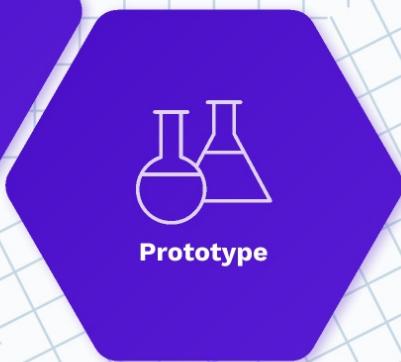
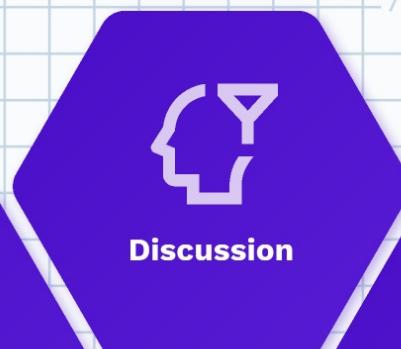


Quiz M&M Dispenser

Martin Radinger
Nikolai Strässle
Pascal Steiner



Project Introduction

How can the motivation to learn something improved?

Idea



Idea

Link the learning process with
a direct reward

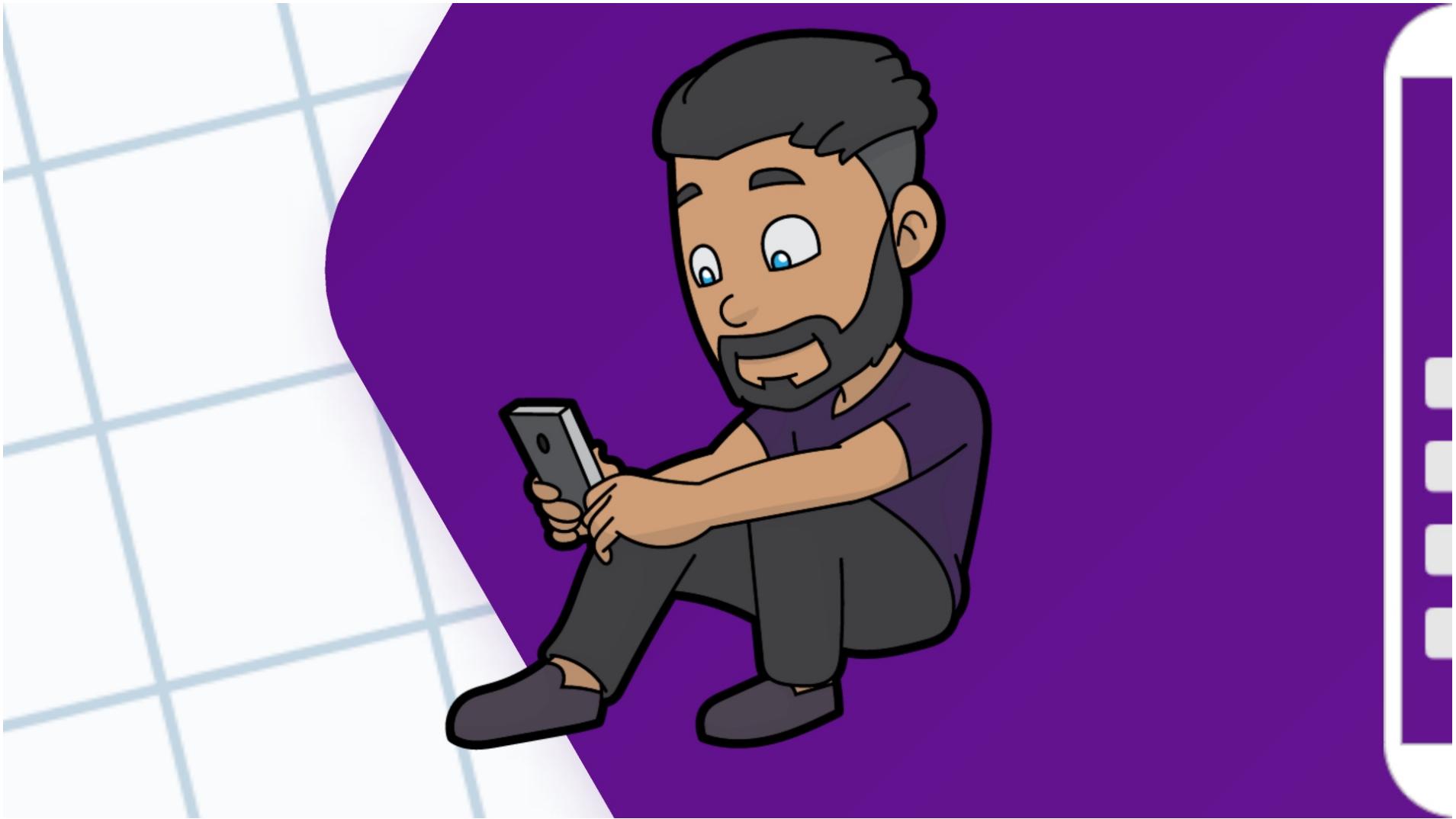
Idea

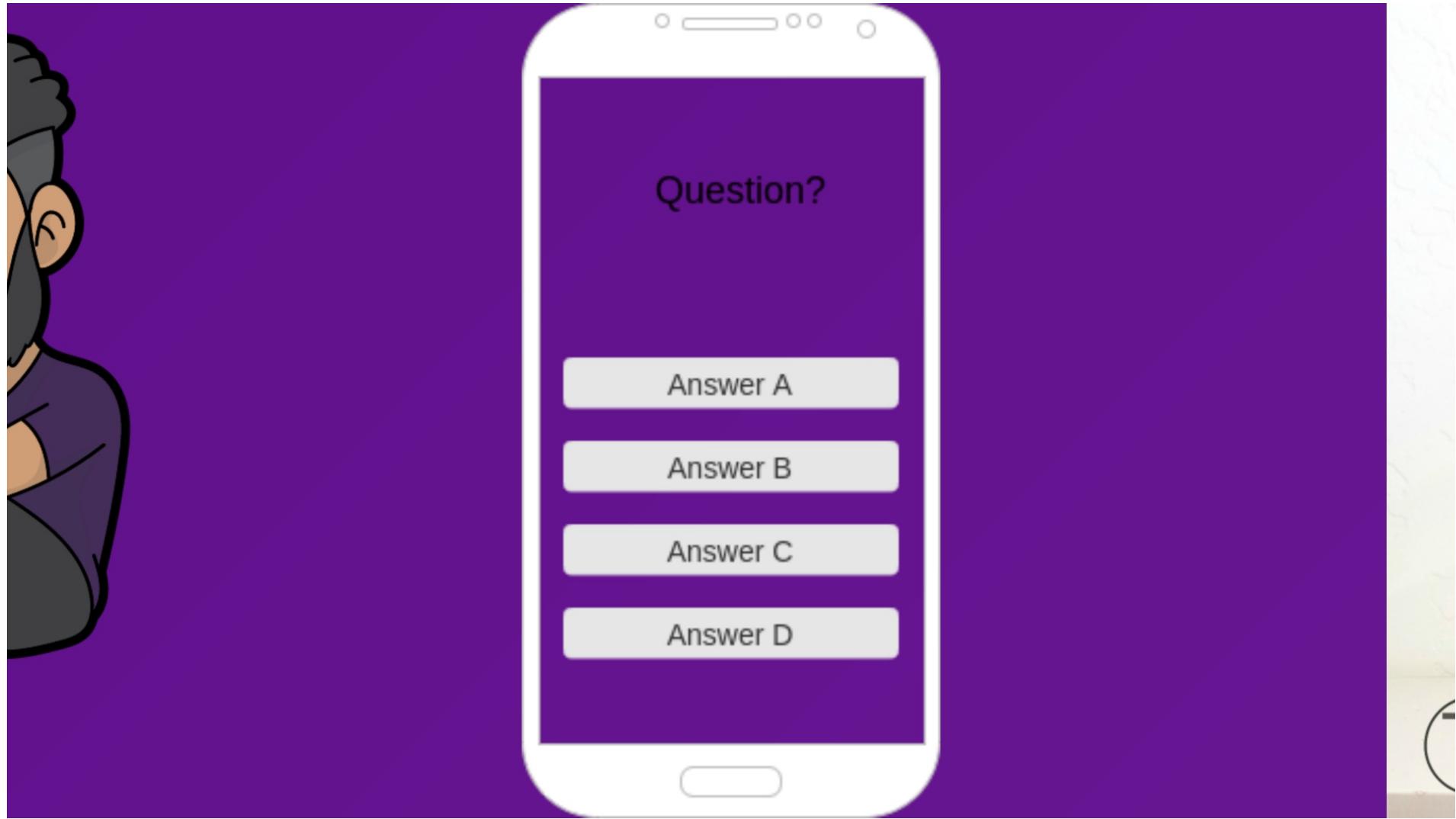
Link the learning process with
a direct reward



