Riddle 1: Food Bowl and Paul the Pet Robot

Once you enter the Escape Room, the first riddle will be on your left-hand side on a small table, which has Paul the Pet Robot in a terrarium mounted on the table and a Food Bowl.

First thing you need to do is to find a RFID key tag in the escape room (hidden inside a book in a bookshelf) and place it in the Food Bowl. There are several key tags hidden in the escape room so, to give you a hint, the Food Bowl has a text “Feed me data” written on it advising you to find a RFID key tag that has a text “Data” written on it.

Once you place the “Data” key tag in the Food Bowl, Paul the Pet Robot activates inside the terrarium and starts moving toward the Food Bowl. The terrarium has an obstacle that Paul the Pet Robot hits and, in order for it to get pass it, you need to find a way to lift the obstacle out of its way (find a key hidden inside the escape room to remove the lock on the obstacle). When the obstacle is lifted, Paul the Pet Robot continues moving toward the Food Bowl and stops before the back wall of the terrarium so you can reach for a key that it is carrying. The key is your hint leading to the next riddle.

A teaching about Artificial Intelligence (AI):

- AI is a learning machine.
- Paul the Pet Robot starts moving and finding it way inside the terrarium once it is fed with “Data”. By first hitting the obstacle inside the terrarium, it learns to avoid hitting any further obstacles and stop in time if there’s something on the way (in this case the back wall of the terrarium).
- The learning is written in a picture frame next to the terrarium in the following form:

> *Articial Intelligence (AI) is a learning machine. From the data fed to it, it learns to detect and react to the things happening around it. Machine learning can be used in recommending movies, smart cars, detecting diseases and in many other ways.*

The Food Bowl:

The circuit diagrams can be found in code and diagrams folder

The foolbowl has an RFID sensor and a led which sends a signal to the robot to power ON.
Once the robot is ON it starts moving and hits the obstacle on its way.
Components used for food bowl are:

1. Arduino UNO
2. IR Led
3. RFID TAG (MFRC522 RFID)

Pin arduino	Connection
Gnd	GND of RFID Reader
13	SCK of RFID
12	MISO of RFID
11	MOSI of RFID
10	SDA of RFID
9	RST pin of RFID
3	Negative termial of the LED

The connection in the food bowl is done in the following way:

To replace/troubleshoot the Components in the foodbowl:

1.Make sure that the IR LEDs terminal is connected to pin 3 and Ground.
2. Use serial to check the RF ID keytag is working and is attached properly to the food bowl.

Read the code in foodbowl folder to understand in detail how it works.

To print the sticker for stop signs, foodbowl and keytags, check the folder Prints.Also this folder contains the laser cut design for the box that is kept on Pauls top for putting in the key

Paul the Pet Robot:

The circuit diagrams can be found in code and diagrams folder

The pet robot consists of the following parts

1. L298N motor driver IC module.
2. Chasis with 4 wheels.
3. 3-IR sensors
4. 6AA battery holder with DC jack
5. Breadboard for connection
6. Powerbank 2600 mAh
7. Arduino nano
8. Push button for reset

To create your own robot, follow the instructions in the circuit diagram and the comments in the code.

Arduino Pins	Connection
3	IR LEDS to detect the front obstacles
4	IR sensor that detects signal from foodbowl LED
2	Extra IR sensor in case sensor at pin 4 fails
10	Enable pin to control the speed of left motors
11	Enable pin to control the speed of right motors
6	to control the left backward motion
7	to control the left forward motion
8	to control the right backward motion
9	to control the right forward motion