



## **PROBLEM STATEMENTS**

- 1) A botnet is a network of compromised machines/computers that communicates and coordinates their actions by Command & Control (C&C) or by passing messages to each other (C&C might be built into the botnet as P2P). Many host /network approaches have been proposed to detect botnets. They employ signature-based, anomaly-based, data mining approaches, etc. to detect botnets. When the botnets are detected by these approaches a huge amount of financial losses, data leakages, etc. has already taken place. You need to design a system that can detect if traffic is coming from a genuine user or a botnet.
- 2) Design an equation solver that will take an image and identify the handwritten or printed mathematical equations and try to solve them. The equations can be complex, linear, quadratic, matrices, etc.
- 3) Develop a digital signature system for authentication and signing of documents for the internal use of an organization. Employees will get an eToken generated which will contain the digital signature corresponding to the employee. The system shall authenticate the user using the public key of the user stored in the server and private key from the eToken of the user. Any document to be uploaded on the server should get signed on the fly via the user's private key and the Server should be able to verify the integrity of the Signed document via the public key and should then only allow the saving of the document on it.
- 4) Develop an app that allows exporters of small consignments to find and book available spaces in partially filled cargo containers nearby. The app should provide registration

to local logistics service providers (rail/road/ship/air) with access to their space availability, in real-time. Service providers should be able to apply for registration through the app, however, approval should be a result of an inspection and the quality of data provided by the service provider. Provide self-registration option to traders—importers and exporters. Show the available space, container-wise, to all registered traders and logistics service provider Traders, they should be able to book the space by clicking and making payment for space online and an Online chat window between traders and logistics service provider.

- 5) A desktop application that can let you control and access your Mobile device remotely. The application should be able to receive notifications from your device and have the capability to reply or act, If notification allows, to them directly from the Desktop. The application will be able to access the device-specific features like real-time GPS location and camera feed and have capabilities to manage, download or stream the media files present on the device.
- 6) At present, there is no platform to connect students & staff all over India. A platform/portal where students could put up their projects share their problems contribute to projects help in academics suggest new ideas just come together for any possible work. This will help them for all over development inform team about current advances in curriculum's etc. Every new project or just a Project Idea or just a solution to a simple mate's question should get some points or some form of credits (Like upvotes in Quora). In this way, we could gamify everything & make it really interesting.
- 7) This application shall aim to create a database of the Eating Joints falling within the Origin and Destination Points of the journey and placing the orders as per the available Menu at particular Eating Joint with the time of Service.
- 8) Creating an app for Windows/Linux users for users that have a disability in their hands (handles or armless). It is very difficult for people without hands to work on the computer. Develop an algorithm that can help these disabled people without hands to control the computer using face gestures and voice commands. We must try to resolve this problem. The system must activate user voice and moves screens/ windows using

face gestures and opening/closing windows, documents can be done through voice commands.

- 9) Design a vulnerability scanner for websites that should automatically parse through the APIs to identify which ones may be exposing the system to danger. A vulnerability database is the list of known vulnerabilities the scanner will use to spot potential problems the more information the scanner has, the more accurate its performance. Once a team has a report of the vulnerabilities, developers can use penetration testing as a means to see where the weaknesses are, so the problem can be fixed and future mistakes can be avoided. When employing frequent and consistent scanning, one will start to see common threats between the vulnerabilities for a better understanding of the full system.
- 10) You have to create an all in one app where you can have complete smart services for university-related to cleanliness lost & found canteen orders event notifications etc. You think standing in the queue for ordering food and then waiting for the food to get ready is wasting your time? It is the same problem for everyone. How if you could just order the food earlier(after the lectures/before reaching the canteen) itself and the food gets ready before you get there. So you've found an earphone and not sure where you're supposed to report it? Found dirt in your classroom and don't know the appropriate authority to report? Could we just directly report this in the app and the appropriate authority will take care of the situation. The application should be able to handle all of the above-mentioned issues.
- 11) Choosing the desired course in college sometimes is a daunting task. You need to develop a system that asks students his/her choices, grades and interests, and analyzing all features & patterns, it must recommend user courses that would be beneficial to him/her.
- 12) Several job postings are being released every day and it is very daunting for companies to select a suitable candidate as they need to manually go through each resume. You need to develop a system that accepts a resume in pdf or doc format and extracts meaningful information such as Name, Email, Phone, Interest, Skills, and Qualifications and stores them.

