UNIVERSITÀ DEGLI STUDI DI SALERNO

IoTLab

SMART CITY
with ARDUINO
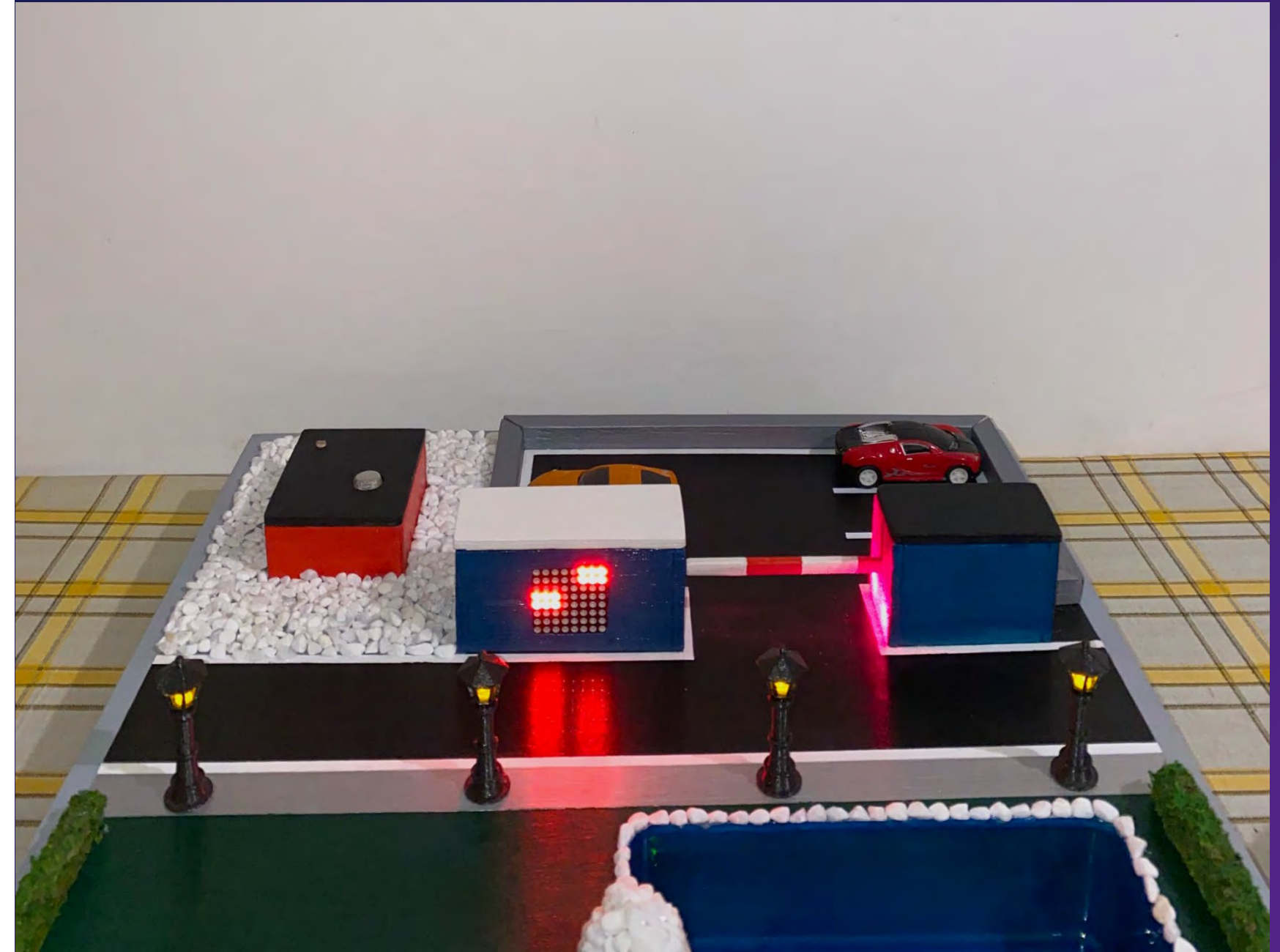
