1. TITLE: **MINIMISING INTERMEDIARIES IN THE AGRICULTURAL MARKET**

DOMAIN: Agriculture

DESCRIPTION:

The major defect of Indian Agricultural marketing is the presence of too many middlemen and the exploitation of farmers by them. On one hand, these middlemen exploit the farmers by purchasing the produce at lower prices, and on the other hand, they exploit the customers by demanding higher prices from them. The only aim of a number of commission agents, brokers etc. are to derive a higher income from the middle processes. These middlemen take undue advantage of the poor farmer on the basis of their financial resources.

REQUIREMENTS:

In order to get rid of this problem, a solution has to be built such that the cost of the commodities should be equal to the Minimum Support Price (MSP). The solution must minimize the intervention of the intermediaries and must reduce the gap between the farmer and the consumer. The solution acts as an interface between farmers and consumers.

Constraints to be addressed in view of small scale farmers:
1. Time and Effort to transport farm products to the market yards.
2. An efficient transportation system should be established to connect small scale farmers with consumers in nearby cities. This system can be built using GPS tracking, and logistics management software to ensure that produce is delivered on time and in good condition.
3. Advance information to consumer about availability of farm products as per date.
4. Optimum routing based on demand and supply at various marketing yards.
5. Predicted prices for next 15 days based on demand and supply gap.

2. TITLE: **ESTIMATION OF CROP YIELD BASED ON SEED QUALITY**

DOMAIN: Agriculture

DESCRIPTION:

Seed may be defined as "a store of food". The quality of seeds is considered as an important factor for increasing yield. The use of quality seeds helps greatly in higher production per unit area. Quality seeds have the ability for efficient utilisation of the inputs such as fertilizers and irrigation.

REQUIREMENTS:

The solution designed should provide an analysis of profits acquired by the farmer basedon seed quality, fertility of land and landscape.

PARTICULARS:

Based on genetic purity the seeds are divided into four categories. They are,

1. Nucleus seed -100% purity

2. Breeder seed - 100%purity and certification tag is golden yellow in colour.

3. Foundation seed - 99.5% purity and certification tag in white colour.

4. Certified seed - 99% purity and certification tag in blue colour.

ADDITIONAL REQUIREMENTS:

1. The solution should suggest the right time for cultivation based on climaticconditions.

2. It should be able to suggest the type of fertilizer that has to be used along withthe quantity.

3. It can also give information about seed and crop analysis, along with theexpected market prices.

4. It should generate the alerts based on type of crop and weather.

5. The solution should also provide alerts on potential pest and disease outbreaks based on weather conditions and other factors.

6. The solution should suggest the appropriate irrigation method and frequency based on the crop, soil type, and weather conditions.

3. TITLE: **AUTOMATED IDENTIFICATION OF FISH SPECIES**

DOMAIN: Agriculture

DESCRIPTION:

INCOIS is providing Marine Fishery Advisory Services to the fishermen. To evaluate its accuracy and in order to develop species-specific advisories, it is necessary to collect the fish-catch information at the species level. While fisherfolk are supportive to these efforts, often species level catch reporting is having hindrances due to several reasons pertaining to manual efforts which result in low or erroneous reporting.

REQUIREMENTS:

The solution should include AI-ML tools for image-based identification of fish species found in the Indian seas. The images of fishes may be taken from online image searches. INCOIS will be able to use this for its fishermen feedback app, where fishermen need to take a photo of fish caught and fish identification will be done through code, minimizing the manual intervention.

Additional Requirements:

1. The AI-ML tools should be able to accurately identify a wide range of fish species found in the Indian seas, including both commercially important and lesser-known species.
2. The identification system should be able to handle variations in fish appearance due to factors such as size, age and sex, as well as variations in lighting and background conditions in the photos.
3. The system should be designed to be user friendly and accessible to fisherman with varying levels of technical expertise, and should be able to provide feedback and guidance to users on how to take high quality photos for identification purposes.
4. The AI-ML tools should be designed to incorporate data from multiple sources, including user feedback, expert annotations, and other relevant information, to improve the accuracy and reliability of species identification over time.

