

Evaluation usability studies

COMPUTER SCIENCE DEPARTMENT

Usable Security and Privacy

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Sunday, December 29, 2024

Evaluation

Evaluation allows you to **learn exactly how usable your system is and to identify specific problems with the usability**. Indeed, without proper evaluation, there is no way to know you have a usable system or to improve it.

Systems can be evaluated **quantitatively (with numbers)** or **qualitatively (through experience and description)**.

Qualitative Evaluation

- Is more designed to give you **a sense of the usability** or to put you **in the place of the user**.

Qualitative Evaluation: cognitive walkthrough

Requirements:

- Description or Prototype of interface.
- Task description.
- List of actions to complete a task.
- User background

What you look for:

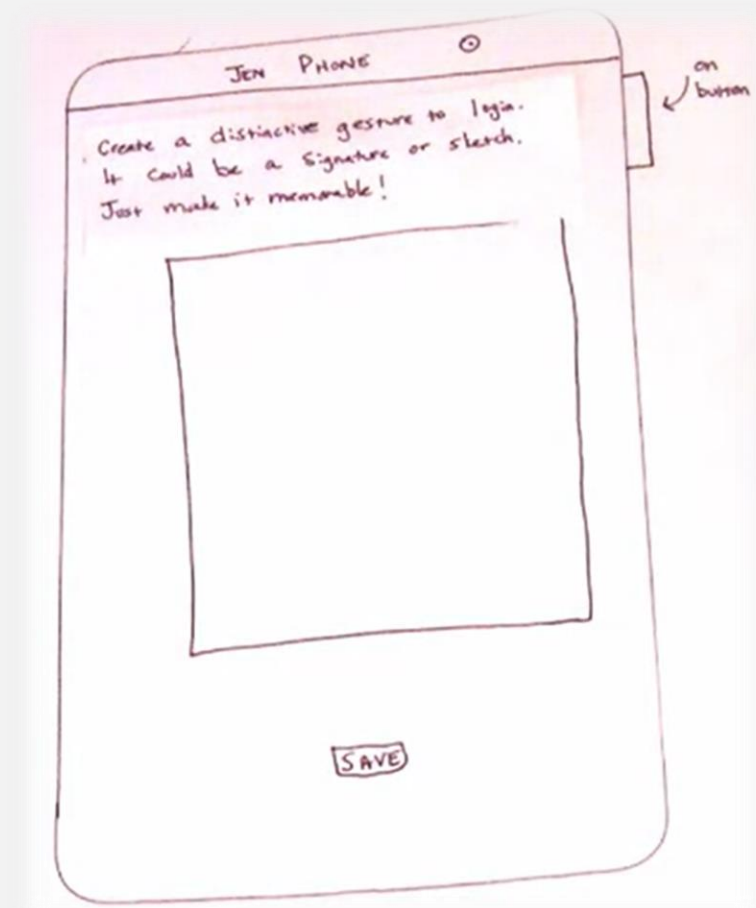
- Will users know to perform the action?
- Will users see the control?
- Will users know the control does what they want?
- Will users understand the feedback?