Simone Benedetto   – 0 5 2 2 5 0 13 3 4
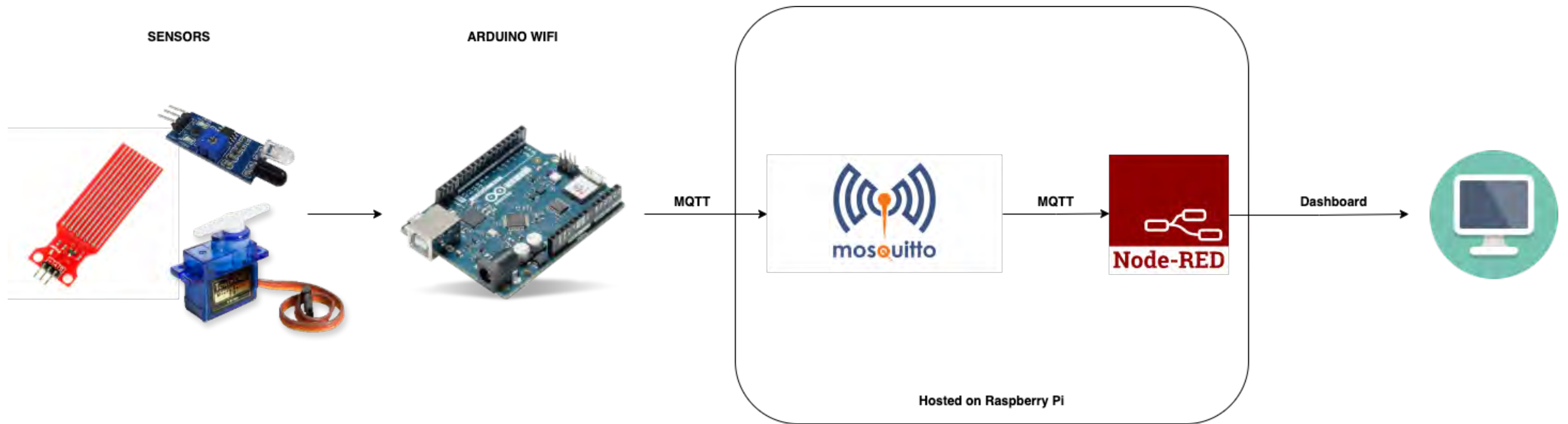S a l e r n o D a n i e l e - 0 5 2 2 5 0 13 5 7