4. TITLE: **ASK AGRI EXPERT**

DOMAIN: Agriculture

DESCRIPTION:

Farmers are always confused to ask any query related to farming. A major reason whythey don't adapt to various existing apps is because they are in English and not in their regional languages. Farmers often struggle for basic information like weather updates, crop prices and expert advice, ending up often relying on hearsays.

REQUIREMENTS:

Farmers can ask queries in their own language/images/voice/video. There should be a dynamically updateable different topic. Only authenticated users should update the topic. The application user should be verified first time by OTP. There should be a manual or partially automated consult expert forwarding system for the requested queries. Every topic has multiple experts and there should be provisioned to forwarding queries by their district. If any query is attended by an expert, then that should not be repeated. An expert can also answer the query using a hand-held device. Admin login to manage names andareas of experts.

ADDITIONAL REQUIREMENTS:

1. There should be frequently asked questions which are updated by authenticatedusers.
2. There should be an option for language (regional).
3. The platform should have a feature to detect the user's location automatically and provide localized information related to weather updates, crop prices, and expert advice.

4. This should allow experts to upload educational content such as videos, blogs, and articles related to farming practices, which could be accessible to all users.

5. It should have an offline mode that allows farmers to access previously viewed content and save queries to submit later when they have internet access.

6. This should have a feature to provide alerts to farmers about upcoming weather events, market trends, and other relevant information.

7. The platform should have a feature to allow farmers to track the progress of their queries, receive notifications when an expert responds.

8. The App should be optimized for low-bandwidth connectivity to ensure accessibility in rural areas with poor internet connectivity.

1. TITLE: **AUTOMATION OF MEDICAL SERVICES BY HOME CALLS**

DOMAIN: Healthcare

DESCRIPTION:

Traditional health check-ups are plagued by long queues, inconsistent doctor appointments, unavailability of required medicines in pharmacies and doubtful services.

REQUIREMENTS:

The solution should deliver services right to the user's door. The client will be able to bookthe doctor's appointment using the solution. The doctor visits the client's house and performs the blood tests and required check-ups in the client's house. The prescription must reach the doctor and the client. A detailed description of the report will be delivered to the client along with the prescribed medicine. The prescription is also sent to the pharmacies, and they make the order ready for delivery.

ADDITIONAL REQUIREMENTS:

1. **DIAGNOSIS REPORTS TO BE INCLUDED:**

    a. Risk percentage
    b. Days required for recovery
    c. Medication requirements

2. In the case of any traditional scans, the client can book an appointment at thediagnostic centre.

3. The solution can also provide the feasibility of pre-booking and spot booking of beds in the case ofemergency.
4. The solution should have a feature to allow clients to track the progress of their orders and receive real-time updates on the estimated delivery time.
5. The solution should have a feature to allow clients to access their medical records online, enabling them to monitor their health and track their progress over time.
6. The solution should have a feature to allow pharmacies to manage their inventory and track their orders, ensuring that they have the required medicines in stock and can deliver them on time.
7. The platform should have a feature to allow doctors to prescribe medicines digitally, eliminating the need for paper prescriptions.

2. TITLE: APP FOR GOVERNMENT MEDICAL SERVICES AVAILABILITY

DOMAIN: Healthcare

DESCRIPTION:

There are many government hospitals available across India in various locations. Every state government has Health Care Centers in villages and multi-specialty hospitals inlarge metros, which provide free or low-cost healthcare facilities such as treatment ofdiseases, conducting an essential test and providing medicines. Most of the citizens are unaware of the services provided and the schemes assured.

REQUIREMENTS:

Develop a hospital finder application using any GPS API which shows the location and nearby government hospital with opening time and closing timing by integrating various bio-medical data sources, containing information relevant to the hospital demographics,inpatient procedure rates, Outpatient department, etc.

Additional Requirements:

1. The app should also display information on the availability of doctors and specialists at each government hospital, including their areas of expertise and the days and times they are available.

