

Scaling Flutter to 100k MAU as a solo dev

Dinu-Ștefan RUSU

June 2025 – scanneralimente.ro

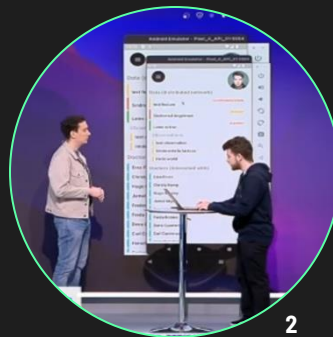




Dinu RUSU
Senior Software Engineer

rusudinu.ro

- Launched 42 mobile apps since 2017 (5.25 apps / year)
 - Senior Software Engineer
 - Teaching Assistant
- & other boring stuff (4x invited at ProTV, Euronews, etc)



Why am I here?

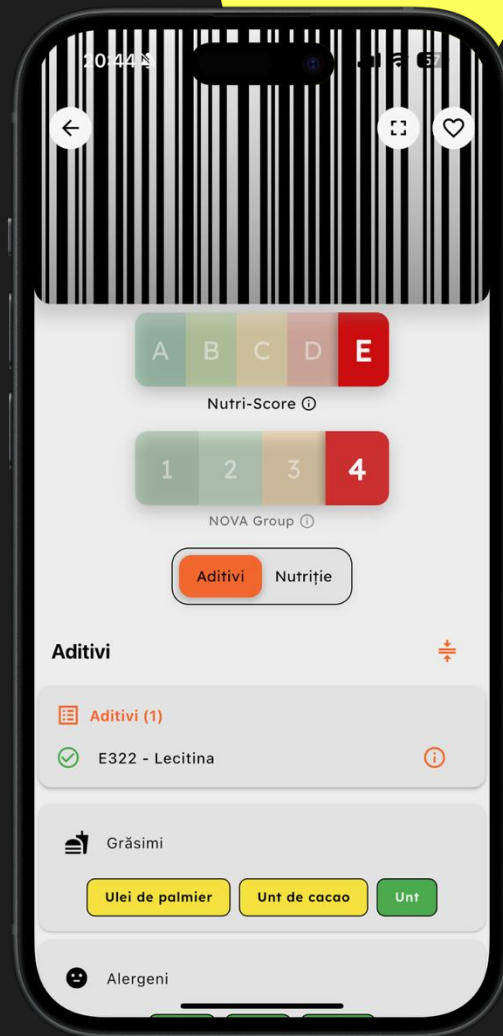
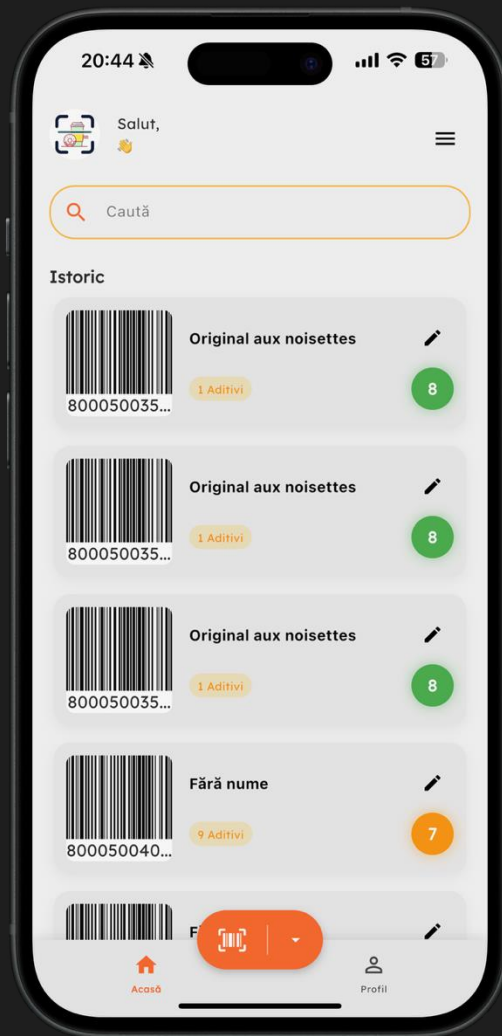
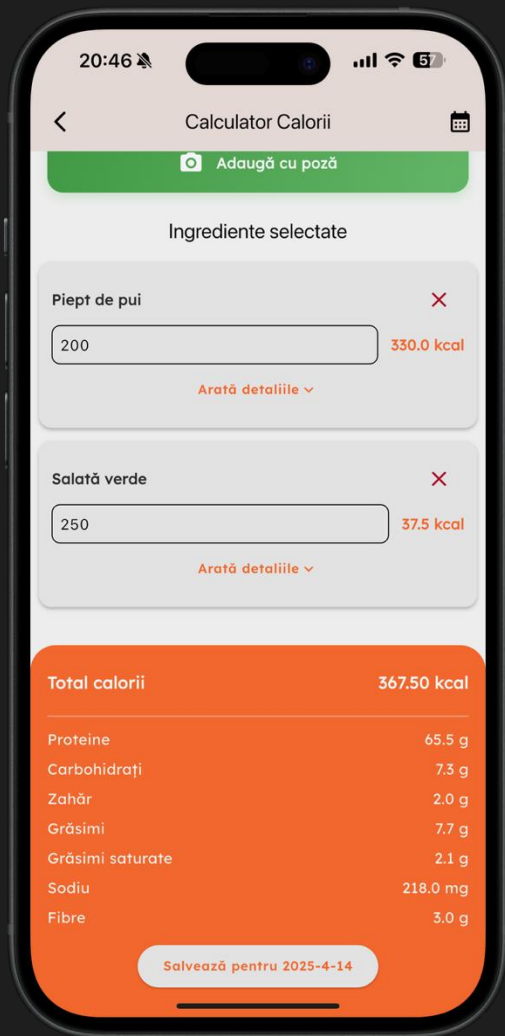
Out of 1.8M apps on Google Play, 3.7k were built by Romanian developers *

How many with over 100k installs (by Ro devs)? **

* <https://42matters.com/how-many-mobile-apps-have-been-built-by-romanian-developers>

** Trust me bro powered by ChatGPT deep research





All you need...

- 5 years of perseverance
- Pay attention to this talk*
- * and maybe a little bit of luck



After paying attention
to this talk



The scary monster

Building a new, user-ready product is hard.

