Problem Statement 1

Hierarchical Decentralised Article Management System on Klaytn Blockchain

Background: Blockchain technology has ushered in a new era of decentralised applications that prioritise transparency, security, and immutability. Content management, in particular, can benefit from this, allowing content creators to have more autonomy, security, and trust in managing their articles.

Objective: Design and deploy a Solidity smart contract on the Klaytn blockchain that functions as a decentralised article management system. This system is to be hierarchical in nature, ensuring that users must first meet the criteria of Level 1 before accessing Level 2 features.

Level 1 - Eligibility Level (Basic Article Management):

- **Create:** Users can post articles on the blockchain with attributes like title, content, timestamp, and the Klaytn address of the author.
- **Read**: All users can read the articles posted.
- **Update:** Only the article's author can modify their article's content or details.
- **Delete:** Only the original author can remove their articles.

Note: Users MUST complete and meet all the functionalities of Level 1 to be eligible for Level 2 functionalities.

Level 2 - Advanced User and Post Handling (Post Eligibility):

- **Multiple Articles:** Eligible users can manage and organize multiple articles simultaneously.
- **Multiple Users:** The contract must efficiently handle several users, each with a unique set of articles.

Level 3 - User Interface Integration:

- **UI Development:** Design an intuitive interface to interact with the smart contract, allowing smooth navigation for posting and managing articles/users.
- **Customization:** The UI must be adaptable to various popular programming languages or frameworks to ensure broad user accessibility and comfort.

Constraints:

- The smart contract should be gas-optimised, especially when handling a significant number of articles or users.
- Implement appropriate access controls in the smart contract to ensure that only authorised actions are taken (e.g., only the original author can delete or update their articles).
- The user interface needs to be user-friendly, responsive, and capable of working on various devices.
- Data on the blockchain must remain encrypted and secure, ensuring user privacy.

Expected Outcomes:

- A deployable Solidity smart contract on the Klaytn testnet or mainnet.
- A user-centric UI that communicates seamlessly with the smart contract, offering users a complete platform for managing blockchain articles.
- Comprehensive documentation detailing the functionalities of the contract, methods, and UI interaction guidelines.

Evaluation Criteria:

- Gas efficiency for contract operations.
- Security and dependability of the contract.
- Feedback on the UI's intuitiveness and responsiveness.
- Adaptability of the UI to cater to diverse user preferences.

Submission and Deployment Rules:

- **Klaytn Faucet:** Participants must secure KLAY tokens for deployment from the Klaytn faucet available at Klaytn Baobab Wallet Faucet.
- **Deployment:** After the development of the smart contract, participants should deploy their contract on the Klaytn Baobab testnet.
- **Frontend Deployment on Vercel:** Participants are required to deploy the frontend of their application on Vercel.
  Ensure the deployed frontend on Vercel communicates seamlessly with the smart contract on the Klaytn Baobab testnet.
  Provide the live Vercel URL link in the submission form.
- **Google Form Submission:** After successful deployment, participants should fill out the provided Google Form(https://forms.gle/Dq2GGpEyhbPM2zZH6). This form will request necessary details, such as the contract's deployed address on the Klaytn Baobab testnet, the participant's Klaytn address, and other relevant data to validate their submission.

Problem Statement 2

Challenge:

Urban food waste is a growing concern with far-reaching implications. Globally, a significant amount of perfectly edible food is discarded daily, contributing to environmental degradation through increased greenhouse gas emissions, resource wastage, and economic losses. Simultaneously, it exacerbates issues of food insecurity and hunger in many communities.

Objective:

The challenge is to conceive and develop innovative solutions that can effectively combat urban food waste. Participants are expected to harness their technological skills and creativity to create a solution that can have a measurable impact within urban settings.

Scope and Approach:

Participants can focus on various aspects of the food waste problem, such as:

1. Consumer Engagement: Developing a mobile application that connects consumers with surplus food from local restaurants, markets, or households, minimising food waste at the consumer level.
2. Inventory Management: Creating an algorithm or software solution that predicts food waste patterns and optimises inventory management in restaurants, supermarkets, or distribution centres.
3. Smart Appliances: Designing a kitchen appliance or device that helps users manage food expiration dates, reducing food spoilage at the household level.
4. Sustainability: Considering the environmental implications of the solution, such as reducing transportation-related emissions or promoting sustainable packaging.

