# Ideathon Problem Statements (1–80)

## 🔧 Hardware (1–12)

## 1. Smart Helmet for Accident Detection A smart helmet equipped with sensors and a GPS module can detect accidents and immediately notify emergency contacts with location data. The system can also alert if the rider isn’t wearing the helmet. With mobile app integration, it can track riding behavior and generate reports. This innovation helps promote road safety and faster medical responses, reducing fatalities caused by delayed treatment. It's especially useful for bike riders, delivery agents, and in remote areas where help may not be immediately available.

## 2. Wearable Health Monitor for Chronic Patients Chronic patients often struggle with regular monitoring of their health parameters. A wearable device that continuously tracks vitals like heart rate, blood pressure, and blood oxygen levels can send alerts to users and caregivers when abnormalities occur. Integrated with cloud platforms, it stores historical data for doctors to analyze remotely. This solution is ideal for elderly or high-risk patients and enables proactive healthcare, reducing hospital visits and emergencies.

## 3. RFID-Based Asset Tracking System Organizations often face difficulty tracking physical assets like tools, equipment, or documents. An RFID-based tracking system allows real-time monitoring and inventory control. RFID tags can be scanned quickly, ensuring items are not lost or misplaced. Integration with dashboards helps asset managers track usage patterns and losses. This improves transparency and reduces theft or mismanagement.

## 4. Solar-Powered Charging Station for Devices Power shortages or outdoor activities often make it hard to charge mobile devices. A compact, solar-powered station can be deployed in public parks, campuses, or rural areas. It provides multiple USB ports and can even include a wireless charging pad. It promotes clean energy use and offers convenience for users on the go.

## 5. Smart Water Dispenser with Purity Indicator Users often drink unclean water unknowingly. A smart water dispenser with sensors can detect pH, turbidity, and TDS levels and show real-time quality status via an LED indicator or mobile app. It ensures people drink safe water and can alert when filters need replacement. Ideal for homes, offices, and public use.

## 6. Digital Pill Dispenser for Elders Elderly individuals often forget to take their medicines on time. A digital dispenser can store medicines and dispense the right dose at scheduled times. It beeps, blinks, or sends reminders via mobile notifications. Some advanced versions also alert family members if a dose is missed. This reduces health risks and supports independent living.

## 7. Smart Classroom Attendance System Using RFID Manual attendance is time-consuming and error-prone. An RFID-based system allows students to scan their ID at entry, and data is logged automatically. Teachers can view reports, and the system integrates with student databases. It saves class time, increases accuracy, and prevents proxy attendance.

## 💻 Software (13–26)

## 8. Virtual Queue System for College Canteens Long queues during lunch hours waste time and reduce productivity. A mobile/web application that lets students join a virtual queue remotely and receive notifications when it’s their turn can save waiting time and reduce overcrowding. The system displays real-time queue status and expected wait time. Canteen staff also benefit from organized operations. This idea enhances user convenience and is ideal for large campuses or cafeterias with high footfall.

## 9. Student Grievance Redressal Portal Colleges often lack a transparent and trackable system for student grievances. A digital portal enables students to file complaints anonymously or by login, track progress, and receive resolutions. Admins can manage categories, assign staff, and generate reports on common issues. It promotes accountability, timely action, and improved student satisfaction across institutions.

## 10. Peer-to-Peer Book Exchange Platform Many students have unused books after exams. A peer-to-peer platform allows users to list, lend, or donate books. Search and chat features enable direct communication between interested parties. This app reduces textbook costs, promotes reuse, and encourages a sustainable academic culture.

## 11. College Event Management System Organizing campus events involves registrations, logistics, and feedback. A web portal helps students view upcoming events, register, check schedules, and receive notifications. Organizers can track attendees, share updates, and manage event resources in real-time. It simplifies the coordination process and increases student engagement.

## 12. Hostel Maintenance Complaint App Hostel residents face issues like faulty lights, water leaks, or broken furniture. A maintenance app enables users to log complaints with images and room numbers. Wardens or technicians can manage tickets, assign tasks, and close requests after resolution. It ensures timely repairs and improves hostel living conditions.

## 13. Academic Planner with Exam and Assignment Tracker Managing multiple deadlines is stressful for students. A mobile planner app can sync academic calendars, notify assignment due dates, and set reminders for exams. It can also color-code tasks and provide performance charts. This solution improves time management and academic performance.

## 14. Indoor Navigation App for Campus Buildings Navigating large campuses with multiple buildings is confusing for new students and visitors. An indoor navigation app using QR codes, Wi-Fi triangulation, or BLE beacons can guide users turn-by-turn inside buildings. It’s especially helpful for exams, events, and administrative tasks.

## 15. Code Practice Platform with College Leaderboard Students need a fun way to practice coding regularly. A coding platform with daily problems, automated testing, and college-wide leaderboards encourages competition and learning. Integration with GitHub or Codeforces APIs helps track real-time progress and build coding habits.