INTRODUCTION

This project treats the development of an IoT smart city using Arduino.

The smart city will be equipped with the following functionalities:
- Smart lighting;
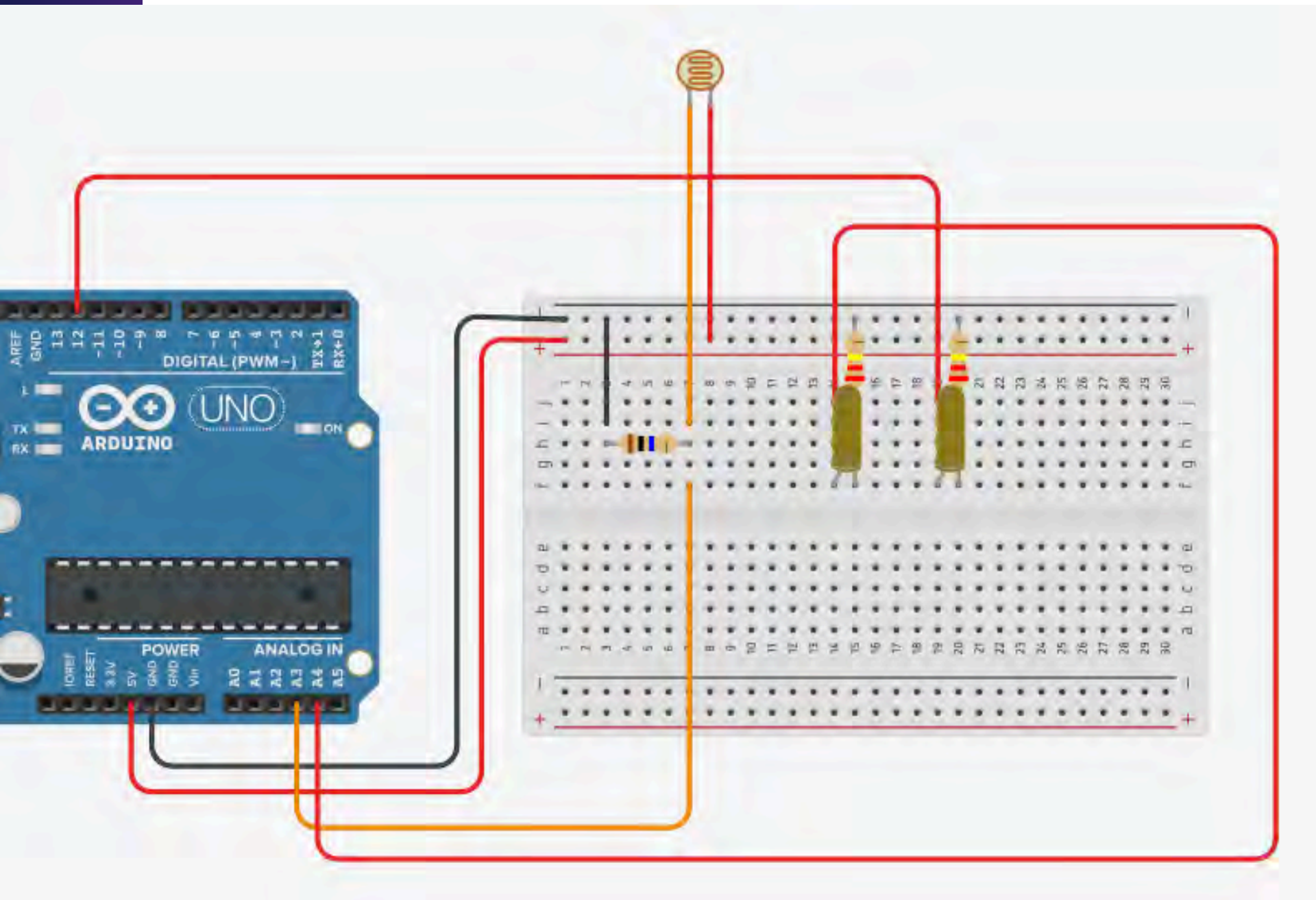- Smart parking;
