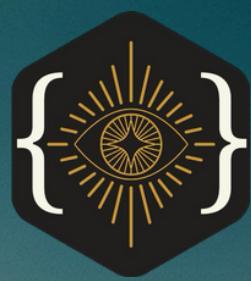


THADOMAL SHAHANI ENGINEERING COLLEGE

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presents

NEED FOR CODE 3.0

..... NAVIGATE THE SEAS OF INNOVATION

PROBLEM STATEMENTS



GENERAL/DOMAIN INSTRUCTIONS

- READ THE PROBLEM STATEMENTS CAREFULLY.
- ALL THE TEAMS SHOULD MAKE A GITHUB REPOSITORY AND NAME IT AS FOLLOWS : NFC3_<TEAMNAME> EG. NFC3_CODETANTRA
- WE RECOMMEND YOU TO UPDATE REPOSITORIES EVERY 2 HOURS.
- IT IS FORBIDDEN TO PLAGIARIZE OR REUSE PREVIOUSLY PUBLISHED CONTENT. IF FOUND UPON INSPECTION THAT THE PROJECT HAS REUSED CODE THAT WAS NOT REVEALED WITH THE SUBMISSION, THE PROJECT WILL BE DISQUALIFIED.
- YOU ARE FREE TO USE ANY DATA SETS YOU FIND APPROPRIATE FOR THE RESPECTIVE PROBLEM STATEMENTS.



DOMAIN WEB/APP PROBLEM

Innovative Educational Workflow System:

Develop an advanced Attendance and Assignment Submission Platform that leverages modern technologies to streamline, automate, and enhance the processes of attendance tracking and assignment management in educational institutions.

Problem Description:

The platform aims to modernize attendance tracking and assignment submission processes.

This will ensure real-time tracking, ease of access, and comprehensive analytics, ultimately contributing to better educational management and student performance. The system should support a range of functionalities from biometric attendance marking to plagiarism detection (In assignment) and be accessible across multiple devices and platforms.

- Attendance Tracking with Real-Time Monitoring and Reports and Analytics
- Assignment Submission with Notifications
- Integration and Accessibility
- Analytics and Insights
- Communication and Collaboration
- Additional and Bonus Features



DOMAIN WEB/APP PROBLEM 2

Digital Ration Card System for Urban Slums:

Develop a streamlined digital solution to enhance the efficiency, transparency, and security of the ration card system in urban slum areas. The system should ensure easy access to essential food supplies, prevent fraud, and provide real-time tracking of stock levels.

Problem Description:

In many urban slum areas, residents rely on ration cards to purchase essential food supplies like grains and rice. However, the current system faces numerous challenges, including inefficiencies, lack of transparency, and opportunities for fraud. There is a critical need for a digital solution that addresses these issues, ensuring a seamless and secure distribution of food supplies. The proposed system will integrate advanced features to authenticate users, manage inventory, facilitate ordering and payment, and provide robust security and support.

- User Authentication and Registration
- Inventory Management
- Ordering System
- Payment Gateway Integration
- Distribution and Delivery
- User Support
- Reporting and Analytics with feedback
- Additional and Bonus Features



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DOMAIN WEB/APP

PROBLEM 3

Comprehensive Platform for NGO Management:

Develop a comprehensive web-based platform to streamline the operations, resources, volunteer coordination, and donor relations of Non-Governmental Organizations (NGOs). The platform should enhance transparency and improve overall efficiency, enabling NGOs to focus more on their mission and impact.

Problem Description:

Non-Governmental Organizations (NGOs) often face challenges in managing their operations, resources, volunteer coordination, and donor relations. A comprehensive web-based platform can address these challenges by streamlining processes, enhancing transparency, and improving efficiency. This platform will provide various tools and features to manage user authentication, projects, resources, staff, volunteers, donations, communications, events, and impact reporting, ensuring NGOs can operate smoothly and effectively.

- User Authentication and Registration
- Admin Dashboard
- Project Management
- Resource and Inventory Management
- Volunteer and Staff Management
- Donation and Fundraising
- Donor Management
- Communication Tools
- Event Management
- Impact Reporting
- Community Engagement



DOMAIN WEB/APP PROBLEM 4

Multiplayer Game Teammate Finder Platform:
Develop a web/app-based platform that facilitates multiplayer gaming by enabling players to find suitable teammates, manage game sessions, and enhance their overall gaming experience through various features.

