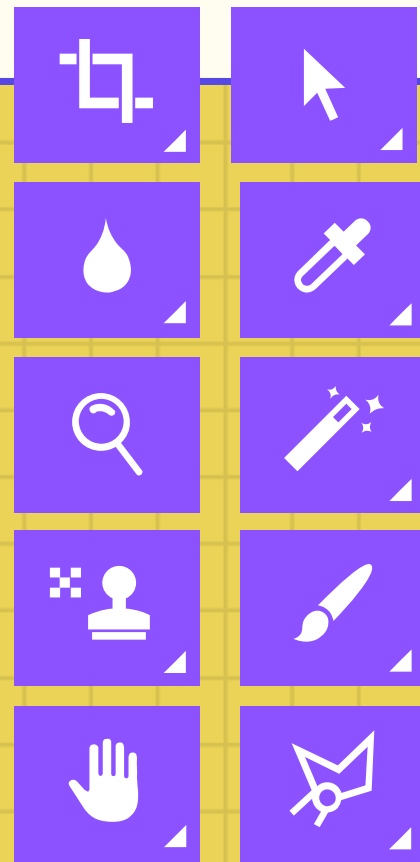


NO WALLET, NO PROBLEM



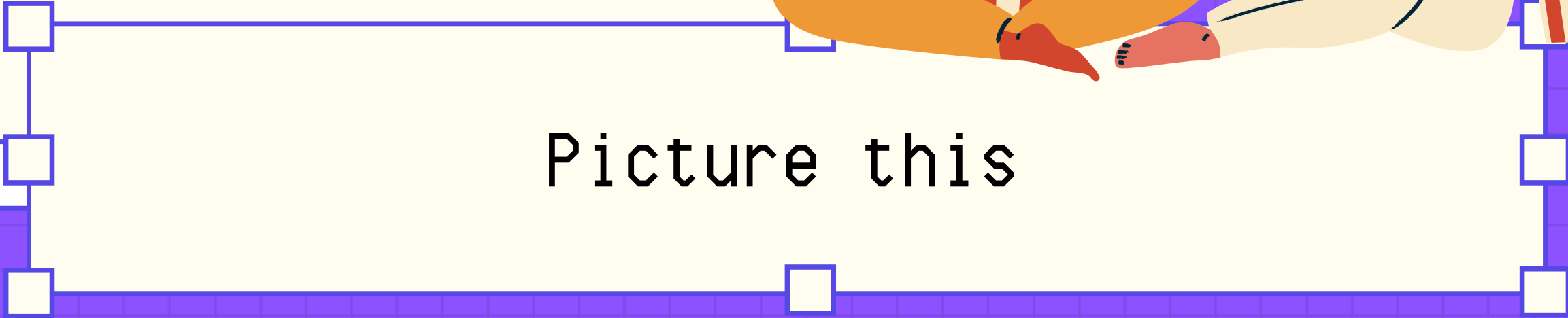
: How JSON Web Tokens
Define the Future of
Mobile Driver's License



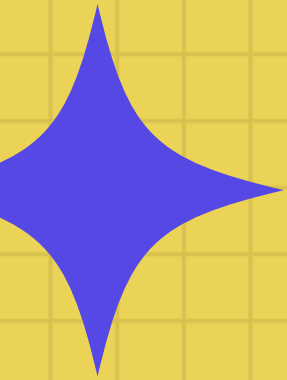


You're a Software Eng.

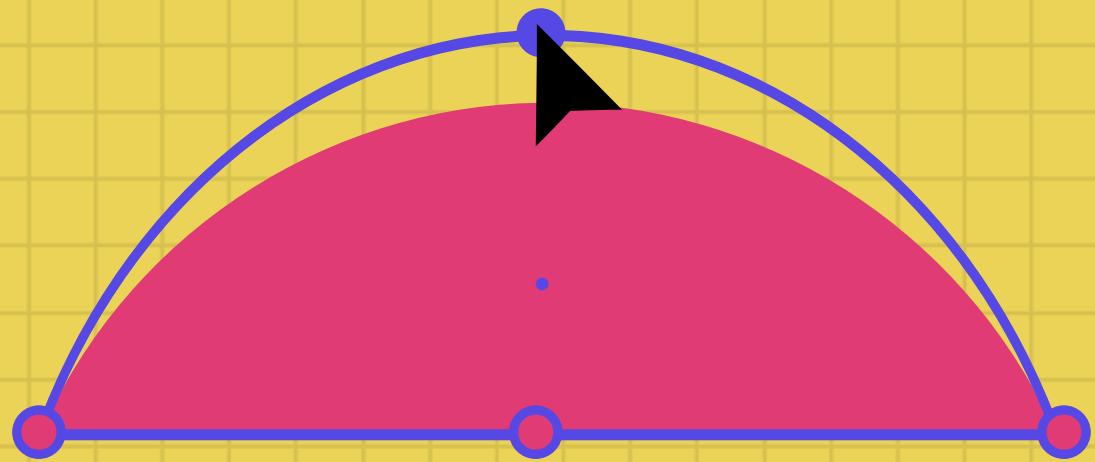
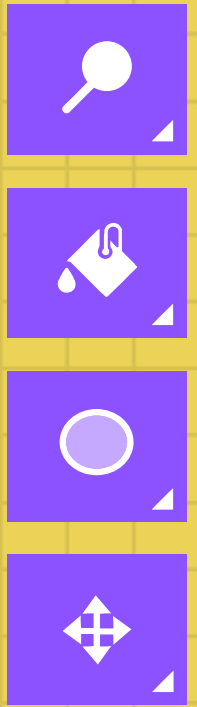
- you just finished a big feature
- unwind with a movie and wine



Picture this

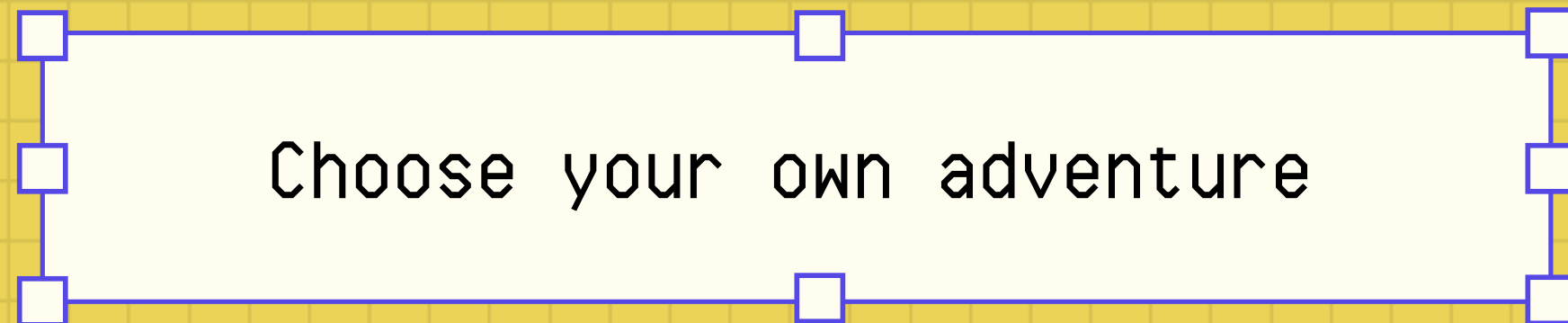
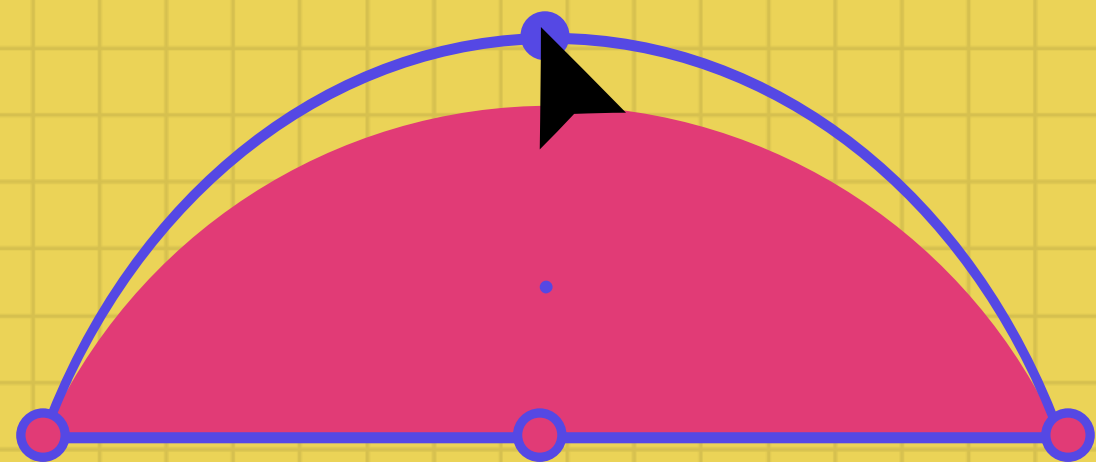
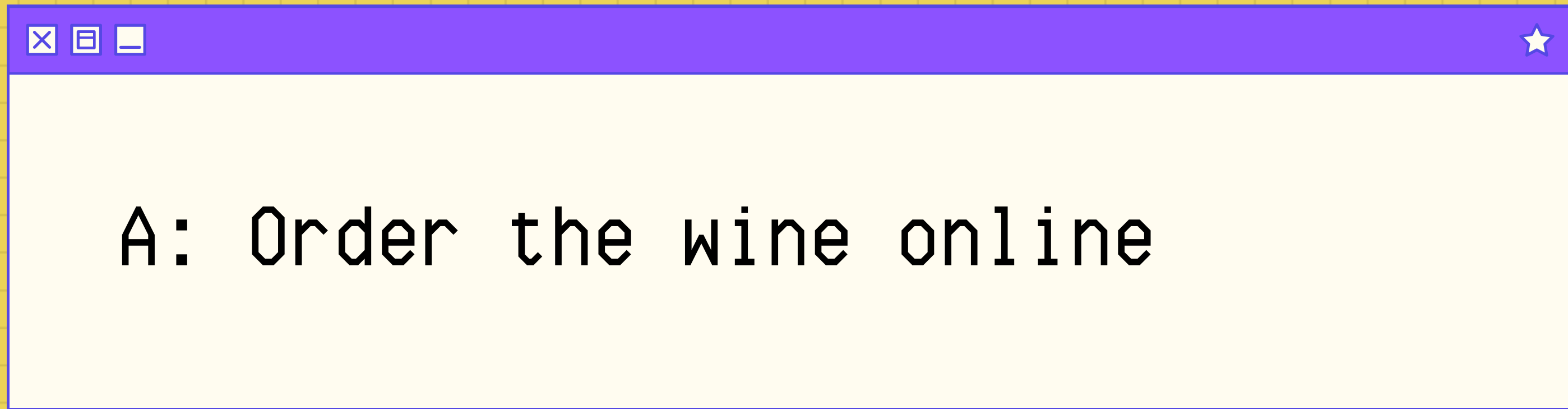
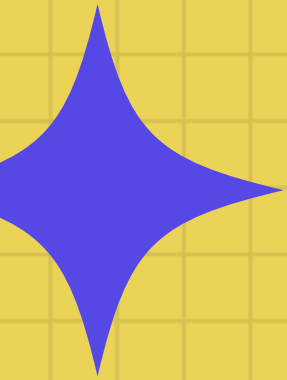