<https://www.buildsomething.com/plans/PA57A1F77F2D3B445/Desktop-Candy-Dispenser>

https://commons.wikimedia.org/wiki/File:Cartoon_Man_Using_His_Smartphone_To_Surf_The_Internet.svg







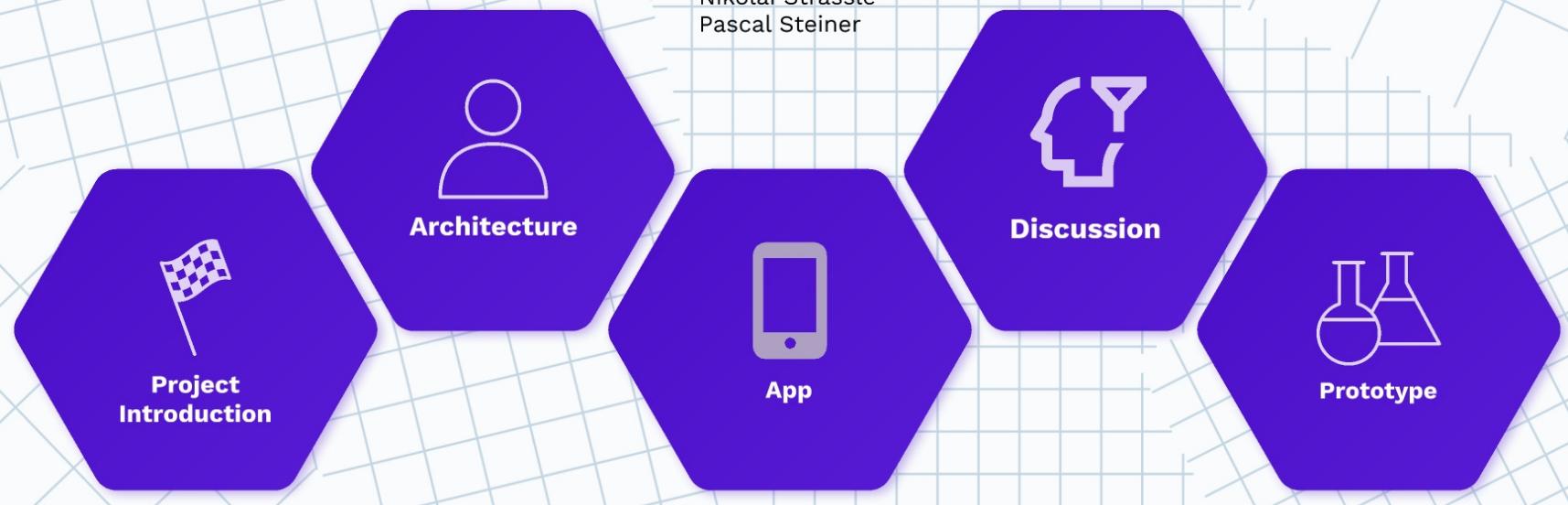
Project Introduction

How can the motivation to learn something improved?