So you should build more.
Or vibe code it to make your life even harder.

- UX
- Marketing
- Actual implementation
- User satisfaction



Competition is high

Most apps are easy to replicate

- A lot of developers try to create a side income
- Developing apps became cheaper (AI + Cross Platform frameworks like Flutter, React Native)
- For Google Play the barrier of entry is lower
- Even Grandma can build an app now (Cursor, Windsurf, etc)



A dramatic anime-style illustration of a battle. In the foreground, the back of a young man with spiky blonde hair is visible; he is wearing an orange and black outfit with a circular emblem on the back. He is facing a massive, orange, nine-tailed fox-like creature with a menacing expression, sharp teeth, and intense red eyes. The creature is crouching on a dark, rocky ground. The background is dark and indistinct. The text "The battle" is centered over the image in a bold, white, sans-serif font.

The battle

Your biggest enemies

- Marketing (+ Business Development)
- Compute



Being conscious of cost

- 1 TB of image storage
- 60GB PostgreSQL database
- 20GB egress / month
- 16GB ram, 8 vCPUs VPS



As promised, the AWS bill came

+ GCP

Service	AWS Estimate	Google Cloud Estimate
1 TB Storage	~\$23.00	~\$26.00
60 GB PostgreSQL DB	~\$20–\$25 (not added to total)	~\$39 (not added to total)
20 GB Egress	~\$1.80	~\$2.40–\$3.80
VPS (16 GB RAM, 8 vCPU)	~\$242	~\$288
Total	~\$260	~\$300

Cost in case of a DDOS

Or protecting against one

Service	AWS Estimate	Google Cloud Estimate
AWS Waf & Shield	\$3.000	-
Google Cloud Armor	-	\$200 (2 resources) otherwise \$3.000

Service	AWS Estimate	Google Cloud Estimate
1TB bandwidth (egress)	\$20/TB	\$65/TB

*Average bandwidth considered for the attack: 1Gbps (0.001TB/s) (=> 1TB/15 minutes)

Cost in case of a DDOS

Or protecting against one

Service	AWS Estimate	Google Cloud Estimate
1TB bandwidth (egress)	\$20/TB	\$65/TB

Service	AWS Estimate	Google Cloud Estimate
2TB transferred	\$40	\$130
20TB	\$400	\$1300
40TB	\$800	\$2600

* With an average duration of 23 minutes / attack => 2TB of data transferred



Marketing

Google Ads

0.31 RON / install (Android)

0.40 RON / install (iOS)

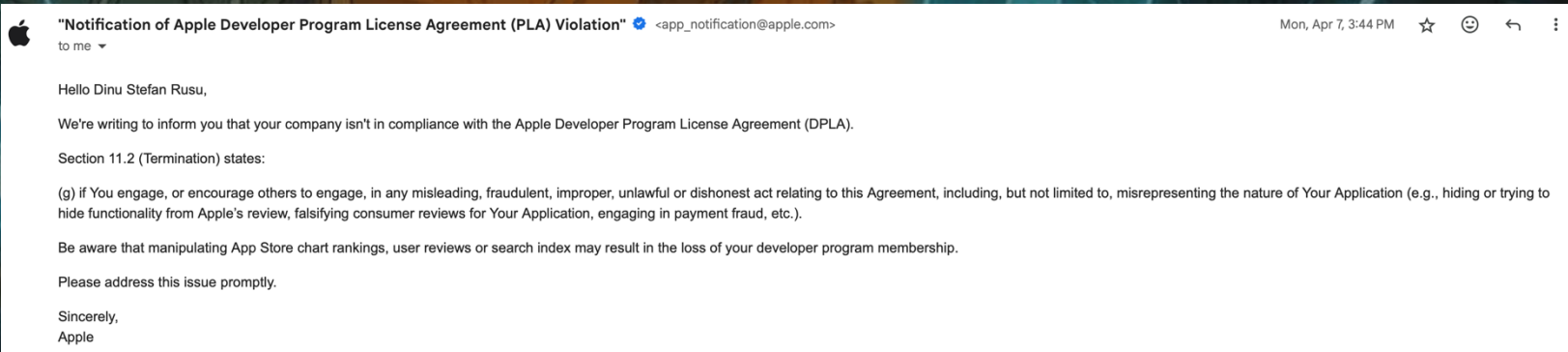
Meta Ads

10 RON / 1.4k-4.1k views

Apple Search Ads

Don't even think about it

How one email can kill your entire app





CodingShadows <dinustefan89.ds@gmail.com>

to Notification ▾

Mon, Apr 7, 3:51 PM



Hello,

Please provide more details regarding this problem as I am not familiar with any violations.

Have a great day,

Stefan

...



Apple Support

to me ▾

Wed, Apr 9, 1:09 PM



Hi,

Thank you for your reply.

As noted in the original notification, manipulating App Store chart rankings, user reviews, or search index is a **violation** of the Apple Developer Program License Agreement (DPLA) and may result in the loss of your Developer program membership.

We suggest you conduct internal investigations to ensure you and any third-parties you may work with are in compliance with the DPLA and App Store Review Guidelines.

We also encourage you to closely monitor your app activities. If you notice any unusual activity in the future, please follow these steps: Sign in to App Store Connect > Contact Us > Report a Concern > Report a Fraud Concern.

We are unable to provide additional information at this time. Thank you for your efforts to make the App Store a safe and enjoyable experience for users and a great opportunity for all developers to be successful.

Sincerely,

Apple

...



Hi Dinu,

We acknowledge that your inquiries pertain to the issue of specific content within your application that may be in violation of the PLA. However, as members of the Developer Support team, we lack the ability to access the inner workings of your application. Consequently, we are unable to provide precise details about the specific issues or guide you towards the problems identified by the App Review team.

Should you require assistance, we recommend that you directly contact the App Review team for further support.

Bets regards,

Tee

Developer Support

A stylized illustration of Naruto Uzumaki and the Nine-Tailed Fox (Kurama) against a dark grey background. Naruto is on the left, wearing his signature orange spiky hair, a black headband with the Konoha symbol, and a black high-collared jacket. He is winking with his right eye and has a confident smile. Kurama is on the right, depicted as a large orange fox with nine tails, looking grumpy with its arms crossed. The text "Taming the monster" is centered over the image in a white, bold, sans-serif font.