Problem Description:

Multiplayer games are immensely popular, but players often face challenges in finding compatible teammates.

This platform aims to address this issue by creating a community where gamers can connect, communicate, and team up for various multiplayer games. The platform will provide features such as player matching based on skills and interests, game session scheduling, in-game communication, and performance tracking. The goal is to create an inclusive and user-friendly environment that enhances the multiplayer gaming experience.

- User Authentication and Profiles
- Teammate Matching System
- Game Session Management
- In-Game Communication
- Performance Tracking
- Community Features (Forums and Tournaments)
- Security and Privacy
- User Support
- Additional Features



DOMAIN AI / ML PROBLEM I

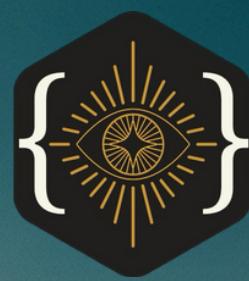
Politician Performance Report Card:

Develop an AI/ML-powered system that generates a comprehensive performance report card for politicians. The system will track and analyze various factors including news mentions, parliamentary activities, constituency work, and criminal records, providing a real-time and data-driven overview of a politician's performance.

Problem Description:

The challenge is to create an intelligent system that automates the creation of a politician's performance report card. The system will integrate multiple data sources, perform sentiment analysis on news articles, and present the information in a user-friendly format. This will enable stakeholders and the public to gain insights into a politician's activities and impact.

- News Tracking and Sentiment Analysis
- Parliamentary Activity Tracking
- Constituency Work(Initiatives and Projects)
- Criminal Records
- User Interface
- Additional Features
 - a. Recommendation System
 - b. Predictive Analytics



DOMAIN AI / ML

PROBLEM 2

Mineral Exploration System:

Develop an AI/ML-powered solution to streamline mineral exploration using the Geological Survey of India's BHUKOSH portal data, aiming to identify economically viable mineral reserves efficiently.

Problem Description:

Traditional methods of mineral exploration are hindered by the labor-intensive process of data integration and interpretation. The BHUKOSH portal offers a wealth of geological datasets that are currently underutilized. Participants are tasked with creating a solution that leverages AI/ML techniques to enhance the exploration process, optimize resource allocation, and improve accuracy in identifying economically viable mineral reserves.

- Data Integration and Preprocessing (geological datasets from the BHUKOSH portal)
- Geological Data Analysis / satellite Image Processing / Feature Engineering
- Visualization and Interpretation / Spatio-temporal Ananlysis & Visualization
- Optimization and Efficiency
- Accuracy and Reliability
- User Interface and Experience
- Scalability and Integration



DOMAIN AI / ML

PROBLEM 3

AI-Driven Solution to Combat Human Trafficking in India:

To create a comprehensive AI-driven solution that enhances detection, prevention, and support mechanisms for victims of human trafficking in India.

Problem Description:

Human trafficking is a severe issue in India, involving the exploitation of men, women, and children for various purposes including forced labor and sexual exploitation.

Traditional methods to combat human trafficking face challenges such as limited resources, lack of coordination among agencies, and difficulties in identifying and supporting victims. An AI-driven solution can address these challenges by improving detection, enabling proactive prevention, and providing robust support for victims through advanced technologies and data-driven approaches.

- AI-Powered Detection System
- Real-Time Monitoring and Alerts
- Predictive Analytics for Prevention
- Victim Identification and Support
- Data Integration and collaboration
- Public Awareness and Education
- Support Services and Rehabilitation
- Compliance and Ethics
- User-Friendly Interface(for law enforcement, NGOs, and support organizations)



DOMAIN AI / ML

PROBLEM 4

Smart Agriculture Assistant:

Develop an AI-based system that helps farmers optimize crop yield by providing real-time insights and recommendations based on soil conditions, weather patterns, and crop health monitoring.

Problem Description:

In this hackathon, your challenge is to create an intelligent system that assists farmers in optimizing their crop yield. The system should leverage AI and ML techniques to analyze various data sources, including soil conditions, weather patterns, and crop health. It should provide actionable recommendations to farmers to enhance their farming practices, improve crop health, and increase productivity.