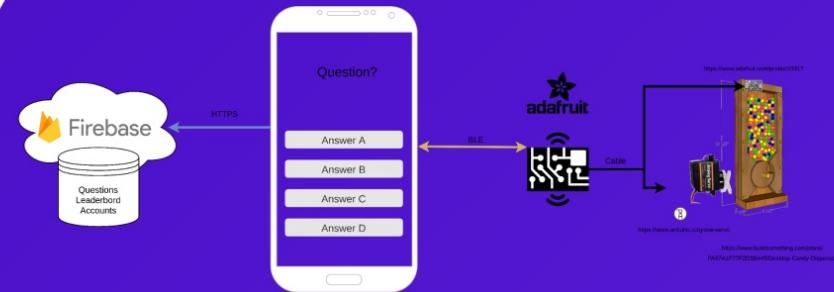
Idea

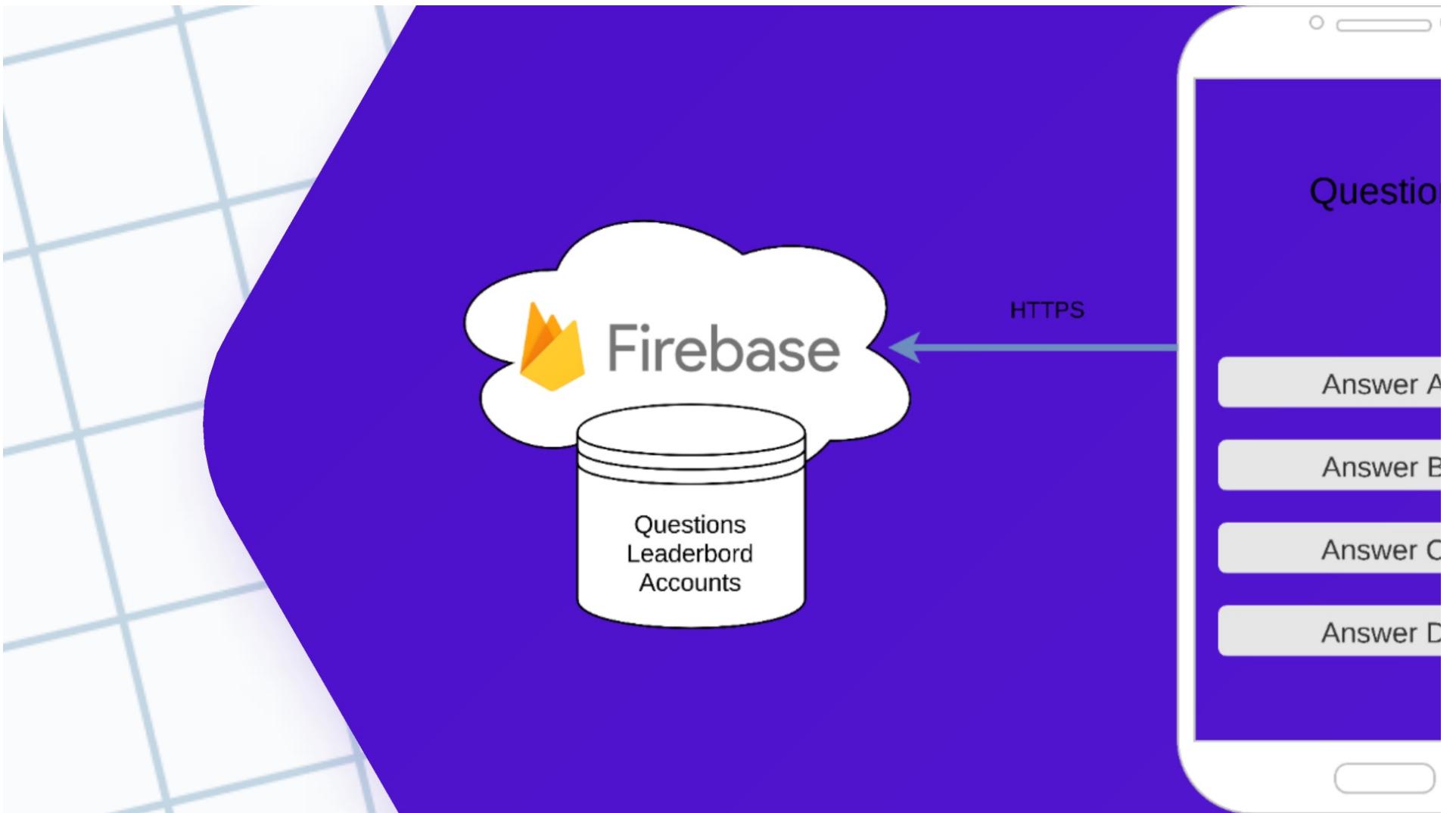
Quiz M&M Dispenser

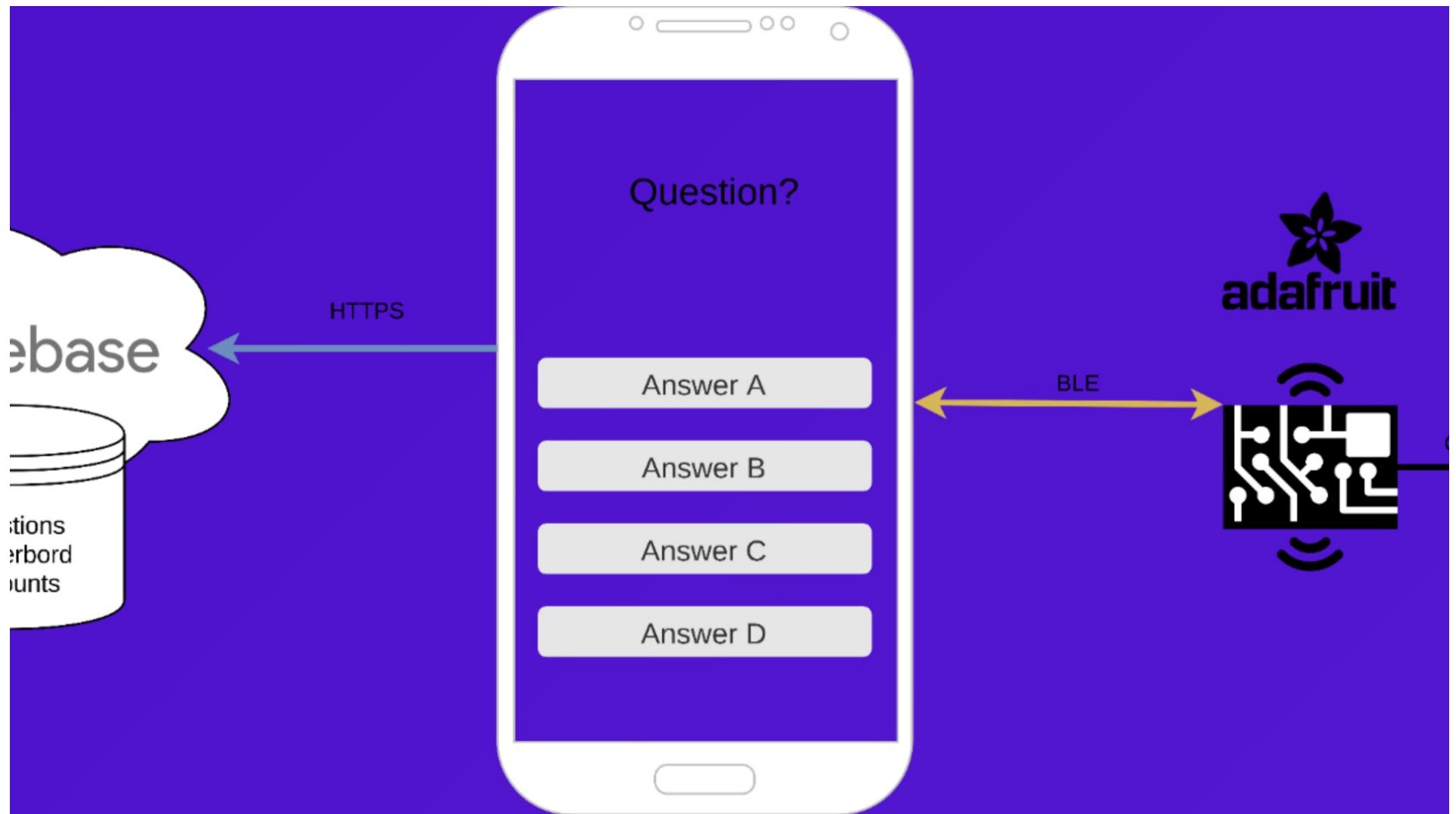
Martin Radinger
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Pascal Steiner