Taming the monster

Compute

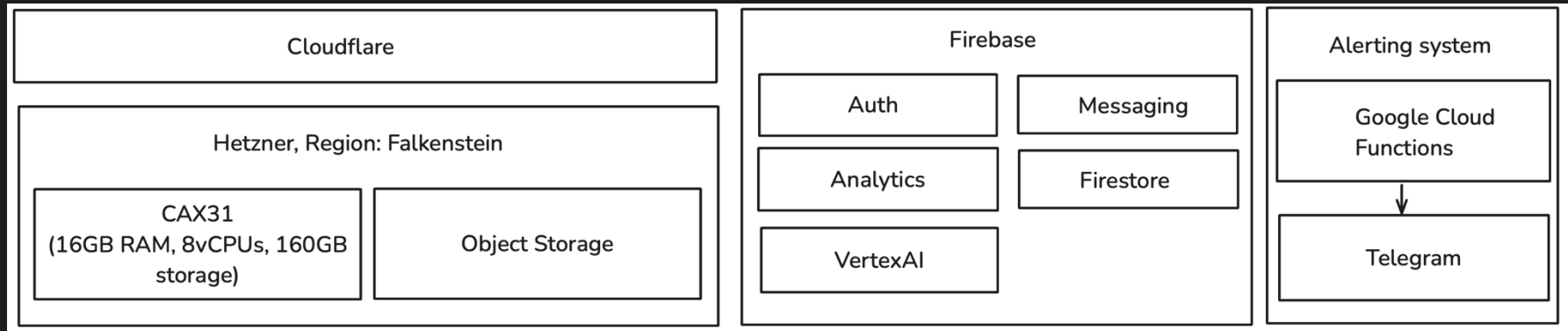
Hetzner

- Fixed cost (\$22/month)
- Cheap networking
- Cheap compute
- Cheap storage
- Reliable (somewhat – I am looking at you, object storage)
- Object storage in Falkenstein kept crashing in the first months
- To create an account, you need Passport / ID verification



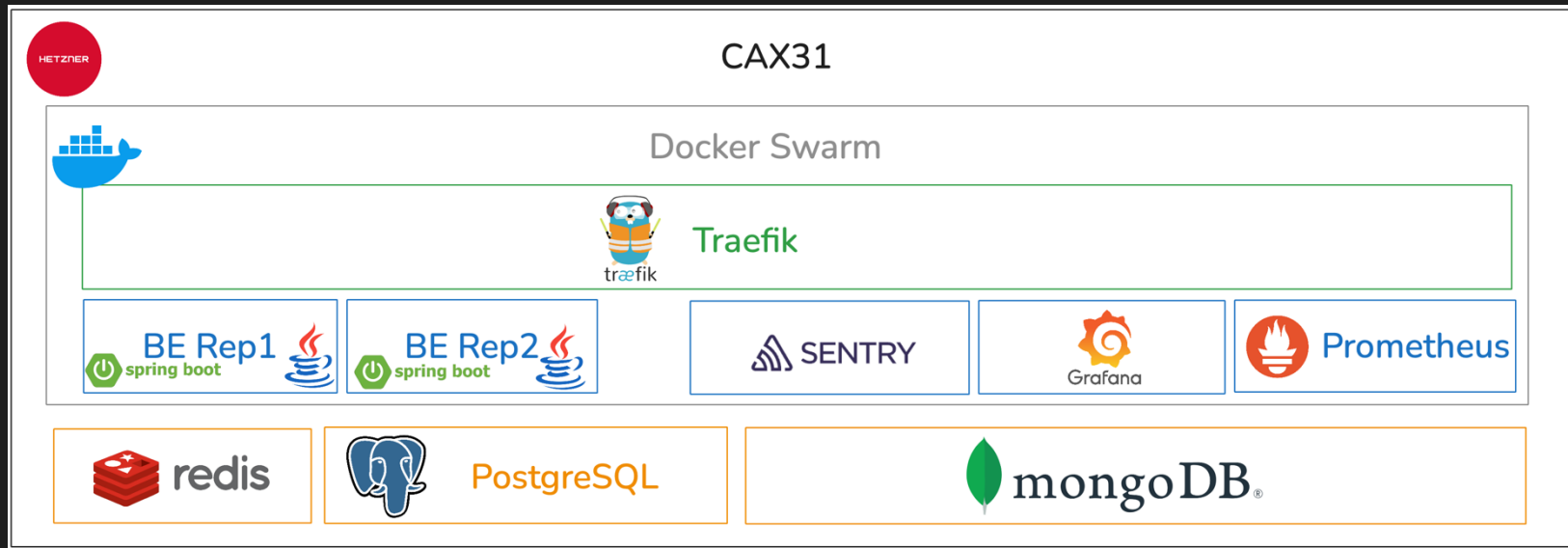
Compute

Hetzner



Compute

Hetzner



Cost in case of a DDOS

Or protecting against one

Service	AWS Estimate	Google Cloud Estimate	Hetzner
1TB bandwidth (egress)	\$20/TB	\$65/TB	20TB Included, then \$1.20/TB

*Average bandwidth considered for the attack: 1Gbps (0.001TB/s) (=> 1TB/15 minutes)

Cost in case of a DDOS

Service	AWS Estimate	Google Cloud Estimate	Hetzner
1TB bandwidth (egress)	\$20/TB	\$65/TB	20TB Included, then \$1.20/TB

Service	AWS Estimate	Google Cloud Estimate	Hetzner
2TB transferred	\$40	\$130	0
20TB	\$400	\$1300	0
40TB	\$800	\$2600	\$24