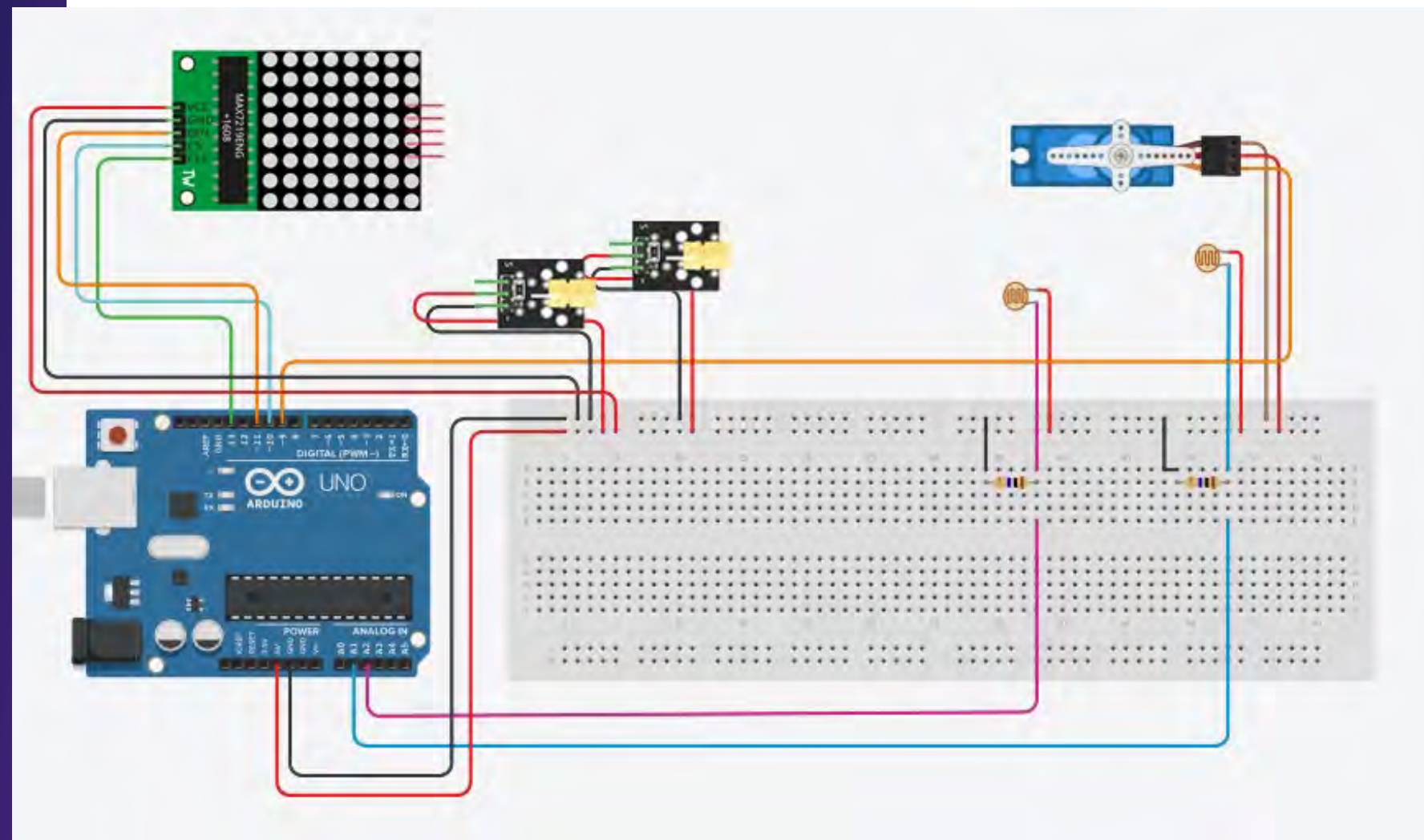- Air quality monitoring;
- Flood management.
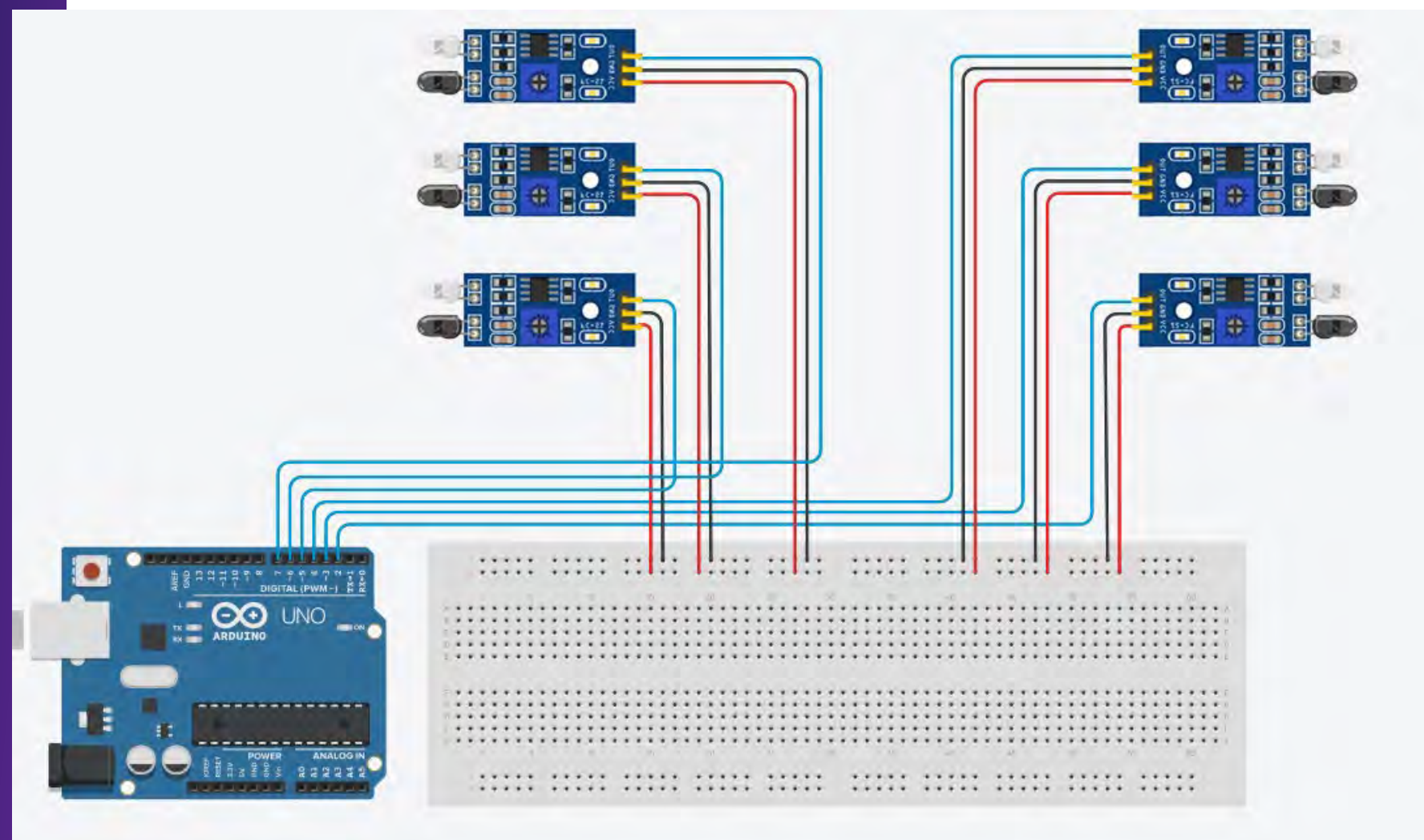
ARCHITECTURE

