OPULENCE: An Expense Tracker (Case Study)

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Content

- Introduction
- Present System
- Proposed System
- Methodology
- Design and Prototyping
- Flutter Codebase
- Machine Learning Model
- Conclusion
- References

Introduction

- **Opulence** is a mobile application for **expense tracking** i.e. to be able to monitor our day-to-day transactions.
- The word Opulence means great wealth and luxuriousness.
- The mobile app aims to figuratively help you achieve its literal meaning, by undertaking small and conscious efforts to track every time you spend an amount.
- It is a **flutter based application with an integrated OCR Model**.

Present System

- On analyzing a few highly-rated, randomly selected applications from Google PlayStore, we came up with the following conclusions by our first-handing testing and the reviews on the application page:
  - Developers have neglected the importance of pleasurable and easy-to-use user interface designs.
  - There is no general weightage of user experience, making it difficult to use the applications initially.
  - Most available applications have the feature of categorizing expenses and transactions fed into the account but fall short in its implementation.

Proposed System

- Despite a flourishingly overriding market of choices available, there have been considerable drawbacks.
- Keeping in mind the setbacks faced by our predecessors, as mentioned in the previous section, we have improved on a plethora of features in our application.
- Highlight features of Opulence that help it stand out among the masses include:
  - Budget and Bill Organizing
  - The Whole Picture in One Place
  - Spending / Income Pie Chart
  - Refined user interface and experience
  - Scan receipt feature
  - Dynamically viewable portrait mode application

Methodology

- Our aim is to learn-by-trial, as the entire tech stack is an unfamiliar territory.
- Each one of us has set personal challenges by setting abstract domain boundaries.
- Design and Prototyping:
  - Considering the first steps of brand-establishment, we have worked and finalised the app identity keeping in mind the target audience and resonance.
  - Combining our understanding of the user response and the minimum deliverables, we are now progressively working on iterating feasible user flows, wireframes and final design prototypes.
- Flutter Development:
  - Being complete amateurs at the tech stack at hand, we have started to grasp the basics of Dart language, and its packages.
- OCR Model Integration:
  - Considering the function where the user can scan a receipt to input the price, we have started studying to make a text extraction model in the form of an API.

Design and Prototyping

- The entire design process from the ideation to the prototyping was done in accordance to a meticulously laid out roadmap, which included the following to highlight the major processes:
  - Brand Designing
  - User Research
  - User Flow
  - Design Mockups

