**SYSTEM REQUIREMENTS**

**CHAPTER 4**

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To be used efficiently, all computer software needs certain hardware components or other software resources to be present on a computer these prerequisites are known as system requirements. System requirements are the configuration that a system must have in order for a hardware or software application to run smoothly and efficiently. Failure to meet these all requirements can result in installation problems or performance problems. The former may be prevent a device or application from getting installed, whereas the latter may cause a product to malfunction or perform below expectation or even to hang or a crash. System requirements are also known as minimum system requirements. System requirements only tell what system must have and what it must allow users to do. The system requirements are of two types:

* **Hardware Requirements**
* **Software Requirements**

**4.1 Hardware Requirements**

* Processor : Multi-core Processor
* Hard disk : 500GB or Higher
* Ram : 8GB or Higher

**4.2 Software Requirements**

* Operating System : Windows
* Front-End : React
* Back-End : Node JS
* Smart Contract Language : Solidity
* Frame Work : Next JS (for front end)
* Library : Web3
* Code Editor : VS Code, Remix IDE

**4.3 Modules Involved**

**Preprocessing Module:**

Purpose : Enhancing crowdfunding data accuracy.

Functions : Noise removal, format standardization.

**Blockchain Integration Module:**

Purpose : Ensuring secure, transparent, and decentralized crowdfunding transactions.

Functions : Integration of blockchain technology.

**Transaction Segmentation Module:**

Purpose : Improving analysis and transparency in crowdfunding transactions.

Functions : Integration of blockchain technology.

**Smart Contract Execution Module:**

Purpose :Automating fund disbursement based on project milestones.

Functions : Implementation of smart contracts for secure and automated transactions.

**Verification and Validation Module:**

Purpose : Ensuring secure and validated transactions through blockchain consensus mechanisms.

Functions : Implementation of blockchain consensus mechanisms.

**Global Participation Module:**

Purpose : Enabling global crowdfunding with reduced barriers and costs through the blockchain.

Functions : Implementation of features to facilitate global participation.

**Cost Efficiency Module:**

Purpose : Minimizing fees and streamlining operations through blockchain.

Functions : Leveraging blockchain’s cost-effective features.

**Transparent Fund Utilization Module:**

Purpose : Real-time tracking and transparency in fund allocation.

Functions : Utilizing blockchain for transparent and accountable fund utilization.

**4.4 Technologies Used**

**Next JS:**

Next.js is an open-source react front-end development web framework that enables the functionality such as server-side rendering and generating static websites for react based of web applications. Utilizing Next.js for web development, I implement server-side rendering and efficient client-side navigation for seamless user experiences. Leveraging its dynamic of routing and API routes, I ensure scalable and performant applications. My proficiency in the Next.js includes optimizing for SEO and building robust react applications with ease.

**Solidity:**

Solidity is a high-level programming language designed for writing smart contracts on the blockchain platforms, with Ethereum being use case. It facilitates the creation of secure and a decentralized applications by defining the rules for executing transactions on a blockchain. A solidity supports the development of complex, self-executing contracts, enabling the way of a programmable and trustless interactions. Its syntax is similar to JavaScript, making it accessible for developers to create decentralized applications (DApps) and deploy them on blockchain networks.

**Web3:**

Web3.js isa collection of libraries that allows you to interact with local or remote Ethereum node using HTTP, IPC or WebSocket. Web3 refers to the third generation of the internet, that emphasizing decentralized and blockchain technology. It enables peer-to-peer interactions, as decentralized applications (DApps), and smart contracts transparent and trustless transactions. With a focus on user control and privacy, web3 aims to reshape the digital landscape by it providing a more autonomous and secure online experience. Cryptocurrencies and the most decentralized identity are integral components of the web3 ecosystem.

**Ethereum Smart Contract:**

It is the collection of functions and data that reside at a specific address on the Ethereum of blockchain. Ethereum smart contracts are self-executing code running on the Ethereum of the blockchain, automating and enforcing predefined rules in a trustless manner. Programmed in solidity, these contracts power decentralized applications (DApps) and various of blockchain based functionalities.