Qualitative Evaluation: cognitive walkthrough

Description or Prototype of interface



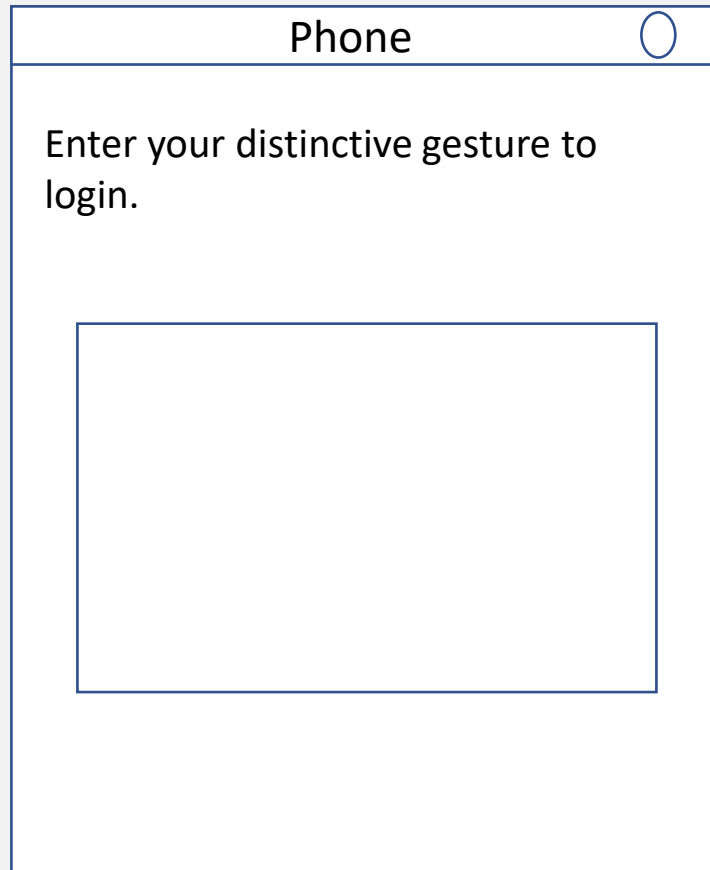
On button



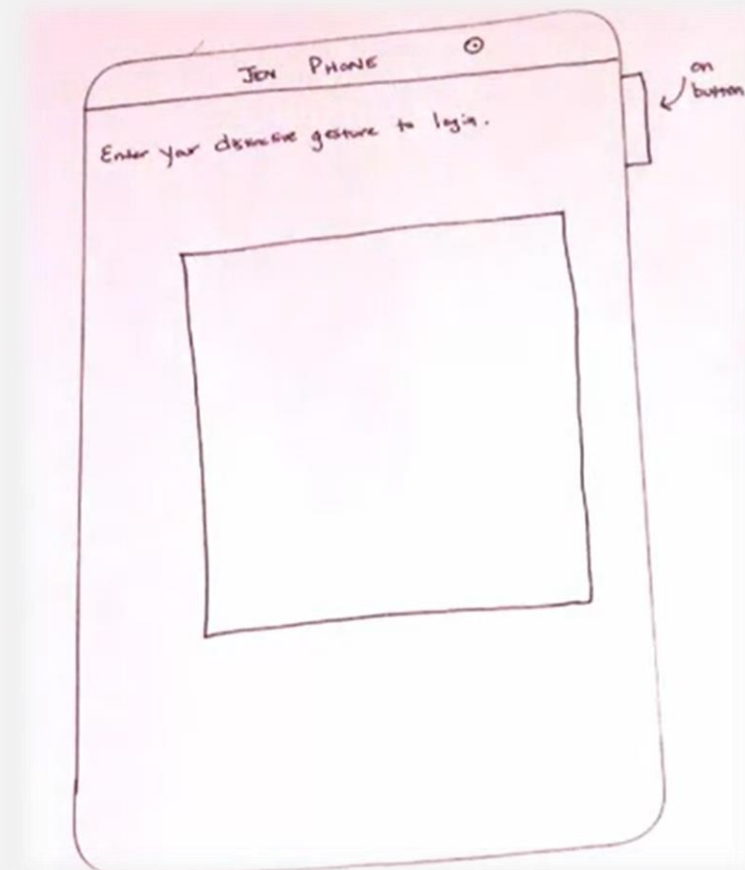
Gesture based authentication prototype

Qualitative Evaluation: cognitive walkthrough

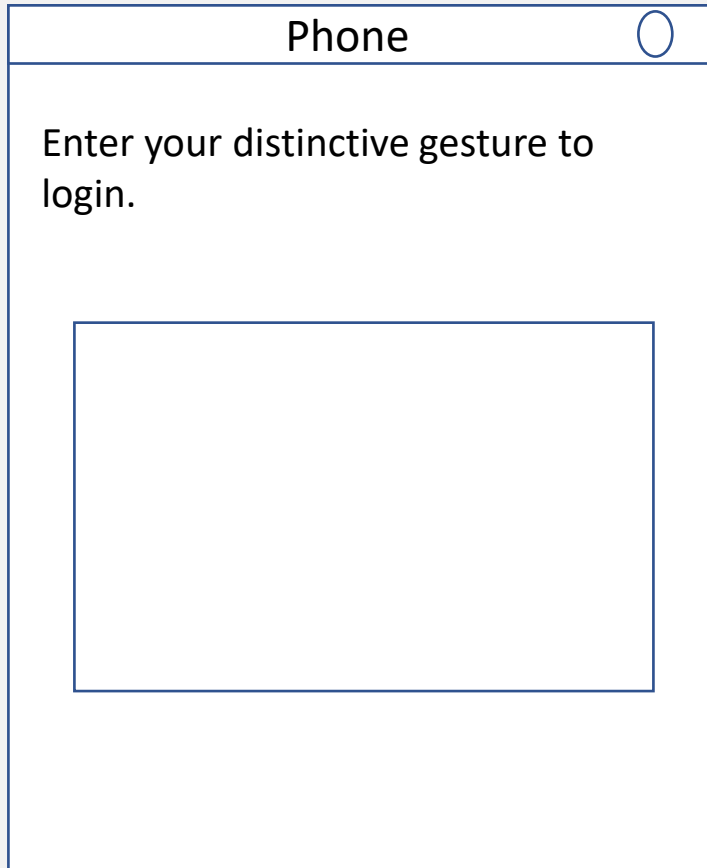
Description or Prototype of interface



