



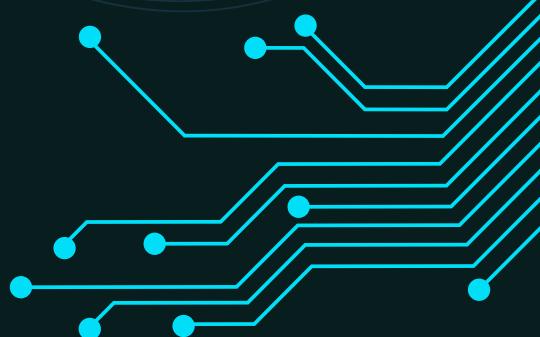
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ENGINEERING COLLEGE



PRESENT

TSEC **HACKS** 2022

PROBLEM STATEMENTS





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DOMAIN WEB/APP





PROBLEM STATEMENT #1

FIND YOUR DEV PARTNER

Good coders create amazing products, but great coders also interact with communities and promote their work. Being at an all-time high in demand activity for Open Source, it can be extremely difficult for developers to find collaborators for their projects and/or find people to discuss projects with.

Build a web/mobile app for developers enabling other developers to find projects to contribute to and project owners to find collaborators.

Potential features:

- The user can view profile information (Tech stack, previous projects, resume) about different developers registered with the web/mobile app.
- To discuss projects in more detail (send files containing ideas and diagrams of your project), connect and interact with fellow developers.
- Can take other developer profiles (GitHub, StackOverflow, Dev.to, etc.) into consideration. (Wild example: Using GitHub commit messages to match people, using dev.to article topics to match interests, etc.)

Bonus: Brainstorm ideas and/or collaborate live on a single platform (something more than just a Kanban board). Build an all-in-one product.

BE INNOVATIVE, BE CREATIVE. WE DO NOT EXPECT JUST A BASIC CRUD APPLICATION.



PROBLEM STATEMENT #2

INTERVIEW SCHEDULER

Interview scheduling is time-consuming and taxing. It requires a set of people or a trained person/secretary to do it, since multiple people such as interviewers/hiring managers, recruiters and candidates have to be taken into consideration.

Finding common availability is a challenge. This includes getting calendar availability of different panels of hiring managers, booking rooms in case of in-person interviews and ensuring invites have the right links for virtual interviews.

Build a solution that will help with scheduling interviews effortlessly faster, saving time.

Propose and design a solution that will carry out the following tasks:

- An interface that interacts with hiring managers to communicate and confirm their availability. This will facilitate a hiring manager's participation in an interview, for a given date, time or location.
- It should also match multiple candidates with multiple interviewers, optimally.
- The interface should be able to provide a list of common free slots, based on the calendar availability of all the participating managers in an interview. (A sample of a hiring manager's calendar.)
- Based on interview scenarios, it should confirm on the basis of availability, rejection and requests to re-check for other time and date slots.

Resources

A sample folder with the calendar of a hiring manager, some general chat scenarios and responses on bot assistance provided to the candidate, and an ideal bot structure.



PROBLEM STATEMENT #3

GAMIFYING DSA/CORE CS CONCEPTS

Build a web/mobile app based interface for gamifying DSA/Computer Science core subjects (DBMS, OS, CN, etc.) which helps users build and maintain consistency while learning concepts and practicing DSA/core subjects.

Possible/potential deliverables:

- Short consistency-building lessons/exercises.
- Rewards.
- Study group leaderboards.
- Regular reminders to complete daily custom tasks.
- Actual real-time contest reminders and functionality to connect profiles of various websites.
- Analysis of contests, what concepts were used in those problems and suggestions to learn and improve concepts.
- Anything innovative which you feel could be a relevant addition to the project.