2. The app should have a feedback mechanism for users to rate and review their experiences at government hospitals, and the ratings should be publicly visible to other users.

3. The app should also include information on government healthcare schemes, eligibility criteria, and how to apply for them.

4. The app should be available in multiple regional languages to ensure maximum accessibility for users from diverse linguistic backgrounds.

5. The app should be able to track wait times for various services at each government hospital and display this information to users, allowing them to plan their visits accordingly.

3. TITLE: INTERPRETING DOCTORS NOTES USING HANDWRITING RECOGNITIONAND DEEP LEARNING TECHNIQUES

DOMAIN: Healthcare

DESCRIPTION:

Most doctors have to write the same thing over and over again. It gets boring after days,weeks, months and years. They have to be very fast with the prescription in order to attend maximum patients. Their handwriting slowly enters decline and by the time they are consultants, it is frequently not understood. Despite the reasons, the prescription is to beunderstood sometimes by the patients.

REQUIREMENTS:

Solution to digitize the handwritten prescriptions, doctor notes, lab reports, which can also help to integrate tightly with other healthcare systems for seamless digitization anddata flow. Standardized forms can also be made machine readable with support for multiple local Indian languages to make digitization much simpler.

Additional Requirements:
1. The solution should have a high accuracy rate for recognizing handwriting, with the ability to decipher different styles of handwriting used by doctors.

2. The system should also be able to recognize medical terminology, abbreviations, and symbols used by doctors and accurately convert them into text.

3. The digitized prescriptions and notes should be stored securely and be accessible only by authorized healthcare providers.

4. The system should be able to generate reports and insights based on the digitized prescriptions and notes, which can help healthcare providers to identify trends, patterns and make data-driven decisions.

5. The solution should be scalable and able to handle a large volume of digitization requests, with minimal human intervention.

4. TITLE: PSYCHOTHERAPY USING EMOTION DETECTION

DOMAIN: Healthcare

DESCRIPTION:

Depression (major depressive disorder) is a common and serious medical illness that negatively affects how you feel, think, and act. Fortunately, it is also treatable. Depression affects an estimated one in 15 adults (6.7%) annually. And one in six people (16.6%) will experience depression at some time in their life. Between 80% and 90% percent of people with depression eventually respond well to treatment. Psychotherapy or "Talk therapy," is sometimes used alone for the treatment of mild depression.

REQUIREMENTS:

Build a working prototype that serves as a conduit for a depressed individual to anonymously and openly communicate his emotions. The user should utilise emoticons to express their feelings (level of depression). Depending on the user's input, the data should be sent to an NGO (any organization) and connected to a person, so that the usercan express their sentiments.

ADDITIONAL REQUIREMENTS:

1. Ensuring anonymity and privacy is important. The security of the user's provided datamust be ensured. The discourse or the inquiry should be gentle and fluid..

2. The system should be able to provide personalized treatment plans based on the user's emotional state, history, and progress.

3. The solution should also be integrated with an emergency response system, which will provide immediate help to users experiencing severe depression or suicidal thoughts.

4. The solution should have a feedback mechanism to evaluate the effectiveness of the treatment and continuously improve the platform's performance.

5. The platform should be able to provide multilingual support to cater to a diverse range of users, including those who speak regional Indian languages.

1. TITLE: AI-BASED TOOL TO GET INFORMATION ABOUT 5 GOOD INSTITUTES BASED ON AISHE

DOMAIN: Smart Education

DESCRIPTION:

India, as we know, is a densely populated country, and every year more than 6 crores of Indians graduate from diverse backgrounds and with diversity in education. Almost a similar number of students enter colleges to take various education courses to help themin seeking jobs. With the advent of time, technology and the requirement of the job sector has changed drastically compared to 10 years back. Many sectors have experienced tremendous employment growth and thus masses opt for those sectors whereas in many sectors there is huge unemployment either due to low job availability or demand for skilled workers is required. Thinking of every branch and when comparing it with the current employment in India and abroad, we will find some points that will help in predicting the admissions and job scenarios in the fields of engineering and technology, management, and pharmacy. Due to the changing technology and its requirement for getting employed in India and abroad, experts have suggested improvements for predicting the Prediction of Admission & Jobs in Engineering & Technology /Management/Pharmacy. This is not a one-time process and needs to be done frequently as trends in the industry keep changing. Addressing this problem will help in knowing the top good institutes and also will give the details on how the institute was able to sustain a good position. This will helpin the development of all other institutions and better growth opportunities will be opened.