On button



Qualitative Evaluation: cognitive walkthrough

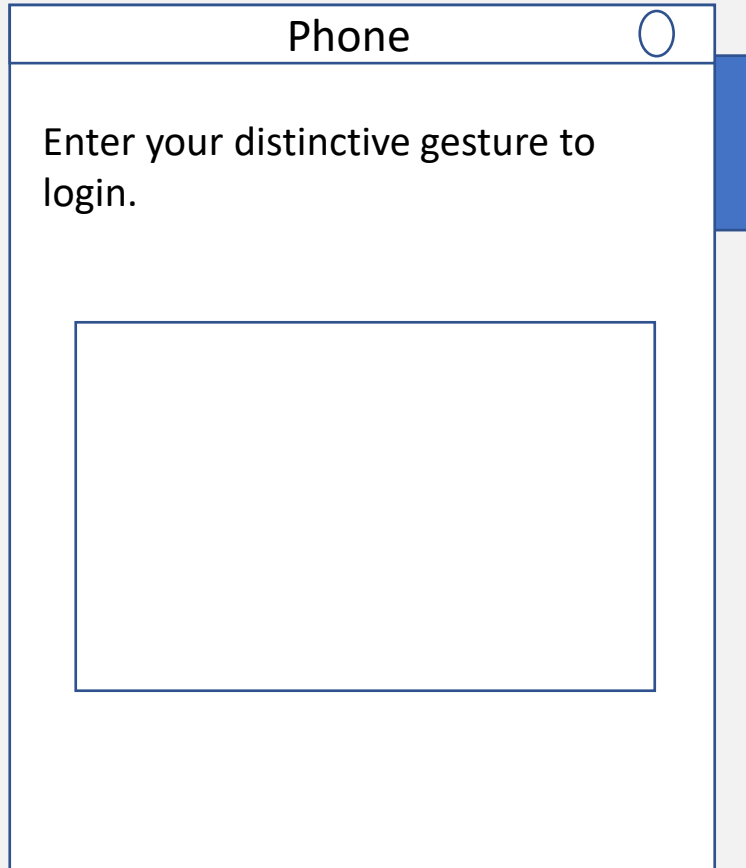


On button

Task description: Login

The description of the task is simply to **authenticate** and **login**

Qualitative Evaluation: cognitive walkthrough



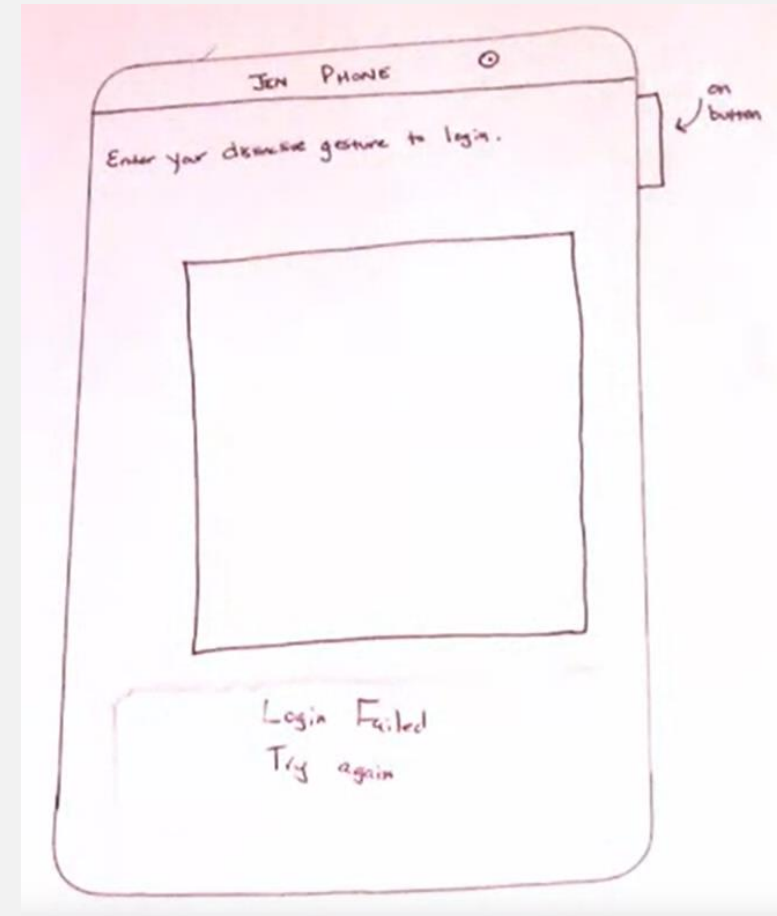
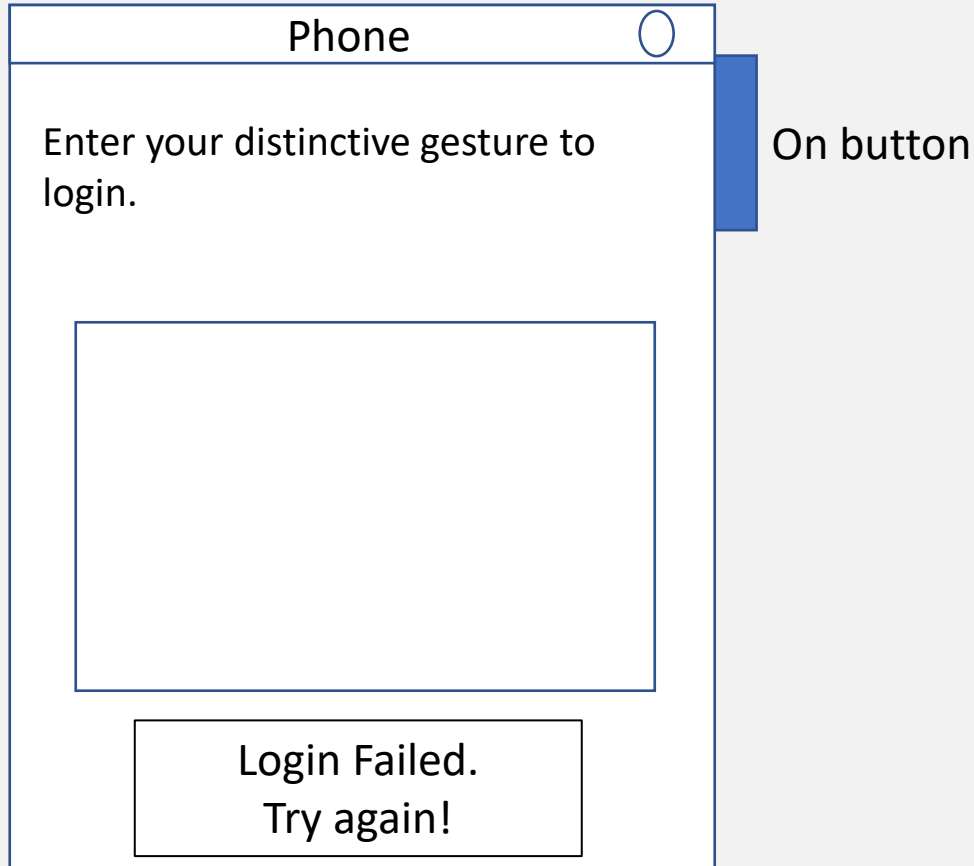
On button

