TECHRUSH 2025 PROBLEM STATEMENTS

A] FRONTEND WEB DEVELOPMENT

1) Stock Tracker
1. Fetch and display live stock prices using a public API.

2. Plot real-time line chart of stock price vs. time using Chart.js.

3. Show key metrics like current price, change %, volume, high/low.

4. Allow users to select or search stock symbols (e.g., AAPL, INFY).

5. Auto-refresh data and chart at regular intervals (e.g., every 5 seconds).

2) LinguaQuest
1. Build a fully accessible web app with no login, where users can choose from available languages (minimum one, e.g., Spanish).

2. Include interactive exercises in each lesson such as multiple-choice, fill-in-the-blanks, and drag-and-drop matching.

3. Provide instant visual and audio feedback for correct and incorrect answers.

4. Add a game-like system where users earn XP for correct responses and lose hearts for mistakes.

5. Ensure the interface is fully responsive and works smoothly on desktop, tablet, and mobile, with two demo lessons.

3) SoundSpace
1.Simulate at least two musical instruments with accurate and distinct sounds.

2.Allow users to play sounds using mapped keyboard keys.

3.Enable simple and seamless switching between instruments.

4.Add visual effects when notes are played for better interaction.

5.Support recording and saving the played piece.

B] FULLSTACK WEB DEVELOPMENT

1) Multi Clinic Doctor Appointment System

Create a web application to book doctor's appointments for a particular doctor at a particular clinic at a particular time slot.

Core Functionalities:
1. Authentication for all users (patients)
2. Clinic selection - patients should be able to select one of multiple available clinics and a doctor available at that clinic and book a specific time slot.
3. Appointment Booking without any clashes (ie if one user books a slot, if another user logs in, that slot should appear booked)
4. Basic Interface for CRUD operations for clinics, doctors and appointment slots with ability to view booked appointments.

Additional/Optional Features:
Doctor's login and Doctor's view with ability to view booked appointments and edit availability.

2) Online Store
Create a simple, clean online store for any item of your choice (eg. mobile phones, shoes, etc)

Core Functionalities:
1. Customer Login
2. Customer should be able to browse all available items with price and stock clearly displayed.
3. Customer should be able to add items to cart (at which point stock should not be reduced), and cart should be saved and accessible on re-login.
4. When a customer clicks buy, stock should be reduced accordingly.
5. Admin view with ability to edit stock and add or remove available items

Additional/Optional Features
1. User's Purchase History should be saved
2. User Review section for products

3) CharityFlow

Create web application for managing non-monetary donations, serving as an interface between donors and NGOs

Core Functionalities

1. Users should be able to register after providing a phone number and email, and select drop off location.
2. Registered users should be able to upload photographs of item(s) which they wish to donate and submit that donation request. (Include tagging of items in specific predefined categories ie books, clothes, utensils etc)
3. Admin should be able to review the donation requests and accept or reject them.
4. If the donation request is accepted, the user should be notified.
5. The admin should also be able to track whether the accepted items have been submitted at the drop off location.
6. NGOs should be able to log in and request donated items (specific number & type)
7. The system should be able to allocate the items submitted to the drop off location to the requesting NGO and notify the NGO when the item is allocated.
8. The NGO should be able to verify that they have received the requested items.

Note: NGO requests need not be visible from user side (can be an additional feature)
No sign up for NGO - NGOs are added only by admin and can log in on their own.

Additional Features

1. Spam Filter (Auto Rejection) for donation requests, eliminating AI generated images, repeated requests and other types which are a waste of time.
2. Admin should be able to keep a track of each user's donation history (submitted requests, delivered items, pending items) and each NGO's request history.

C] ARTIFICIAL INTELLIGENCE/MACHINE LEARNING

1) Pneumonia Disease Prediction and Anomaly Detection Using X-ray Images
 - Develop a machine learning model that can predict pneumonia and detect anomalies from chest X-ray images.
 - Include relevant preprocessing and feature extraction on techniques to improve prediction accuracy.
 - Utilize explainable AI methods to highlight the infected or abnormal areas on the X-ray for transparency.
 - Explore using generative AI to provide personalized preventive and health guidance to individuals who tested positive.

2) MCQ Generator Using PDF as Input Based on Difficulty Level and Topic Tagging
 - Develop an automated MCQ generator that takes a PDF document as input and generates

questions based on the selected difficulty level and the desired number of questions along with their answers.
 - Ensure the generator can tag questions with appropriate topics derived from the PDF content for organized learning.

3) Solar Energy Prediction Using Weather Data
 - Develop a machine learning model that predicts solar energy generation using weather data.
 - Utilize datasets containing historical solar power generation and weather parameters for accurate forecasting..
 - Consider including location -based variability and seasonal trends in the prediction model.

D] FRONTEND APP DEVELOPMENT

1) Vaccine Scheduler App

Build an app to help both parents and healthcare providers manage vaccination schedules more effectively.

Core Features:
1. Separate login for parents/guardians and healthcare staff (NGOs, hospitals).
2. Parents can view and add upcoming vaccination appointments for their children.
3. Healthcare staff can manage vaccine doses, update availability, and organize vaccination camps.
4. Streamlines communication and scheduling between healthcare providers and communities.
5. Improves vaccination tracking and delivery for better community health outcomes.

2) Constitution Quiz App

Build an app that helps users learn about the Indian Constitution through fun, MCQ-based quizzes.

Core Features:
1. MCQ quizzes covering key topics of the Indian Constitution.
2. Users receive scores, feedback, and level updates after each quiz.
3. Gamified experience to make learning constitutional rights and duties fun.
4. Helps users deepen understanding of constitutional articles and provisions.
5. Encourages continuous learning through challenges and progress milestones.

3) Campus Pay

Build an app designed for university students to easily manage campus payments, split expenses, and handle club fees with a clean, user-friendly interface.

Core Features
1.Multiple User Roles & Login: Support Student, Club Organizer, and Admin logins with role-based access (UI only).
2.Peer-to-Peer Payments UI: Enable sending and requesting money between students (UI screens only, no backend).
3.Group Bill Splitting: Create and manage split payments for events like trips and parties with clear participant shares.
4.Club Event Management: View and create club events with fee details for easy tracking and participation.
5.Transaction History & Clean UI: Display past payments and transaction history with a simple, modern, and intuitive interface.