A: Order the wine online
B: Pick it up from the store



Choose your own adventure





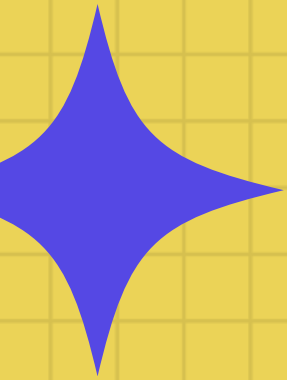


Delivery driver arrived

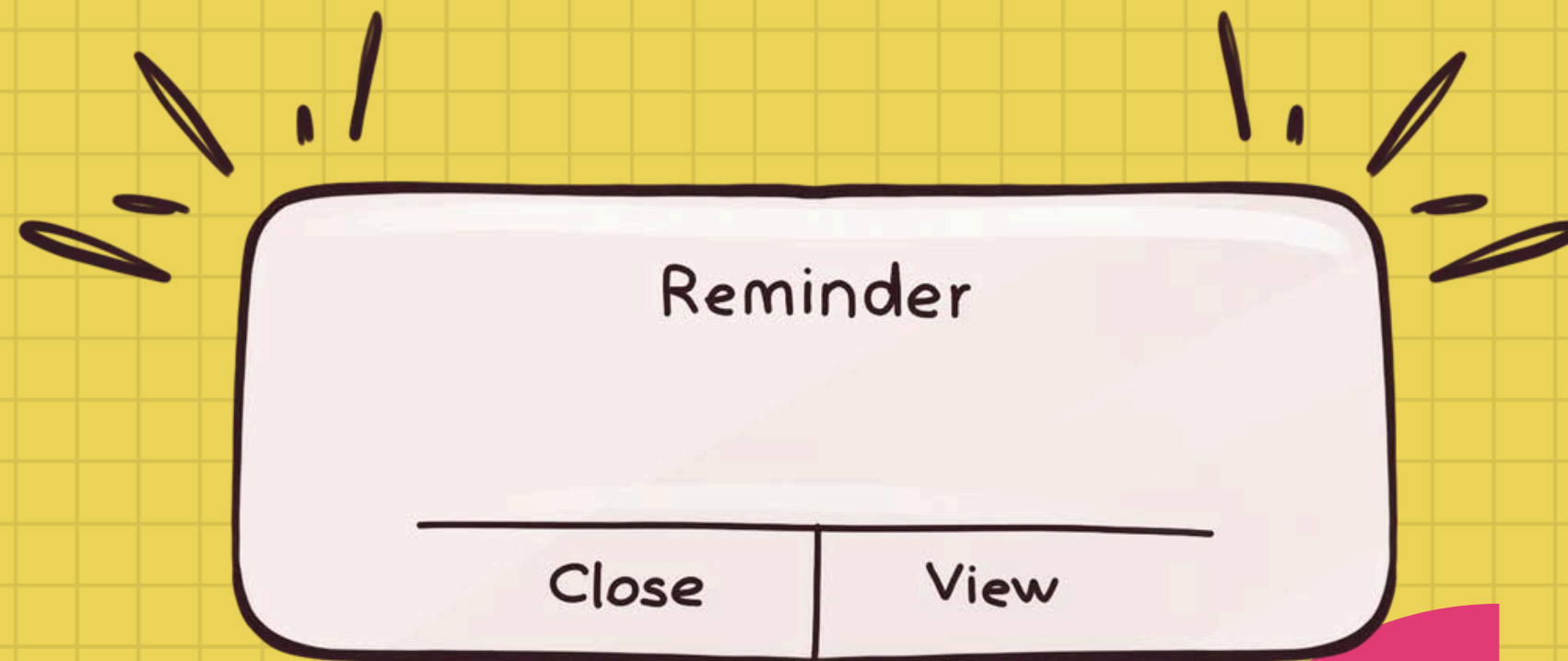
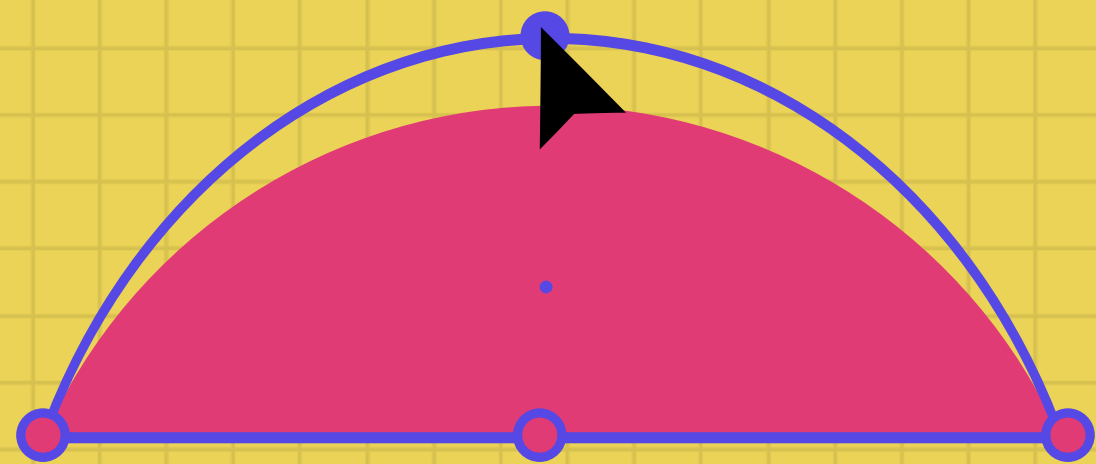
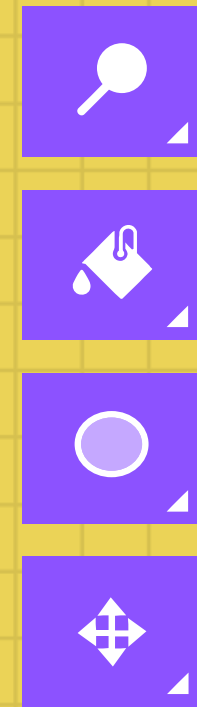
- The app told you don't forget **two** items!

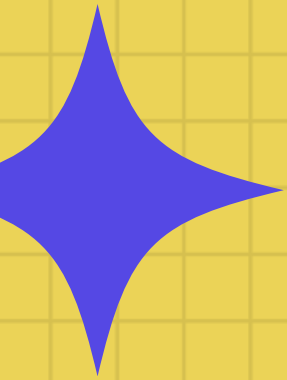


Delivery driver arrived



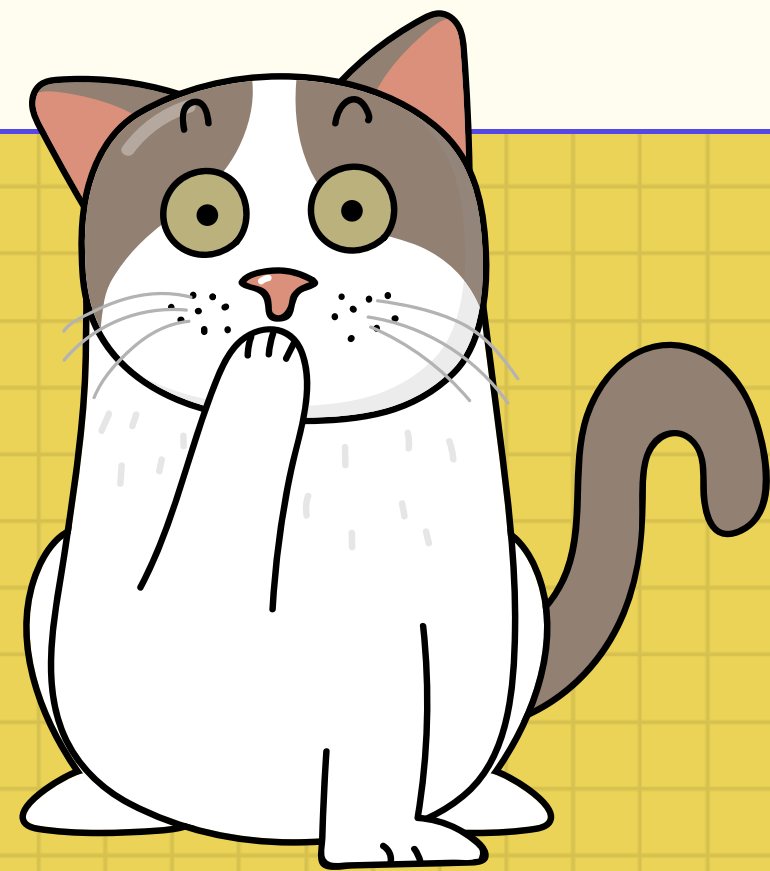
What items did the app tell
you not to forget?





⌵ ⌵ ⌵ ☆

You forgot your ID!



Back upstairs!



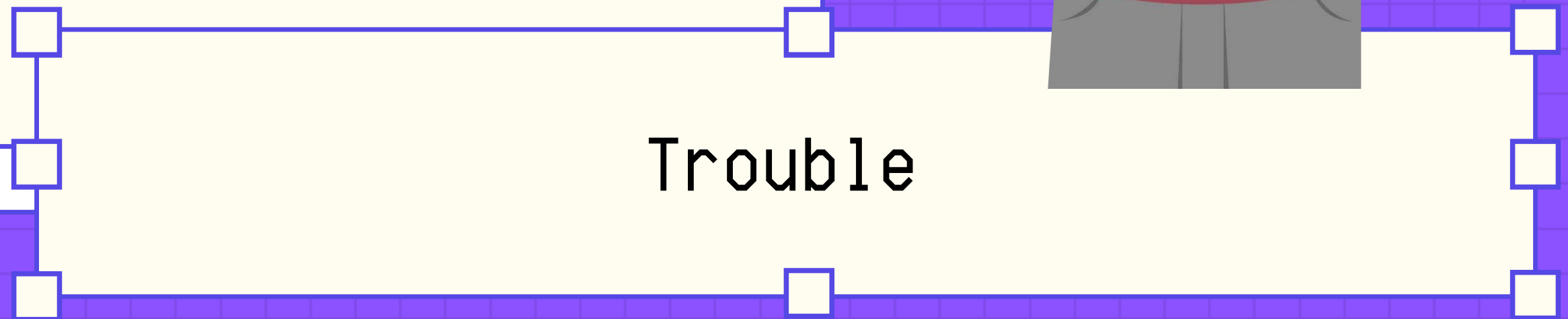


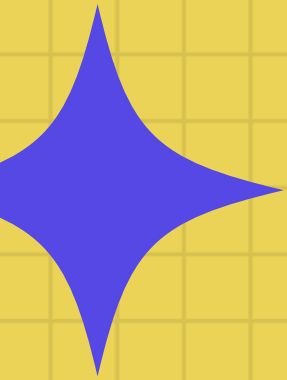
Delivery driver is annoyed

- his company times his deliveries.
- doesn't get paid enough for this.

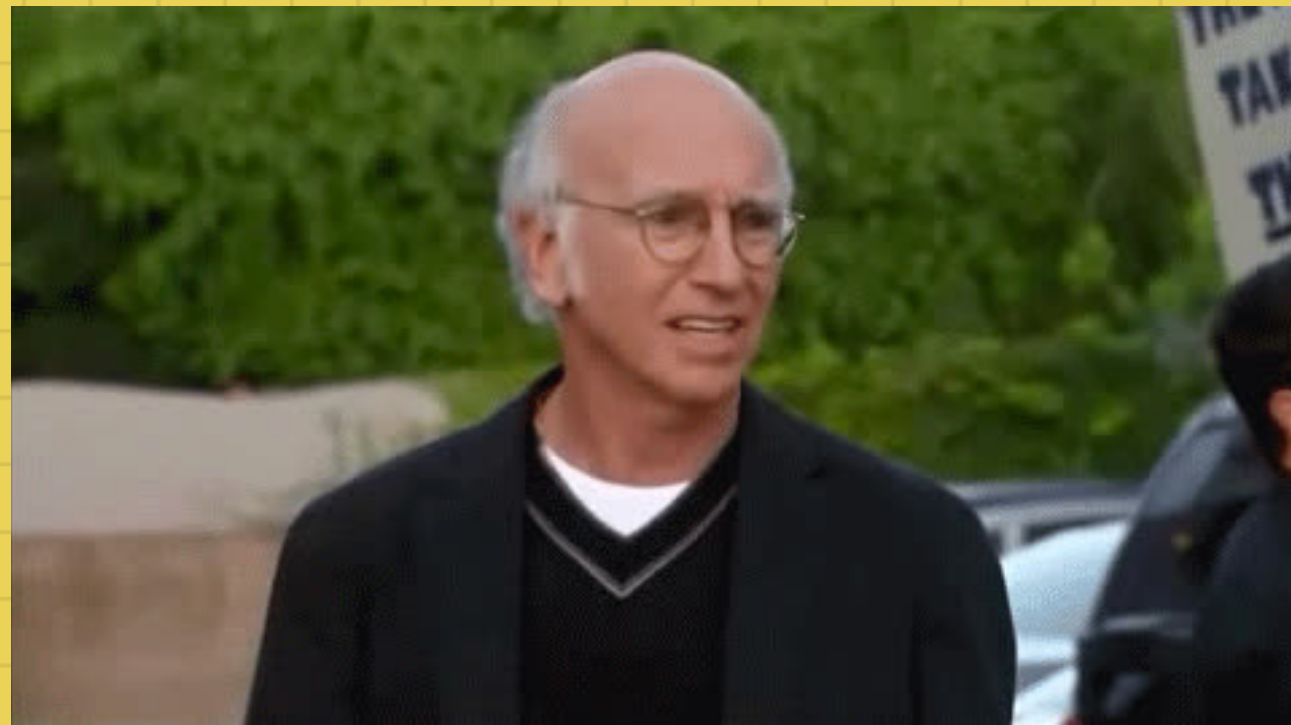
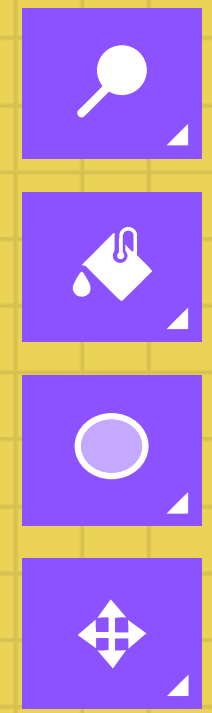


Trouble



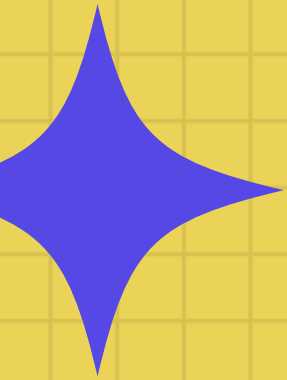


```
⌵ ⌵ ⌵ ☆
A: Leave
B: Risk getting fired
```