* With an average duration of 23 minutes / attack => 2TB of data transferred

Mobile tech

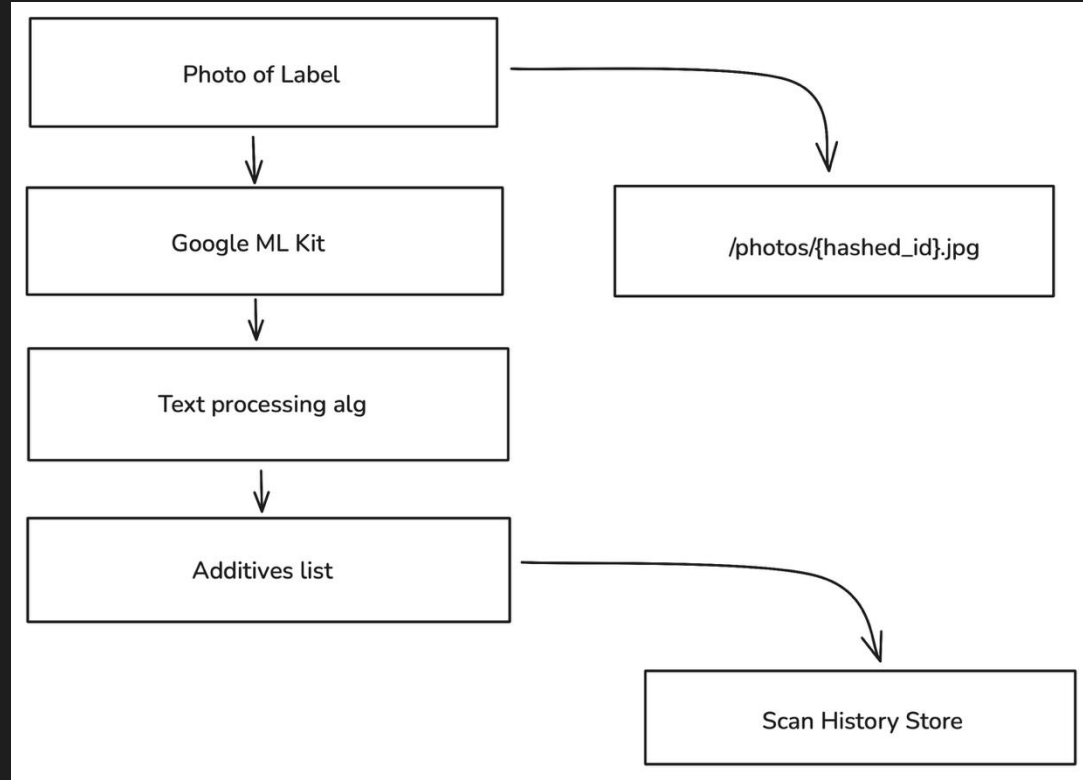
Why Flutter

- I don't like JavaScript
- Already had an internal UI Library
- Same UI on both Android and iOS + Web and Desktop support
- Better performance compared to RN



Optimizations

- Full on-device image processing
- Full on-device scan history
- Cost of a scan is \$0 (in v0)



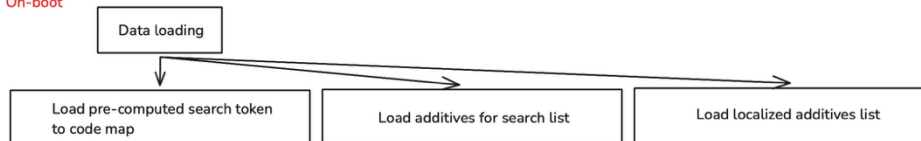
Local OCR is not that precise

RELEASE PIPELINE (PRE-COMPILE)