REQUIREMENTS:

We need you to develop a portal where information on 5 good institutes based on AISHE data like faculty-student ratio, infrastructure (Laboratory and Hostel facility), research facilities at institutes, etc will be shown up. And this data should change according to the latest AISHE data. Always maintain the portal with the real-time datafrom AISHE.

ADDITIONAL REQUIREMENTS:

- Extend the solution by adding information about top 5 schools.

- Include information on the alumni network and career services provided by the institutes to help students with job placement after graduation.
- Integrate a feature to compare the institutes based on different parameters and provide a detailed analysis of their strengths and weaknesses.
- Provide a Chabot to answer user queries and assist them in the decision-making process.

2. TITLE: ACCESSING VISUAL INFORMATION (WRITTEN INFORMATION) BY PERSONS WITH VISUAL DISABILITIES.

DOMAIN: Smart Education

DESCRIPTION:

Unlike sighted people, people with visual impairment rely on alternative formats such as braille, large prints and talking book or tape recordings and electronic resources to meet their reading needs. The provision of information materials to persons with visualimpairment has remained worrisome to producers and providers of alternative formats. Summary: The Internet and the World Wide Web have significantly increased the ease of access to information resources for people with disabilities due to the flexibility of use and the provision of assistive technologies such as screen readers for people who are BVI. However, web content is only useful if it is accessible and usable. The concepts of accessibility, usability, and usefulness are part of a growing field that focuses on user experience (UX) and user-centric design.

REQUIREMENTS:

The solution is to convert the available materials into alternative formats. It should enhance accessibility and usability by blind or visually impaired persons for visual information.
Solution should be more user friendly.

ADDITIONAL REQUIREMENTS:
1. Develop an AI-based tool that can recognize text from images and videos and convert it into alternative formats like Braille or audio descriptions for people with visual disabilities.
2. The solution should support multiple languages and be able to handle complex text formats like mathematical equations and diagrams.
3. The tool should have the capability to learn from user feedback and improve the accuracy of the conversion process over time.
4. The tool should comply with accessibility standards like Web Content Accessibility Guidelines (WCAG) to ensure that the alternative formats are accessible and usable by people with visual disabilities.

3. TITLE: ENGAGING CHILDREN IN CO-CURRICULAR ACTIVITIES

DOMAIN: Smart Education

DESCRIPTION:

Extra-curricular activities are a great way for children to learn about the world around them. It is important that they are given an outlet for their extra energy and curiosity so that they can grow into healthy, well-rounded adults with a wide range of knowledge and experiences. However, more than just being fun, extra-curricular activities also teach children how to be social in many different situations which will help them later on in life once they enter the workforce.

REQUIREMENTS:

The solution should provide the beginner level guide for co-curricular activities. It must also give rewards on completion of each task in order to motivate the kids. This has tobenefit mainly children in the age range of 5–13.

ADDITIONAL REQUIREMENTS:

1. The solution should include interactive elements, such as quizzes and games, to make the learning experience more engaging and enjoyable for children.
2. The solution should have a social component that allows children to connect with other children who are also participating in co-curricular activities. This could be through a chat feature, a forum, or a social media platform.
3. The solution should have a progress tracking system that allows children to see their achievements and progress in their chosen co-curricular activities. This could be in the form of a digital badge or certificate for each completed task.
4. The solution should ensure safety and security of the children's personal information, including their name, age, and location. This could be achieved through strict privacy policies and security measures.