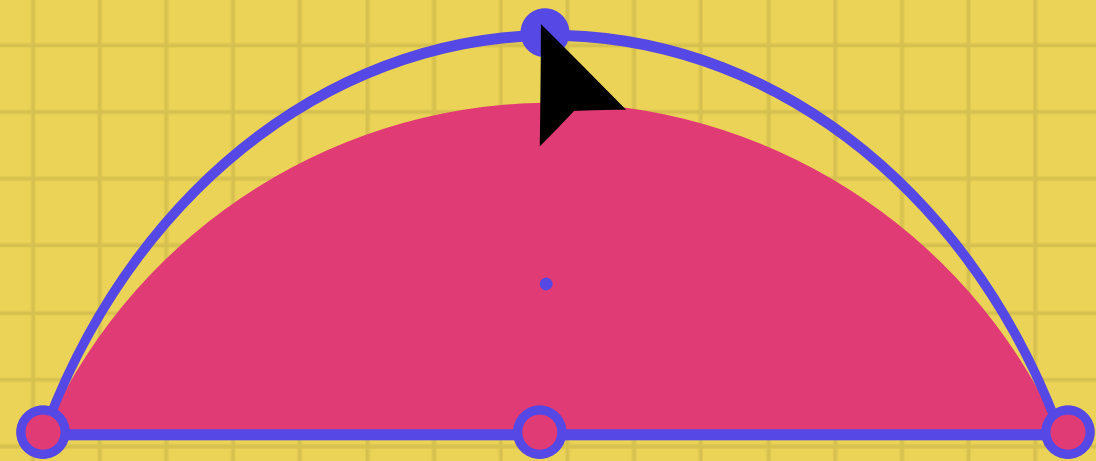


Delivery driver choices



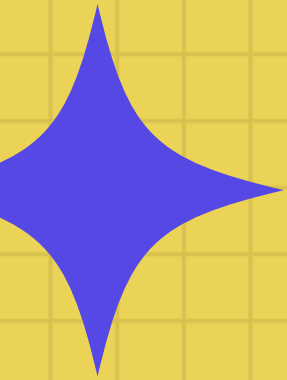


B: Risk getting fired

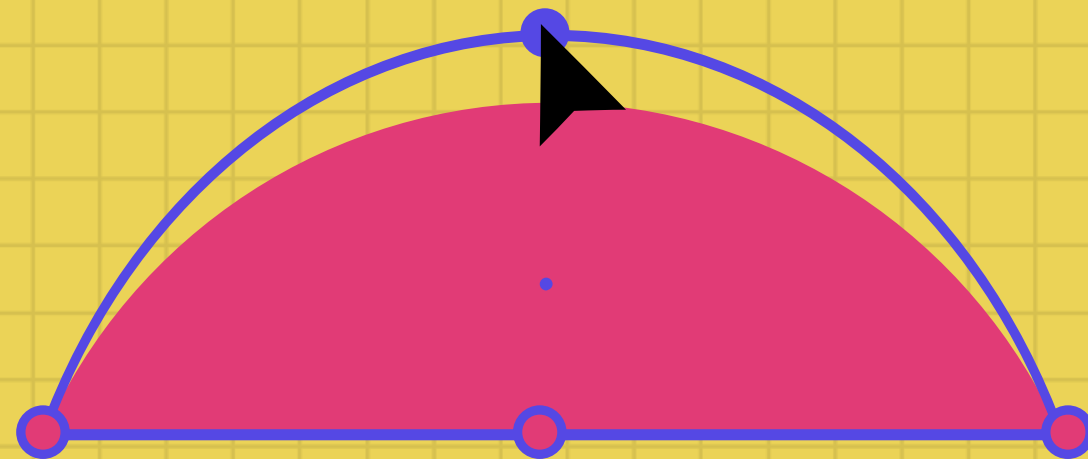


Delivery driver is a nice guy





Have you ever ordered alcohol online? What was your experience?



Question for YOU 🤝





Hi, my name is Rizèl Scarlett 🙌

- Dev Advocate at TBD
- I don't drink alcohol, but I know tips on purchasing booze with a JWT.
- @blackgirlbytes

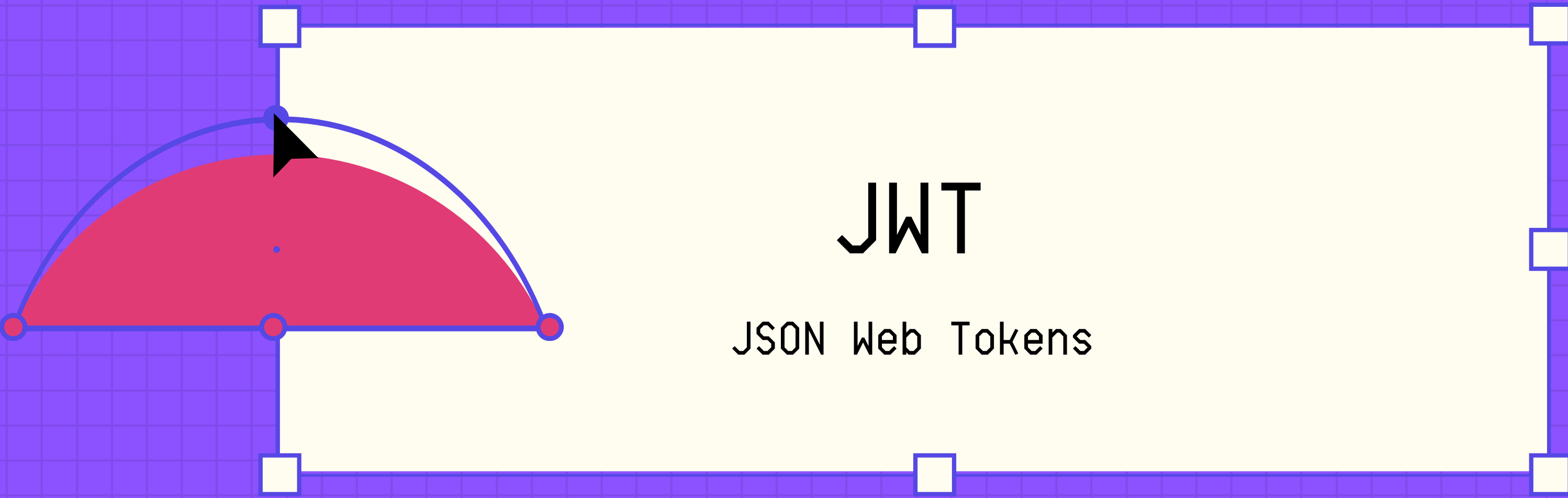
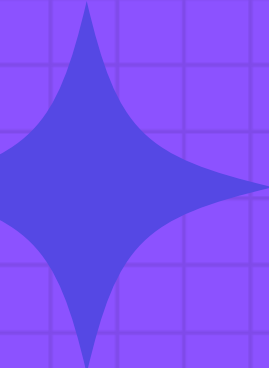




Agenda

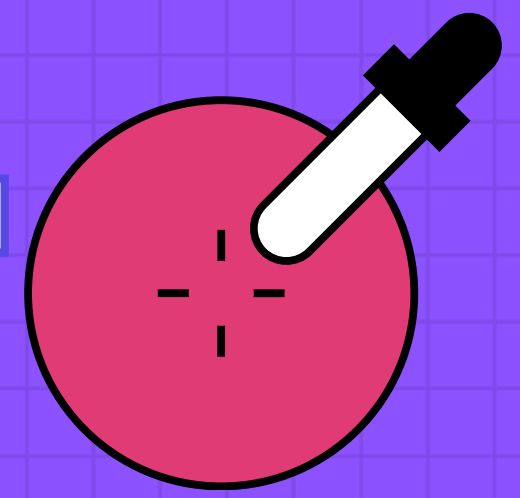
- JSON Web Tokens
- A special kind of JWT
- How it works
- How they're being used
- Challenges
- Build a special JWT
- Interactive fun
- Swag

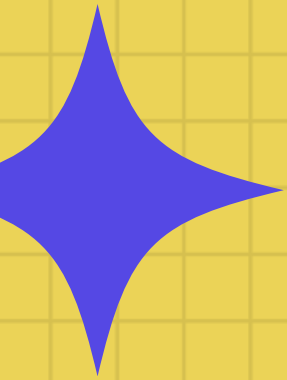




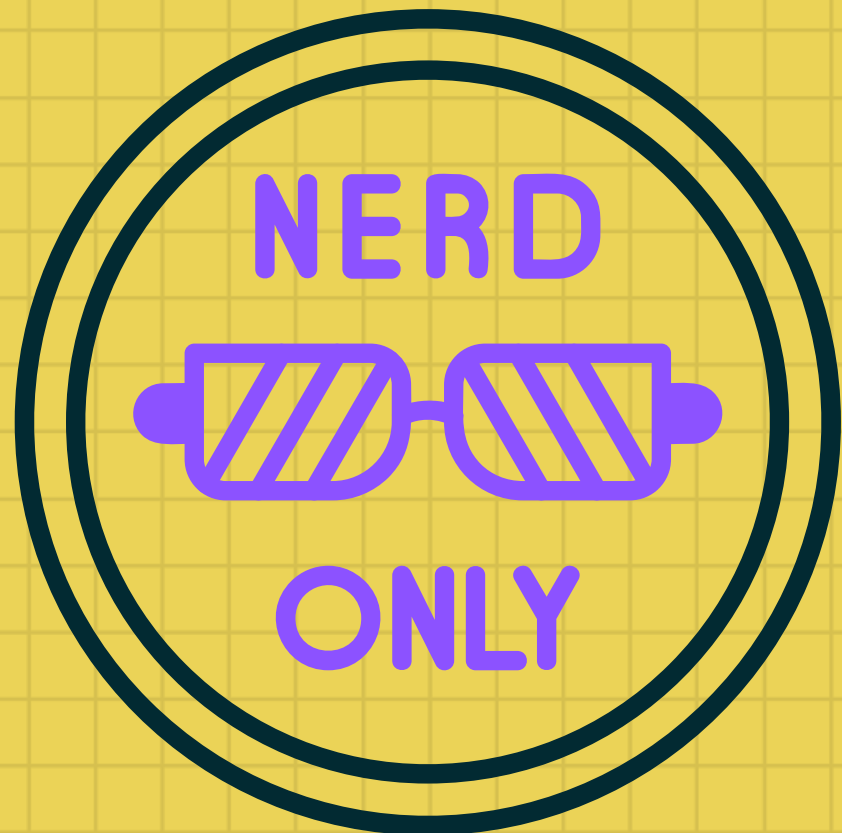
JWT

JSON Web Tokens





```
ⓧ Ⓛ Ⓜ ☆
A: JOT
B: JAY-DOUBLE U-TEE
```



```
NERD FIGHT
```





A JWT is a secure way to share information between two parties online.

1 eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpvaW4iLCJpYXN0IjoiZm90IiwiaWF0IjoiMTUxNjIzOTIyIn0.2.3 XbPfbIHMI6arZ3Y922BhjWgQzWXcXNrz0ogtVhfEd2o

1

Header

```
{
  "alg": "HS256",
  "typ": "JWT"
}
```

2

Payload

```
{
  "sub": "1234567890",
  "name": "John Doe",
  "iat": 1516239022
}
```

3

Signature

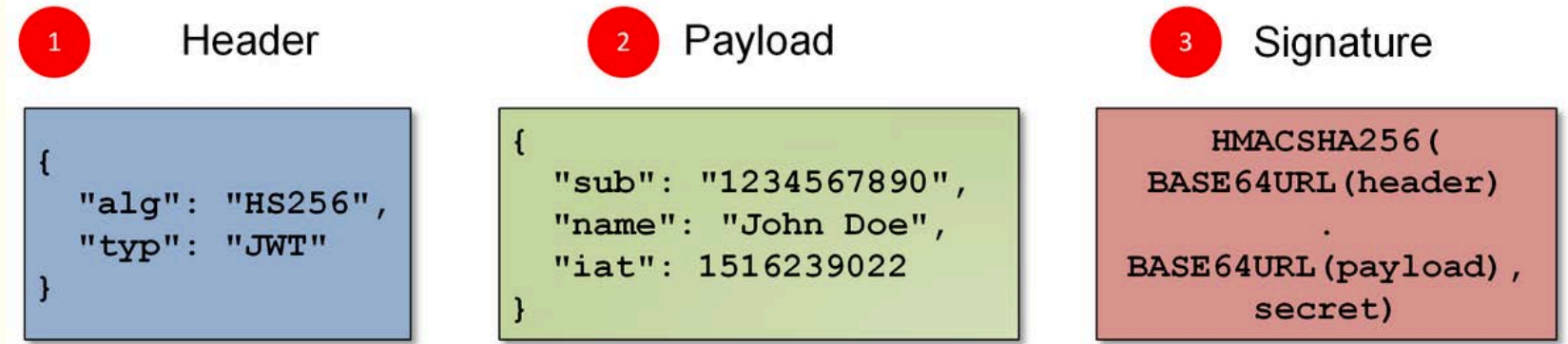
```
HMACSHA256(
  BASE64URL(header)
  .
  BASE64URL(payload) ,
  secret)
```

JSON WEB TOKEN

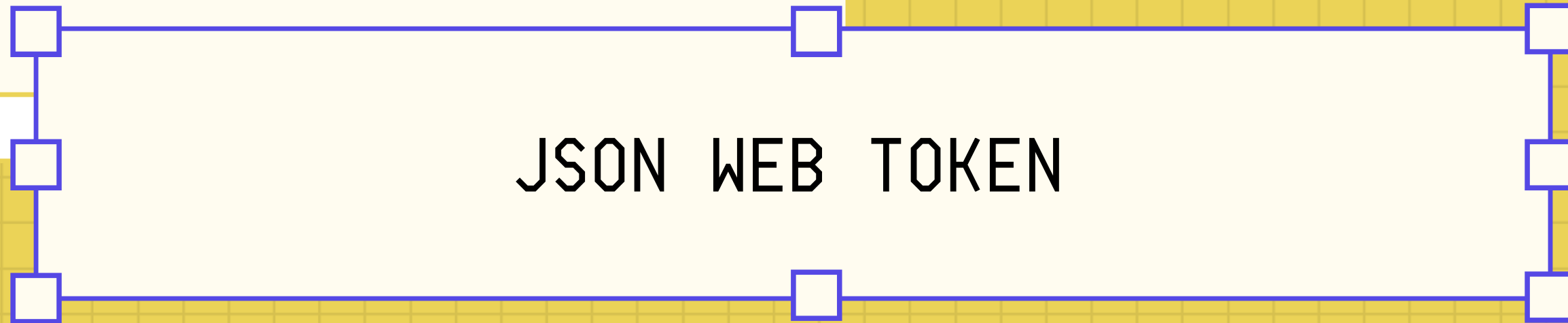


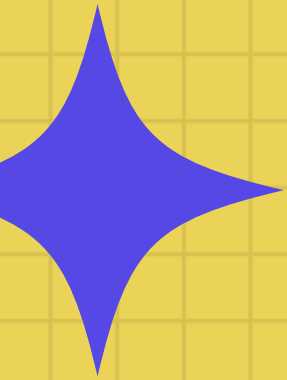
- Header - type of token
- Payload - data you're sending
- Signature - verifies the data wasn't changed along the way