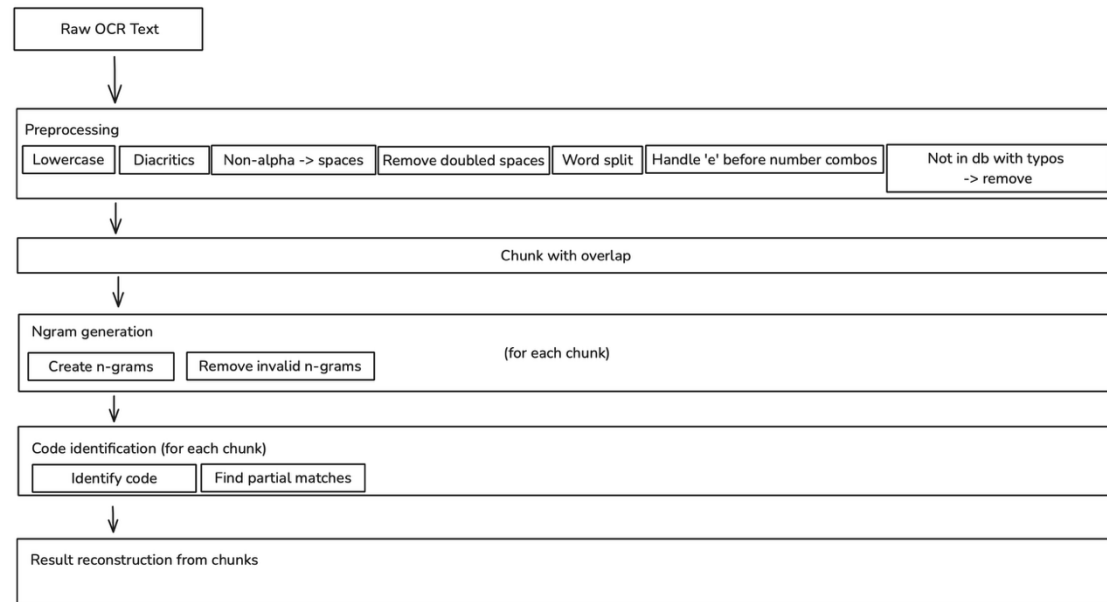


RUNTIME Text processing alg

On-boot

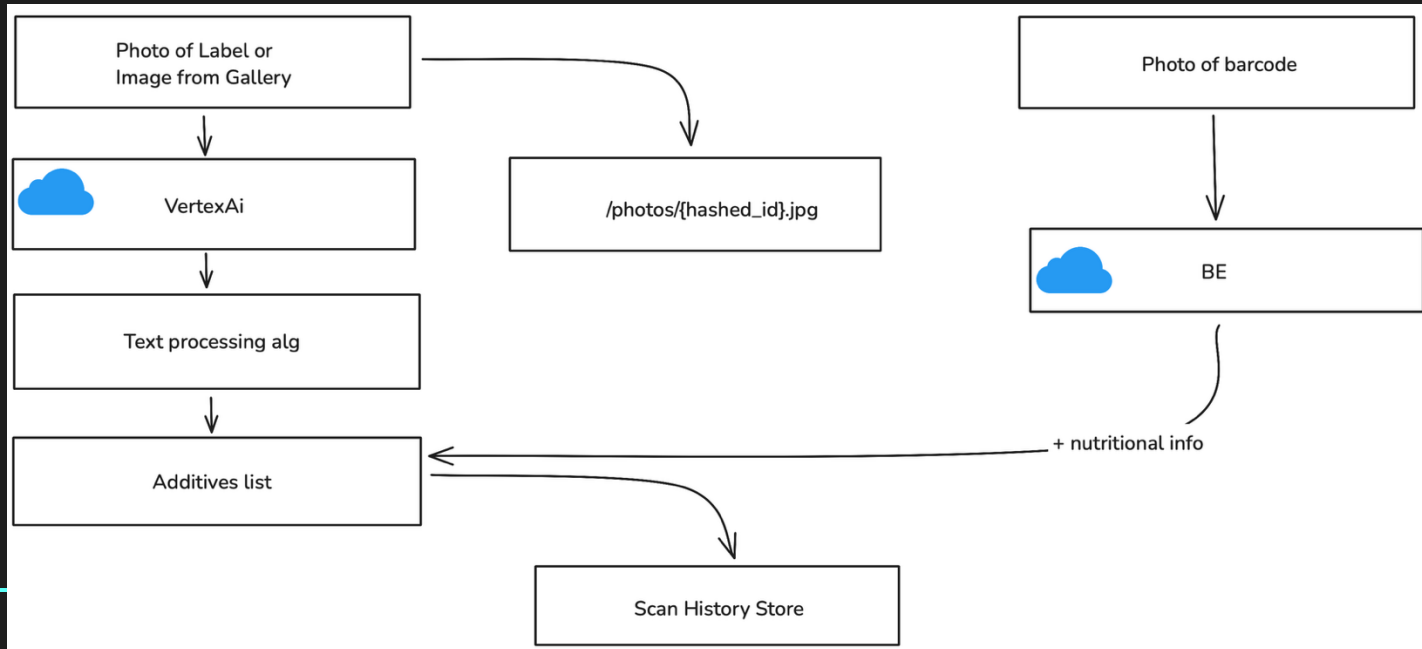


On-scan

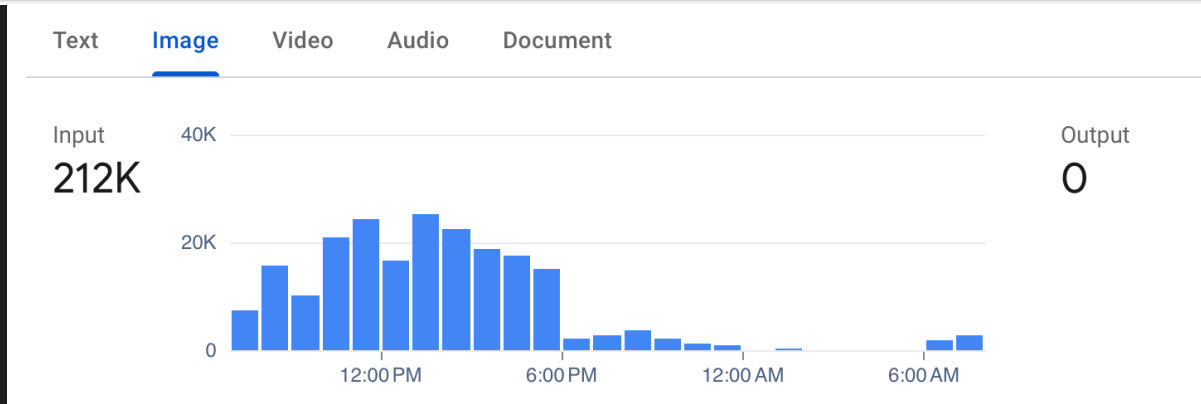
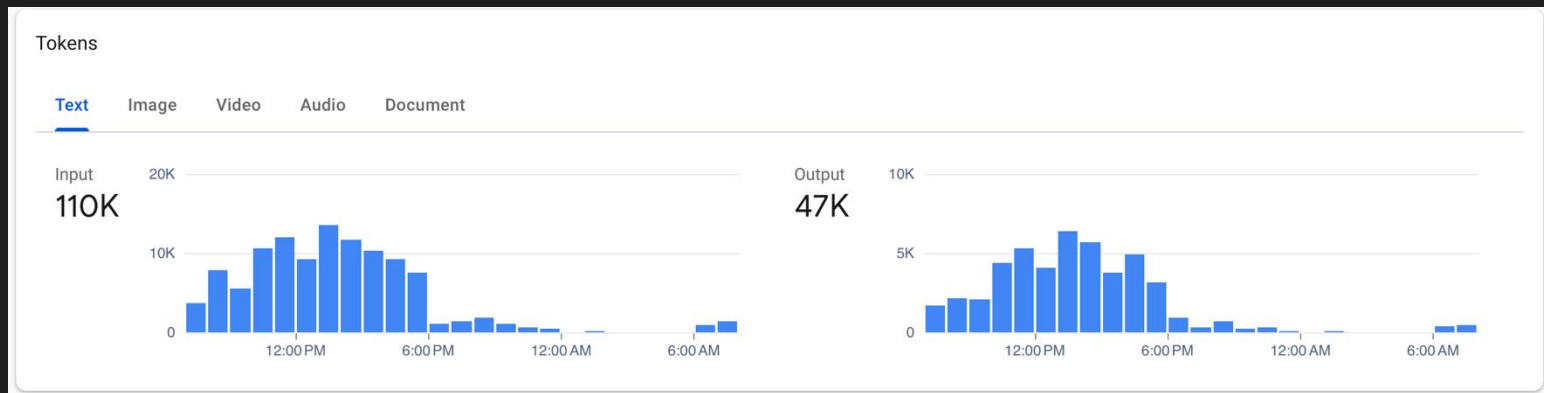


Current version

- Cloud text extraction (improved accuracy) – Cost: \$0.00004
- Barcode scanning – Cost: \$0 (but total cost for the server is \$21 (fixed))