4. TITLE: RECOMMENDATION SYSTEM BASED ON LEARNING PATTERNS

DOMAIN: Smart Education

DESCRIPTION:

Many times, students start learning something and get lost when they face difficulties and because of a lack of awareness of future scope. In order to provide a better learning experience

REQUIREMENTS:

To develop a recommendation system that recommends a guided path and learning scope for projects, research and development, latest trends in that field, and various job opportunities.

ADDITIONAL REQUIREMENTS:

1. The recommendation system built should be able to integrate with various learning platforms and recommend the above based on the user's activity.
2. The system should be able to recommend various resources such as books, articles, videos, podcasts, and online courses that are relevant to the student's learning path.
3. The system should be able to recommend internships or mentorship opportunities in the student's area of interest to help them gain practical experience and real-world skills.
4. The system should have a feature that allows students to track their progress and set goals for their learning journey.
5. The system should be able to provide real-time updates on the latest trends and developments in the student's field to ensure that they are always up-to-date with the latest information.

5. TITLE: GAMIFIED LEARNING

DOMAIN:

SmartEducation

DESCRIPTION:

Usually, children hate the learning process because they have to repeatedly learn the same thing for a long time. Making learning an interesting activity can be of great helphere. They get bored with the routine study schedules and procedures.

The system is failing to create an interest in pedagogy. One of the important reasons why children may find studies boring is the wrong method or way of teaching. Games are loved by children as they give them the universal freedom to express themselves and enjoy themselves. It gives them a feeling of relaxation and happiness.

REQUIREMENTS:

You're required to build an easy-to-use platform to gamify the experience of learning for toddlers and pre-teens. It should include rewards to encourage them to learn more. Each level in the game must ensure a learning outcome. Each topic's level should retain its proper hierarchy. Daily or weekly learning outcomes are great to keep the learners on their toes.

ADDITIONAL REQUIREMENTS:

1. Include the majority of topics covered in any elementary or middle schoolgrade's curriculum.
2. Add a feature to allow the learners to convert the rewards into goodies.

3. The platform should have a diverse range of characters and avatars to promote inclusivity and representation.
4. The solution should provide personalized learning pathways based on each learner's strengths and weaknesses.
5. The platform should include mini-games or quizzes that reinforce learning concepts to ensure knowledge retention.
6. The Solution should have regular updates and new content to maintain the learner's interest and provide new challenges.

1. TITLE: **Developing applications to help individuals and organizations track and reduce theircarbon footprint.**

DOMAIN: Sustainability

DESCRIPTION:

Carbon footprint is a measure of the total amount of greenhouse gasses released into the atmosphere as a result of an individual's, organisation's, or nation's actions. It's usually measured in tonnes of CO2. In reality, the links between greenhouse gas emissions and climate change are too evident and extreme to ignore. Average global temperatures are increasing, extreme weather events are becoming more severe and ocean levels are rising. All of these ecological threats are a result of human activity.By lowering your carbon footprint, you can help contribute to the overall reduction of greenhouse gas emissions.

It's not just about the environment either. Reducing your carbon footprint can help you live a healthier lifestyle, as well as save you money. Whether it's cleaner air, a healthier diet, or reduced energy bills, these benefits of reducing your carbon footprint also mean you're doingyour bit to combat climate change.

REQUIREMENTS:

To resolve this issue, you need to develop a solution that will track, monitor, and suggest waysto reduce carbon footprint and help the environment. The solution must inform people about how much carbon they are releasing into the environment and recommend tips to limit their carbon emissions according to their daily lifestyle.

ADDITIONAL REQUIREMENTS:
1. The solution should be designed to cater to both individuals and organizations, with different features and functionalities for each.
2. The solution should be scalable and able to accommodate data from different sources, such as energy bills, transportation logs, and food consumption data.
3. The solution should have a feature that suggests eco-friendly alternatives for common daily activities and products, such as transportation options, food choices, and household items.
4. The application should have a feature to help users track their progress over time, set goals and challenges, and earn rewards for achieving them.

