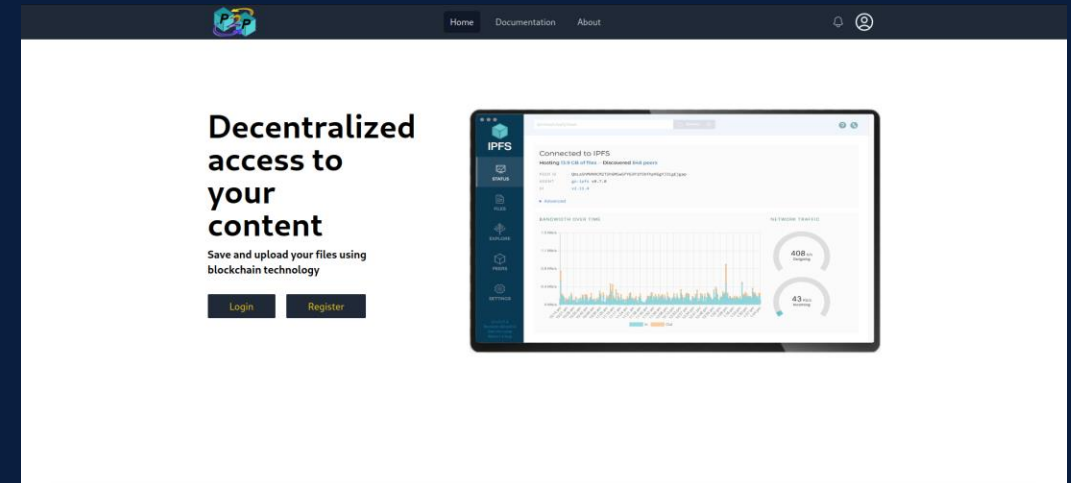


Front End

- ReactJS
- Postman
- User Icons
- Herolcons
- Bootstrap
- HeadlessUI
- Prefixer
- Axios
- Tailwind