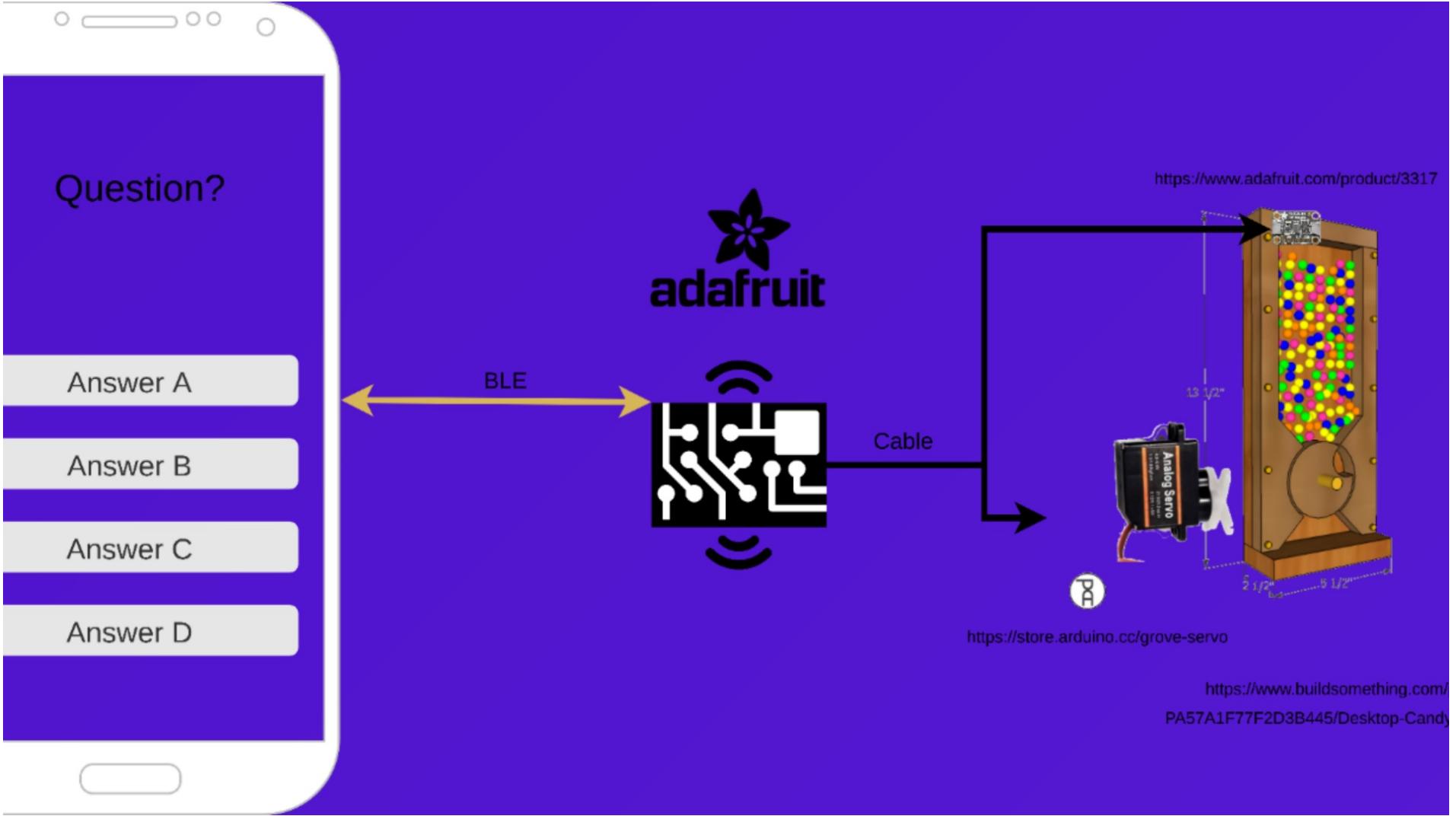


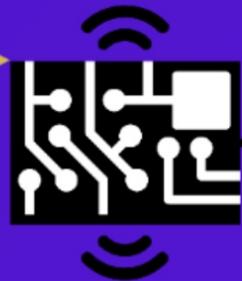
Architecture





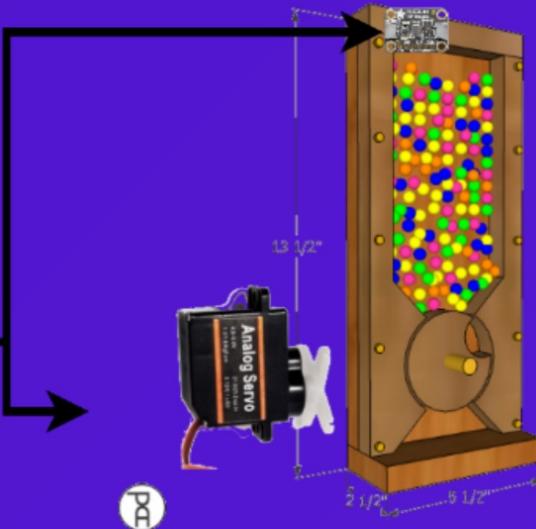






Cable

<https://www.adafruit.com/product/3317>



<https://store.arduino.cc/grove-servo>

<https://www.buildsomething.com/plans/PA57A1F77F2D3B445/Desktop-Candy-Dispenser>

Firebase

- Authentication
- Database for questions
- Database for the leaderboard

Architecture



Firebase

BLE

Sensor & Actuator

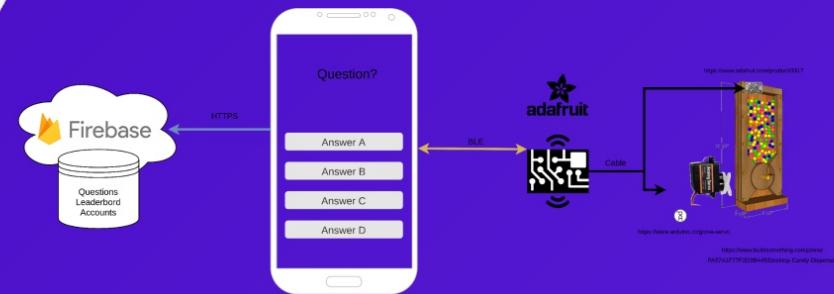
BLE

Custom GATT Service (113A0001-FD33-441B-9A57-E9F1C29633D3)

3 custom GATT Characteristics:

- Notify Dispenser State (113A0002-FD33-441B-9A57-E9F1C29633D3)
- Write Dispense (113A0003-FD33-441B-9A57-E9F1C29633D3)
- Notify Filling Level (113A0004-FD33-441B-9A57-E9F1C29633D3)