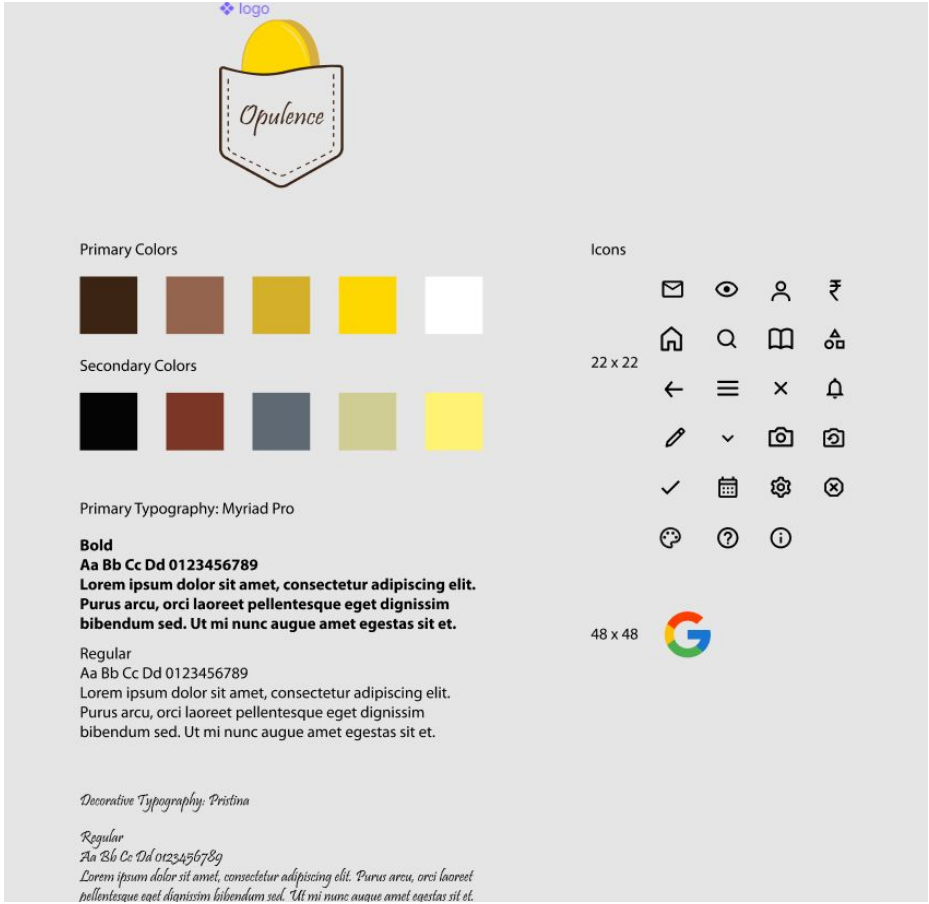
Brand Designing

- Our market analysis helped us conclude that many existing applications serving the same purpose had misleading logos.
- We wished to have an impactful logo that could resonate and stay with the users from the first use.
- Through various brainstorming sessions, the team was able to finalize a logo.