1 eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJzdWIiOiIxMjM0NTY3ODkwIiwibmFtZSI6IkpvaWV0IiwiaWF0IjoiMTUxNjIzOTIyIn0.DIyfQ.XbPfbIHMI6arZ3Y922BhjWgQzWXcXNrz0ogtVhfEd2o 2 3

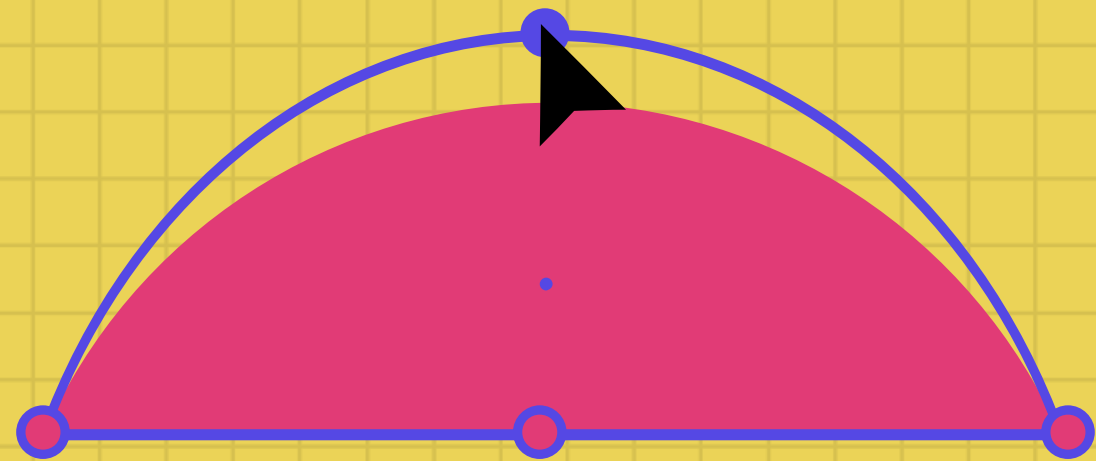
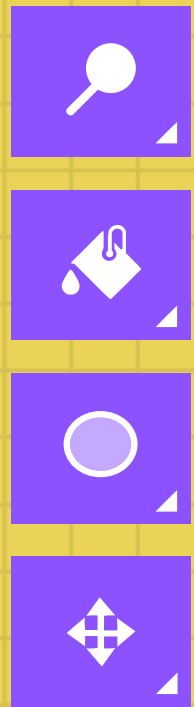


JSON WEB TOKEN





```
Authorization: Bearer <token>
```



Authorization & Authentication





Designed to completely prevent
unauthorized access or changes.



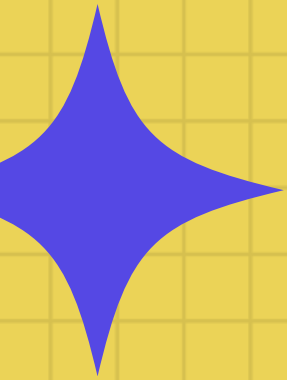
TAMPER PROOF



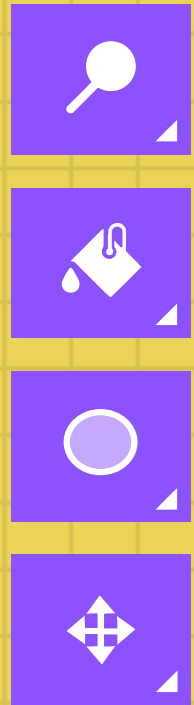
Shows clear signs if any
unauthorized access or changes
have occurred.



TAMPER EVIDENT

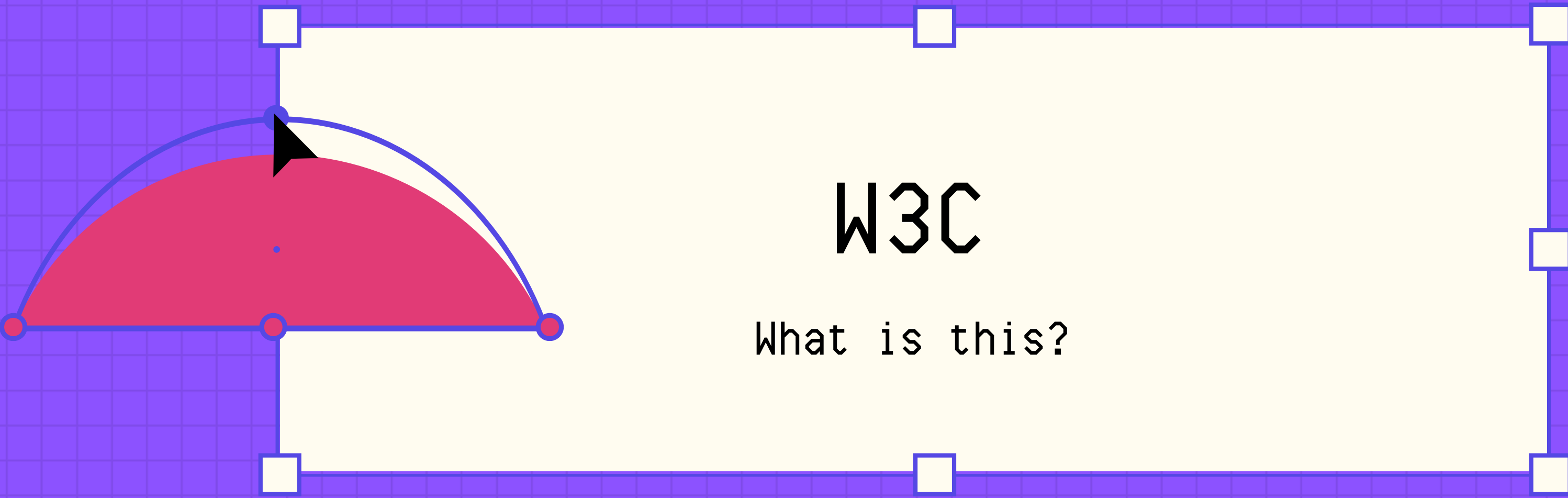
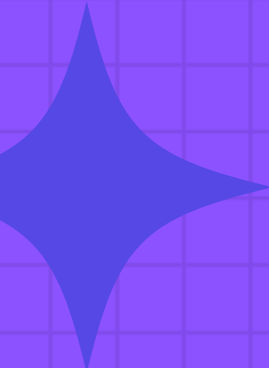


```
✕ □ □ ☆  
A: TAMPER EVIDENT  
B: TAMPER PROOF
```



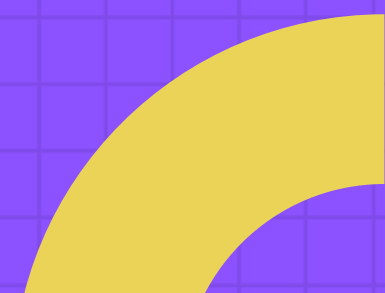
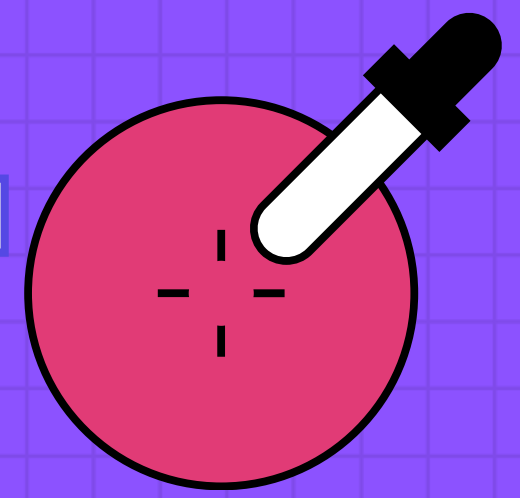
Which one describes a JWT?





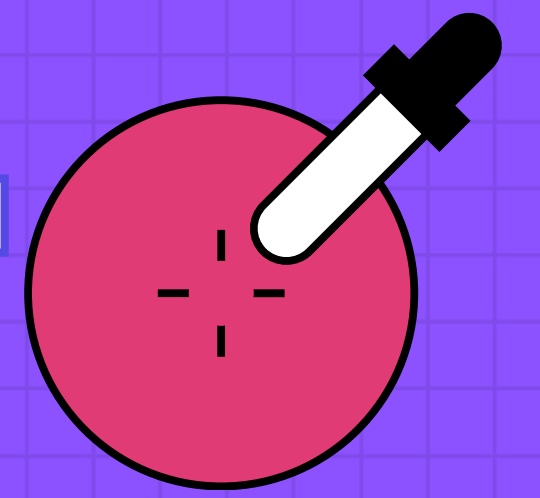
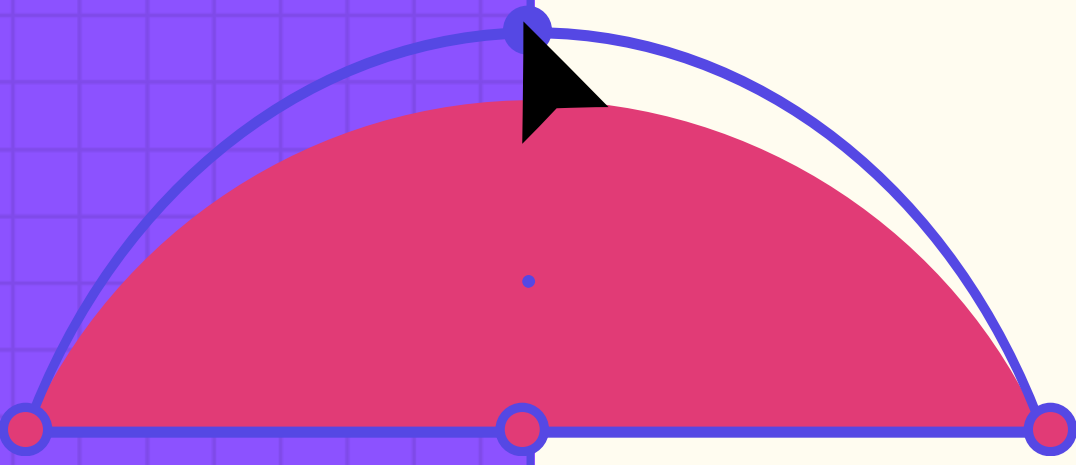
W3C

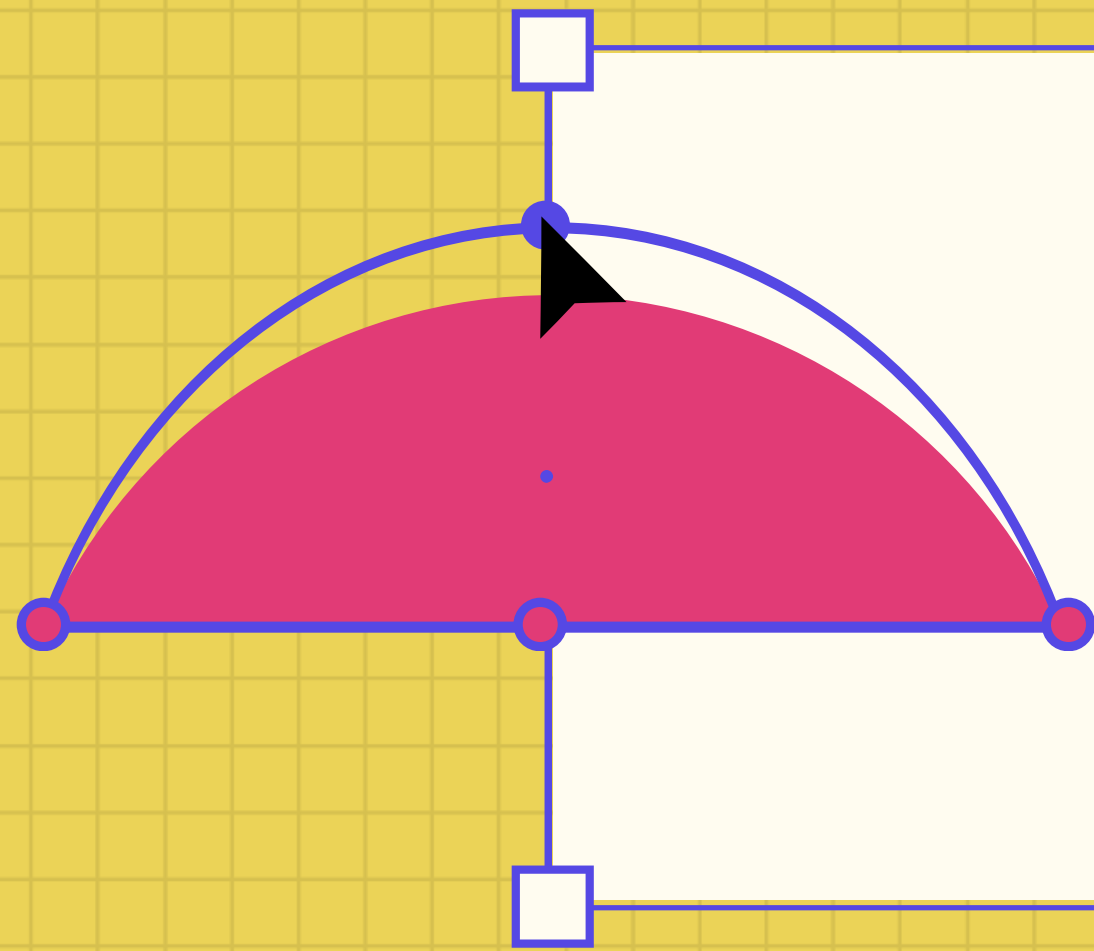
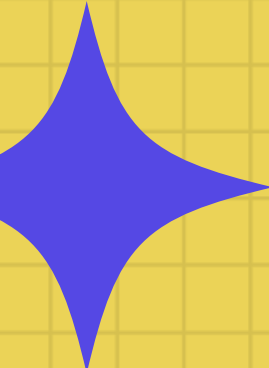
What is this?





