Riddle 2: Microsoft HoloLens and the Keypad

Once you have obtained a key in the first riddle, the second riddle will take place around a large desk in the middle of the room on your right-hand side. Use the key to open one of the drawers in the desk. Opening the drawer activates the Keypad mounted on the wall next to the desk and the Keypad asks you to enter a 9-digit code. Inside the drawer there's Microsoft HoloLens and a diary. By combining the numbers you find when putting on the HoloLens and the letters highlighted in the diary, you can find out the code for the Keypad. By entering a right code, you will move on to the next riddle.

A teaching about Artificial Intelligence (AI):

- AI is programmed to do the wanted tasks by using Algorithms.
- The teaching is written in the diary that you use in solving the riddle in the following form:

> *Artificial intelligence (AI) needs information - like a huge library or bookshelf to work. AI is a tool for handling information, it's like a cookbook is tool for making tasty meals out of single ingredients. AI could use any information in the world for a given purpose. AI can find exciting patterns from information and do forecasts for us about weather or different illnesses - even prevent illnesses with its' forecasts".*
>
> *What we now need is some rules to process all that information - like preparation steps in cooking recipe. These rules are algorithms. Algorithms are cooking recipes for information - they tell you exactly how to deal with things: Which ingredients to use, in what order, how many times, in which way and how long. Same principle goes to handling information. Algorithms then form the AI - AI is the collection of rules how to process things. Now take my glasses and go explore my office!"*

Mircosoft Hololens code can be found on

https://drive.google.com/drive/folders/1ptx55aM1AtKCCPW2RFWUSXTP1gE--CjS?usp=sharing

The Keypad

The circuit diagrams can be found in code and diagrams folder

Components used for keypad

1. Arduino uno
2. Matrix 3x4 keypad
3. Buzzer (active low)
4. Relay (to turn the raspberry pi on when correct code is input)
5. LCD with inbuild I2C, using SCL SDA

There are 3 input connections in the smart mirror getting external inputs and giving external outputs. They are as follows

1. Input wire coming from the sensor fitted inside the drawer (one goes to pin A0 and other goes to ground)
2. Output wire going to neural network to active the next riddle (one goes to pin 3, other to common Ground)
3. Output relay connected to the power supply of the raspberry.

The circuit diagram shows the connections of the keypad

Pin arduino	Connection
5	Signal pin of the buzzer module
3	Signal pin going to neural network circuit (going to pin 3 of neural network)
A4	SCL of LCD
A5	SDA of LCD
A0	Signal from the Magnetic sensor from table drawer
12	(COL 2) (PIN 1 OF KEYPAD)
11	(ROW 1) (PIN 2 OF KEYPAD)
10	(COL 1) (PIN 3 OF KEYPAD)
9	(ROW 4) (PIN 4 OF KEYPAD)
8	(COL 3) (PIN 5 OF KEYPAD)
7	(ROW 3) (PIN 6 OF KEYPAD)
6	(ROW 2) (PIN 7 OF KEYPAD)
2	Relay for powering the smart mirror

To replace the Keypad:

1. Remove the wire from the Magnetic sensor of the drawer from the keypad to be replaced (wires on pin A0 and ground)
2. Remove the 2 wires coming from neural network riddle (pin 3 and ground)
3. Remove the DC power supply.
4. Replace the keypad and put back the magnetic sensor wires, one on pin A0 other on ground
5. Put back the wires of the neural network to the replaced keypad
6. Put the DC supply and open the drawer to make sure the keypad responds to this.