Architecture



Firebase

BLE

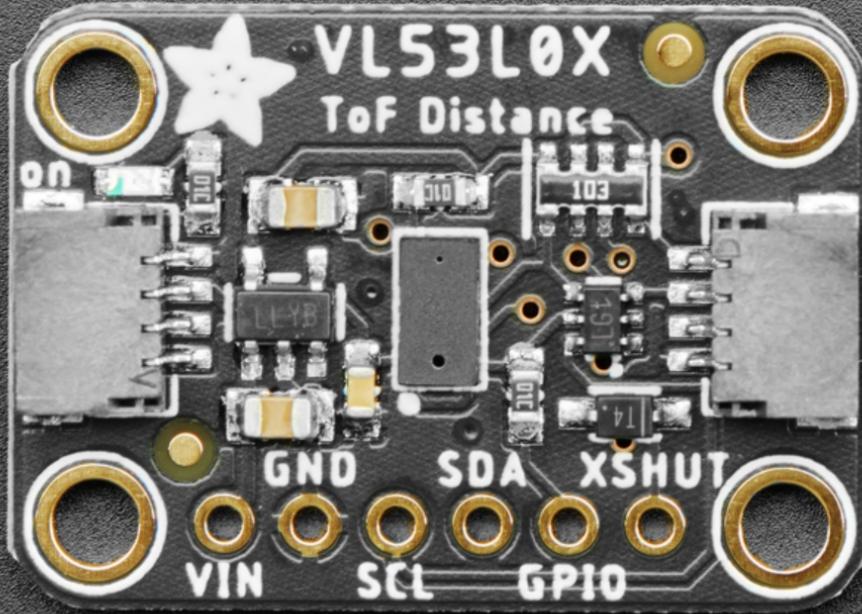
Sensor & Actuator

Sensor & Actuator



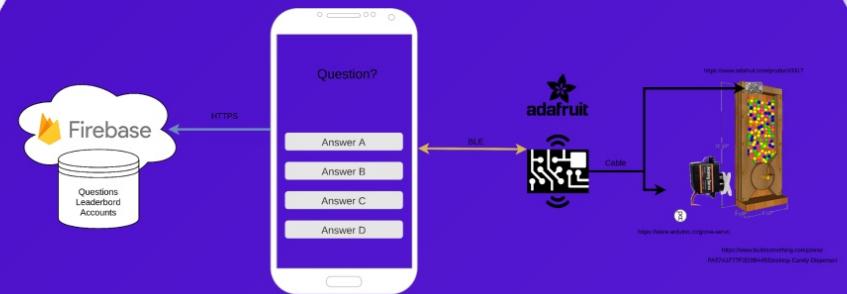
<https://www.adafruit.com/product/3317>

<https://store.arduino.cc/grove-servo>





Architecture



Firebase

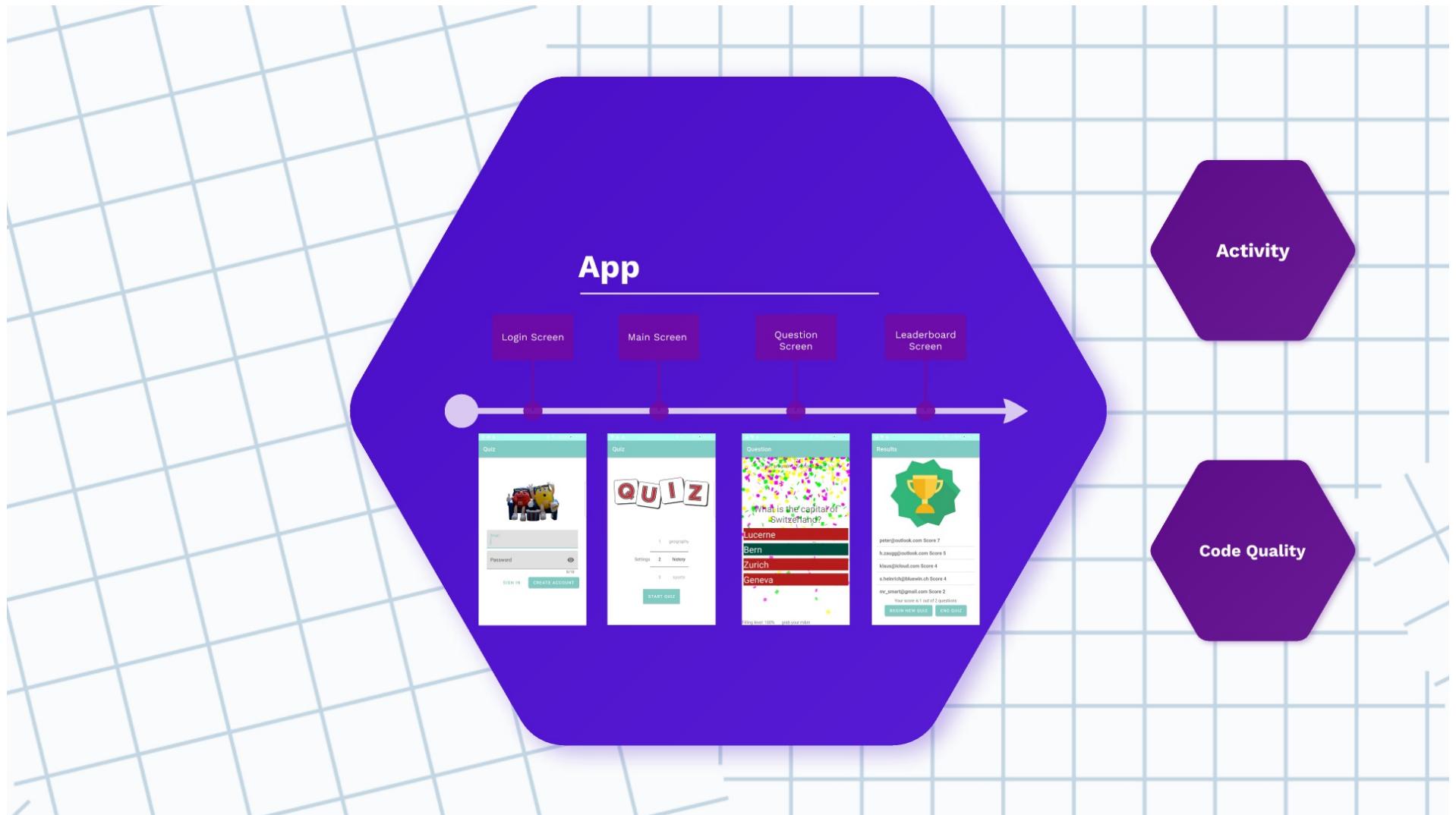
BLE

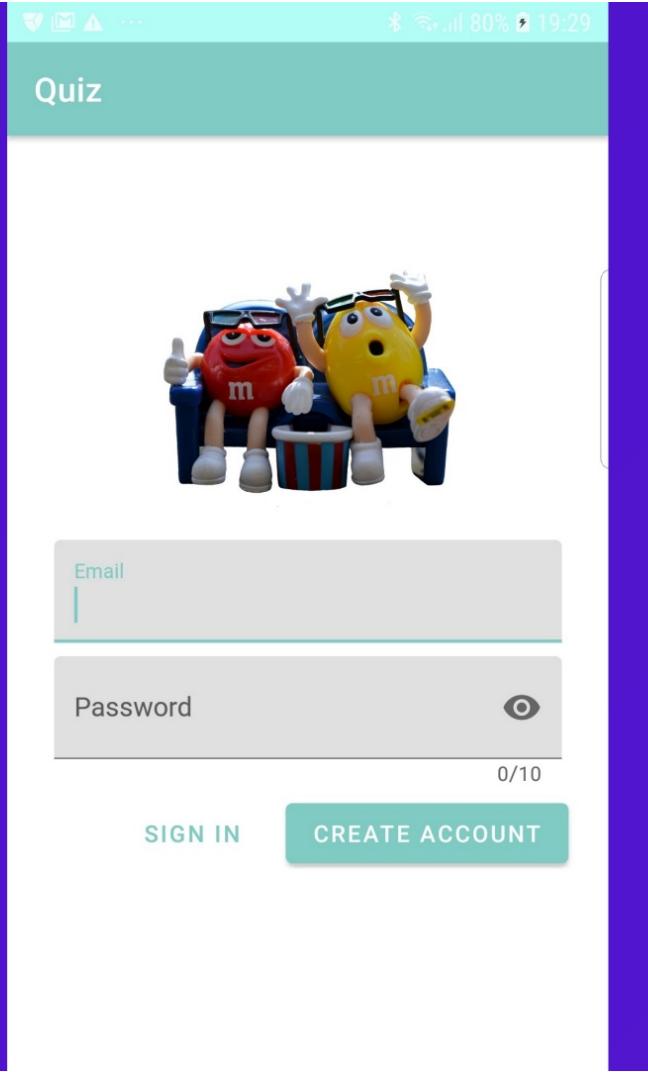
Sensor & Actuator

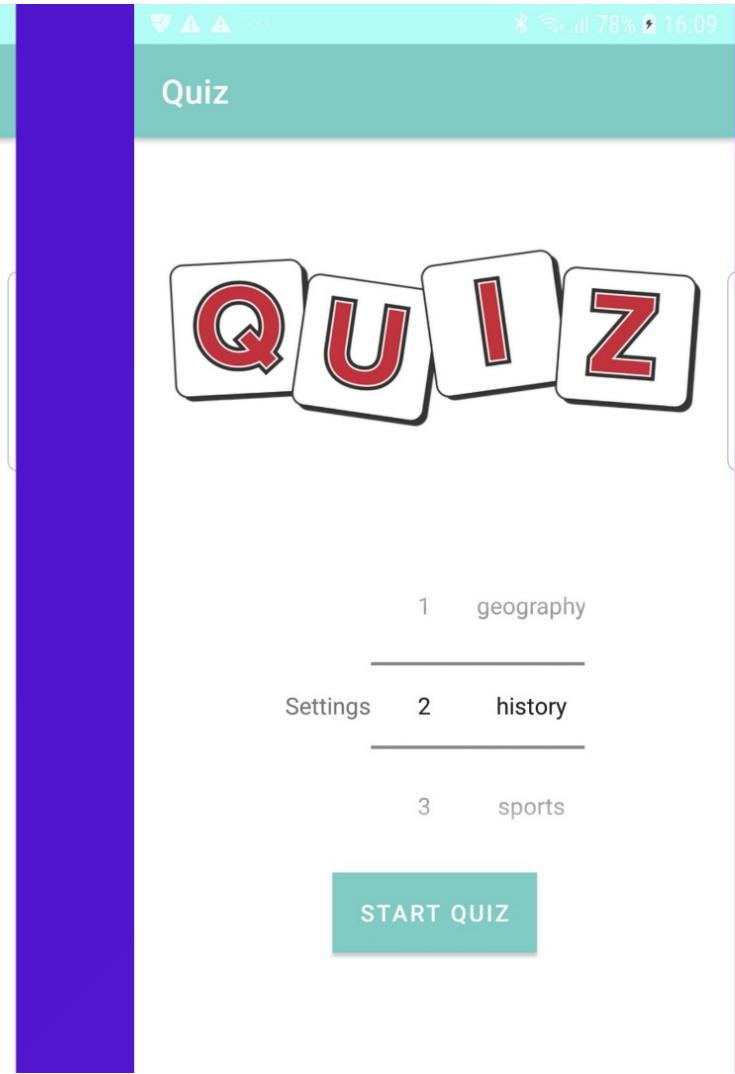
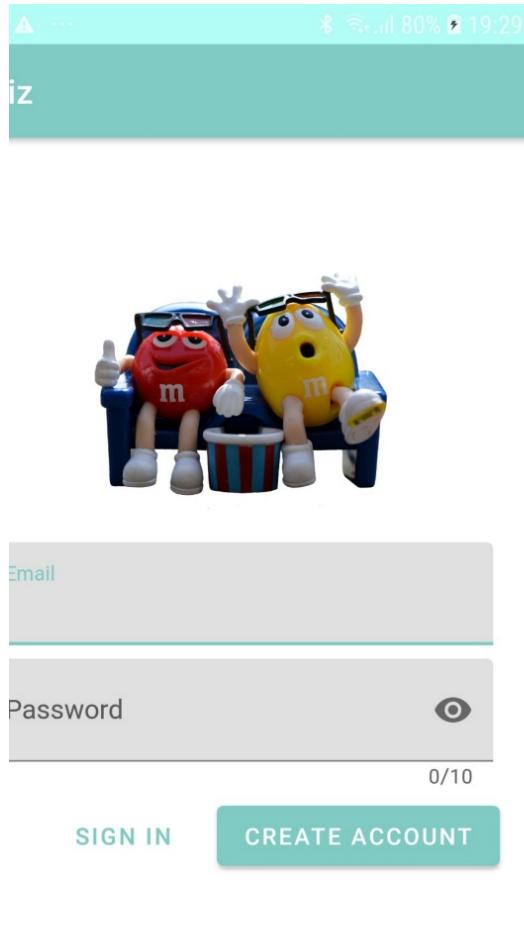
Quiz M&M Dispenser

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The image consists of three vertically stacked screenshots of a mobile application titled "QUIZ".

Start Screen (Left):

- Large "QUIZ" logo at the top.
- Navigation bar with three items:
 - 1 geography
 - 2 history
 - 3 sports
- A large green "START QUIZ" button at the bottom.

Question Screen (Middle):

- Header: "Question" and "Topic geography Question 1 Out of 1" with a timestamp of 16:17.
- Background: Confetti falling.
- Text: "What is the capital of Switzerland?"
- List of four options:
 - Lucerne (red background)
 - Bern (dark green background)
 - Zurich (red background)
 - Geneva (red background)
- Text at the bottom: "Filling level: 100% grab your m&m"

Results Screen (Right):

- Header: "Results" with a timestamp of 16:17.
- Icon: A golden trophy inside a green hexagonal frame.
- List of users with their scores:
 - peter@outlook.com Score 7
 - h.zaugg@outlook.com Score 5
 - klaus@icloud.com Score 4
 - s.heinrich@bluewin.ch Score 4
 - mr_smart@gmail.com Score 2
- Text: "Your score is 1 out of 2 questions"
- Buttons at the bottom: "BEGIN NEW QUIZ" and "END QUIZ".

Filling level: 100% grab your m&m

Question

Topic: geography Question: 1 out of 1

What is the capital of Switzerland?