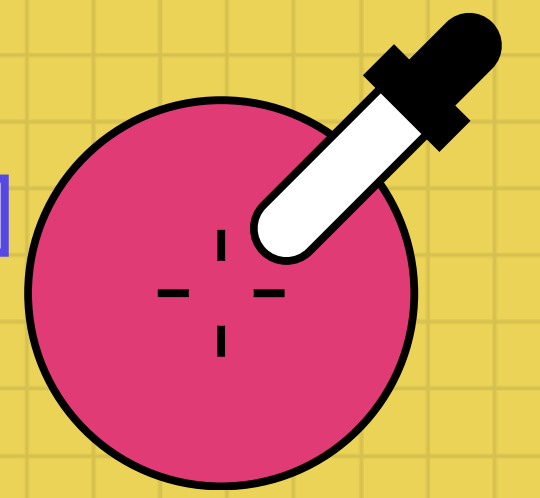
W3C
World Wide Web Consortium





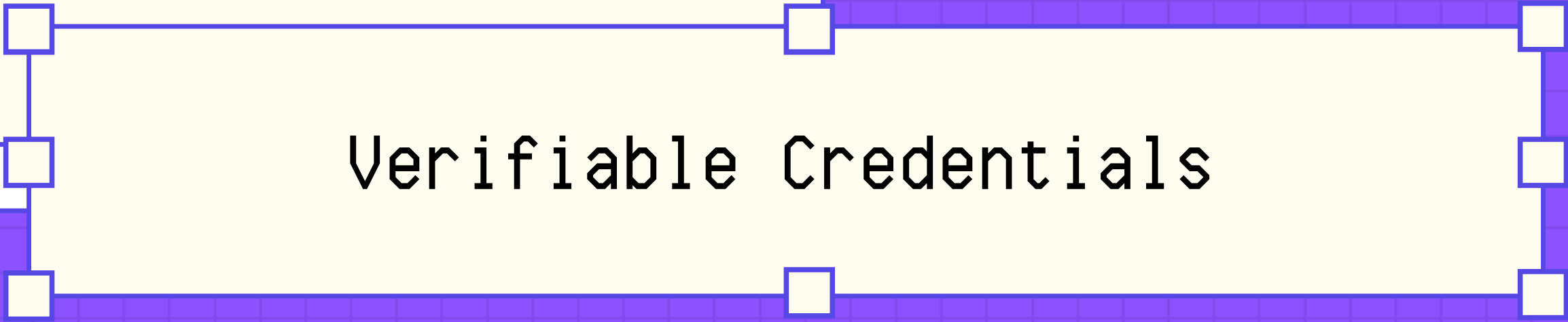
Special JWT

Verifiable Credentials





- digital proofs used to confirm specific facts about individuals, organizations, or entities.



Verifiable Credentials



- digital representations of paper documents
- ID, degree, driver's license, health insurance card

Socrates University DIPLOMA 90312



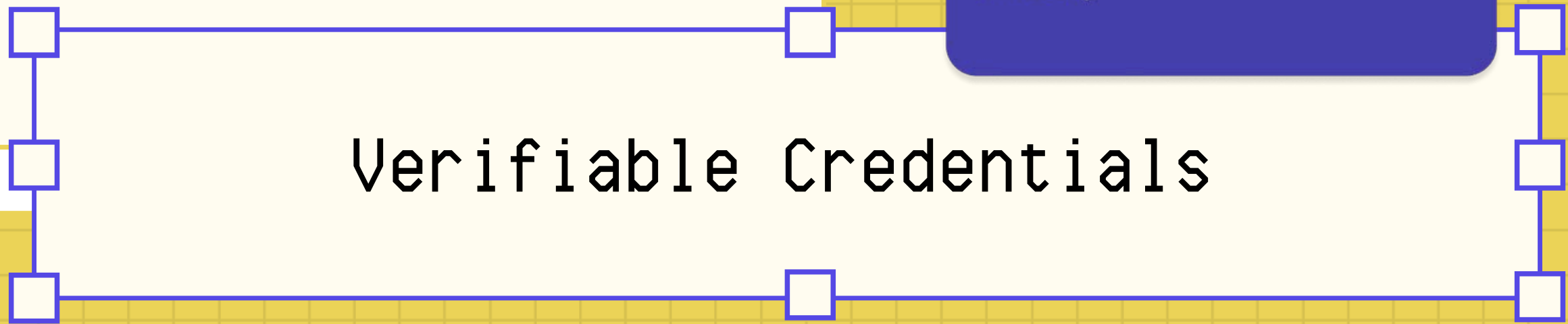
Hanna Herwitz
Electrical Engineer

DESCRIPTION
Hanna graduated with honors as an Electrical Engineer

<small>AWARDING DATE</small> 2019-06-15	<small>EXPIRY DATE</small> 2025-03-01
<small>DIRECTED BY</small> Socrates University	<small>LOCATION</small> United States



Verifiable Credentials





- live in your phone's wallet
- cryptographically signed JWT



@ScribblandDibbl

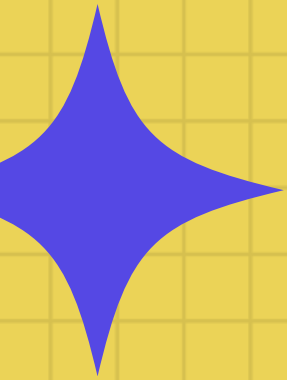


Verifiable Credentials

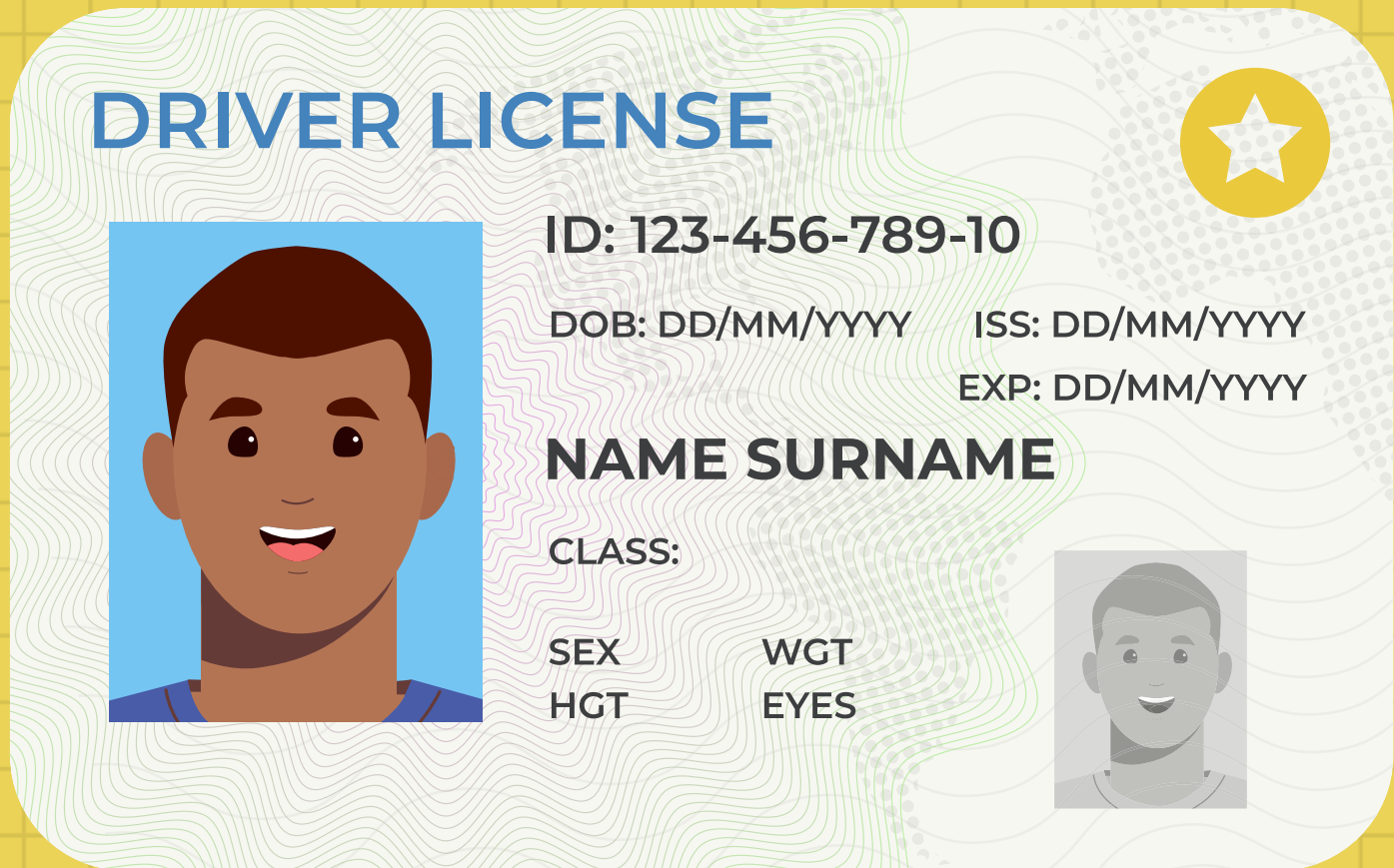
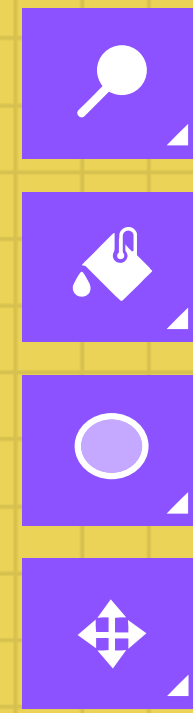
- Angie Jones did this!
- with her mobile driver's license = a Verifiable Credential



Buying booze with a JWT

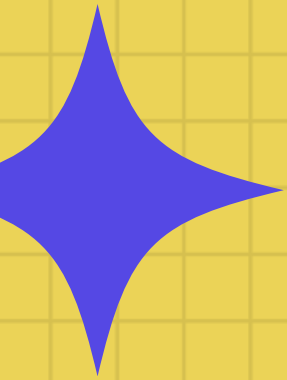


A: I have an mDL
B: I do not have a mDL

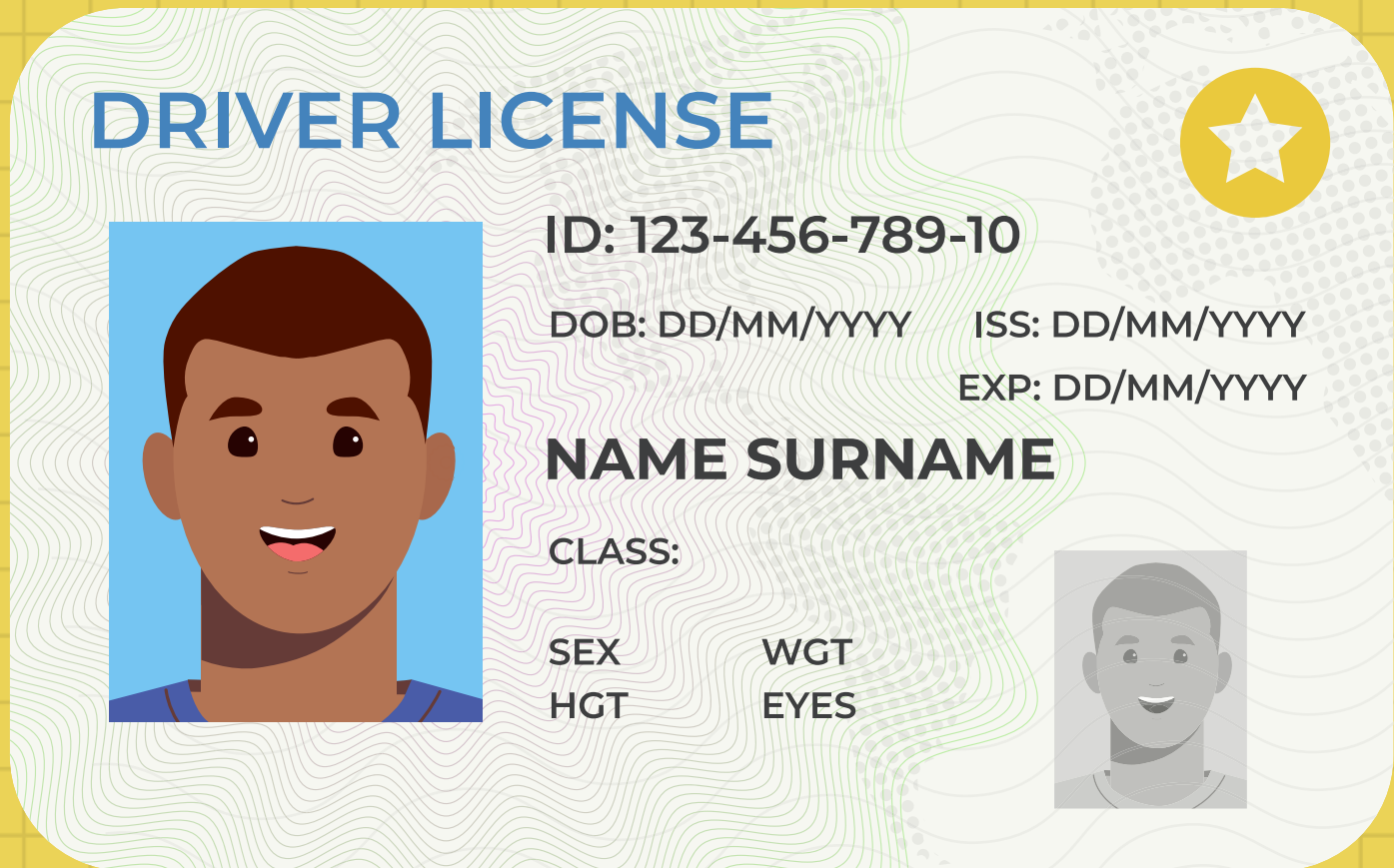
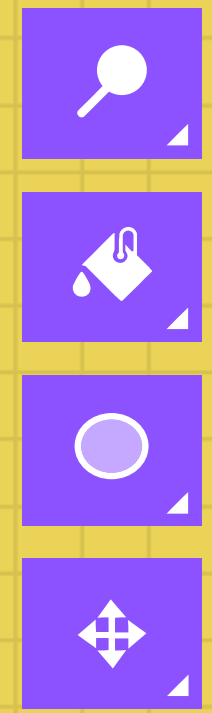