- The logo stands for a variety of resonates:
  - Hinting towards a school/ academic uniform
  - Reminiscing small allowances/ pocket money
  - Saving small amounts at a time

Logo

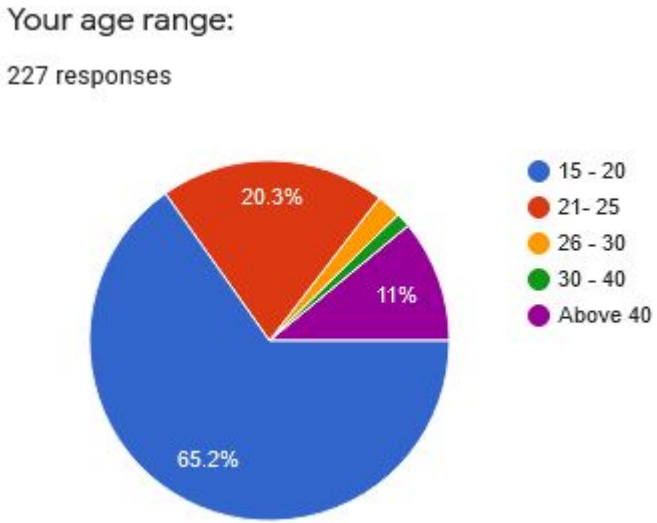
Brand Style Guide

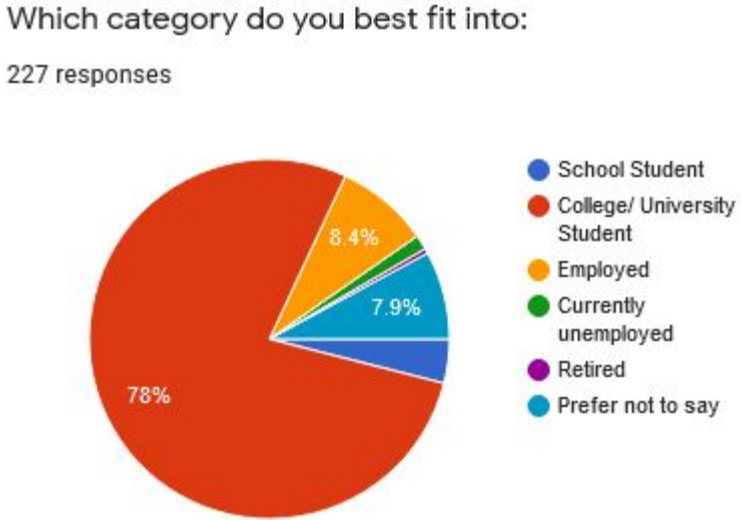
- Keeping in mind the aesthetics and practicality, we based our style guide on the logo.