## 🌱 Sustainability (27–38)

## 16. Campus Waste Segregation Awareness App Improper waste segregation leads to ineffective recycling. This app educates students and staff on how to properly segregate waste into biodegradable, recyclable, and hazardous categories. With gamified quizzes, segregation reminders, and real-time disposal tracking, users can improve their habits. Institutions can analyze data to track improvement and reduce landfill waste.

## 17. Carbon Footprint Tracker for Students Climate change awareness begins with individual accountability. A mobile app that calculates daily carbon footprint based on transport, food, electricity, and consumption habits allows users to visualize their impact. Suggestions for greener choices like carpooling or switching to LEDs help reduce footprints. The app can rank users by eco-score to motivate sustainable behavior.

## 18. Smart Greenhouse Monitoring System Greenhouses help grow crops sustainably but require constant monitoring. A smart monitoring system with temperature, humidity, and soil sensors can regulate internal conditions automatically. Remote access via mobile apps allows farmers to make timely adjustments, leading to optimized growth, reduced water usage, and energy-efficient agriculture.

## 19. Paperless Office Suite for College Admin A large volume of academic and administrative communication still happens on paper. A web-based paperless system allows digital submission, approval, and archival of documents. Features like e-signatures and version history improve security and efficiency. Reducing paper usage directly impacts the campus's environmental footprint.

## 20. Solar-Powered Smart Bench Campuses lack outdoor charging and relaxation spots. A smart bench with solar panels can provide device charging ports, Wi-Fi, and seating in public spaces. It promotes renewable energy use and enhances student convenience. With sensors, it can also collect weather and usage data for maintenance.

## 21. Sustainable Product Review App Consumers often struggle to identify eco-friendly products. This mobile app allows users to scan product barcodes and view sustainability ratings based on packaging, ingredients, or certifications. User reviews, alternatives, and education on environmental standards guide better shopping decisions and promote green brands.

## 22. Energy Usage Dashboard for Campus Buildings College buildings consume significant energy for lighting, air conditioning, and computers. An energy dashboard integrates with smart meters to visualize usage per department or floor. Alerts on overuse, weekly targets, and suggestions for saving energy drive behavioral change. It helps institutions lower their electricity bills and carbon footprint.

## 23. Urban Farming Starter Kit App Urban residents are interested in growing their own vegetables but lack guidance. This app provides tutorials, plant trackers, weather-based watering reminders, and a virtual community for beginners. It promotes kitchen gardening in apartments, supports food sustainability, and enhances awareness of organic produce.

## 🤖 Machine Learning / AI (39–52)

## 24. AI-Powered Disease Prediction System Early detection is critical for diseases like diabetes, heart conditions, or cancer. An AI system can analyze patient data such as symptoms, history, and lab results to predict potential health issues. It can be deployed in clinics for rapid screening, reducing diagnostic delays. With machine learning, the model becomes more accurate over time, assisting doctors in providing preventive care and minimizing long-term treatment costs.

## 25. AI Tutor for Exam Preparation Students need personalized study guidance. An AI tutor app analyzes a student's strengths and weaknesses using quiz results and activity logs to recommend topics for revision. It can adapt difficulty levels, provide instant explanations, and suggest practice papers. Ideal for competitive exam prep, the app keeps students focused and self-motivated through gamification and intelligent scheduling.

## 26. Real-Time Language Translator for Students Language barriers can hinder learning. A real-time translator app powered by AI can convert speech or text from one language to another instantly. Students from diverse linguistic backgrounds can use it to follow lectures, participate in discussions, or complete assignments. The system improves accessibility and inclusivity in classrooms.

## 27. AI-Based Resume Analyzer for Recruiters Shortlisting resumes manually is time-consuming. An AI tool can scan large volumes of resumes and highlight candidates based on job-specific keywords, skills, and experience. Recruiters can adjust filters and access analytics on applicant pools. It reduces bias, saves time, and improves hiring accuracy for campus placements or HR teams.

## 28. Smart Surveillance System Using Computer Vision Traditional CCTV systems require manual monitoring. A computer vision-based system can detect unusual activities like fights, thefts, or trespassing and trigger alerts. With face and motion recognition, it improves campus security. It can also track student attendance or library usage automatically using visual input.

## 29. AI-Powered Course Recommendation System Choosing electives or online courses can be overwhelming. An ML model can analyze a student’s interests, academic history, and goals to suggest suitable courses or MOOCs. It can update recommendations based on feedback and progress, helping learners choose effectively and explore new domains.

## 30. Virtual Interview Coach Using NLP Job interviews are stressful, especially for first-timers. A virtual coach powered by Natural Language Processing (NLP) listens to mock interviews and provides real-time feedback on tone, clarity, hesitation, and content. Users receive improvement tips and practice sessions tailored to their field. It helps build confidence and readiness.

## 31. Emotion Detection from Voice and Facial Data Understanding emotions from expressions or speech can enhance user experiences. An AI model trained on audio and video data can detect emotions like joy, anger, or stress. It can be used in virtual classrooms, therapy apps, or customer service platforms to adapt responses accordingly. It improves engagement and communication.

## 32. Fake News Detection System Misinformation spreads fast online. An AI-based platform can verify news articles or social media posts using NLP techniques and credible source comparisons. Users can input content to check authenticity, while admins can flag harmful misinformation. It promotes media literacy and responsible digital citizenship.

