All projects with an asterisk * have to be taken by at least one member.

Basanti Chat Bot - NLP (2 people)*

- Learn about NLP, tokenization, word embedding space, a bag of words, and Machine learning models.
- Will work on dataset creation.
- Work on different web scrapping functions and trigger functions, that the bot will call.

Python, Web scrapping, NLP , ML

Basanti Chat Bot - Computer Vision and Arduino (1 person)*

- Face tracking of the person talking to Basanti and moving the eyeballs according to that.
- Integrate tracking from open cv to controlling servos from Arduino
- Control the mouth with a servo according to the speech (Hindi + English)

Open CV, Python, Arduino

Basanti Chat Bot - CAD modelling (1 person)*

- Design a face for Basanti with a proper stand
- The neck joint should have 2 axis (y and z) of rotation and should have controllable eyeballs and a controllable mouth
- Have a place for camera, a place for raspberry pi and Arduino Nano and servo controllers in it.
- The model should be designed in parts and should be 3d printable

CAD Modelling, 3D printing

Garbage Classification (2 people)

- Learn about machine learning models in the image recognition domain
- Learn about NN -> CNN then other models
- Prepare dataset on roboflow
- Use YOLOv8 to classify and detect objects, create annotations using Roboflow
- Create a Model to classify waste into 4 categories: Plastic, Metal, Organic, Other

Research, Computer Vision, Neural Networks , CNN, ML

Gripper - CAD + Arduino Code (2 people)*

- Design a cad model of a gripper to move and grip a 15X15X15 box firmly
- Can use 55gm servos for certain places where torque is High
- All parts should be made so they could be 3d printed. Only small parts like joints, holders and gears will be 3d printer
- Write Arduino code to control the gripper arm using Arduino,servo driver IC and keyboard

CAD Modelling, Structural rigidity, Arduino

Blog Website - Web Dev(1 person)*

- Create a react-based blog website which will be integrated into the Zine website, follow the website theme.
- Clone the current website from GitHub repo and build new pages on that.
- Use Firebase in backend
- Anyone can read the blogs, if any doubts they can ask which will redirect to mail
- Create a blog editing page, where a blog can be typed and should support images also.
- Create an admin page where a new blog can be posted or previous blogs can be edited.

React, Firebase, WebDev

Productivity Management - Web Dev (1 person)

- Create a react-based project management app which could be connected to zine website
- Use Firebase on the backend
- Authentication required verify email
- Pages : Home page , Project page , Profile section
- Only the admin is allowed to create a project and add members using email ids, add deadlines and sub-tasks.
- Members can change the status of the project (assigned/in progress/submitted), add links or updates to the sub-task assigned
- Members can also start threads to ask doubts or queries

React, Firebase, WebDev

Discord Channel and Bot - (1 person)*

- Create descriptive discord channels and relevant roles
- Create a discord bot (Python + Replit), to answer some certain queries (list of the present 2nd year ?), fetch some data form the database and display certain information.
- The bot should be scalable so we could add different features to it on the later stage
- Integrate it with the productivity management app, so when an admin creates a page a new channel is created in the projects section which will be visible to people added in the project only.

- All the chats and updates should be reflected on the chat
- Integrate the announcement features and chats section from the zine app or website

Discord, python, backend

<u>Zine app - App dev (2 people)</u>*

- Learn flutter, build a basic app
- Learn about MVVM architecture clone the official zine app repo
- Make UI changes on the Zine official app
- Make changes to the chat section of the app, implement reply features, profile photos and etc.
- Implement project management and monitoring features

Flutter, app dev, MMVM