Berne

Bern

Zürich

Berna

Level: 100% grab your m&m

Results

peter@outlook.com Score 7

h.zaugg@outlook.com Score 5

klaus@icloud.com Score 4

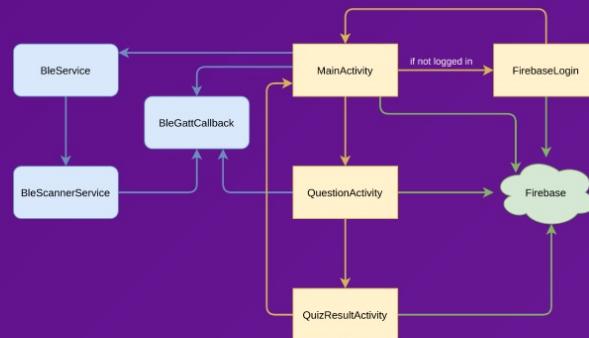
s.heinrich@bluewin.ch Score 4

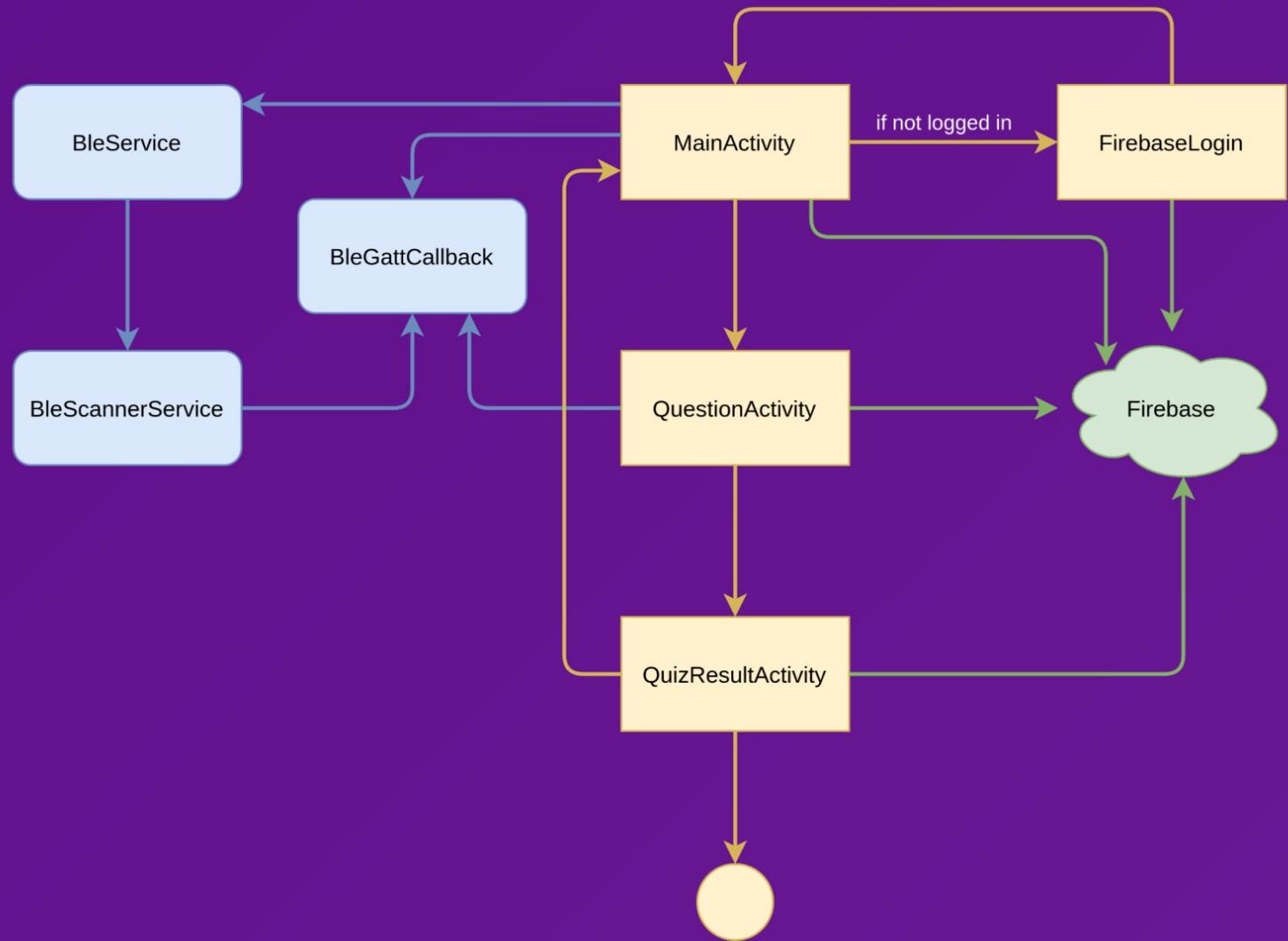
mr_smart@gmail.com Score 2

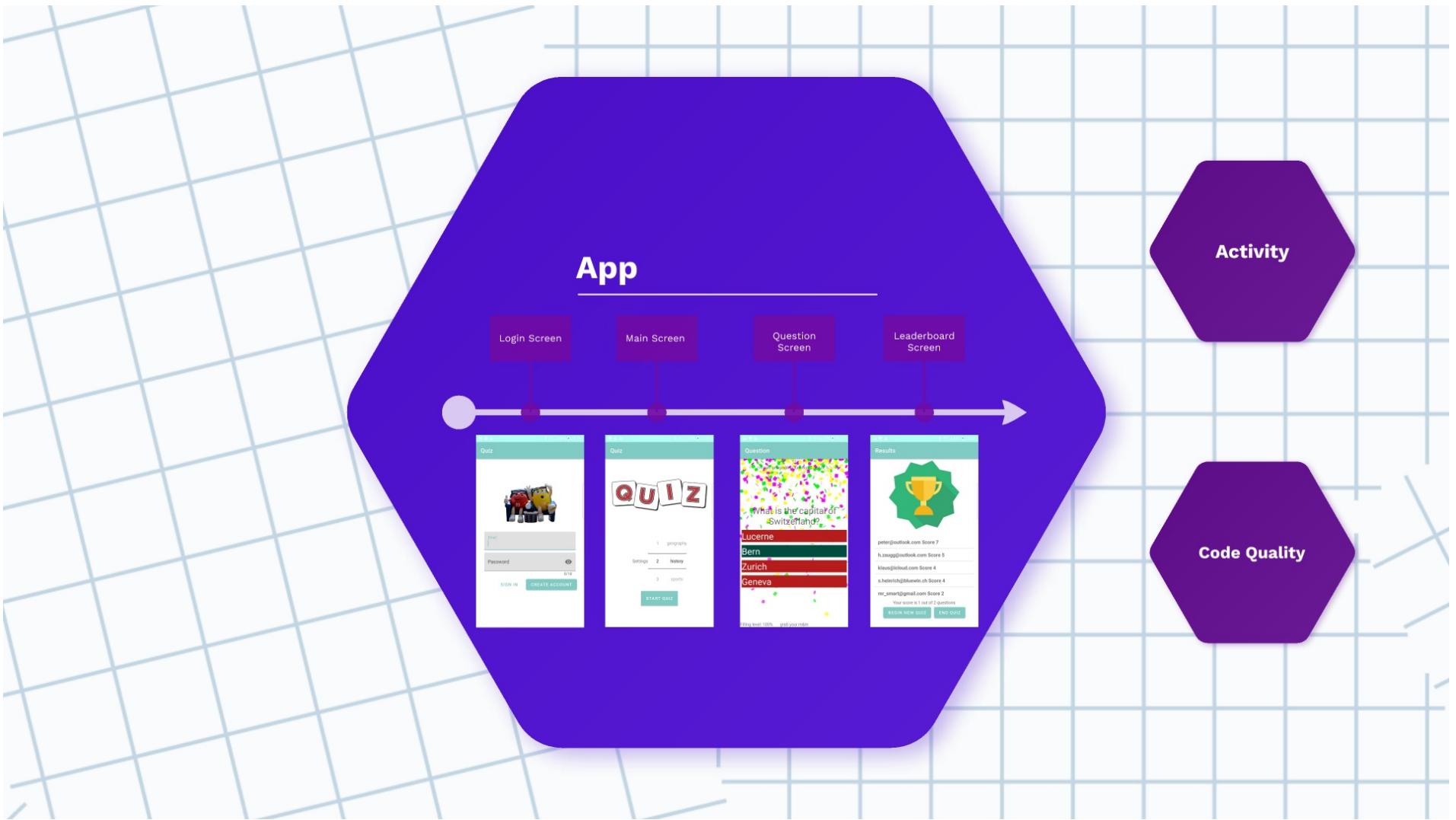
Your score is 1 out of 2 questions

BEGIN NEW QUIZ END QUIZ

Activity

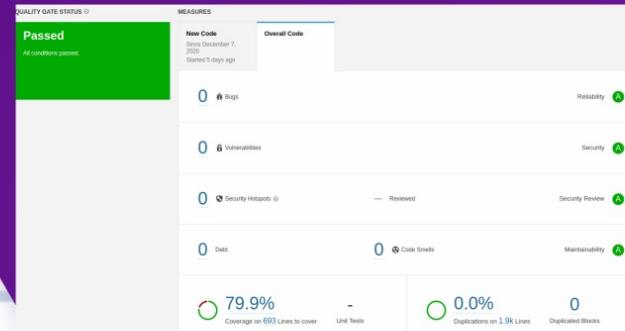






Code Quality

- 44 Unit Tests
- 8 End-2-End Tests
- 0 Security Issues
- 0 Bugs



QUALITY GATE STATUS ⓘ

Passed

All conditions passed.