## 33. AI-Based Plagiarism Detection for Code Code plagiarism in assignments is hard to detect manually. An AI tool can analyze coding patterns, logic structures, and submission history to detect copied work—even when code is slightly modified. It supports academic integrity in computer science courses and helps educators assess genuine student efforts.

## 34. Traffic Violation Detection Using AI Manual detection of traffic violations like red-light jumping or helmetless riding is inefficient. A camera system with AI vision algorithms can automatically identify violations, capture license plates, and generate reports. It assists in smart city planning and enforces road safety regulations effectively.

## 🌾 Agriculture (53–64)

## 35. Smart Irrigation System Over-irrigation wastes water and harms crop yields. A smart irrigation system equipped with soil moisture sensors and a microcontroller automates watering based on real-time soil needs. Farmers can monitor and control it via a mobile app. This conserves water, reduces labor, and ensures optimal plant growth. It’s ideal for regions facing water scarcity or where manual monitoring is difficult.

## 36. Crop Recommendation System Based on Soil and Weather Data Farmers often grow crops based on tradition, not data. A system that analyzes soil type, nutrient content, pH levels, and weather conditions can recommend the best-suited crops for a particular season and region. This maximizes yield, minimizes risk, and promotes scientific farming. Machine learning can improve accuracy over time.

## 37. Drone-Based Crop Health Monitoring Monitoring large farms manually is time-consuming. Drones equipped with cameras and sensors can scan fields and capture images indicating plant health, pest infestations, or water stress. The data is processed using AI to generate actionable insights for farmers. It enhances crop management and reduces inspection efforts.

## 38. AI-Powered Yield Prediction Tool Predicting crop yield helps farmers plan sales and storage. This tool collects historical weather, soil, and crop data to predict expected yield using machine learning algorithms. It assists farmers in decision-making and enables policymakers to ensure food security at scale. It can be integrated with mobile interfaces for accessibility.

## 39. Livestock Health Monitoring Wearable Diseases in livestock often go unnoticed until too late. A wearable device that tracks temperature, movement, and feeding habits can detect early signs of illness. Alerts sent to farmers allow timely intervention. This improves animal welfare, reduces mortality, and increases dairy or meat productivity.

## 40. Fertilizer Dosage Calculator App Incorrect fertilizer usage leads to poor soil health. This app lets farmers input crop type, soil test results, and acreage to calculate the exact quantity and type of fertilizer required. It promotes precision farming, lowers input costs, and prevents environmental damage due to excess chemicals.

## 41. Water Source Locator for Rural Farmers In dry areas, locating water for irrigation is challenging. This GIS-powered app uses satellite data to identify potential underground water sources, riverbeds, or rainwater accumulation points. It helps farmers plan borewells and rainwater harvesting setups effectively, supporting sustainable agriculture.

## 42. Agricultural News and Market Price Alert App Farmers often lack access to timely updates on crop prices, government schemes, and weather alerts. An app delivering localized agriculture news, mandi prices, subsidy info, and expert tips in native languages empowers farmers with real-time decision-making tools. It reduces exploitation and increases profitability.

## 🌍 Others (65–80)

**43. Disaster Alert and Response App**  
During natural disasters like floods or earthquakes, timely information can save lives. This app provides location-based alerts, emergency contacts, and safety tips. Users can mark themselves safe, request help, and locate shelters. Integrated with government data and local weather APIs, it improves coordination between the public and authorities during crises.

**44. Smart Voting System with Blockchain**  
Traditional voting systems face issues like tampering, long queues, and inefficiency. A blockchain-based e-voting platform ensures security, transparency, and trust. Voters can securely cast votes from verified devices. Blockchain ensures vote integrity, while smart contracts automate counting, making elections faster, more accessible, and tamper-proof.

**45. Campus Navigation App for Visually Impaired**  
Navigating large campuses is difficult for visually impaired students. This app provides voice-based navigation using GPS, Bluetooth beacons, or QR markers installed around the campus. It offers step-by-step audio instructions, allowing users to find lecture halls, restrooms, or offices safely and independently. It promotes accessibility and inclusion in educational spaces.

**46. Cyberbullying Detection and Reporting Tool**  
Cyberbullying affects students’ mental health and often goes unnoticed. An AI-powered tool can scan online chats, posts, or messages for harmful language and alert school authorities or parents. It can offer resources like counselor contacts and self-help guides. This early warning system helps prevent escalation and supports safer digital environments.

**47. Smart Women Safety Wearable**  
Women’s safety in public spaces is a serious concern. A discreet wearable device (bracelet or pendant) can trigger an SOS alert when pressed. It sends location, audio, and emergency contact info to trusted numbers and police. Connected to a mobile app, it ensures quick responses in emergencies.

**48. Crowdsourced Problem Reporting Platform**  
On campuses or in communities, issues like broken benches or faulty lights often go unreported. A mobile/web platform allows users to post problems with photos and locations. Others can upvote issues, and admins can assign resolutions. It fosters civic participation and improves institutional responsiveness.