- Soil Health Analysis / Satellite Image Processing
- Weather Forecasting
- Crop Health Monitoring
- Personalized Farming Recommendations
- Irrigation Management
- User Interface(intuitive dashboard for farmers)
- Data Sources
- Bonus Challenges



DOMAIN AI / ML PROBLEM 5

AI-Driven Personal Finance Manager and Stock Market Investment Platform:

Develop an AI-driven platform that utilizes machine learning and predictive analytics to enhance personal finance management and optimize stock market investment strategies. The platform aims to provide intelligent tools for expense tracking, budgeting, savings goal setting, debt management, portfolio optimization, and real-time investment decision support.

Problem Description:

Effective personal finance management and informed investment decisions require sophisticated tools capable of analyzing extensive data sets, predicting market trends, and delivering personalized recommendations. Current solutions often lack AI-driven capabilities tailored to individual financial contexts and market dynamics.

- AI-Powered Personal Finance Management(Expense Tracking and Categorization,Budgeting and Savings Goals,Debt Management)
- AI-Enhanced Stock Market Investment Platform(Predictive Analytics and Portfolio Optimization,Real-time Insights and Investment Recommendations)
- Security and Data Privacy
- User Interface and Accessibility(Customizable dashboards and visualizations)



DOMAIN SOCIAL CAUSE PROBLEM I

Crime Reporting and Community Safety App:

To develop a platform that streamlines crime reporting, ensures user anonymity, and provides real-time updates to both residents and law enforcement, thereby improving community safety and trust.

Problem Description:

Residents in local neighborhoods often face challenges when reporting crimes due to inefficient methods, slow processes, and fear of repercussions. This project aims to create an application that simplifies the crime reporting process, ensuring that users can report incidents anonymously and receive timely updates. The application will serve as a bridge between the community and law enforcement, fostering a safer and more trusting environment.

- User authentication and Anonymity
- Incident Reporting
- Real-Time Updates
- Law Enforcement Interface
- Community Features(eg: Incident heat maps to visualize crime hotspots)
- Accessibility(Multi-language support,Easy-to-navigate design,Offline reporting capabilities)
- Additional Features(Emergency contact feature,Analytics and reporting tools,etc)



DOMAIN SOCIAL CAUSE PROBLEM 2

Unified Platform for Old Age Homes and Orphanages:

To develop a unified web-based platform that facilitates collaboration between old age homes and orphanages, streamlines operations, and enhances the well-being of elderly residents and orphans through shared resources, volunteer coordination, and community support.

Problem Description:

Old age homes and orphanages often operate independently, despite facing similar challenges such as resource allocation, volunteer management, and providing adequate care. This project aims to create a comprehensive web-based platform that connects these institutions, enabling them to share resources, coordinate volunteer efforts, and provide mutual support. The platform will improve operational efficiency and foster a supportive community for both elderly residents and orphans.

- User authentication
- Resource management and Inventory tracking
- Volunteer Co-ordination
- Care management
- Community support
- Donation and Fundraising
- Activity and Program Management
- Report and Analytics
- Accessibility with Multi-language support
- Additional Features(Integration with local healthcare, Feedback system for residents)



DOMAIN SOCIAL CAUSE

PROBLEM 3

Pet Adoption Platform:

To develop a platform that streamlines the pet adoption process, increases visibility for pets in shelters, and improves the overall experience for both potential adopters and shelter staff.

Problem Description:

Pet adoption processes often face challenges such as lack of visibility for available pets, inefficient matching between pets and potential adopters, and cumbersome administrative processes for shelters. This project aims to create a comprehensive platform that addresses these issues by providing an intuitive and efficient system for managing pet adoptions. The platform will enhance the visibility of pets, facilitate better matching, and simplify administrative tasks, ultimately improving adoption rates and satisfaction for all parties involved.

- User Authentication
- Pet Listing and visibility
- Pet Profiles
- Adoption Process Management
- Shelter Management Tools
- Communication and Support
- Events and Campaign
- Reporting and analytics
- Community Engagement
- Additional Features(Integration with local veterinary clinics, Donation portal)



DOMAIN SOCIAL CAUSE PROBLEM 4

Personalized Addiction Rehabilitation Support System

To develop a system that provides personalized rehabilitation support to individuals struggling with addiction, offering real-time insights and recommendations based on user behavior, emotional state, and environmental triggers.