MEASURES

New Code

Since December 7,
2020
Started 5 days ago

Overall Code

0 🐞 Bugs

Reliability A

0 🔒 Vulnerabilities

Security A

0 🛡️ Security Hotspots ⓘ

— Reviewed

Security Review A

0 💸 Debt

0 💩 Code Smells

Maintainability A



79.9%

Coverage on 693 Lines to cover

-

Unit Tests



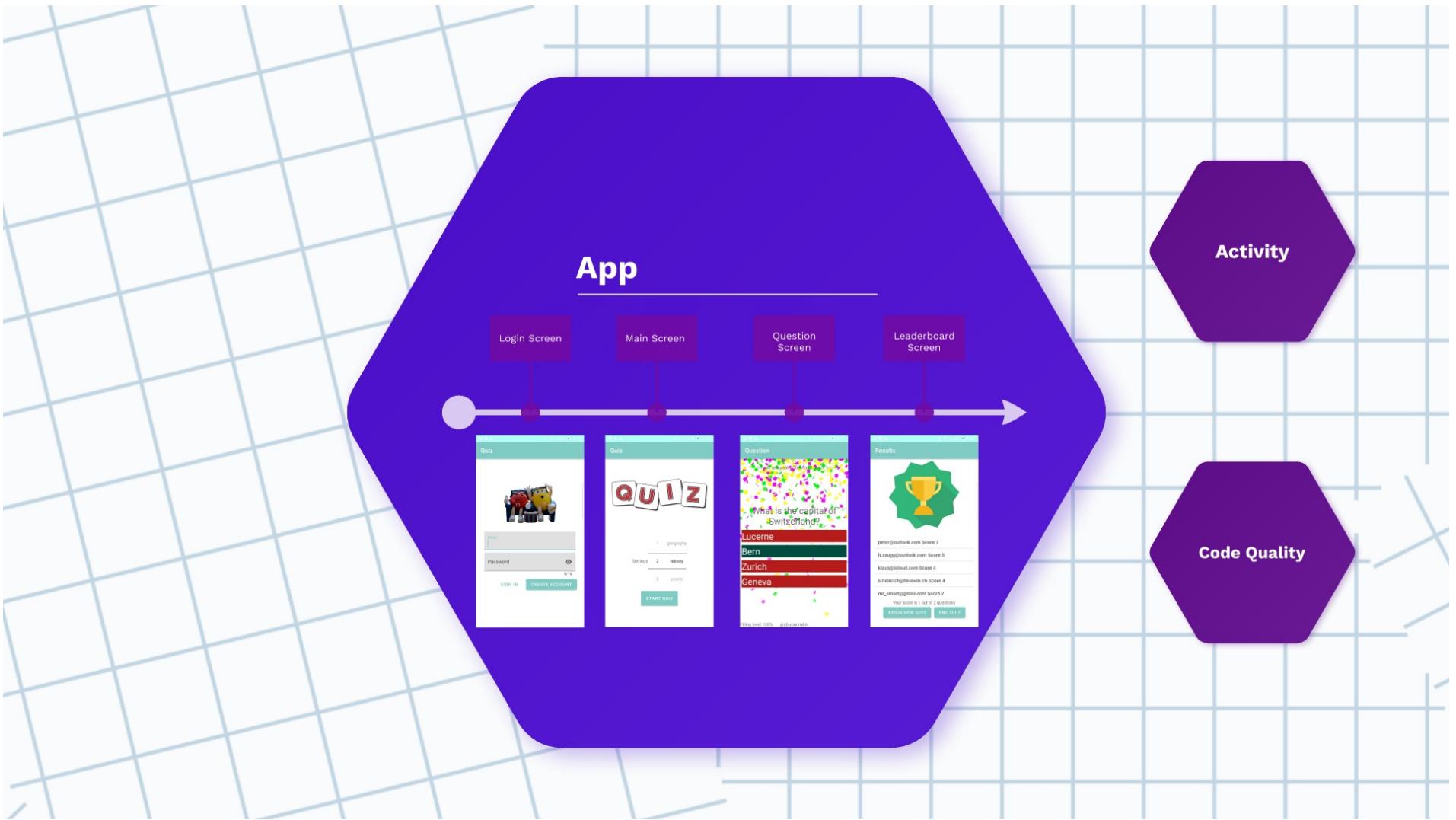
0.0%

Duplications on 1.9k Lines



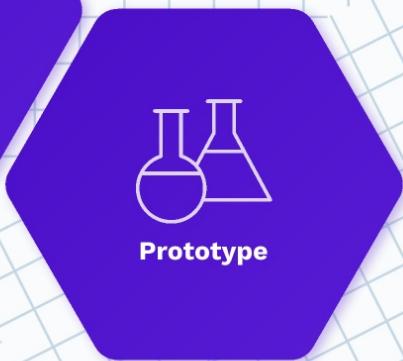
0

Duplicated Blocks



Quiz M&M Dispenser

Martin Radinger
Nikolai Strässle
Pascal Steiner



Discussion



Achievements

- BLE Connection Android <-> Arduino
- Usage of sensors and actors
- writing unit and End-2-End tests

Problems

- Android Testing without experience is hard
- Debugging BLE connection was complicated
- A video is not made in 5 minutes

Outlook

Outlook



- Improve the dispenser construction
(e.g. hide electronic parts)
- Add a duel feature
- iOS application
- Automatic reorder new M&M's if the filling level is lower than 10%

Discussion



Achievements

- BLE Connection Android <-> Arduino
- Usage of sensors and actors
- writing unit and End-2-End tests

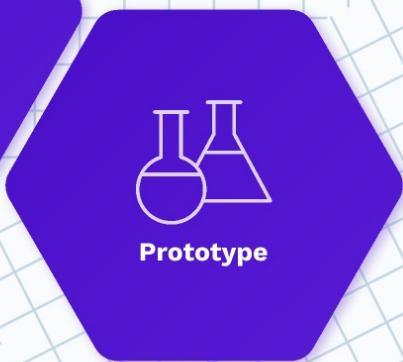
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Outlook

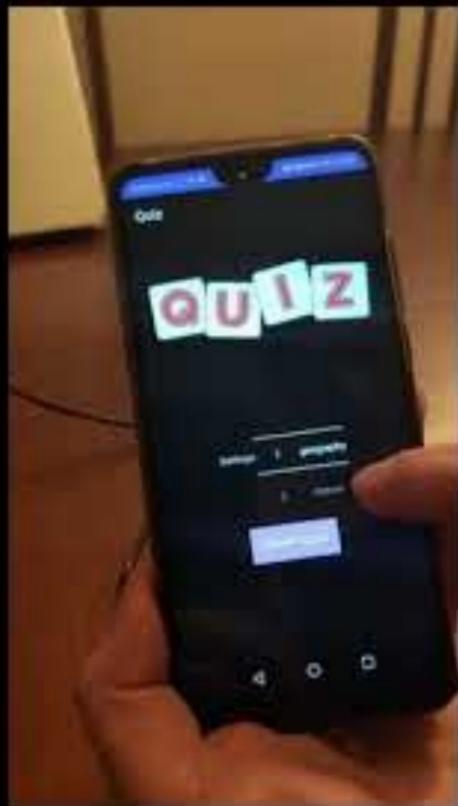
Quiz M&M Dispenser

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Pascal Steiner



Prototype





Quiz M&M Dispenser

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Nikolai Strässle
Pascal Steiner