Actions to complete a task

1. Click the on button.
2. The login screen will appear.
3. Enter the gesture.
4. The user will be logged in

Qualitative Evaluation: cognitive walkthrough

Understand the feedback



Qualitative Evaluation: Heuristic Analysis

- Follow "rules of thumb" or suggestions about good design
- Can be done by experts/designers, fast and easy

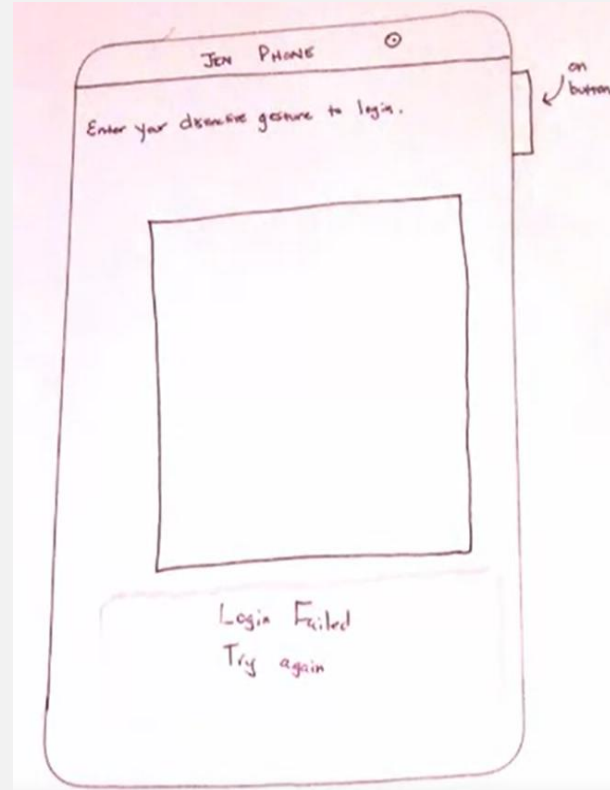
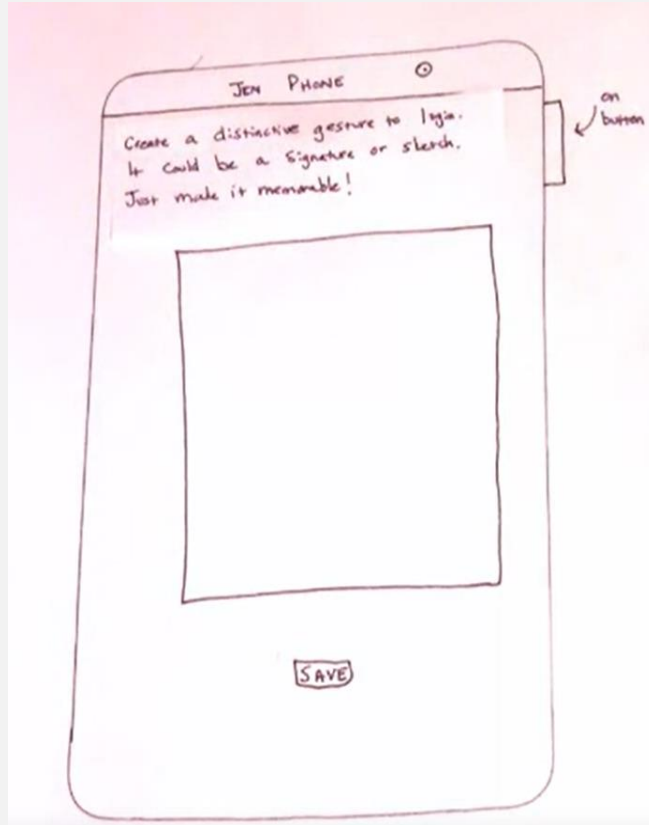
Nielsen heuristics

