Interim Report

Description

The planned final year project aims to build a paid search engine using a private blockchain where user identity will be anonymous. The overall goal of the project is to remove the centralization of search engines and address the issues of data privacy that arise from the current centralized search engine model.

The background of the project is the growing concern over how centralized companies store and use personal data. Centralized search engines, such as Google and Bing, collect vast amounts of data on their users, which can be used for targeted advertising and other purposes. This raises concerns about data privacy, as well as the potential for misuse of personal information. Additionally, the centralization of search engines can lead to censorship and bias in search results. The problem statement of the project is to design a decentralized search engine that addresses these concerns. By using a private blockchain, the project aims to create a decentralized system where users can search for information anonymously and without fear of their data being collected or misused. In this project, the blockchain will be a private one and the miner nodes will be responsible for receiving search queries and transactions from users and loading them on the blockchain. The search engine will then search for the queries and reward the miner with the money received with each query. The search results will be stored on a database, which will be scraped by the user to load the results. The overall goal of the project is to create a decentralized and private search engine that addresses the concerns of data privacy and censorship in the current centralized search engine model. The project aims to demonstrate that it is possible to create a search engine that respects user privacy and ensures unbiased and uncensored search results.

Literature review

The proposed project aims to address the issues of data privacy and censorship that arise from the current centralized search engine model by building a paid search engine using a private blockchain. In this section of this report, I will be providing the literature review of research and development which provides the motivation and initial ideas for my project: -

In terms of search engine technology, ZSUZSANNA BODOGH in [1] has noted how search engines use the user's data i.e., IP, location etc. to track a user and to advertise with custom ads built using users search queries, which is a violation of privacy. Use of blockchain will result in this information being anonymous for the search engines.

About maintaining the anonymity of the user [2] explains what the Whisper protocol by Ethereum and how it maintains users' anonymity, where [3] in his project uses whisper to maintain uses anonymity by using onion routing on top of the protocol to hide the users IP address as anonymity in online systems is an important aspect of data privacy.

To conclude on the literature review part, we can say that there is enough research and development to help make a search engine which will not be able to access users data.

Plan of work

To complete this project on time and leave a few days in the end for adding the advanced features I have planned the schedule in the following steps:-

Step 1:- Research technology and review the existing literature.

Step 2:- Design the architecture of the system, including the private blockchain, miner nodes, search engine, and database.

Step 3:- Develop the miner nodes, which will receive search queries and transactions from users and load them on the private blockchain.

Step 4:- Build the user, search engine and a script to run all these in an environment separately

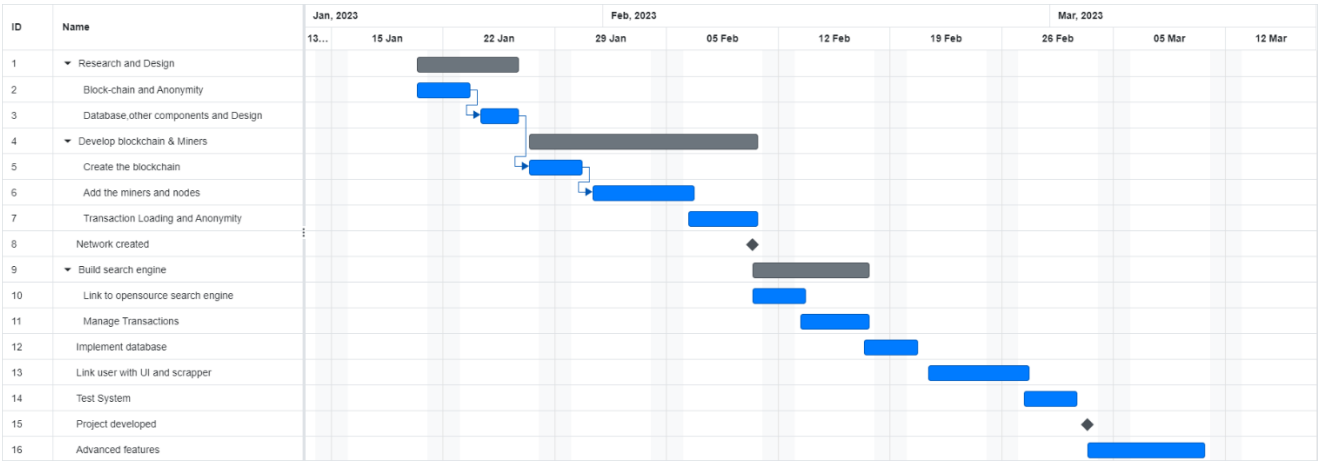
Step 5: Implement the database that will store the search results.

Step 6: Test the system to ensure it is functioning properly and that the search results are accurate and relevant.

Step 7: Optimize the system for performance and scalability.

Step 8 :- look for advanced features that can be added to the project.

The following Gantt chart explores shows the timeline of implementing all these features



Ethical Issues

This Project does not have any ethical issues, as the project objective is to prevent search engines from taking user's data and using it for custom advertisements. Therefore, rather than violating any ethic, the project helps preventing it. Other than that, there is no collection, processing, or cleaning of any form of user data which can lead to ethical issues.

References

[1] – ZSUZSANNA BODOGH ,“PRIVACY ISSUES OF THE INTERNET SEARCH ENGINES - IN THE LIGHT OF EU DATA PROTECTION LEGISLATION”,url: https://eds-p-ebscohost-com.elib.tcd.ie/eds/detail/detail?vid=0&sid=9c5a368e-8176-4885-8f94-f00162dc83ae%40redis&bdata=#AN=edshol.hein.journals.mujlt5.18&db=edshol

[2] Stefan Byre, What is Ethereum Whisper? A Detailed Guide, Accessed on 18/01/2023, url: https://www.mycryptopedia.com/ethereum-whisper-a-detailed-guide/

[3] Sean Durban, An Anonymous Decentralised Messaging Application Utilising the Whisper Protocol url: https://www.scss.tcd.ie/Donal.OMahony/bfg/201718/TCD-SCSS-FYP-2018-081.pdf