2. TITLE: Designing and implementing data-driven solutions for reducing waste and improving recyclingrates.

DOMAIN: Sustainability

DESCRIPTION:

Waste disposal was a significant challenge faced by the community and government. Customers buy and use goods that produce a considerable amount of waste. Waste management is a major problem since the number of consumers increased due to high wastegeneration. This has resulted in a huge amount of waste, which calls for enormous waste- management policies.

REQUIREMENTS:

A growing population and economy, which means increased volumes of waste generated.This puts pressure on waste management facilities, which are already in short supply. Design a smart waste collection system that allows citizens to segregate the various types of solid waste they want to dispose of and the municipal authorities to efficiently collect the same. The system should have two interfaces one for citizens and another for garbage collectors. The system should be mobile app (Android) based.

PARTICULARS:

The following categories of waste are available:

- Organic waste.
- Recyclable waste.
- Toxic waste.
- Electronic waste.

ADDITIONAL REQUIREMENTS:
1. The solution should incorporate data analytics to monitor and analyze waste generation patterns and identify areas where waste reduction and recycling efforts can be improved.
2. The solution should also provide incentives to citizens for proper waste segregation and recycling, such as reward points or discounts on services.
3. The system should be scalable and adaptable to different cities and regions, taking into account local waste management policies and practices.

3. TITLE: Designing and implementing intelligent transportation systems to reduce traffic congestion and promote sustainable transportation options.

DOMAIN: Sustainability

DESCRIPTION:

Traffic congestion has been increasing in much of the world, developed or not, and is expectedto get worse, representing an undoubted menace to the quality of urban life. The main issues are increasing journey times, fuel consumption, operating costs and environmental pollution, as compared with an uninterrupted traffic flow.

REQUIREMENTS:

Intelligent transportation systems provide effective and efficient solutions toward the road traffic management and decision-making problems, and thus help to reduce fuel consumption and emission of greenhouse gases. Design and implement an application which will optimize the transportation system and make better decisions to ease traffic. The solution provided should also provide an interface to suggest improvements over the current Intelligent transportation systems if present.

ADDITIONAL REQUIREMENTS:
1. The intelligent transportation system should be able to analyze traffic patterns and make predictions to help manage traffic flow during peak periods.
2. The application should include a feature that enables users to report traffic incidents or accidents, which can then be used to alert other drivers to potential delays.

1. **TITLE:** Building a real-time IOT data visualization platform for industrial processes

DOMAIN: Industry 4.0

DESCRIPTION:

Data is Everywhere! Right from a customer visits a company's website until he signs out, all the data and the behavioural pattern is tracked. All these data becomes useless, unless they serve for a particular purpose. Analysing the data and predicting the future trend and where to focus more are some of the significant benefits it offers. Smart data visualization tools andtechnologies helps to slice and dice the data to the minute granular level.

REQUIREMENTS:

Design a visualization platform that helps the industries to analyze the data received in the form visual format such as a graph, chart, or heat map for better understanding. The solution should include the option to upload the data, able to verify the content before visualization, and variety of chart types.

Additional Requirements:
1. The platform should allow users to upload their own data sets, as well as integrate with other third-party data sources, to provide a comprehensive view of the industrial processes.
2. The platform should include features for data verification and quality control, to ensure that the visualizations accurately reflect the underlying data and are reliable for decision-making purposes.

2. TITLE: **Aggregated news for investment**

DOMAIN: Industry 4.0

DESCRIPTION:

Investing is a time-tested way of putting your money to work for you, as you work to earn more of it. By investing money regularly, you may be able to increase it many times over with time. That's why it's important to begin investing as early as possible and as soon as you have some money saved for that purpose. Furthermore, the stock market is a good place to start, Investment varies depending upon on the experience of the Investor. They receive a large number of reports, recommendations and financial news from many different sources and there is currently no platform that can structure and aggregate this data.