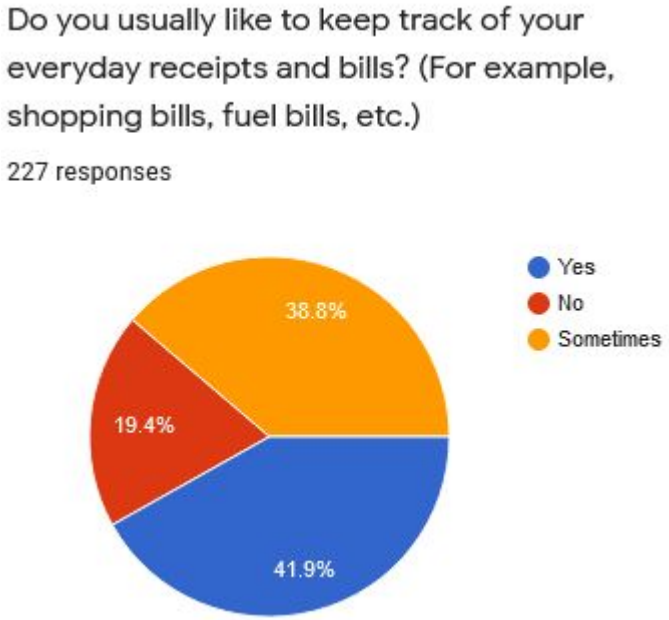
User Research

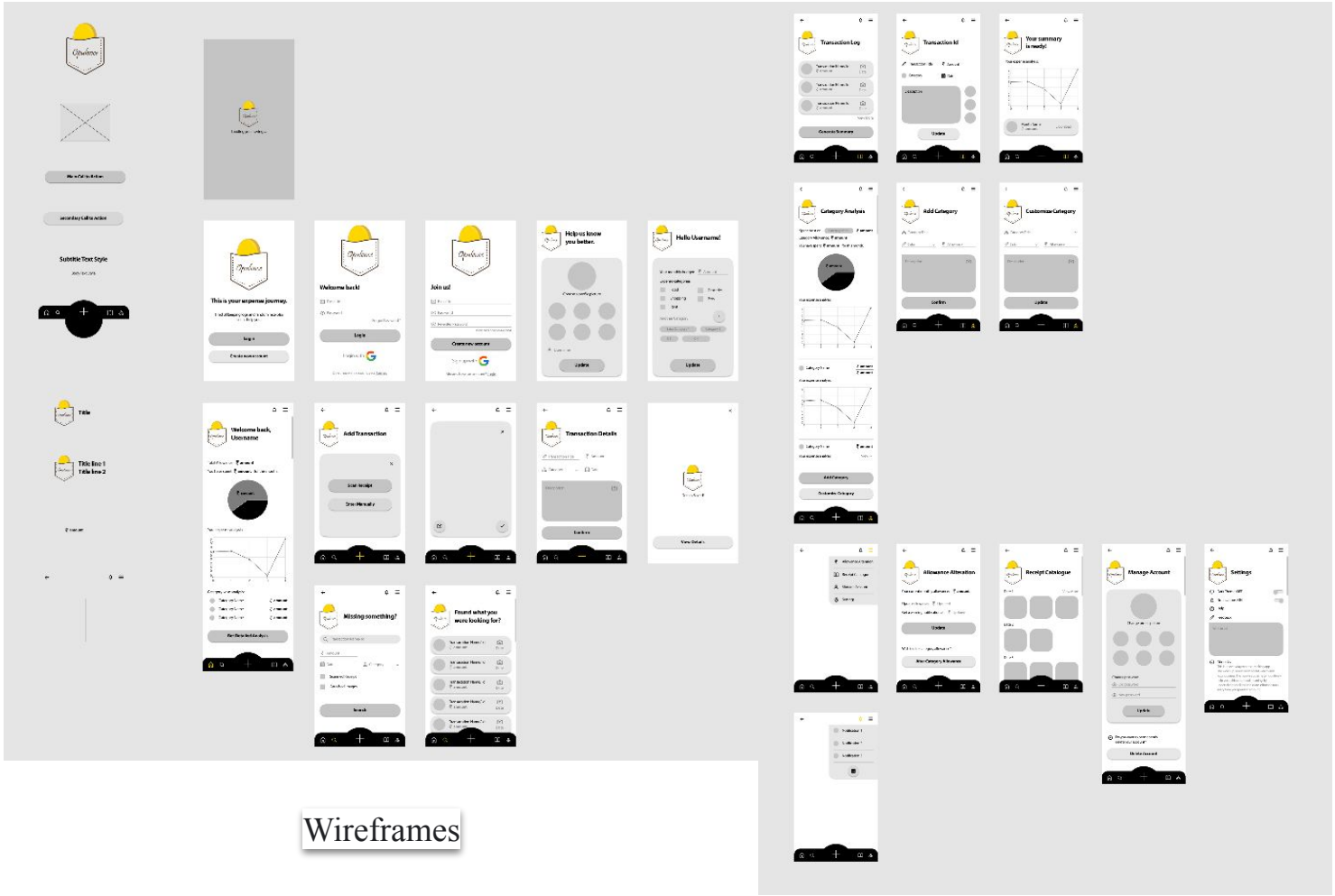
- As college students, one of our biggest concerns is how to manage our allowance money while being away from the watchful eye of our parents.
- Even though at the time of its inception, we primarily had hostellers and university students as our target audience, our user research has helped us make better decisions.