Token usage in Firebase AI (prev Vertex AI)



generate_content gemini-1.5-flash

Successful model 1s 614ms Jun 2, 2025, 8:47:57 AM

Input

```
[
  {
    "event.name": "gen_ai.user.message",
    "content": [
      {
        "mimeType": "image/jpeg",
        "data": "image/jpeg<sha5123ddf85119f4cb05ea98e25ebe2c95d594cb51cf594e91d8982140ed6b6dc7fe9ce9d62ced2b133d1fe92c588ab29f945ac1196a7b7e354d8697df2ca7df4fe07>",
        "displayName": ""
      },
      {
        "text": "Ce ingrediente sunt in imaginea de mai sus? Raspunde cu ingrediente separate prin virgula fara alte detalii sau simboluri. Daca nu exista ingrediente, raspunde cu 'NU'. Indiferent de limba ingredientelor, raspunsul tau va fi in limba romana."
      }
    ],
    "role": "user"
  },
  {
    "event.name": "gen_ai.system.message",
    "role": "system",
    "content": [
      {
        "text": "You are a romanian user that reads labels. For each image you will return the ingredients of that product. You will respond in romanian, regardless of the language of the ingredients. You will only respond with the list of ingredients, separated by commas, nothing else. If there are no ingredients in the image you will respond with NO."
      }
    ]
  }
]
```

Output

```
[
  {
    "event.name": "gen_ai.choice",
    "index": 0,
    "message": {
      "content": [
        {
          "text": "Cremă (46%), ciocolată cu lapte (29%), grăsime vegetală (ulei de palmier), emulgatori din surse vegetale (lecitină de soia E322, poliglicerol poliricinoleat E476), aromă naturală, uleiuri, făină de grâu, lapte praf degresat, lactoză, pudră de cacao cu conținut redus de grăsimi, emulgator (lecitină de soia E322), amidon alimentar. Poate conține migdale și alune.\n"
        }
      ],
      "role": "model"
    },
    "tool_calls": [],
    "finish.reason": "stop"
  }
]
```

```
final safetySettings = [
    SafetySetting(HarmCategory.harassment, HarmBlockThreshold.high, HarmBlockMethod.probability),
    SafetySetting(HarmCategory.hateSpeech, HarmBlockThreshold.high, HarmBlockMethod.probability),
];
```

```
generationConfig: GenerationConfig(
    maxOutputTokens: 500,
),
```

```
final model = FirebaseVertexAI.instanceFor( 'FirebaseVertexAI' is deprecated and shouldn't be used. 'FirebaseVertexAI' library and 'firebase_vertexai' package have...
    location: FirebaseRemoteConfig.instance.getString('vertex_ai_model_region').isEmpty ? 'europe-west1' : FirebaseRemoteConfig.instance.getString('vertex_ai_model_region'),
    appCheck: FirebaseAppCheck.instanceFor(app: Firebase.app()),
).generativeModel(
    model: FirebaseRemoteConfig.instance.getString('vertex_ai_model').isEmpty ? 'gemini-1.5-flash' : FirebaseRemoteConfig.instance.getString('vertex_ai_model'),
```



```
static Schema _createRecipeDetailsSchema() {
  return Schema.object(
    properties: {
      'recipe': Schema.object(
        properties: {
          'name': Schema.string(description: 'Name of the recipe'),
          'description': Schema.string(description: 'Brief description of the recipe'),
          'ingredients': Schema.array(
            items: Schema.object(
              properties: {
                'item': Schema.string(description: 'Name of the ingredient'),
                'quantity': Schema.string(description: 'Required quantity with unit'),
              },
            ),
            description: 'List of ingredients needed for the recipe',
          ),
          'instructions': Schema.array(
            items: Schema.string(description: 'Step-by-step cooking instruction. Do not start with Step 1, just write them in order.'),
            description: 'Ordered list of cooking steps',
          ),
        },
      ),
    },
  );
}
```

Marketing

TikTok, Facebook & Instagram

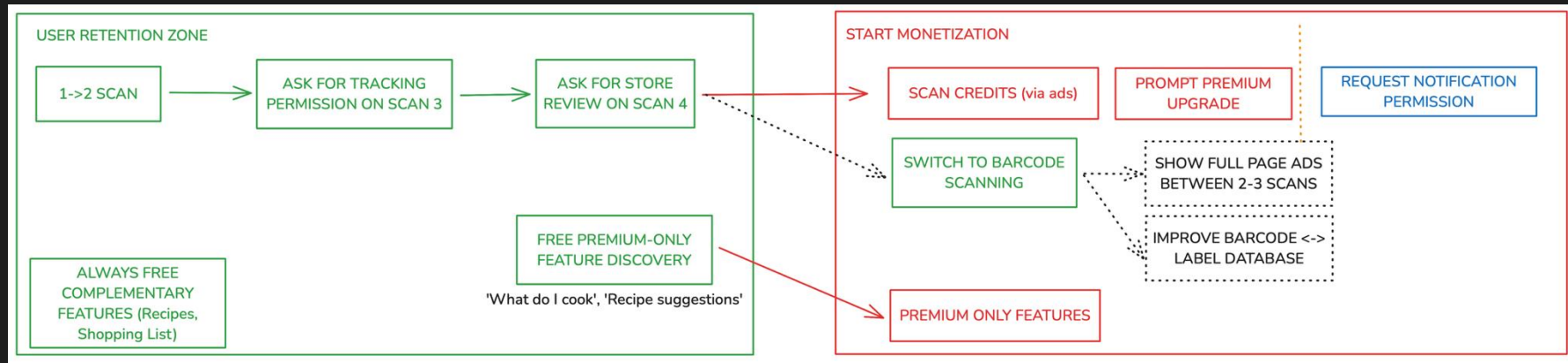
- 2 TikTok accounts, 1 post / day
- 1 Facebook account
- 1 Instagram account
- Short videos, under 30 seconds, scanning a product
 - 'Real life' use-case, videos in which I did not say the app name => more views
 - Let the users ask in the comments what is the app name
- After product market fit > Google Ads + Meta Ads



Business

- No cost for V0 => Always 'on profit' so I could outclass my competitors
- Low cost => More permissive with pricing for users
- Build a valuable ingredient <-> barcode database with the users by offering Free Scans
- Learn valuable user patterns with surveys for Free Scans
- Re-use the database of other apps or sell to 3rd parties that want to integrate barcode scanning (e.g Nutrilens)