POSTMAN



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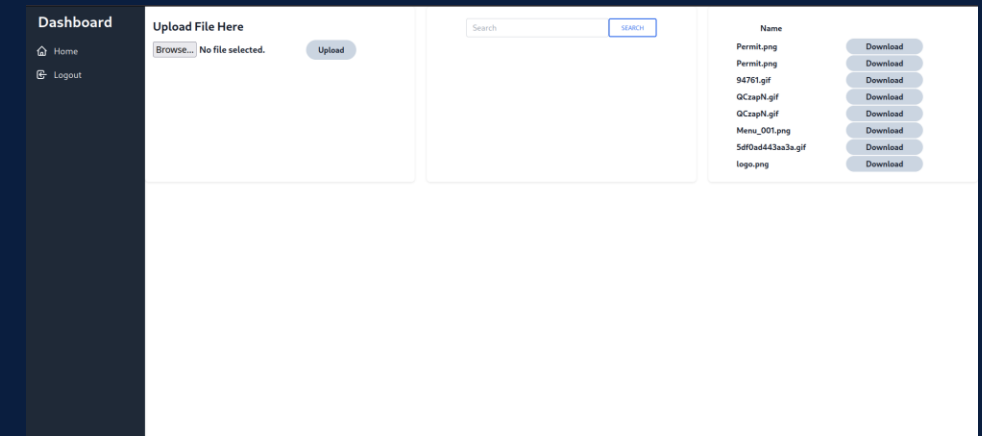
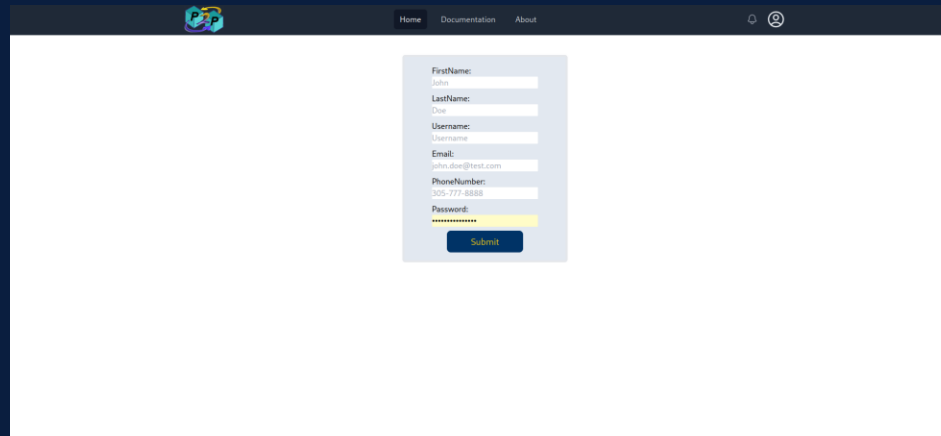
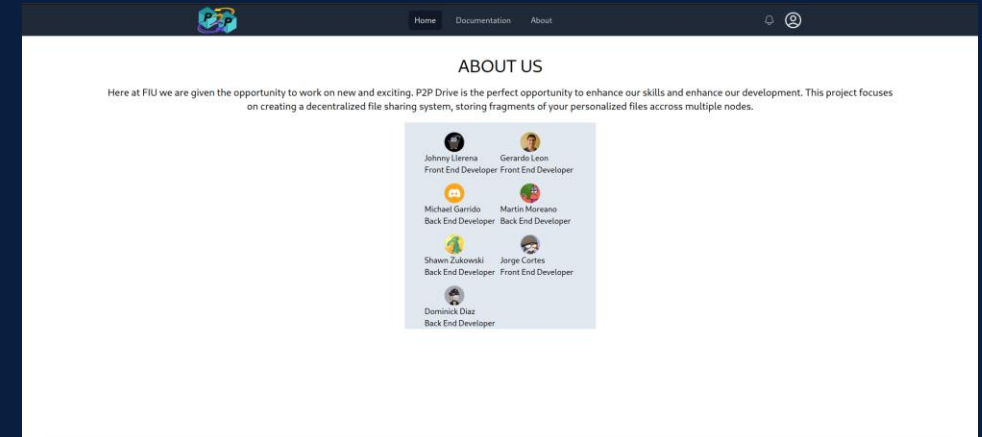
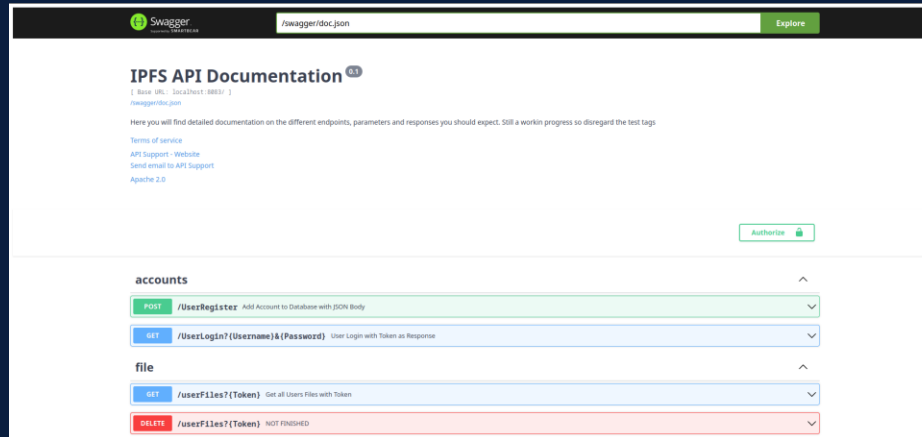
Back End

- GoLand
- Fiber
- Swagger
- MongoDB
- MD5





Results





For the Future...

- Settings feature for user customization/personalization.
- Add a status method to display on a home page to view all users connected to IPFS.
- Accept folders as directories for upload and download.
- Implement a working content-level file encryption using AES instead of MD5.

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Thank you!

We will now be taking any questions!

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