REQUIREMENTS:

Develop a platform that would consolidate news, information and reports that are relevant to investors based on their needs and investment strategies. This platform should provide investors with industry snapshots, financial news highlights, as well as research reports categorized by topic/analyst.

Additional Requirements:

1. The Solution should be able to customize the news feed according to the user's interests and preferences.
2. The platform should have an efficient search functionality to help users find the information they need quickly and easily.
3. This should also provide real-time updates on market news and events that may impact investment decisions.

3. TITLE: **Subscription management solution**

DOMAIN: Industry 4.0

DESCRIPTION:

A corporate architecture called subscription management optimizes subscription delivery through tech-driven automation and shared data (where customers pay on a recurring basis for access to your product or service). Improved customer experiences across the purchasingprocess encourage adoption, renewals, retention, and growth.

REQUIREMENTS:

- The idea is to create a mobile app or web platform to empower consumers to bettermanage their payments for ongoing subscription services like Amazon, Spotify, iCloud, DropBox, and so on.
- The focus of this software or app should be to help detect and manage consumers' subscriptions once they fall into disuse.
- Platform should show the users statistics
- Solution should track the user app usage through parameters like watch hours and suggest them which package or subscription is best for them

4. TITLE: **Automated Translation in finance**

DOMAIN: **Industry 4.0** DESCRIPTION:

Financial institutions produce thousands of reports for their customers which includes Balance sheet, Income Statement and Cash flow statements etc. Although the productionof these reports is automated, the translation of these into the customer's local language is manual, costly, and time consuming.

REQUIREMENTS:

Develop a semi-automated translation solution for financial institutions that enables efficient review and workflow validation.

- Solution Should generate summary of the reports in customers understandablelanguage

- Solution should validate and describe workflow to the user

5. TITLE: Mobile payments for administering Aid

DOMAIN: Industry 4.0

DESCRIPTION:

Digital mobile payments are widespread mechanism for delivering aid, but their successful launch would require banks and mobile network operators to partner together. Although there has been widespread adoption of mobile wallets, there has been little focus on adaptingthis model to the needs of this segment. For example, phones may be limited in a refugee camp, therefore multiple people may depend on the same device. Creating multiple accounts under the same number would be a simple solution.

Smaller NGOs still use paper vouchers as means of payment, which can lead to fraud and violence.

REQUIREMENTS:

Find a solution that would enable people in regions requiring emergency aid to make payments and withdraw cash through alternative networks. This solution could combine biometrics with blockchain and crypto currency.

Additional Requirements:

- Include biometric authentication to ensure secure and accurate identification of aid recipients.
- Ensure that the platform can handle multiple users per device, as well as situations where internet connectivity may be limited.
- Implement security measures to prevent fraud, such as transaction monitoring and real-time reporting.

1. **TITLE:** Developing a secure authentication system for online accounts

DOMAIN: Cyber Security

DESCRIPTION:

Authentication is a process of validating the identity of a user. Secure authentication prevents several attacks, that can exploit a system or user data. Having a secure authentication process will make it more difficult for an attacker to gain access to the system. Users can trust the system when the organisation provides data security and privacy. User depends highly on the security mechanism of a system.

Providing a secure authentication is a significant challenge. The attackers are in a constant procedure of finding exploits in the system. Some of the major vulnerabilities related to broken authentication

- Vulnerable authentication logic.
- Weak account/password recovery process.
- Using a vulnerable authentication library.
- Insecure session handling.
- Missing rate limiters and lockout process.
- Insecure two-factor authentication.
- Insecure password verification methods.

REQUIREMENTS:
To develop a secure authentication system for online accounts. This can include some of the advanced techniques such as multi-factor, biometric, voice and facial recognition. The participants are free to use any algorithm and are expected to develop an end-to-end architecture for authentication which is uncompromisable with new-age exploits

2. TITLE: **Building a data encryption tool for sensitive information**

DOMAIN: Cyber Security

DESCRIPTION:

Digital communication witnessed a noticeable and continuous development in many applications in the Internet. Hence, secure communication sessions must be provided. The security of data transmitted across a global network has turned into a key factor in network performance measures. So, confidentiality and the integrity of data are needed to prevent eavesdroppers from accessing and using transmitted data.