- **Simple and natural** dialogue
- **speaking the users' language**, which means not using technical jargon if you have users who won't understand it.
- **Minimizing the users' memory load**, so they don't have to remember too much.
- Being **consistent**, and that means consistent within your own application, but also consistent with what users are used to interacting with.
- **Giving good feedback.**
- **Providing clearly marked exits** so if the user doesn't know what they want to do, they can get out.
- Having **shortcuts** for expert users.
- **Preventing errors.**
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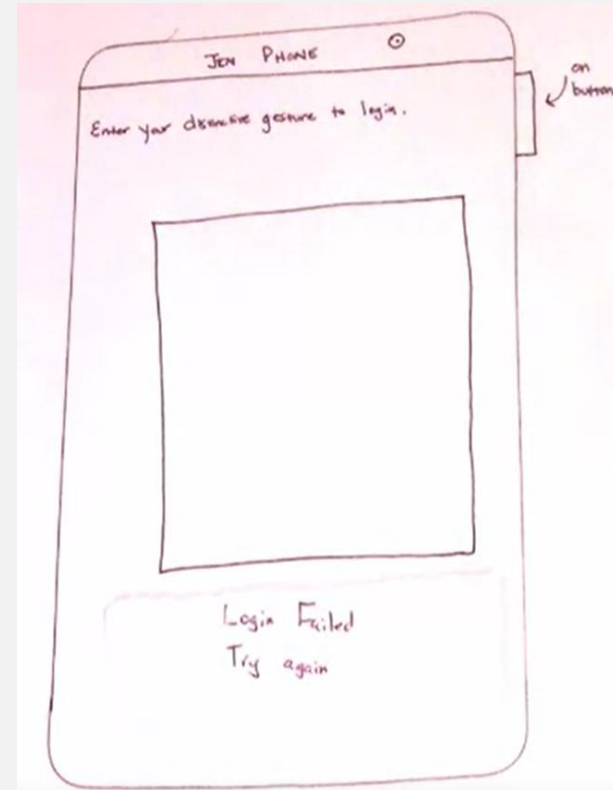