- 13) Develop a website that allows users to use Facial Recognition and AR Features via a live feed from the webcam.
- 14) Design a web application that can collect data for various stocks, analyze them and helps users choose an optimal stock to invest in, according to their past trends.
- 15) Design an interactive map of Inderprastha Engg. College, including indoor maps that locate classrooms, laboratories, etc. (AR Map).
- 16) An organization has an online system of customer feedback in suggestions. Customers can give their feedback on the website, mobile application as well as through social media. Since the number of feedback is large, machine reading of the content and classification among various departments, zonal and regional offices can help in quick transfer of such feedback to the concerned officials for immediate redressal. A solution needs to be developed for such a utility.
- 17) Presently centralized data repository is missing for various disease citizens for different regions of the country. Smart Solution is required for predictive analysis and medication support using the application to assist policymakers to provide better health services in affected areas.
- 18) Web-based model for distributing the smartphone app among the authorized persons is very popular. Although the web site provides a level of protection against app copying and forging, it is not enough. Work out a solution that ensures integrity, proper installation, and usage of an app.
- 19) “Zero-day” malware attacks are very common. Antivirus solutions will be able to detect such viruses only after they are reported and analyzed. Workout a unique solution that can detect “Zero-day” malware which attempts to propagate through eMail. Identify the infected machine(s).

Note: For the simulation of a zero-day attack, use an anti-virus solution with missing signatures of certain viruses.

- 20) Develop an android app that can show the consolidated recent news from different news channels and allow the user to read the full story by visiting the relevant websites.
- 21) Develop a course tracker that tracks a lecture series for a course. The teacher puts in lecture notes and references at the end of every lecture and the system trawls the internet for resources that supplement the lecture topic such as open-source projects, book references and academic and/or professional papers.
- 22) Images are deceptive in a way that you don't really know when a particular image was taken while also being attention capturing media being used on social media and news. No wonder people have successfully used old images to signify an event that didn't occur or exaggerate what actually happened and sometimes might make to the news. Can you find a way to securely and reliably recognize an image that was not taken when it was said it was?
- 23) Nowadays we can see an increase in depression and suicides among students. Your task is to design an app that helps these students and people who suffer from depression and suicidal thoughts where they can proper counseling and guidance. The counselor can be a person who logs in or maybe a ChatBot.
- 24) Develop an app where you can write and save your thoughts and ideas. The app then can analyze and connect you with other users having similar interests.
- 25) Design a system that can provide a decentralized and confidential way of storing and maintaining a patient's medical record that can be used for future references.
- 26) An app that will GPS based Dengue risk Index. A GPS enabled smartphone owner can find the susceptibility to dengue infection at the location where he is.
- 27) Over speeding and the use of phones while driving has been a cause of a number of road accidents. Smartphones provide a way of monitoring user activities and data on physical location, altitudes, etc and mechanisms to help alert users by the use of sound, visuals and other effectors. Putting the technology available to better use to

help reduce such accidents may have a good impact on the lives of people and encourage them to use such technologies.

- 28) Today's generation has a mixed mentality. Students become confused when it comes to their school and college projects. They are blank. They know things but can't project them correctly. If there would be a platform where these students can get help from the students across the country will be a great help. For such purpose, they need a platform where students/professionals across the nation can come forward and share their ideas/projects with everyone.
- 29) Develop a solution for hostel management. The solution should provide features for allocation and reallocation of room to the students, and must display the number of rooms empty, the number of students from a particular institute in a particular hostel building, etc. The application should allow report generation (student wise, building wise, number of rooms empty/occupied, etc.). The solution should be created assuming that there is more than one hostel building, number of floors in each building, number of rooms on each floor and requirements on each floor.
- 30) Disaster relief operations entail seamless interoperability, absolute transparency and information exchange with no delay. Resources like food, clean water, vehicles, and volunteers are crucial aspects to manage as efficiently as possible in order to save lives. Blockchain can be useful in several ways, including:
- Blockchain provides a single source of truth for all organizations that are shared in real-time
  - All Transactions history is recorded on the ledger and ensures in contract execution
  - Parties keep their data sovereignty and don't have to expose their resource capacities to other participants