SINGLE SECTION
HARDWARE AND WIRING

SMART LIGHTING

- Light Sensor (Photoresistor);
- Resistor 10k ohm;
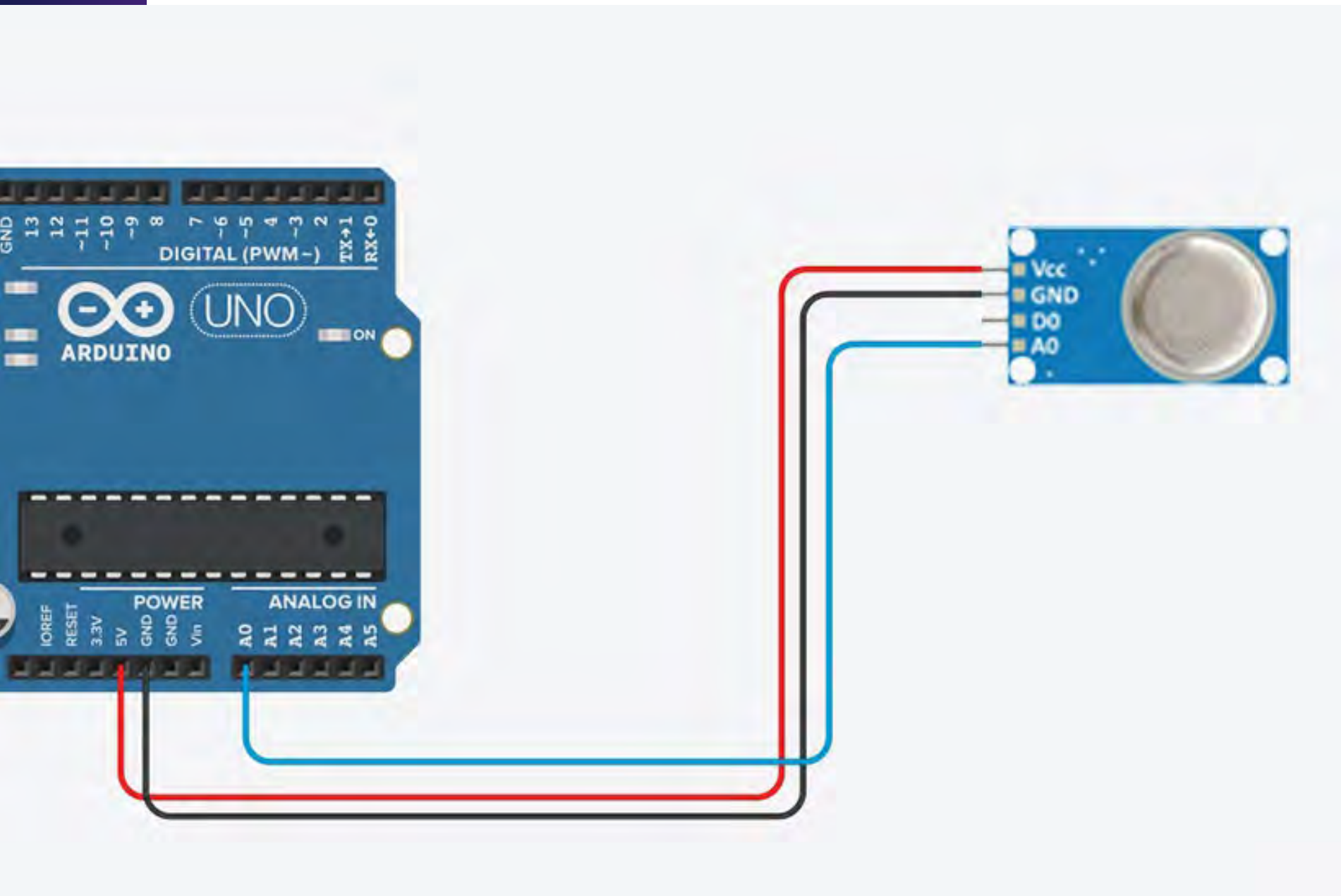- Resistor 220 ohm (2x);
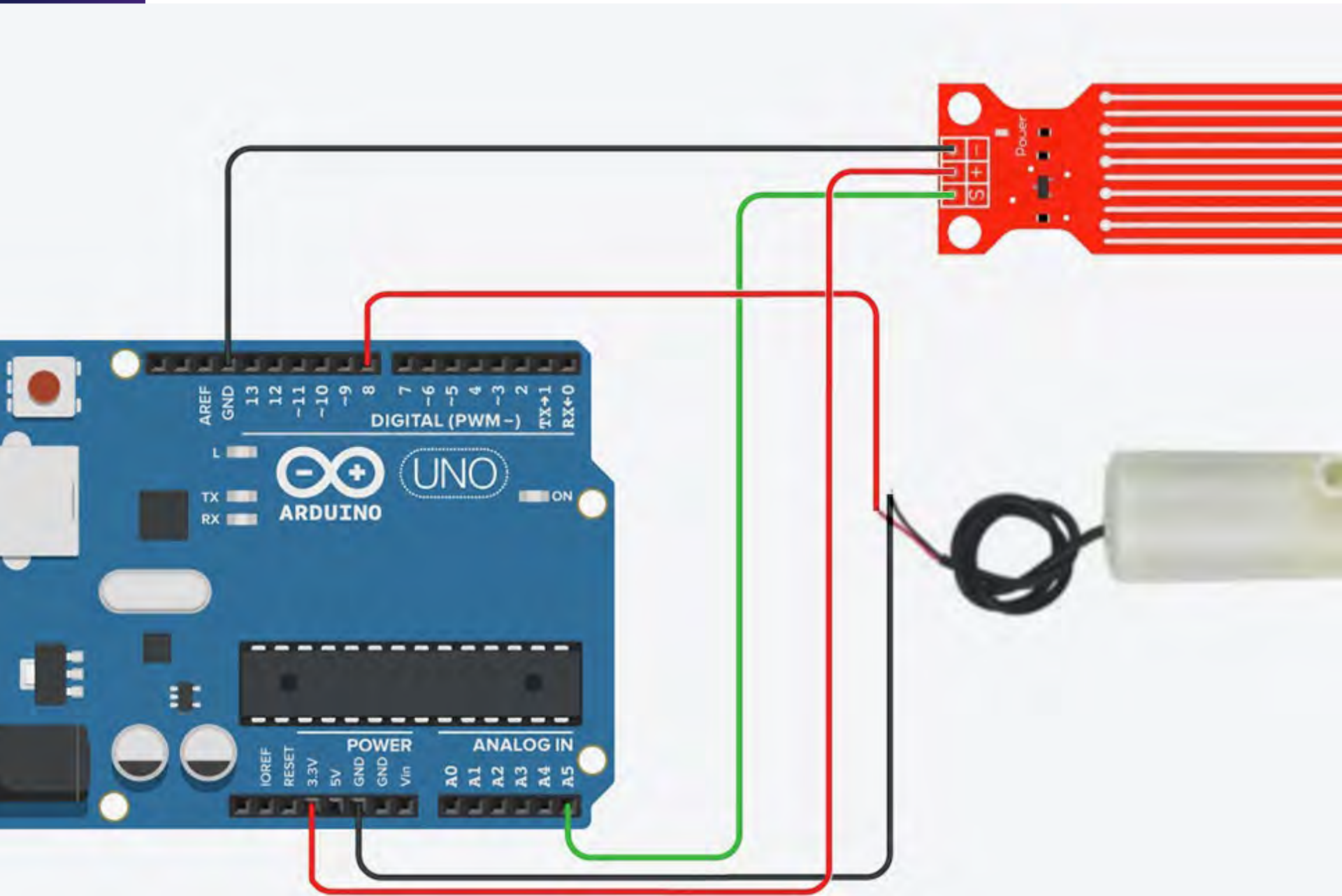- Yellow LED 5mm (6x);