Purchase revenue

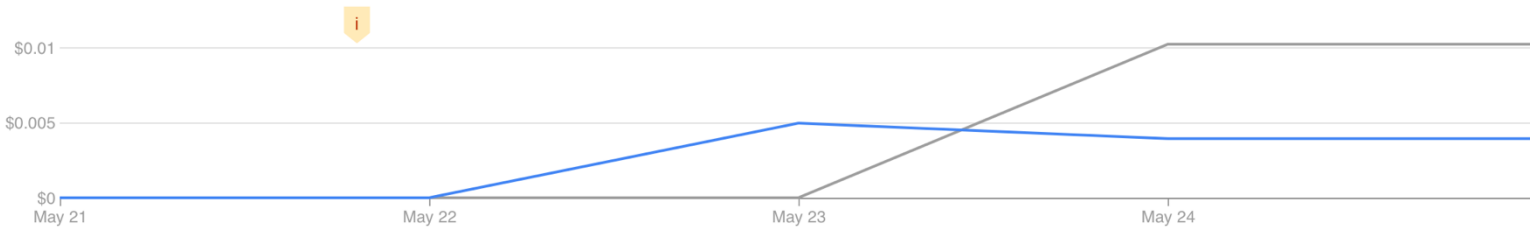
Cumulative In-App Purchase Revenue Per User

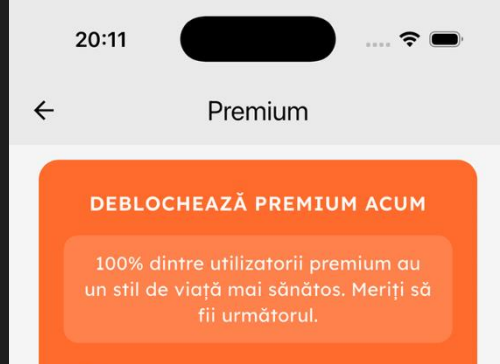
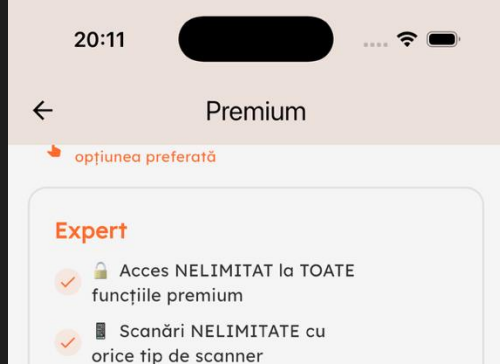


7 days

30 days

All time

[illegible]



Monday,
Apr 21, 2025

Realized LTV / Paying Customer (30 days): \$3.43

New Paying Customers (30 days): 1.00

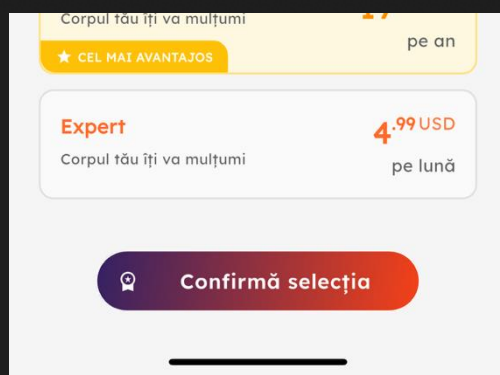
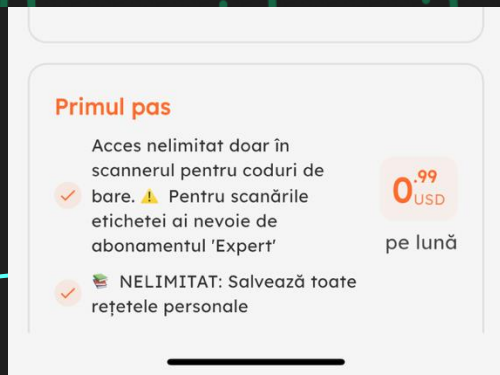
Realized LTV (30 days): \$3.43

Wednesday,
Apr 30, 2025 (Incomplete)

Realized LTV / Paying Customer (30 days): \$22.70

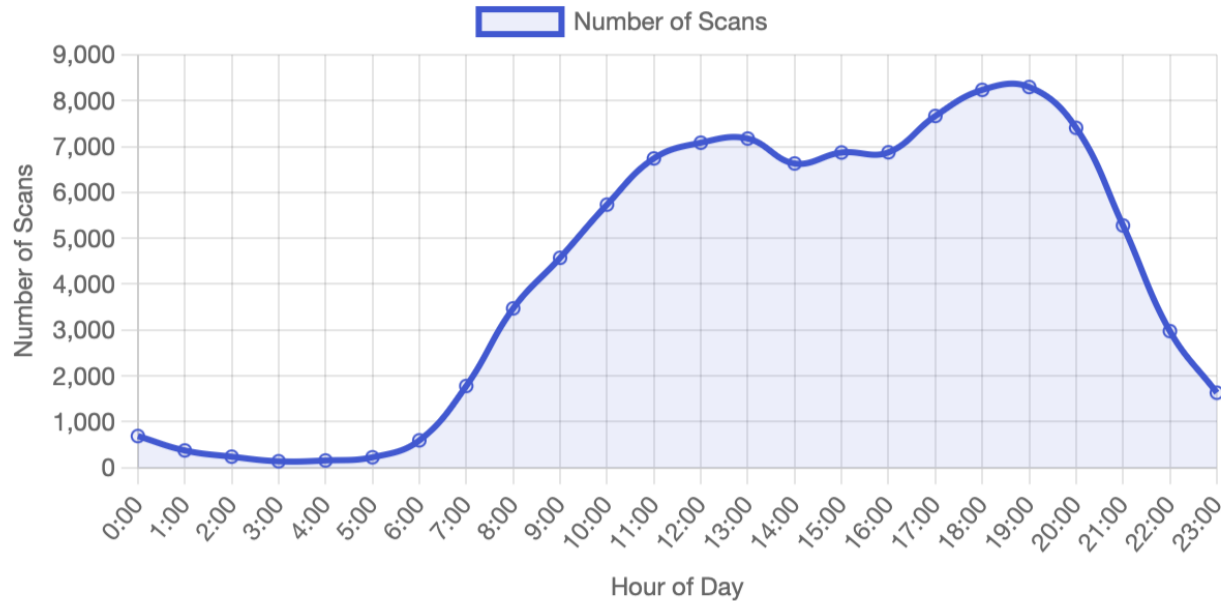
New Paying Customers (30 days): 1.00

Realized LTV (30 days): \$22.70



Insights

Scan Time Distribution (Last 30 Days)