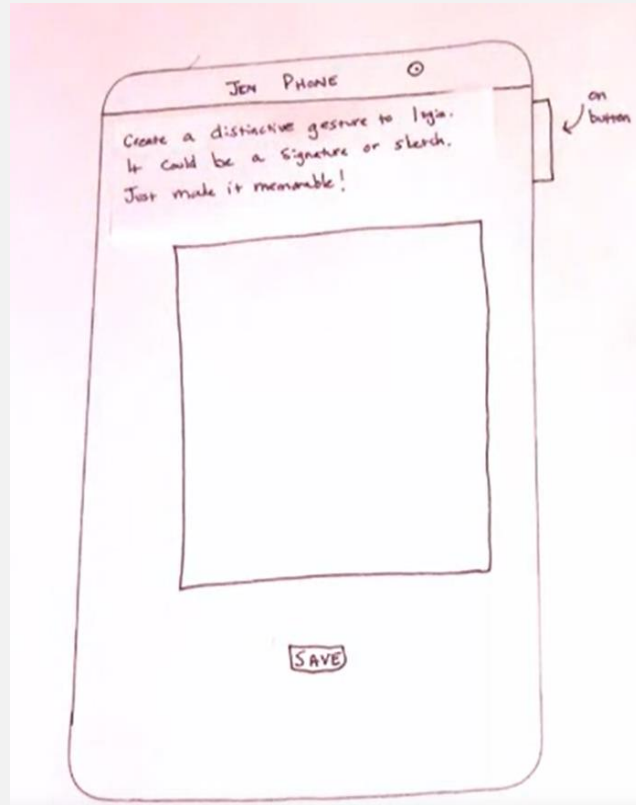
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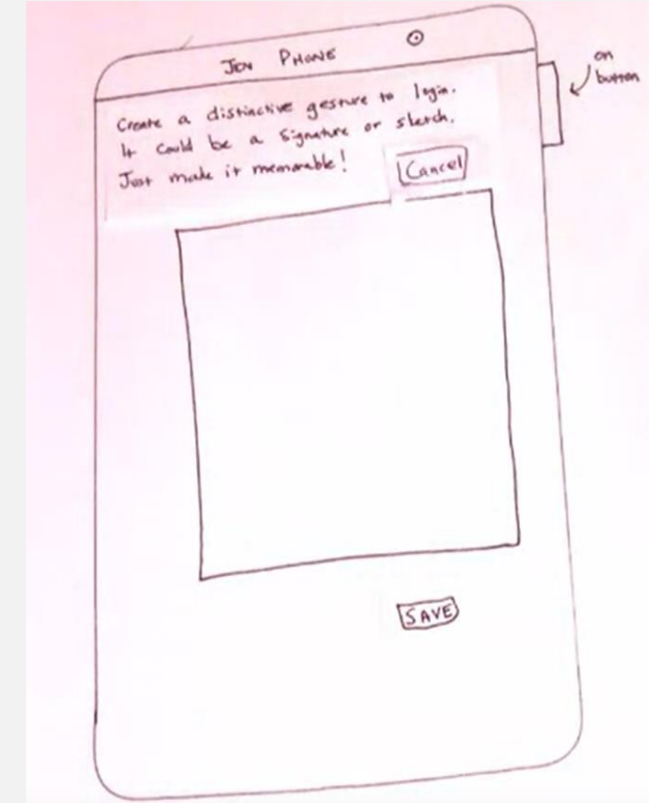
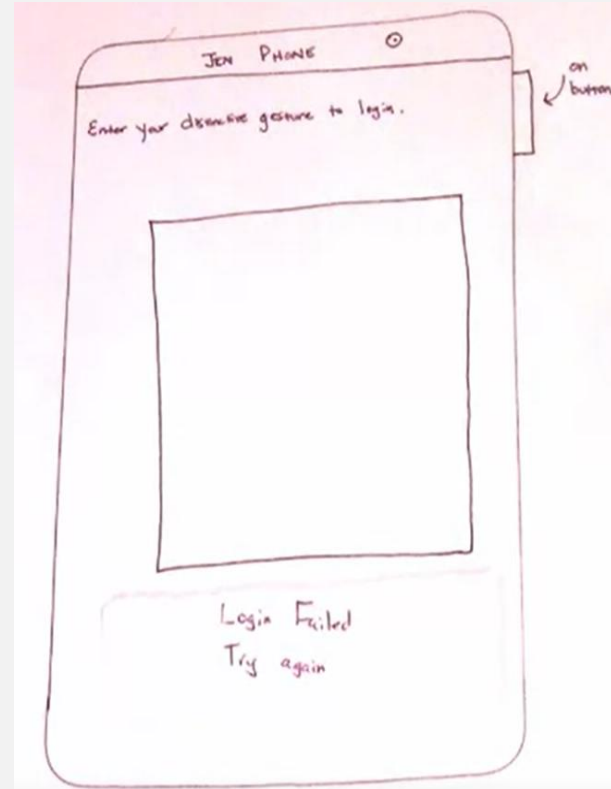
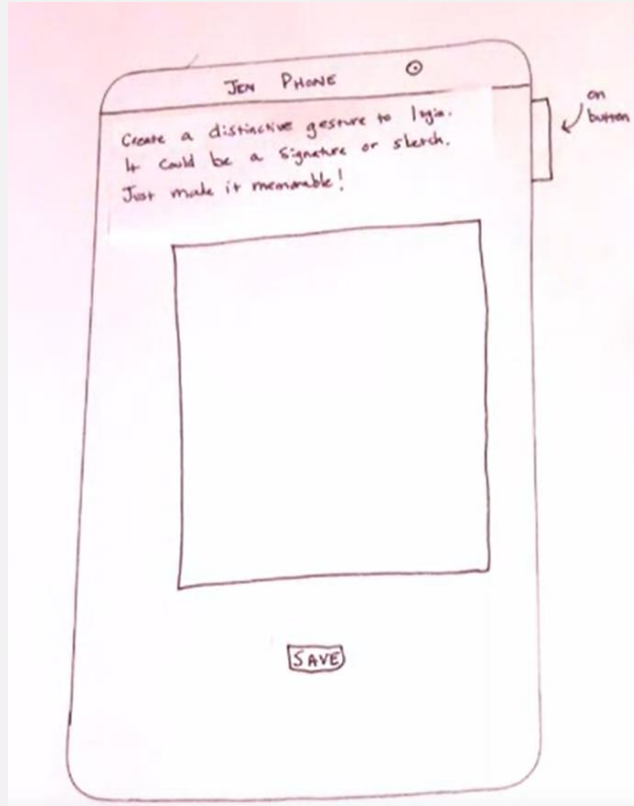
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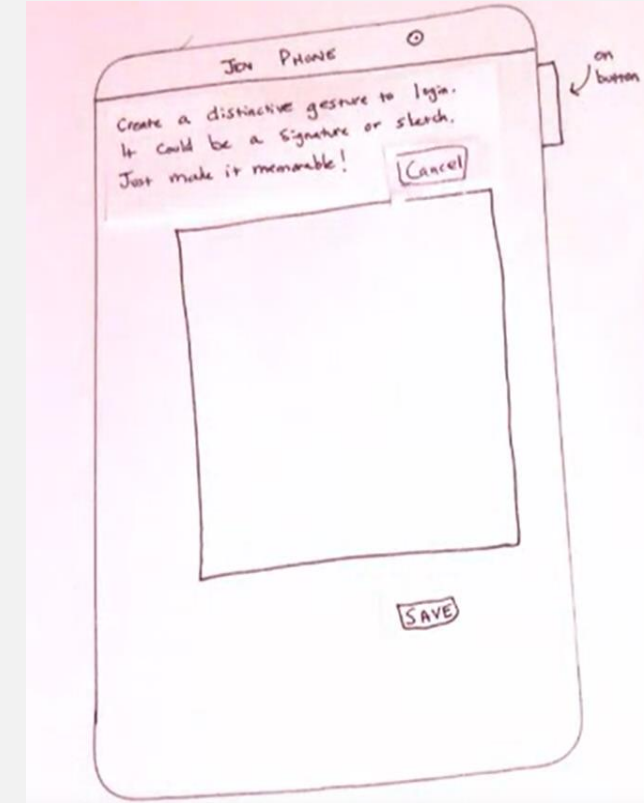
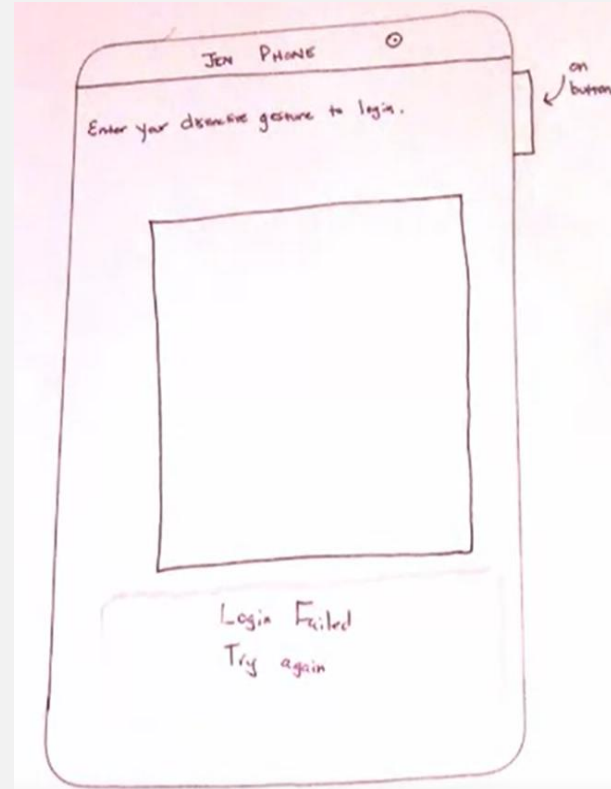
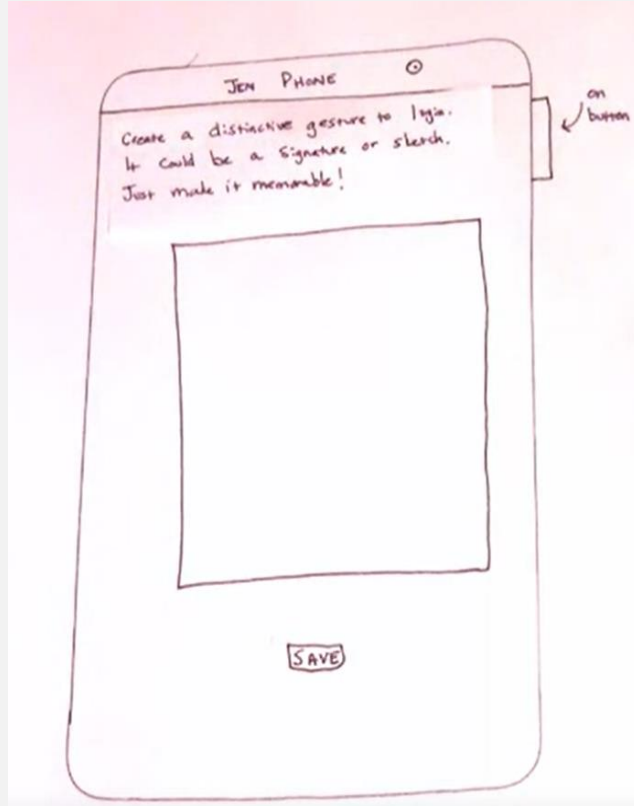
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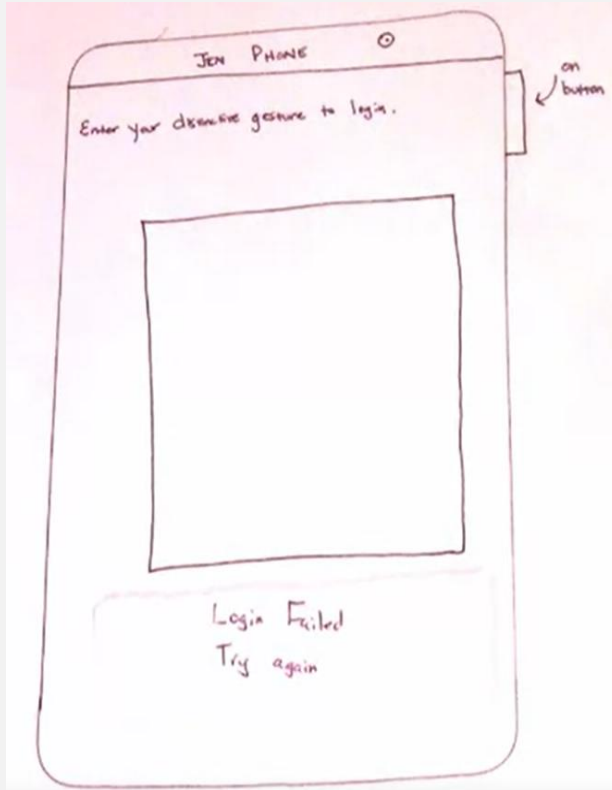
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Gesture based authentication prototype