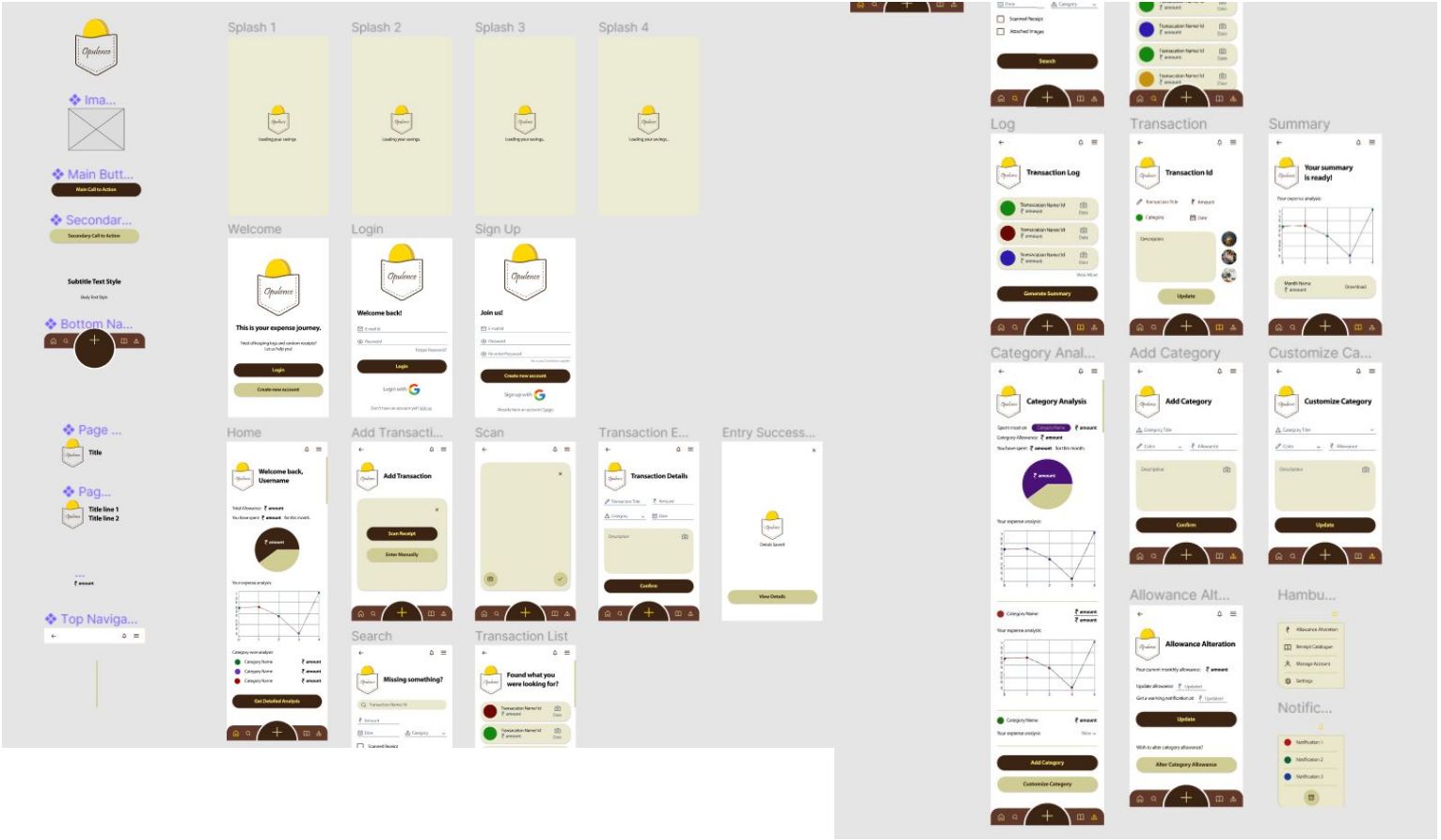


- As stated earlier due to the expanse of the similar applications already in existence, we wanted to deliver something that would help us stand out and will be of use to our user audience.
- Hence we have decided to include a text extraction model which would help the user to scan a receipt to input the total price as well as to keep record simultaneously.




Subtitle Text Style
Title
Title line 1
Title line 2
This is your expense journey.
Welcome back
Join us!
Helpus know you better.
Hello Username!
Welcome back, Username
Add Transaction
Transaction Details
Missing something?
Found what you were looking for?
Transaction Log
Transaction Id
Your summary is ready!
Category Analysis
Add Category
Customize Category
Allowance Alteration
Receipt Catalogue
Manage Account
Settings