Most Popular Shopping Items

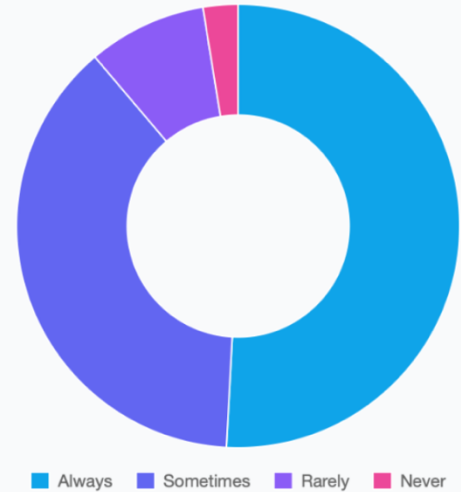
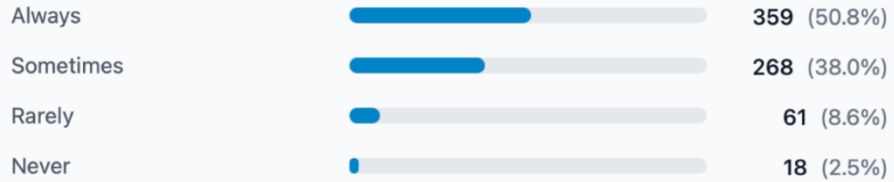
Product
morcovi
ceapa
cartofi
piept de pui
rosii
rădăcină de țelină
mozzarella
ouă
iaurt
spanac

Most Scanned Additives

Code	Frequency
Sare	1726988
Zahar	1499387
Lapte	1167436
Gluten	832552
Soia	630000
E330	561830
Ulei de floarea soarelui	397556
E322	370119
Ulei de palmier	356678
Fructe	317488
Sirop de glucoza	314322
Porumb	296038
E300	288791
Mustar	287794
Unt	251386
Oua	248664
Seminte	248008
E500	239855
Dextroza	223224
E250	220871

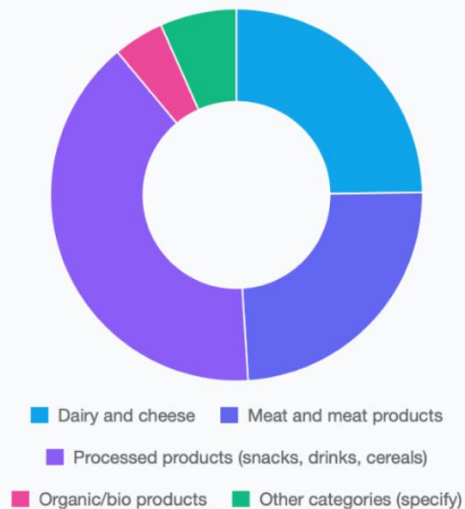
Q1: How often do you check food product labels before buying?

Total responses: 706



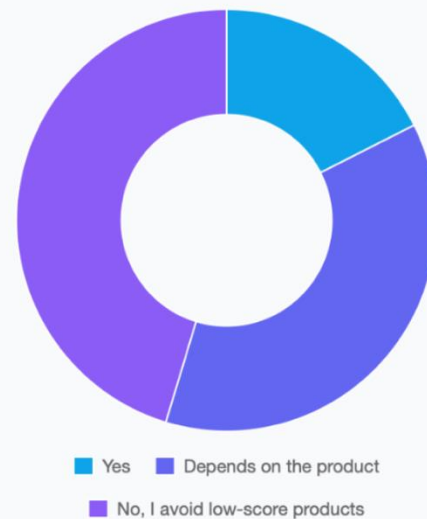
Q2: What type of products do you scan most often?

Total responses: 706



Q4: Would you buy a product with a score lower than 5 if there were no alternatives?

Total responses: 706



What could have been improved

- Not using **code generation** packages like json_serializable from the get-go
- Better optimizations of app size by streaming assets
- Revenue / user needs to be improved
- Cleaner code structure using Bloc more often

A dark-themed illustration of Naruto Uzumaki and the Nine-Tails (Kurama). Naruto is on the right, sitting cross-legged, wearing his signature orange and black jumpsuit and headband. He has a joyful expression with his eyes closed and a wide smile. Kurama is on the left, a large orange fox-like creature with nine long, flowing tails. It is looking towards Naruto with a gentle expression. The background is dark and textured.

**The friends we made
along the way**

Did it work?

Users & Revenue

+\$1,000

MRR (subscriptions only)

+200,000

Downloads across both stores
in <1 year

+4.8/5 ★

From over 3,000
reviews



Did it work?

Media & partnerships



**& Up Romania
Edenred Benefit**



Other tips

- Focus on winning a single market
- Less is more
- Try to win over creators
- Gradual feature discovery
- Defer asking for notification permissions
- Ask for reviews at key moments



User feedback

by Lunaaaaaa16 – Jan 14, 2025

Cea mai buna aplicatie de genul asta

by Go01! – Nov 24, 2024

Extrem de utila si usor de folosit. M-a ajutat sa aleg varianta sanatoasa cand 3 produse arata la fel dar continutul sin punct de vedere sanatate e total diferit . Bravo asteptam si pentru dermatologie

by Ioana Clara – Oct 16, 2024

În sfârșit o aplicație foarte utilă!

by Leo Leo – Apr 19, 2025

Nu este perfecta dar este foarte buna, cand scanezi unele alimente te apuca groaza cate chimicale sunt in ele, de cand o folosesc am inceput sa renunț la produse pe care le foloseam des inainte, de ex, sucuri.





daniel paunescu
Feb 23 18:48



@Constantin Topala



Cine face aplicații de astea.? Nu poți să ai încredere în așa ceva.! Așa, ca atitudine. 1d

Approve

Delete

De ce aplicatia intra prin fisiere si acceseaza parolele????

The background of the image features a dark, textured surface. On the left, a large, brown, nine-tailed fox (Kurama) is crouching, its head turned towards the right. On the right, a young boy with spiky blonde hair (Naruto) is sitting cross-legged, smiling broadly. He is wearing a black and orange jacket, orange pants, and a black headband with a silver metal plate featuring a spiral symbol. The text is overlaid on the center of the image.

**You are now part
of the friends I made
(not the angry ones)
along the way**

See you at
rusudinu.ro
codingshadows.com