SMART PARKING

- IR Infrared Obstacle Avoidance Sensor Module (6x);
- Light Sensor (Photoresistor) (2x);
- Resistor 10k ohm (2x);
- KY - 008 Laser Module (2x);
- Servo micro TowerPro sg90 9g;
- 8x8 Dot Led Matrix Module;

AIR QUALITY MONITORING

- MQ2 Air Quality Sensor;

FLOOD MANAGEMENT

- Water Sensor;
- Water pump 5V;

MQTT COMMUNICATION

STREET LIGHTS

We publish messages on the topic **"topic/** **street_lights** **"**.

The messages have the following format:

{ lights_status : *value* }

The variable **value** can be 0 if the lights are OFF, and 1 if they are ON.

AIR QUALITY MONITORING

We publish messages on the topic **"topic/air_quality"**.

The messages have the following format:

{ air_quality_status : *value* }

The variable **value** can be 0 if the air quality is GOOD, and 1 if it is BAD.

FLOOD MANAGEMENT

We publish messages on the topic **"topic/ flood_management "**.

The messages have the following format:

{ flood_status : *value* }

The variable **value** is the water level **.**

PARKING

We publish messages on the topic **"topic/parking"**.

The messages have the following format:

{free: *value* , slot1: *status* , slot2: *status* , slot3: *status* , slot4: *status* , slot5: *status* , slot6: *status* }
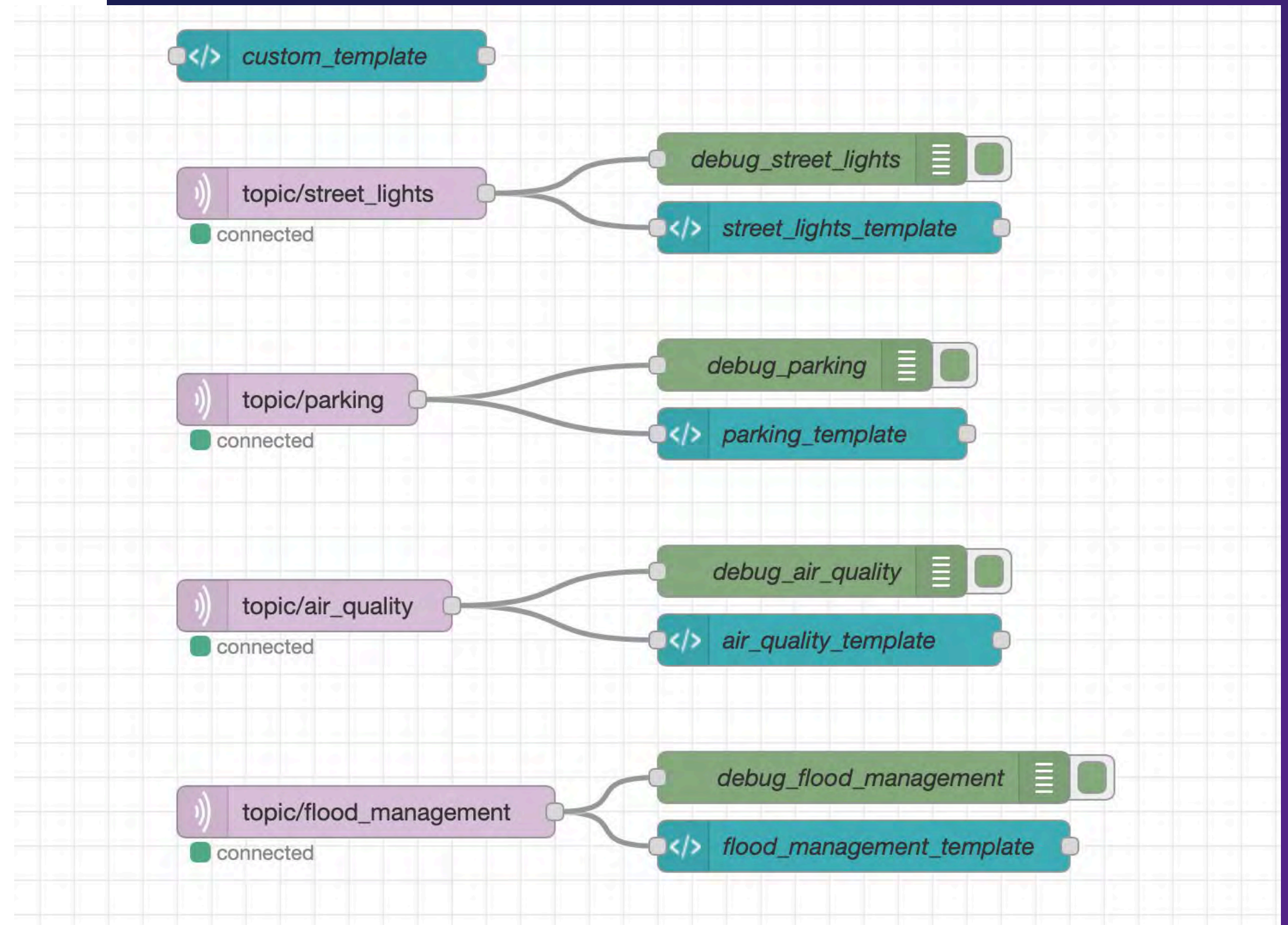
The variable **value** is the number of free slots and **status** that can be 1 if the slot is free, 0 if it is busy.

WEB APPLICATION

FLOW

To build our web application we used **Node - Red** , a programming tool for wiring together hardware devices, APIs and online services .
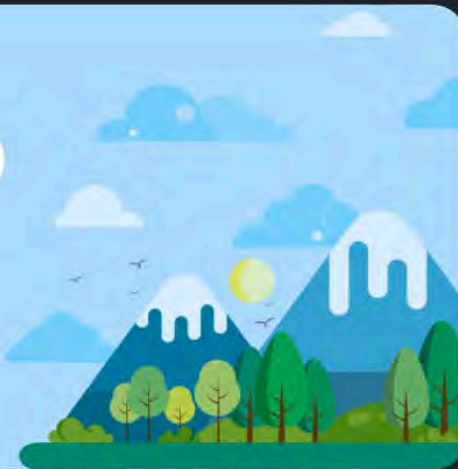
DASHBOARD

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THANK YOU
FOR YOUR ATTENTION

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