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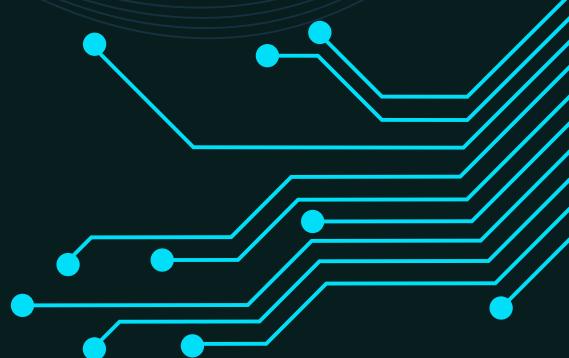
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DOMAIN AI / ML





PROBLEM STATEMENT #1

RESEARCH PAPER RECOMMENDER

Numerous studies have proven that reading and analyzing primary literature improves scientific literacy, critical thinking abilities and knowledge of scientific facts. However, finding a good research paper can be time-consuming. Furthermore, while writing research papers, it may become difficult to find similar papers from good journals to your liking and filters, specifically for writing literature reviews. Hence, create a software that recommends and allows users to upload research papers.

Potential Features:

- Recommend papers based on the paper given as input by the user.
- Recommend papers based on the user's past history of papers read or interested topics.
- Allow users to upload and delete their research papers, either as text or a document .
- Basic login/registration should be implemented.

Suggestions:

- Represent or color-code areas of topics that are similar in the recommended papers.
- Allow users to upvote/like other papers to represent the popularity/quality of papers.
- Dataset: <https://www.kaggle.com/Cornell-University/arxiv>



PROBLEM STATEMENT #2

VISUAL TEXT SUMMARIZATION

Visual communication has quickly risen to be the dominant form of communication on the web, it has been proved that when information is presented visually and in a concise manner it proves to be a much more effective medium of communication in comparison to the loquacious and long-winded articles. Adding on, with today's fast growing world, most people don't have time to read through verbose articles. They want information available to them in a concise, yet understandable format.

Build an interactive visual text summarization tool that aids users in summarizing a large collection of text.

Suggestions:

- Converts long paragraphs of text into different multiple sub-sections.
- The sections can be represented in a tree-like visual structure.
- Allow the user to have a quick summary of the entire document and navigate to sections of their interest.



PROBLEM STATEMENT #3

INTELLIGENT FILE EXPLORER

Intelligent File Browser

Isn't it frustrating when your drive folder gets cluttered? Wouldn't it be better if the computer knew exactly where to store a file every time you upload a file?

Your task is to develop a machine learning-based solution that can correctly sort and suggest locations to store a file based on its properties. The solution should learn from the user's actions and inform them when and where the files have been located. When storing a file, your solution should ensure that all the files in its folder are similar on the intent, context (if possible) and keywords. Furthermore, implement a search feature which selects files based on the intent.

The solution can be a webapp or an extension.



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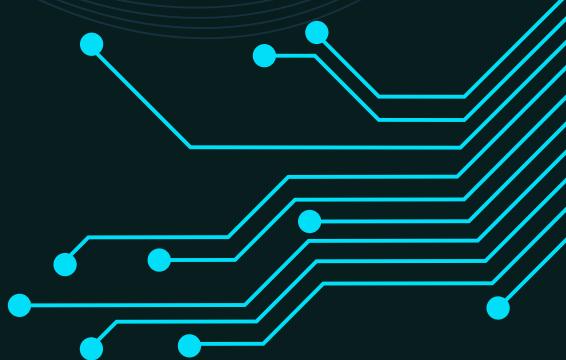
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DOMAIN BLOCKCHAIN





PROBLEM STATEMENT #1

DIGITAL RIGHTS MANAGEMENT

Currently, there is no transparency in the way funds are transferred from the subscriber of a streaming service to the creator of the content, this can lead to services favouring some artists over others and small content creators being suppressed. Instead, if Digital Rights Management (DRM) is based on a Blockchain, then there could be transparency in payouts for all artists. This could be proportional to how often the track is played or for the duration of time the content is played. By making this based on smart contracts and codifying the deal, there will be lesser disputes based on contract clause wordings.

Assume types of digital assets like audio, video, etc.

Keeping the third-party involvement transparent will also help increase people's trust in subscription services.

Additional features/suggestions:

- Make various types of contracts such as view-only, redistribute, etc.
- Make provisions for artists to make contracts with others who wish to make remixes, etc. in order to make sure everyone is compensated for their work.
- The ownership of the track can also be transferred to another record company. While doing so, make sure that the creator gets the royalty that they deserve.