Phone

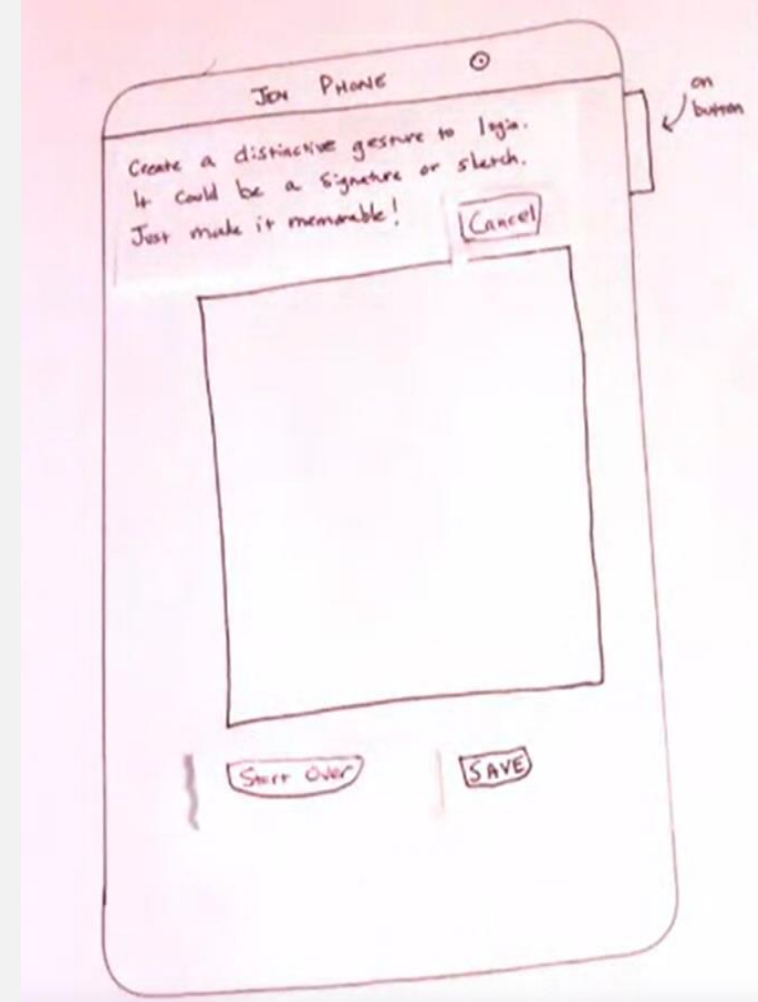
Create a distinctive gesture to log in.
It could be a signature or sketch. Just
make it memorable!