Encryption helps protect private information, sensitive data and can enhance the security of communication between client apps and servers so that an unauthorized person or entity gains access to it. The purpose of encryption is confidentiality—concealing the content of the message by translating it into a code.

REQUIREMENTS:

Develop a tool for encrypting the data. The tool should be able to encrypt all types of data such as text, voice and video. The tool should be able to incorporate the following principles:

- Confidentiality - encodes the message's content.
- Authentication - verifies the origin of a message.
- Integrity - proves the contents of a message have not been changed since it was sent.

3. TITLE: **Developing a cyber security education program for employees**

DOMAIN: Cyber Security

DESCRIPTION:

Human errors are a massive issue for cybersecurity. Human error in cybersecurity accounts for either unintentional or lack of action that results in a data breach. It includes activities like downloading infected software and keeping a weak password or compromising the IP address that can be checked on What Is My IP and not updating the software.

Empowering your employees to recognize common cyber threats can be beneficial to your organization's computer security. Security awareness training teaches employees to understand vulnerabilities and threats to business operations. Cybersecurity training programs will **reduce the risk of data breaches**. Employees will be better equipped to recognize red flags. This will help prevent any costly mistakes – saving time and money in the long run. To reduce such errors there is a need for educating employees.

REQUIREMENTS:

An application incorporating a cyber security education program which is aimed to educating the users about the new age exploits and practices to be followed to reduce the risk of human errors. The program is expected to be efficient, interactive and in micro learnings.

Additional Requirements:
1. The program should be tailored to different departments or job roles within the organization to ensure that employees receive training specific to their needs and responsibilities.
2. The application should be available in multiple languages to accommodate a diverse workforce and global operations.
3. The program should be regularly updated with new information and best practices to keep up with evolving cyber threats and technology.

4. TITLE: **Creating a system for detecting and preventing phishing attacks**

DOMAIN: Cyber Security

Description:

Phishing attacks are the practice of sending fraudulent communications that appear to come from a reputable source. It is usually done through email. The goal is to steal sensitive data like credit card and login information or to install malware on the victim's machine.

Phishing has two main delivery vehicles: emails and websites. Emails being the foremost of these, are most classically associated with phishing. These often include malicious URLs to direct userstowards maliciously crafted content. By obfuscating the real destination of a URL through a fewsimple manipulations, users can quickly find themselves on unknown and insecure ground. Therefore it is vital to tackle this massive worldwide problem

REQUIREMENTS:

Develop a system which is capable of detecting and preventing phishing attacks. The solution should be able to detect user actions which may result in phishing of user information, intimating them and preventing such actions.

Additional Requirements:

1. The system should be able to identify and block phishing attacks in real-time, with minimal false positives.
2. The solution should be able to detect and prevent spear phishing attacks, which are highly targeted attacks aimed at specific individuals or organizations.
3. The system should be scalable to handle large volumes of email traffic and website requests.
4. The system should provide detailed reporting and analysis on phishing attacks, including trends, sources, and impact on the organization.

5. TITLE: **Building a cyber security risk assessment tool for organizations**

DOMAIN: Cyber Security

Description:

For many enterprise organizations, administering risk assessments is the first step in building an effective cyber threat management system. The visibility gained from these assessments provides insight that helps guide high-level cybersecurity decisions, making them valuable assets for organizations of all sizes. That said, the effectiveness of cyber risk evaluations is heavily relianton the tools used to conduct them.

The goal of these assessments is to determine how network assets would be affected in the eventof a breach and identify their individual risk level. The insight gained enables comprehensive risk prioritization, improving an organization's ability to quickly respond to network threats.

REQUIREMENTS:

Develop a tool that is capable of performing the following steps:

- Determining Information Value
- Identifying and Prioritizing organisational assets
- Identifying Cyber Threats
- Identifying Vulnerabilities

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