Wireframes

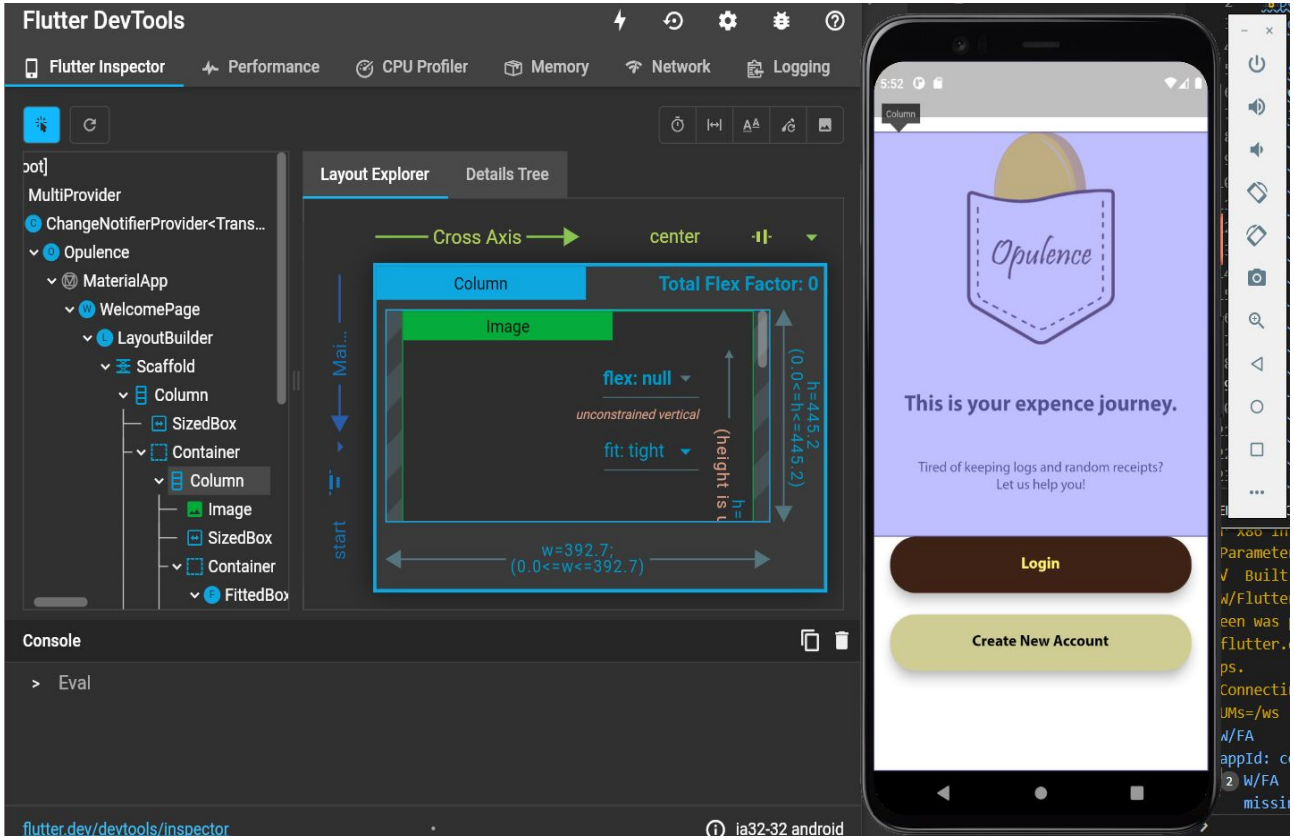


High-Fidelity Design Mockups

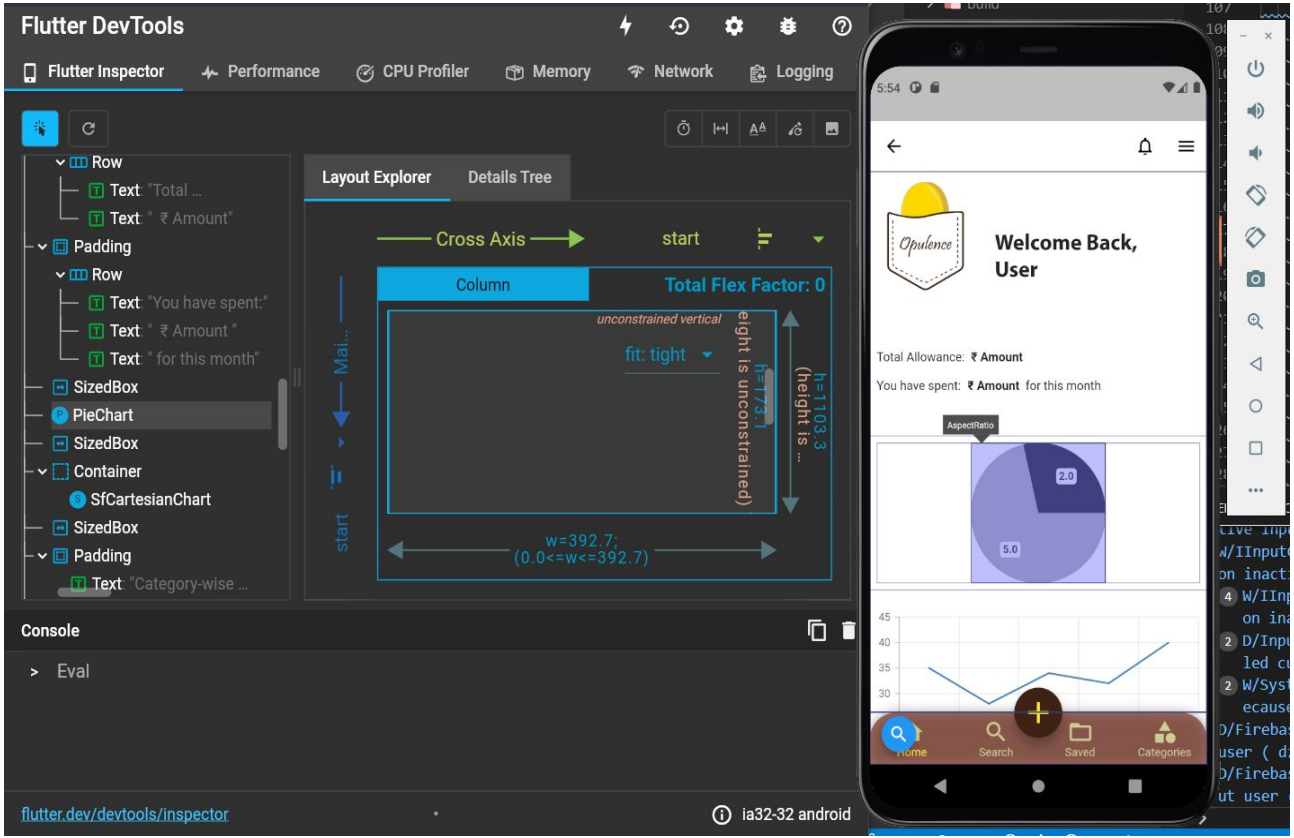
Flutter Codebase

- **Widgets Development:**
  - We started developing the pages of the application by preparing the widget tree, deciding which components are to be placed in a row and which components are to be placed in a column. After we completed this part, we started coding the components into widgets. The pages were divided into 5 sub-parts: constant, models, provider, screens, widgets. By performing this, we completed the front-end part of the application.
- **Firebase:**
  - After the completion of the front-end, we started working on the backend part of the application. We used Firebase for the authentication of the user. The user can only use the app when they are logged into the application. If they are not a part of the database present in Firebase, they need to sign-up.

Flutter DevTools



Flutter DevTools



Machine Learning Model

- Google ML Kit is a mobile software development kit that brings Google's machine learning expertise to Android and iOS apps in a powerful yet easy-to-use package. google_ml_kit Flutter plugin is a flutter plugin to use google's standalone ML Kit for Android and iOS. Its features include text recognition, face detection, pose detection, barcode scanning, image labeling, etc.
- We take an image as input using the phone's camera and take out the visible text and from that extract the total amount.

Machine Learning Model

- We also worked on our own model which has not been converted into an API yet :


```
else:
    print("not found")
```

```
Total Amount:  418 .95',
```

Conclusion

- There is a saying that “the easiest way of becoming bankrupt is by not paying attention to your expenses.” There is nothing that expresses the significance of keeping track of your expenses better than that saying.
- The responsibility of taking care of your finances doesn’t ensue when you begin making money from your job. It starts much earlier; for some when they get to college and for others even earlier. If you don’t learn to manage your resources earlier in life, you may find it harder to adopt proper monetary habits later when you begin to earn.
- Thus, our case study on a flutter-based mobile application.

References

- Design Inspiration: *Behance*
- Reference App 1: *Spending Tracker*
- Reference App 2: *Money Manager*
- Flutter Documentation: *Flutter documentation | Flutter*
- Flutter Course: *Flutter & Dart - The Complete Guide [2021 Edition] | Udemy*
- API: *What is an Application Programming Interface?*
- ML Model: *Optical Character Recognition*