



Puzzle Team 5

1. NFC DOOR LOCK

2. UPS RECUSE

11.11.2021

The Workstation with UPS

- UPS: Uninterruptible Power Supply
- The UPS should maintain the power of a workstation in case of power outage
- The battery in the UPS is dead
- **Replacement battery** in the **charging station (a safe)**



Task 1: Unlock the Charging Box

- Box is password-locked/ locked by another puzzle



Puzzle 1 Option 1: Password information from NFC Tags

- NFC Tags stuck on:
 - **Battery**
 - **Charging box**
- Scan tags to get hints from the scanner's display
 - **Each tag contains an ID**
 - **Password = battery ID + box ID**
 - (Or a harder way?)

Puzzle 1 Option 2: 2048 on HoloCubic

- [Reference video](#)
- Finish the mini 2048 game (3x3 grid, get to 64 is enough) to unlock the box
- Much more interesting than looking for a password!

Task 2: Replacing the Battery

1. Pull out the new battery from the box
2. Plug the old battery back
3. Close the box
4. Plug the new battery to the UPS
5. [House keeping] If the old battery hasn't been put back to the box, an error screen instead of the login screen will prompt

Task 3: Login the Computer

- Login screen that require **username** and **password**

Puzzle 2.1: Looking for Username

- Username can be found by scanning a (NFC) staff card in the room
- Obtain the staff card from puzzle of another team?

Puzzle 2.2: Forgot Password

- Use “Forgot password” to retrieve the password
- Answer a few general questions
 - **How old is Freiburg?**
- Answer some more specific questions
 - **What is your favourite color? (color of the staff card)**
 - **What is your employee ID? (retrieve by scanning the staff card)**

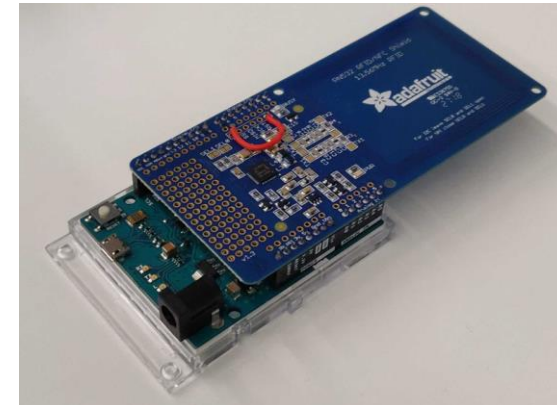
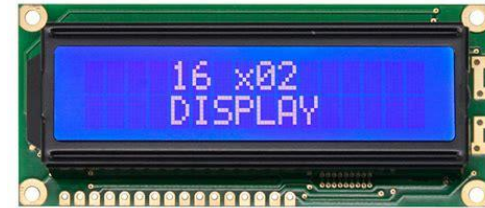
What's next?

- Another puzzle to resume the smart grid?
- Resume the power to enable other puzzles?



Hardware: NFC Scanner

- Requirements:
 - **Portable**
 - **LCD for text display**
- Components:
 - **ESP32 / Arduino Uno**
 - **LCD 16x2**
 - **RFID-RC522 RFID/NFC transceiver / PN532 Shield**



Hardware: 2048

- ESP32
- OLED screen (>64x64, ~1 inch) / HoloCubic
- MPU6050 Gyroscope



Hardware: Workstation

- A general PC / Raspberry Pi
 - **With keyboard / numpad**
 - **A monitor**
 - **An USB extension cable to the UPS box**

Hardware: UPS + Battery

- UPS: Just an empty box with an USB cable between the battery and the workstation
- Battery: smaller box with USB communication ability
 - **For workstation/ charging station to identify the battery**

Update after 4th meeting

- Decided to use 2048 as the battery safe's lock puzzle
- The battery will be used to resume the power of the control room, including the radio of puzzle #3
- Workstation is not used as there is no linkage with other puzzles