Evaluation Criteria:

Solutions will be evaluated based on their innovation, effectiveness, scalability, and potential positive impact on urban food waste reduction. Participants should also consider the ethical, social, and economic dimensions of their solutions, as well as the feasibility of implementation.
The goal is to encourage participants to think critically, creatively, and technologically to address a pressing issue and demonstrate how technology can be harnessed to make a meaningful difference in our world.

Problem Statement 3

Context:

A Company works in association with parents directly or ASHA and ICDS workers who are responsible for children up to age of 6 years and they provide information regarding the child's growth. Various data parameters are collected via periodic, static forms which are in compliance with WHO guidelines, to regularly monitor the child's growth.

Based on answers to several questionnaires, a decision is made on whether a child is differently abled or not. Currently, the foundation has a web application based development milestone tracker which is available in 9 regional languages.

The tracker application is already in place and is currently undergoing beta testing. Additional support is needed in taking this application to the remotest of villages and making it more user friendly.

If the child has been identified as being Specially Abled, Company provides support in form of medical consultation, surgery, therapies (Physio, speech and occupation), availing social security schemes, enrolment into schools and adaptive devices either through face to face or tele-rehab.

Challenge:

The challenge is to increase user (parent/guardian/ICDS/ASHA worker) engagement on the tracker. One possible way to achieve this could be through regular notifications-alerting user to periodically provide data (by means of well-ordered forms) so that development delay can be identified promptly, or through any other ideas/processes that you can think of.

- If the tracker application identifies a disability in a particular region, a communication should also be sent to the company, providing them specific details so that well timed assistance can be provided.
- Besides making the application and hence assistance for disability more accessible, increased data insights for admins is needed, for instance to be able to view data geographically or location-wise. This enables easy identification of areas that need extended or specific support.

Additional Considerations:

The application needs to be taken to the remotest of places where people might have limited access to a stable network. Hence, a lightweight application is preferable. Additionally, special consideration needs to be given to deal with data uploads from such locations.

- To be able to reach maximum people, the application needs to diversify in terms of lingual support. A User-Friendly application with Multi-Lingual support would be an added bonus.
- Reminder for parents/users to enrol into company services if there is a developmental delay.

Technology Baseline:

Currently the Company has developed the tracker and promotes the same with new mothers, however the goal is to reach out to remotest villages.

Problem Statement 4

Context:

Consider the huge number of inter-state and intra-state migrant workers and their significant contribution to the creation of wealth and GDP, and the fact that they form the backbone of the economic growth and financial health of the nation, the organisation decided to facilitate employment for skilled and unskilled labour primarily in one state but labour can be from any state. They engage with employers (contractor, sub-contractors etc.) who share job opportunities which can then be availed by job seekers or migrant workers. These job postings often offer employment in bulk, requiring multiple workers for a single opportunity.

Currently, these opportunities are located in that state, but labourers come in from all over the country seeking work. Some of the current challenges they are trying to face in ensuring that the labourers have a safe work environment and are treated well by their employers. To do this, they are exploring digitization of employer contracts that includes standard clauses to protect worker rights as well as situation specific additions that the employer/organisation can make.

Challenge:

How can technology help the company build a robust, user-friendly, multilingual platform to regulate Intra and Inter State migrant labour interactions with the industry? The organisation wants to facilitate quick and quality employment opportunities to build a caring, humane society.

Additionally, how can technology empower the labourers through education and digital skill training for better employability?

Additional Considerations:

- Labourers may need more clarity/information on a specific opportunity. How can the platform facilitate this?
- A forum where migrant labourers get the opportunity to post questions and provide feedback.
- The tool needs to be multilingual, transcribed in Hindi and English.
- Consider giving the administrators control to restructure the form by adding and removing form fields.
- As this application will be serving a very wide range of people, consider how you make it both desktop and mobile-friendly.

Technology Baseline:

The organisation runs a manual process to facilitate employment at the moment. They use Google Forms to collect employment requests. For the sake of this challenge, you can assume

- All end-users will have bank accounts.
- Every user will have access to the internet.

Few Key Points:

- In addition to the designated prize money for the hackathon, it is our privilege to announce that students who opt to select **Problem Statement 1** will have the opportunity to receive extra rewards generously offered by **Mining Devs**.
- We have crafted a few problem statements with the specific intent of the needs and capabilities of **first-year students**.
- To encourage innovation and challenge participants, we have implemented a scoring system that rewards teams **opting for more complex** problem statements.