PROBLEM STATEMENT #2

BANK OF ACADEMIC CREDIT

Data is the key to measuring educational effectiveness promptly. However, data and education are trapped and poorly structured across centralized systems, resulting in information gaps and inaccuracies. This has resulted in numerous missed opportunities, academic credential disagreements, and never-ending confusion about learning capacity.

Academic Bank of Credits is an academic service mechanism to facilitate students to become academic account holders. It enables students to switch between multiple degrees or courses within a degree through a formal system of credit accumulation, credit transfer and credit redemption to promote distributed and flexible learning.

You need to develop a solution using blockchain technology to provide services such as credit verification, credit accumulation, credit transfer or redemption and authentication of academic awards.

Features:

- Viewing of total credit accumulated under one window.
- Ability to transfer credits across courses and colleges.
- Using blockchain to provide public and private proof of the veracity of credits.
- Enabling educational institutes to view credits earned by a particular student to make better decisions.
- Ability of college to verify / update the credits achieved by their students.



PROBLEM STATEMENT #3

DIGITAL IDENTITY AND MANAGEMENT OF DONATIONS

Given that sites like Patreon have blocked donations for Ukraine, it is necessary to have a decentralized platform that allows for donations to verified hospitals or humanitarian organizations.

The people who will donate will be able to verify that the hospital is genuine and they can know how the money was spent in order to maintain transparency. Individuals in need can verify their digital ID with the organization and verify that they are Ukrainians in need without the need for any additional paperwork.

The platform must be able to:

- Verify identity without revealing personal information.
- Verify a hospital being legitimate without revealing its location to the donors.
- Be able to verify to the donors that the donation they made has been transferred for the purpose needed.

Additionally:

- Allow the Ukrainians to reveal their identity/location of the hospital once the crisis has ended so the donors can have proof that their donation had reached the right hands.



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DOMAIN SOCIAL CAUSE





PROBLEM STATEMENT #1

HELP FOR DEMENTIA PATIENTS

Every year 10 million patients are diagnosed with Dementia in India itself. Puzzles, riddles and cognitive exercises help memory retention of such patients.

Aapka Sahara Foundation aims to develop an app/website to help these patients and the centers which help such patients.

Potential features:

- Patients should get reminders to video call their family.
- Family members should be able to upload memories in the form of photos and videos.
- Patients should be engaged in some mind stimulating activity (like solving puzzles and crosswords).
- The doctor should be able monitor the diet of the patient on their feed.
- The caretaker should be able to track the undertaking of medicines of the patient. (The medications prescribed by the doctor can be entered in the app and it will create a schedule for the patient which will be maintained and logged by the caretaker.)

Bonus:

- The app will tell random jokes at regular intervals that can be set by the caretaker. These jokes elevate the state of mind of the patient.



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Appwrite is an end-to-end backend server that provides you with a set of APIs, tools and a management console UI to help you build your apps a lot faster and in a more secure way. Between Appwrite's different services, you can find user authentication and account management, user preferences, database and storage persistence, cloud functions, localization, image manipulation and more.

Show us how you use the various services Appwrite offers such as database, authentication, storage, functions, realtime, etc. to build any project you would like on a platform of your preference!

Resources

- Website: <https://appwrite.io>
- Documentation: <https://appwrite.io/docs>
- Support channel: <https://discord.gg/Typhnvvzn2>

Prize

Voucher worth \$200 for the Appwrite Swag Store to the winning team of this problem statement.



MOST CREATIVE USE OF

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Note

- Judging for this problem statement will be done separately.
- Teams who use Appwrite as a part of the given problem statements will be automatically eligible for this prize. Please let the committee know that you're using Appwrite's services in one of the given problem statements.

Teams who decide to use Appwrite's services to build a product under this Problem Statement, i.e without using our given problem statements, will be eligible for the Appwrite prize, but will not be eligible for the event's top 10 team selection and prize pool of Rs. 60,000 (Rs. 30,000 + Rs. 20,000 + Rs. 10,000) for the top three teams.