

Comparative Analysis of Web2 and Web3  
  
**Objective/Aim:**  
  
 To understand the fundamental differences between Web2 (traditional internet) and Web3 (decentralized internet



built on blockchain and smart contracts), highlighting their architectures, features, advantages, and limitations.

**Apparatus/Software Used:**

* Laptop
* Word for documentation
* Internet for research
* Web2 Platforms and Web3 Platforms

**Theory/Concept:**

**What is Web2?**

Web2 refers to the current generation of the internet, dominated by centralized platforms, social media, and cloud-based services. In Web2, users can create, share, and interact with content, but data ownership and control are primarily in the hands of centralized companies.

**What is Web3?**

Web3 represents the decentralized evolution of the internet, built on blockchain technology and powered by smart contracts. It eliminates the need for intermediaries by ensuring direct peer-to-peer interactions, ownership of digital assets, and trustless transactions.

**Key Differences between Web2 and Web3**

* **Architecture**: Web2 has Centralized servers controlled. Web3 Decentralized blockchain networks
* **Data Ownership**: In Web2 user data is owned and stored by companies but in Web3 User have full ownership and control of their data.
* **Data Privacy:** Higher in Web3.
* **Security**: Web2 vulnerable to hacks, Web3 more secure due to decentralization and cryptographic
* **Transparency:** Web2 has limited visibility. Web3 transactions and code are transparent.
* **Complexity:** Web3 has a steep learning curve compared to Web2.



**Procedure:**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**1.Identify the Objective**

* Define the purpose: to study and analyze the fundamental differences between Web2 (centralized internet) and Web3 (decentralized internet).

**2.Collect Resources**

* Access Web2 platforms such as Google, YouTube, and Facebook.
* Access Web3 platforms such as Ethereum test networks (Sepolia/Goerli), MetaMask, and decentralized applications (Uniswap, IPFS).

**3.Practical Exploration of Web2**

* Observe how data is stored and accessed through centralized servers.
* Note how login credentials, cloud storage, and data monetization rely on intermediaries.

**4.Practical Exploration of Web3**

* Deploy a basic smart contract on a testnet using Remix IDE.
* Connect MetaMask wallet to a decentralized application (dApp).
* Observe direct peer-to-peer transactions without intermediaries.

**5.Compare Features**

* Document the key differences (data ownership, trust model, transparency, monetization, and security).
* Record observations in a comparative table.

**Observation Table:**

| **Aspect** | **Web2** | **Web3** |
| --- | --- | --- |
| **Architecture** | Centralized servers controlled by companies | Decentralized blockchain-based networks |
| **Data Ownership** | Controlled by platforms (companies monetize user data) | Users have sovereignty over their data and digital  assets |
| **Trust Model** | Trust in intermediaries (banks, corporations, platforms) | Trust in code, cryptography, and consensus  protocols |
| **Transparency** | Limited visibility into algorithms and data handling | Full transparency via blockchain ledger |
| **Security** | Vulnerable to single point of failure (hacks, outages) | Enhanced security due to decentralization and cryptographic verification |
| **User Interaction** | Users consume and generate content but do not own underlying infrastructure | Users can interact, govern, and earn rewards  directly on decentralized applications |
| **Examples** | Facebook, YouTube, Google, Amazon | Ethereum, Uniswap, IPFS, Decentralized Social Media (Lens, Farcaster) |



**Signature of the faculty** 