Question for YOU



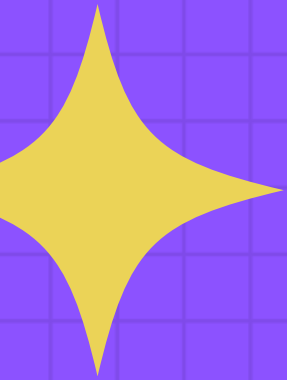


```
tinymce.com/mdl-us-map
```



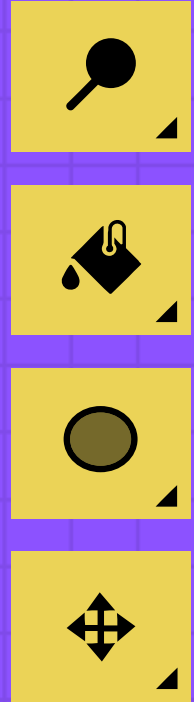
Map of States with mDLs





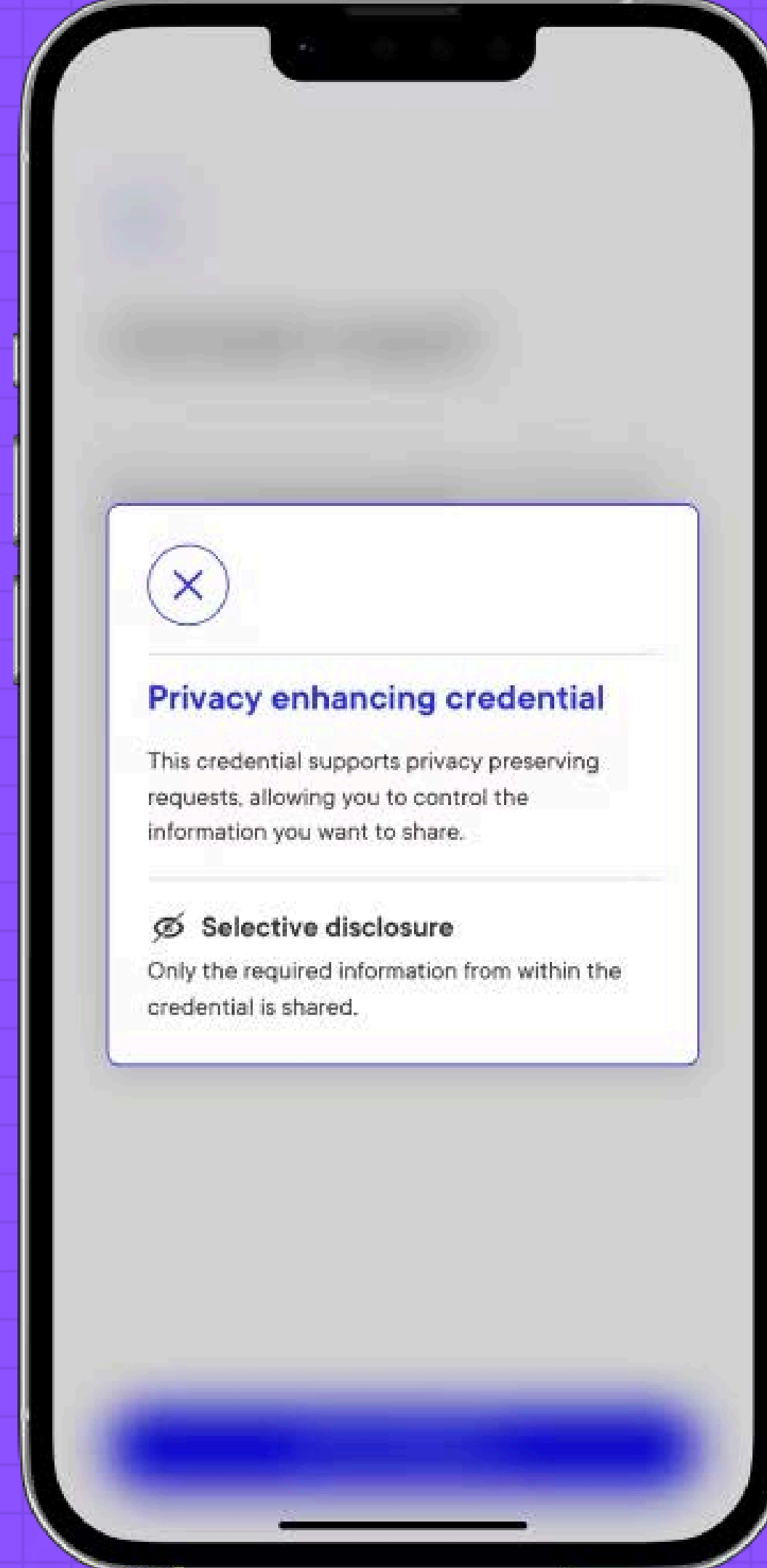
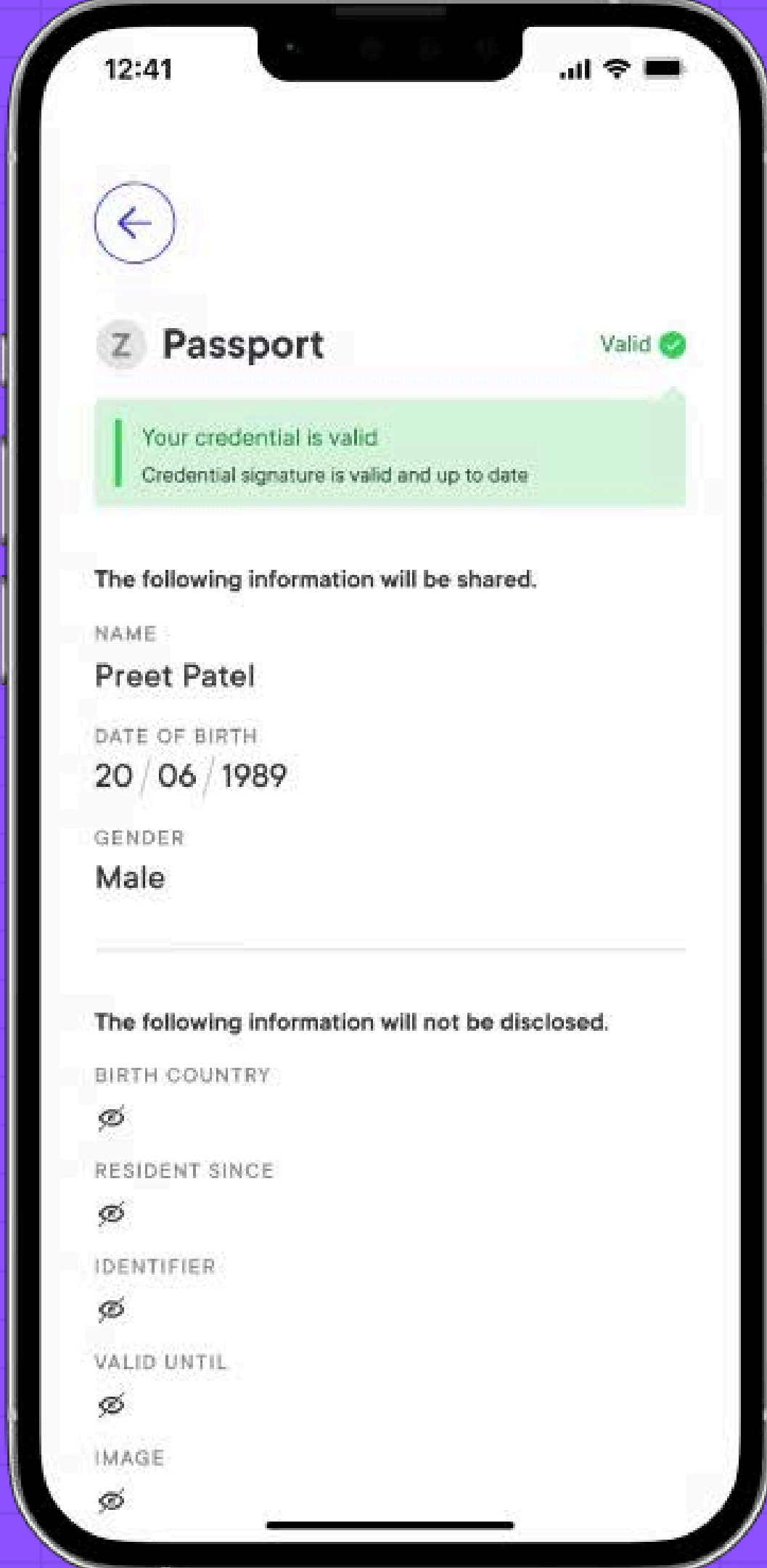
⌵ 📄 □ ☆