Cancel

Start Over

Save

On button



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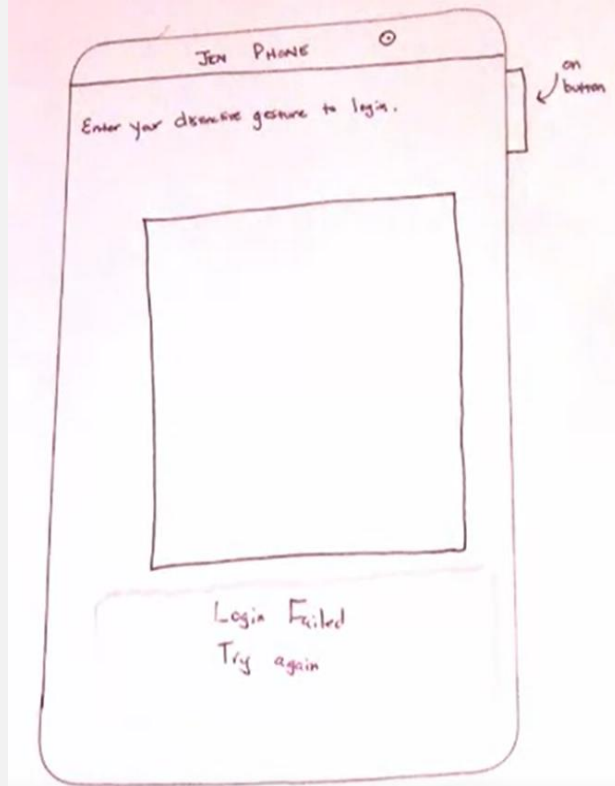
Shortcuts

- Don't apply here
- No need for the shortcut in this authentication prototype

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Qualitative evaluation : personas.

- Fictitious users that represent a class of users.
- Reference point for design and analysis, so that prevents designers, programmers and other people who are thinking about an application, from referring to themselves too much.
- Has a goal or goals that they want to accomplish either (in general or within your system).

Qualitative evaluation : personas.

Persona: Frank



Wants encryption but in a simple, low-effort way.

Undergraduate Student

- 21 years old
- Psychology Major
- Political activist
- Savvy computer user, but not expert

Goals

Wants easy to use email and social media tools that are encrypted to protect his privacy

About Frank

Frank is an undergraduate at the University of Maryland. He enjoys playing baseball, swimming, and watching movies. He carries an iPhone and has a laptop and tablet. He is constantly connected and a frequent social media user. He is also a political activist and worries about his communications being monitored.

Qualitative evaluation : personas.

Phone

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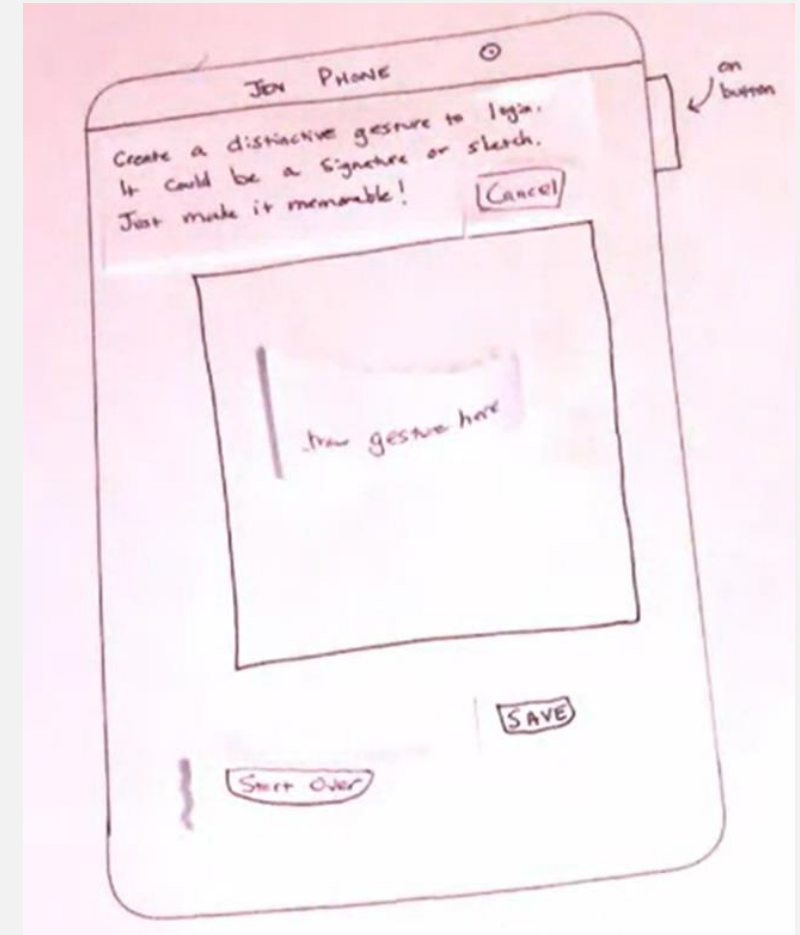
Cancel

Enter gesture here

Start Over

Save

On button



Conclusion

- **Qualitative evaluation** can provide insights into the usability of a system without needing to do **measurements or timing**.
- There are various **levels of complexity**. Some of them, like a **heuristic evaluation**, **can be pretty straightforward**, but developing good **personas can be something that takes hours to do**, and a team may spend a lot of time building the personas and doing the analysis.
- Some types of **qualitative evaluation can be quick and inexpensive**, but they may miss insights that users provide. There are also types of qualitative evaluation that include users.

A/B testing



Site A



Site A



Site A

References

- Jennifer Golbeck's lecture notes