Problem Description:

Individuals struggling with addiction often face challenges in finding effective and personalized support for their rehabilitation journey. This project aims to create a comprehensive system that leverages user data to provide tailored support, real-time insights, and actionable recommendations. By addressing the unique needs and circumstances of each user, the system aims to enhance the effectiveness of addiction rehabilitation and support long-term recovery.

- User Authentication
- Personalized Rehabilitation Plans
- Real time insights and recommendations
- Support and communication
- Behaviour Tracking and analytics
- Educational resources
- Emergency Support
- Feedback and improvement
- Integration and wearable devices



DOMAIN BLOCKCHAIN

PROBLEM I

Blockchain-Based System for Tracking and Verifying Charitable Donations

To develop a blockchain-based system that enhances transparency and accountability in charitable donations, ensuring donors can track the use of their contributions and the impact they make.

Problem Description:

Charitable organizations often face challenges in maintaining donor trust due to the lack of transparency in how donations are utilized. Existing methods for tracking donations can be inefficient and fail to provide real-time visibility to donors. A blockchain solution could revolutionize this process by creating a transparent and immutable ledger of transactions, accessible to all stakeholders involved in the donation process.

- Blockchain Integration(e.g., Ethereum, Hyperledger)
- Use smart contracts to automate donation processes
- Donor Dashboards
- Charity Organization Interface
- Verification and Accountability
- Security and Privacy
- Scalability and Performance



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DOMAIN BLOCKCHAIN

PROBLEM 2

Blockchain-Based System for Intellectual Property Management

To create a blockchain-based system that streamlines intellectual property (IP) management, ensuring secure, transparent, and efficient handling of IP rights.

Problem Description:

Intellectual Property (IP) management is crucial in protecting the rights of creators and innovators. Traditional methods of managing IP rights are often plagued by disputes over ownership, unauthorized use, and inefficient processes for registering and enforcing IP. These challenges can hinder innovation and economic growth. A blockchain-based system can address these issues by providing an immutable, transparent, and secure platform for IP management, benefiting creators, innovators, and stakeholders.

- Immutable IP Ledger
- Royalty Management
 - a. Automated Royalties
 - b. Multi-party Distribution
- Authentication and Verification
- IP Registration Platform
- Licensing and Transactions
- Dispute Resolution
- IP Portfolio Management
- Security and Privacy
- Compliance and Standards
- IP Search and Discovery



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DOMAIN

BLOCKCHAIN

PROBLEM 3

Decentralized Insurance Platform Using Blockchain Technology

To create a decentralized insurance platform that leverages blockchain technology to enhance transparency, efficiency, and trust in the insurance process.

Problem Description:

The traditional insurance industry faces several challenges, including lack of transparency, slow claim processing, high administrative costs, and potential fraud. These issues can lead to mistrust among policyholders and inefficiencies in the insurance market. A decentralized insurance platform using blockchain technology can address these problems by providing a transparent, efficient, and secure system for managing insurance policies and claims, benefiting both policyholders and insurers.

- Blockchain Ledger
- Smart Contracts
- Decentralized Policy Management
- Automated Claims Processing
- Fraud Prevention
- Peer-to-Peer Insurance Pools
- User-Friendly Interface
- Regulatory Compliance
- Trust and Transparency
- Data Security
- Payout Efficiency
- Scalability



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DOMAIN

BLOCKCHAIN

PROBLEM 4

Decentralized Medical Research Database Using Blockchain Technology

To create a decentralized platform that ensures the secure, transparent, and efficient sharing of medical research data, facilitating collaboration and accelerating medical advancements.

Problem Description:

The field of medical research relies heavily on the sharing of data and collaboration among researchers worldwide. However, traditional methods of data sharing can be fraught with challenges such as data breaches, lack of transparency, and inefficiencies in collaboration. These issues can slow down the pace of medical advancements and reduce trust among researchers. A decentralized platform using blockchain technology can address these challenges by providing a secure, transparent, and efficient system for sharing medical research data.

- Blockchain Ledger
- Data Encryption and Access Control
- Decentralized Data Sharing
- Smart Contracts for Data Access
- Collaboration Tools
- Audit and Compliance
- User-Friendly Interface
- Data Integrity and Traceability
- Scalability
- Interoperability