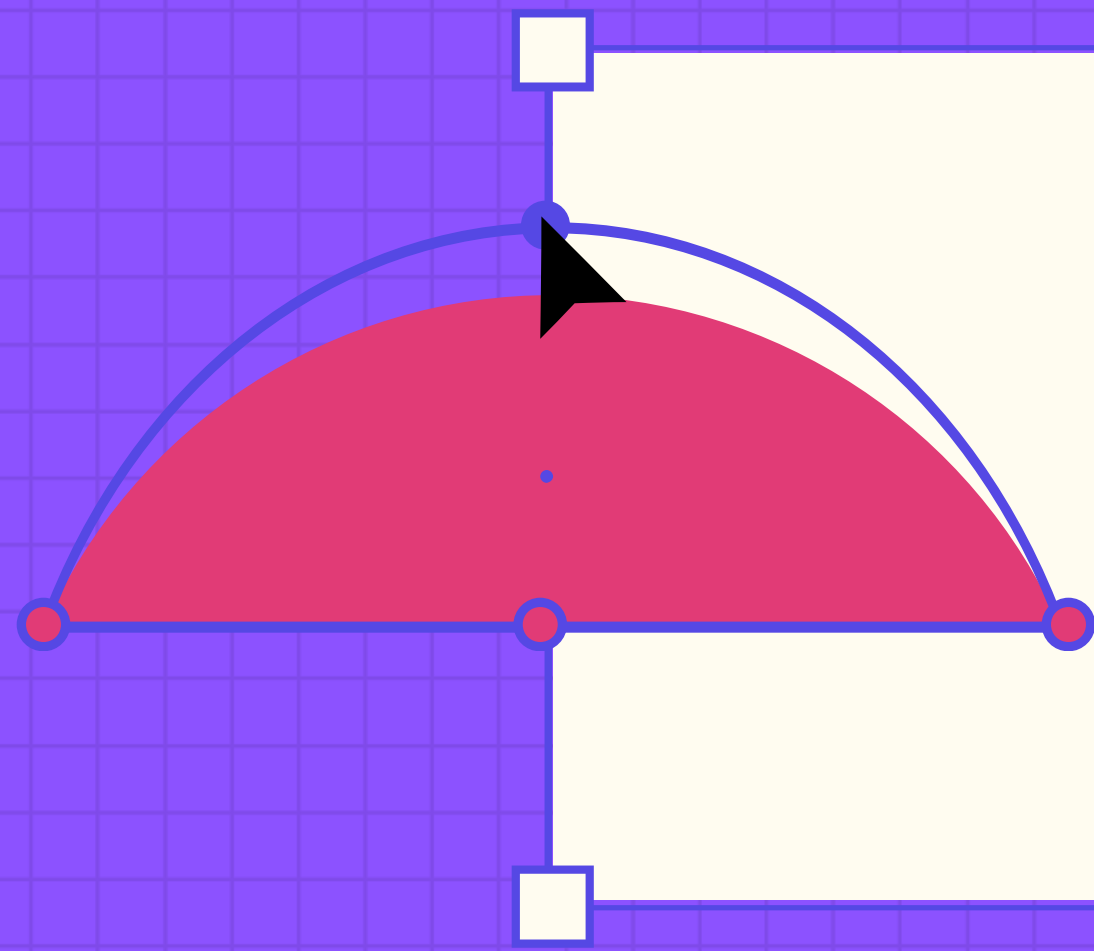
Selective Disclosure



Benefits of VCs

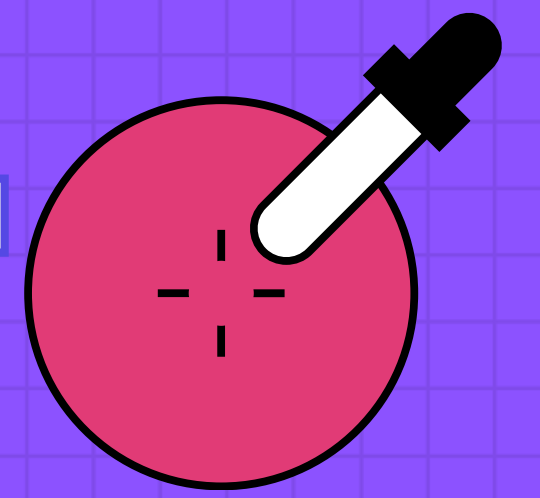


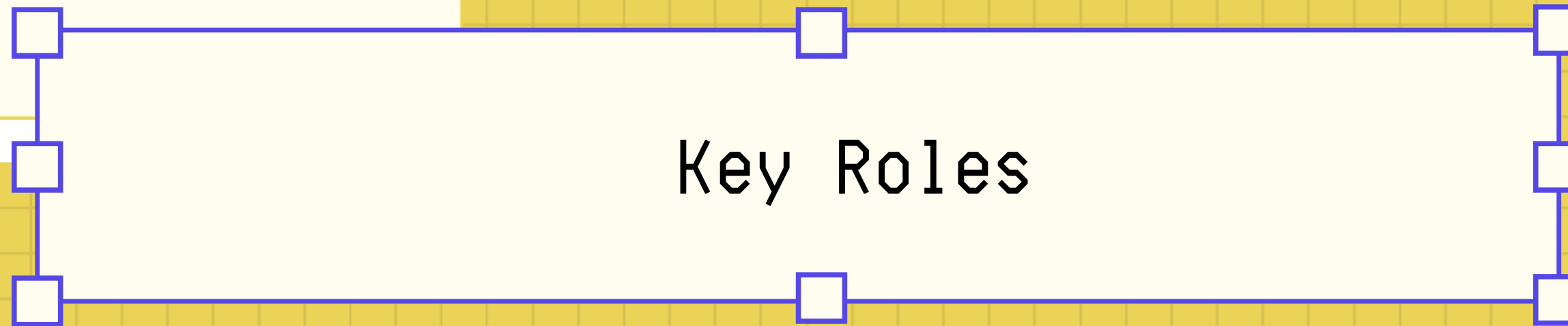
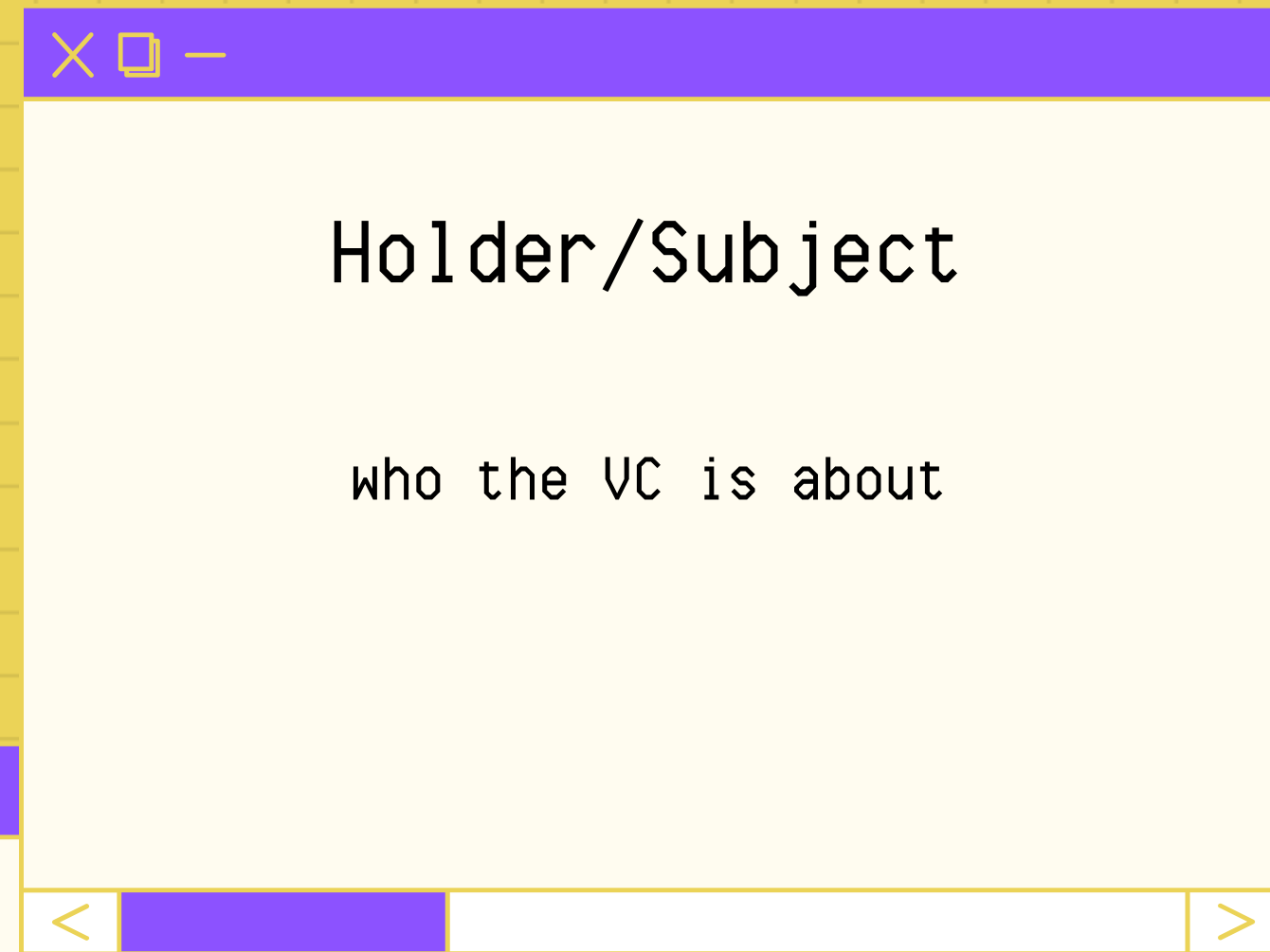




VC FLOW

How does it work?





Flow

1

YOU GO TO THE DMV

2

THE DMV CREATES A VC FOR
YOU STATING YOU'RE OVER

21

3

DMV DIGITALLY SIGNS
THE VC -> JWT

4

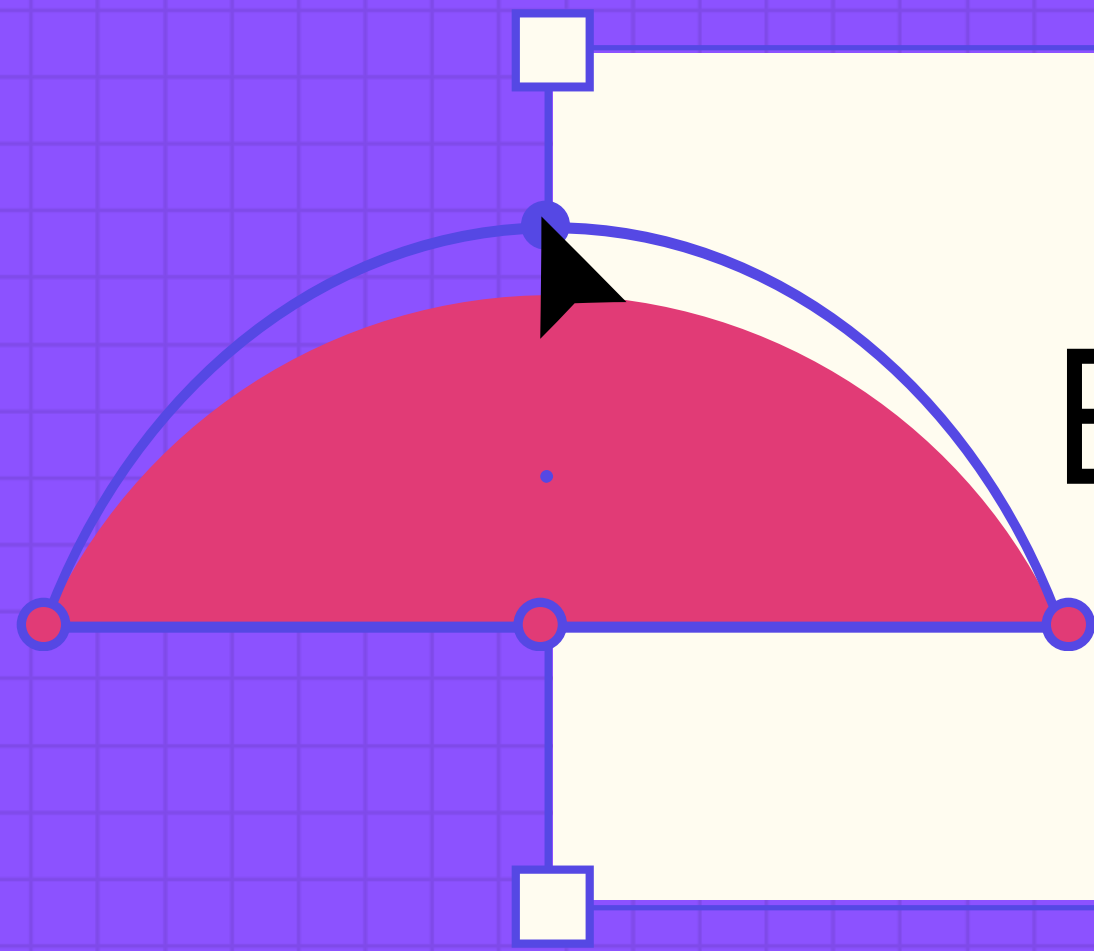
YOU STORE THE JWT IN
YOUR PHONE

5

SHOW THE VC TO THE
BARTENDER

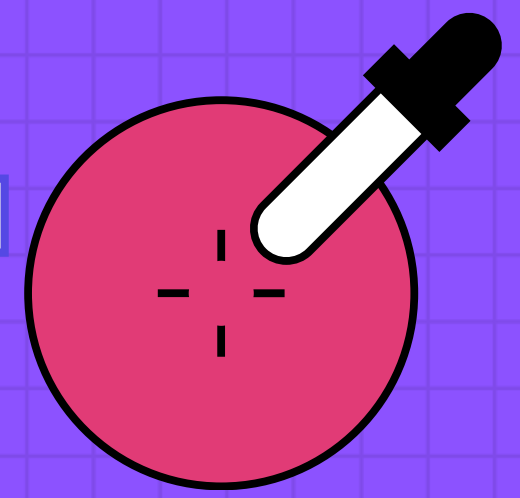
6

BARTENDER SCANS VC AND
PROGRAMMATIC CHECKS
OCCUR



BEYOND ALCOHOL

Additional use cases





Pharmaceutical Supply Chain

- Determine if during the trade:
 - the medicine is real
 - the pharmacist is a real pharmacist






Content Authenticity Initiative


- When was the picture taken?
- Who took the picture?
- Is it AI generated?

```
Terminal
> ./c2patool ~/Projects/images/Dumbo.jpg
{
  "active_manifest": "adobetest:urn:uuid:825cf3cf-0127-4af3-
b65c-c11d0f961e67",
  "manifests": {
    "adobetest:urn:uuid:825cf3cf-0127-4af3-b65c-
c11d0f961e67": {
      "vendor": "adobetest",
      "claim_generator": "c2patool",
      "asset": {
        "title": "Dumbo.jpg",
        "format": "image/jpeg",
        "instance_id": "xmp:iid:8dc9aa07-6920-40b7-
b6bc-0638b8414141",
        "thumbnail": {
          "format": "image/jpeg"
        }
      }
    }
  }
}
```



Content Credentials

 Adobe Inc.
Mar 1, 2022 at 6:53 PM

PRODUCED BY ?

 Jane Smith

SOCIAL MEDIA ACCOUNTS ?

 @janesmith
 @janesmith

PRODUCED WITH ?

[View more](#)





Native Tribes

- Special Economic Zones
- Helping Native tribes set up businesses
- They establish their identity and business through a VC

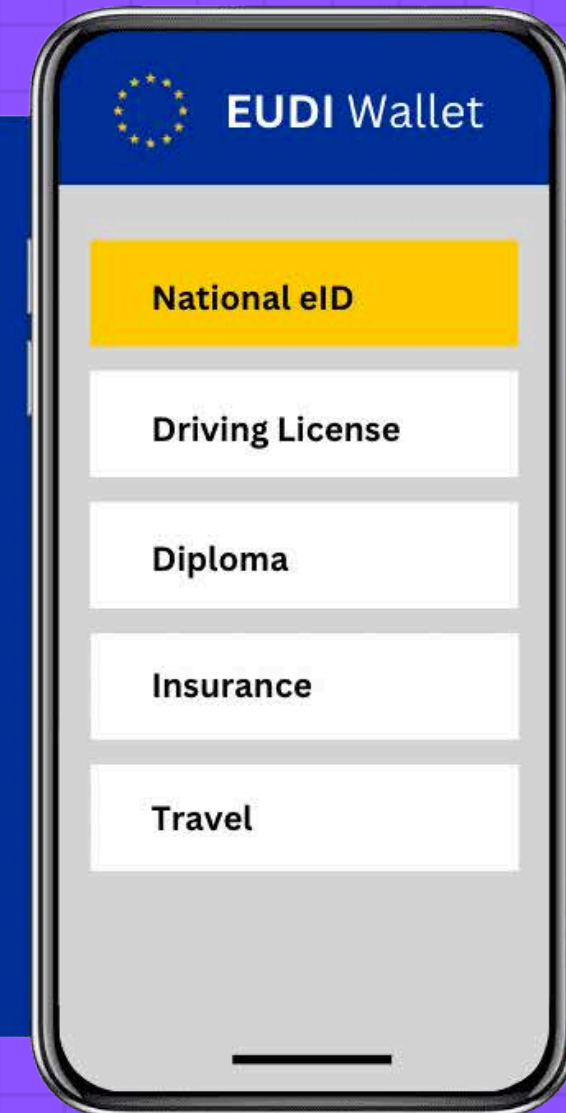
The screenshot shows a live video call on the left with three participants: Gabriel, Joseph, and Rizel (@blackgirbytes). On the right is a web application interface for the Catawba Digital Economic Zone. The interface includes a navigation menu with options like Dashboard, Companies, Notifications, Settings, DID Management, and Support. The main content area displays a message: "You have a DID! Decentralized Identifiers (DIDs) revolutionize online identity, providing a secure, self-sovereign way to manage your digital presence. Stored on a decentralized network, DIDs ensure unique, tamper-proof identities, free from central authority control." Below this is a "Reveal DID" button and a section titled "Here are your Verifiable Credentials:" which lists an "eResidency" credential created on 06/14/2024 at 12:38 PM for user "silipi". The Verifiable Credential JWT is shown as "eyJ0eXAJOUKV1QILCJhb...".

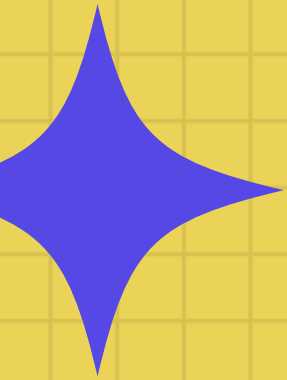




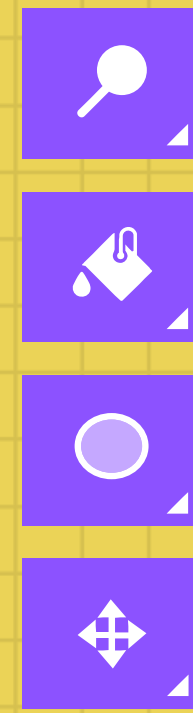
European Digital Identity Wallet

- Aim for 2026:
 - All residents, citizens, and businesses have access to store any documents digitally in this phone wallet
- Ex: Education -- did your school shut down? Still have proof that you graduated



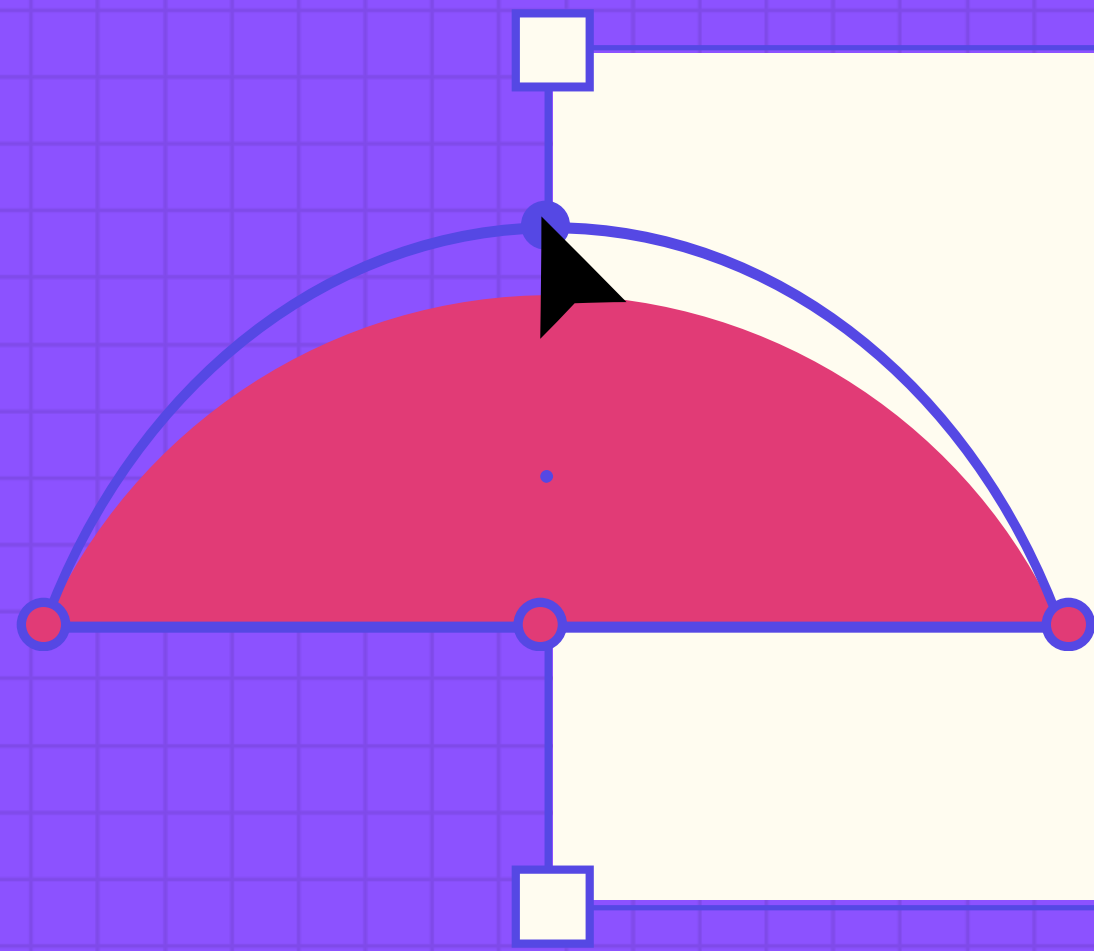
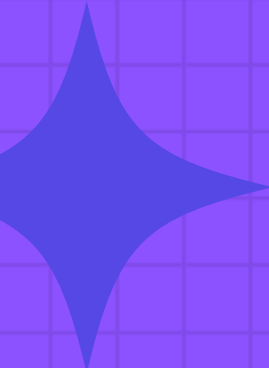


Any ideas of what you might want a VC for?



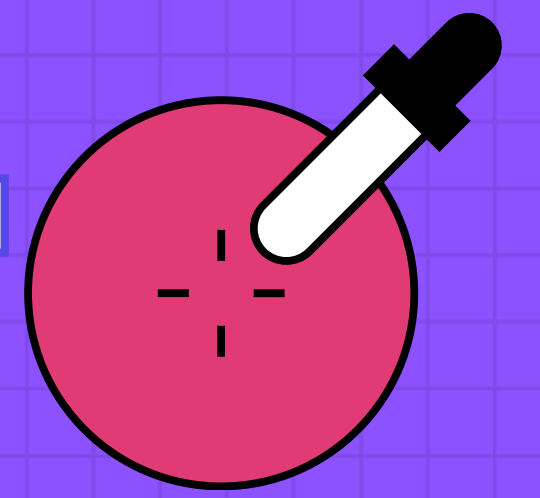
Question for YOU 🤝





CHALLENGES

of VCs

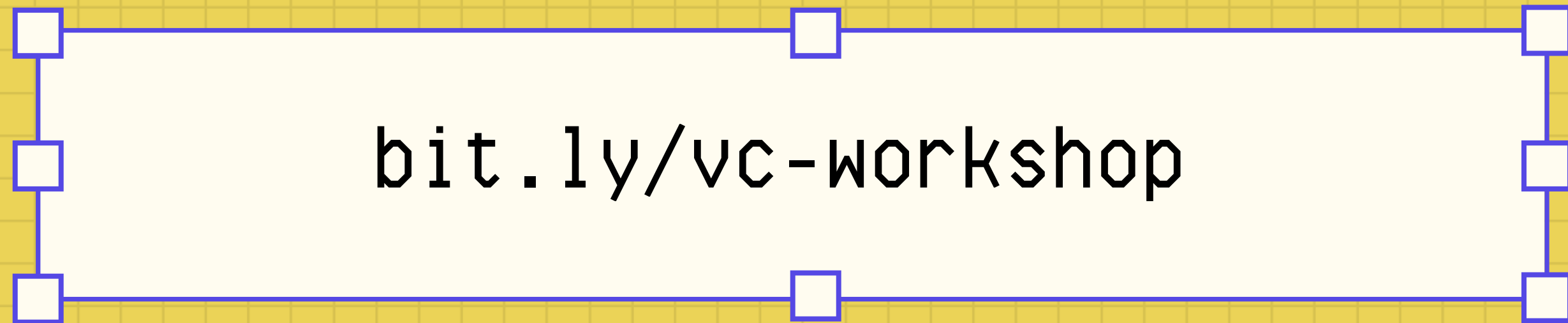
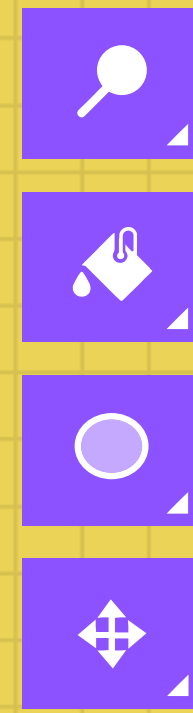
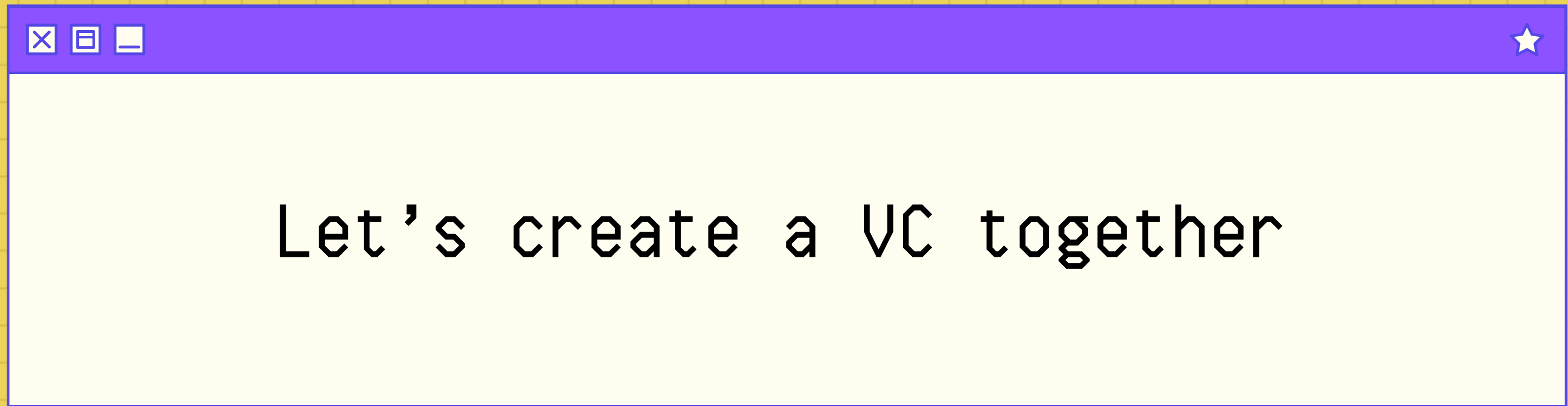
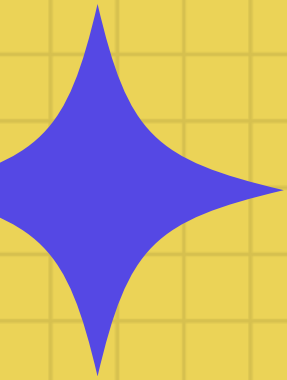


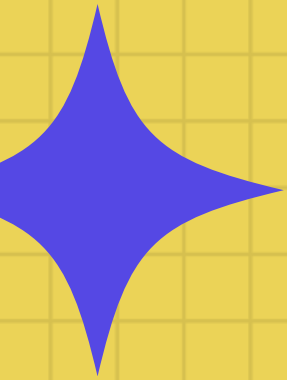


Challenges

- Standardization and interoperability
- Educating the general public on the benefits

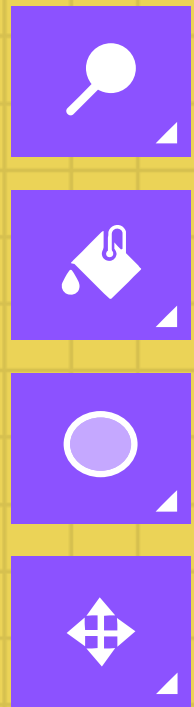






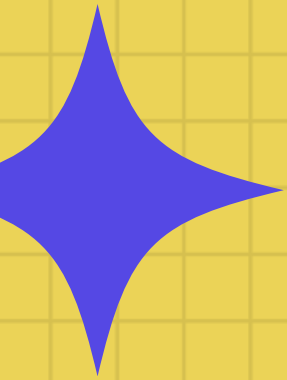
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Kahoot Quiz

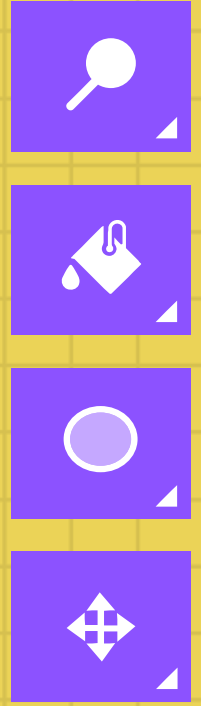


Your turn 🤝





Resources & Swag



Your turn 🤝

