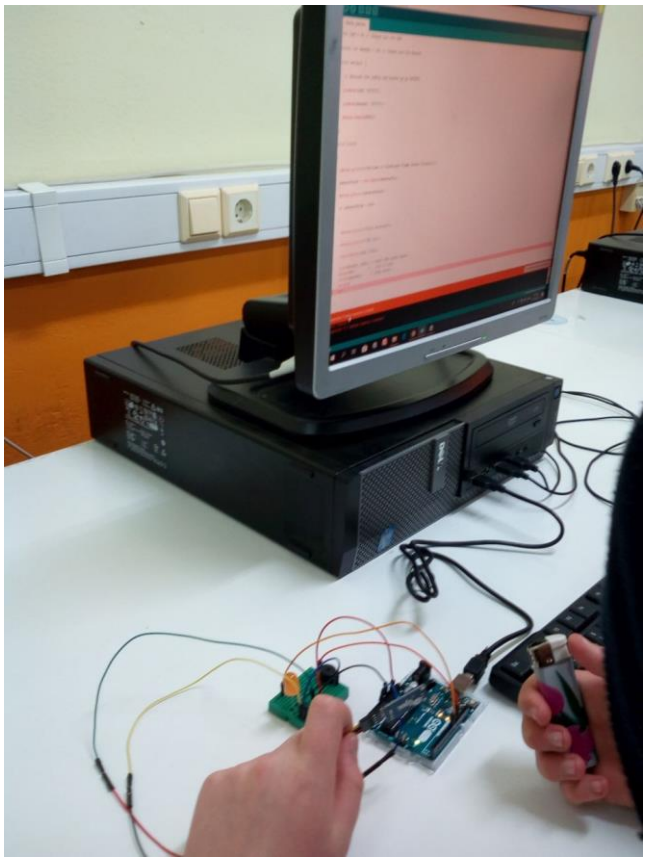
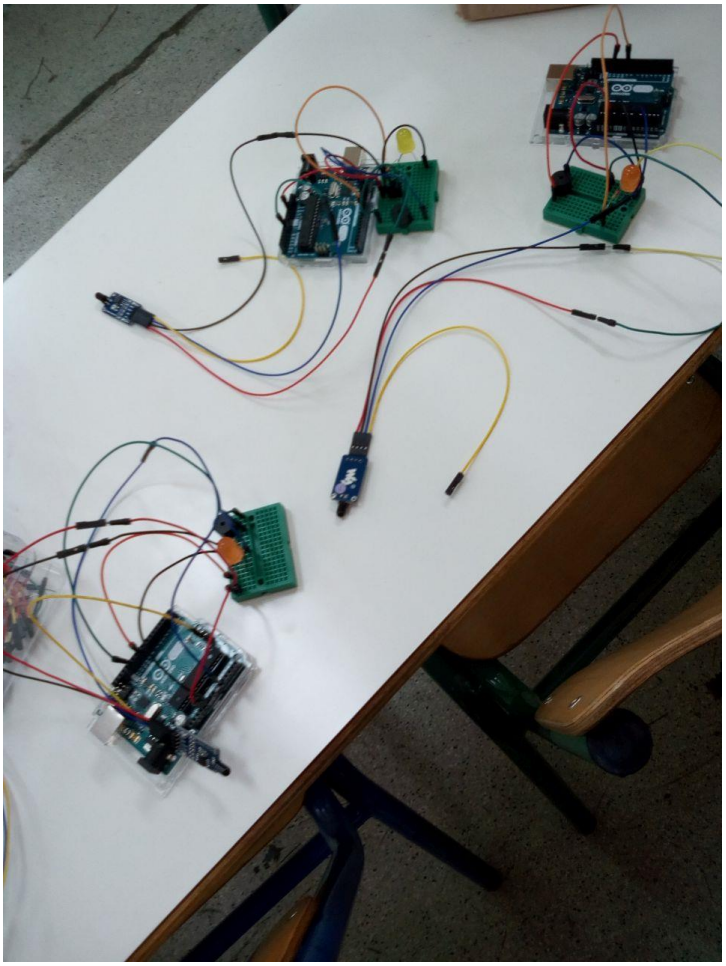
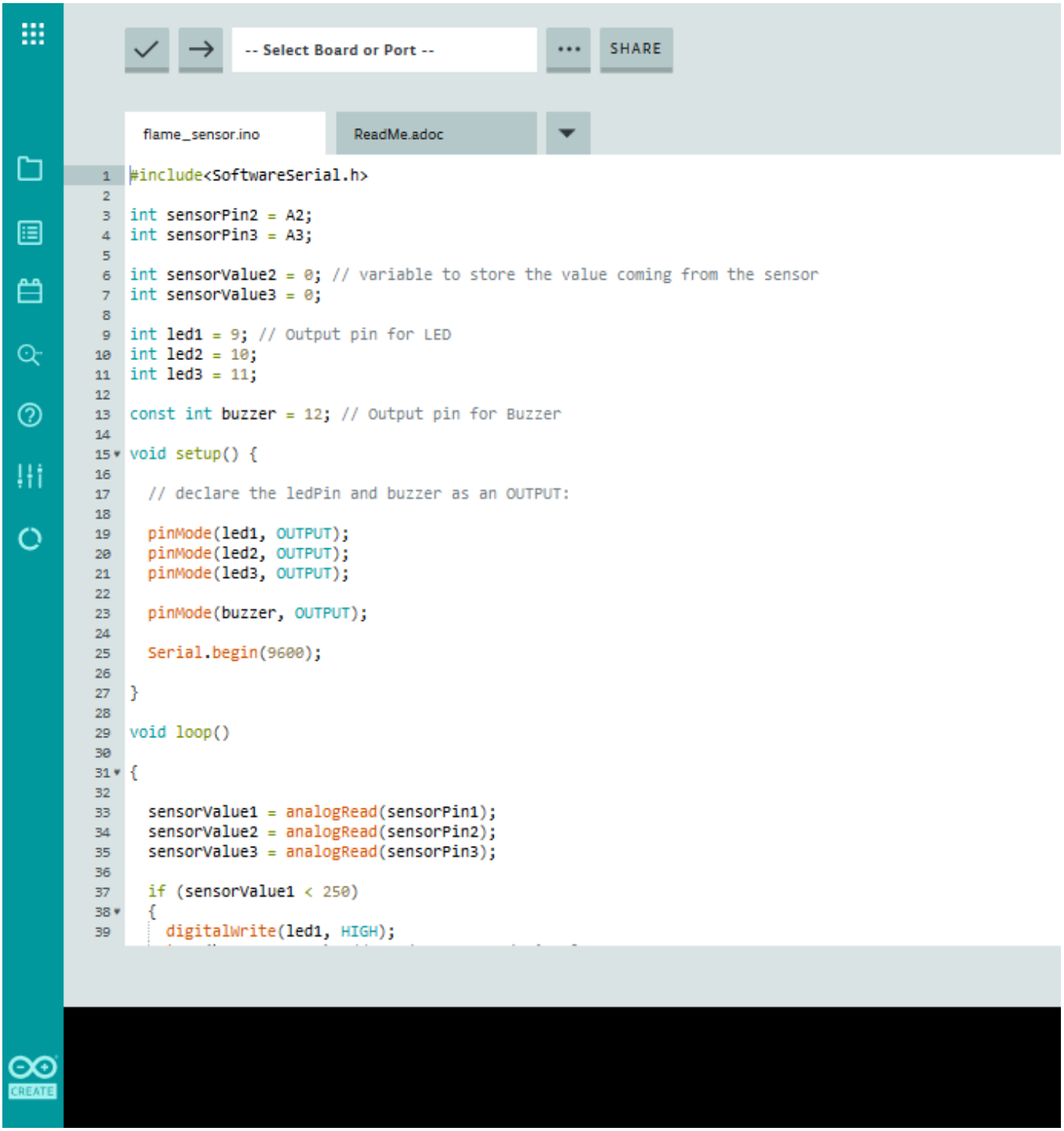
We are the makers – IoT Learning Scenario

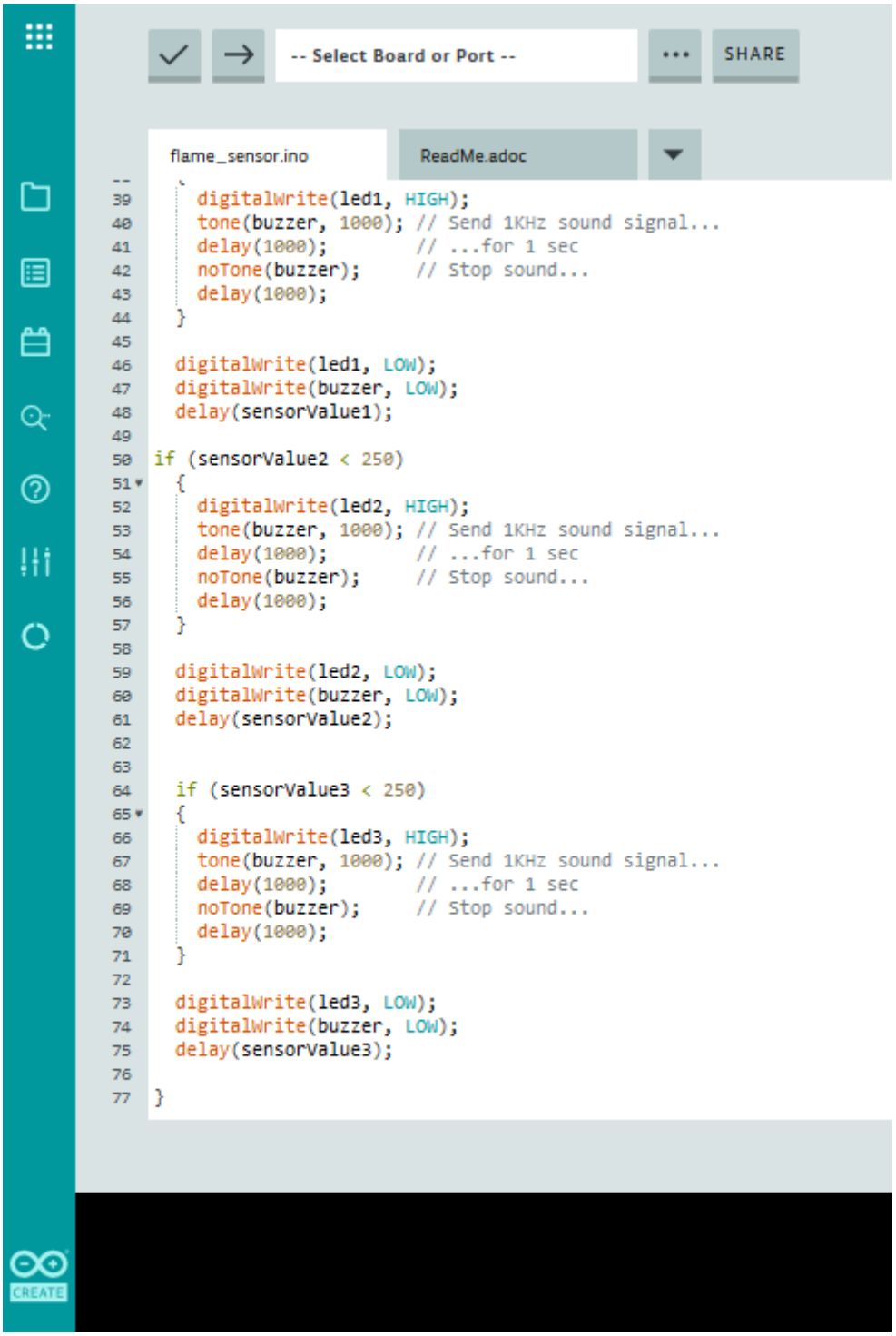
1. Title of the Scenario	***Fire management system in the forest***
2. Target group	This scenario can be fit with ages: 12-15 years old
3. Duration	This scenario can be implemented in the classroom in 3 sessions (2-3 hours each)
4. Learning needs which are covered through the exercise	- Understanding the value of natural environment, - Highlighting traditional and modern methods of fire prevention, - Understanding basic Arduino theory (modules, add-ons, platform, programming language, etc.) - Understanding (roughly) how sensors operate - Overview of current fire prevention and fire management systems
5. Expected learning outcomes	- Realizing the importance of retaining and preserving nature - Building basic Arduino circuits - Effectively using Snap for basic projects - Getting familiar with block-based (Snap4Arduino) and/or text-based (Arduino IDE) coding - Effectively using and programming with sensors
6. Methodologies	**Lesson 1: Welcome lesson** - Team formation - Small Introduction/Presentation: Impact of natural disasters (from fire), Aims of project, Explanation Expected outcome - Arduino: First familiarization **Lesson 2:** - Arduino circuit (boards, sensors, etc.) - Snap 4 Arduino: Commands, compilation, execution - Arduino code: some commands **Lesson 3:** - Programming to implement the task (Snap4Arduino, code)
7. Place / Environment	Computer Lab
8. Tools / Materials / Resources	Projector, Audio system, Arduino kits, sensors

9. Step by step description of the activity / content	**Lesson 1** 1. Small team formation activity – team bonding 2. Show a short video about fires in forests (to involve students and share some information). 3. Presentation of what has to be done for the project 4. Introduction to Arduino – small demonstration (video or live) **Lesson 2** 1. Building/Setting up the electronic circuit (Arduino/ breadboard/ sensors/ resistors etc.) 2. Demonstration of Snap4Arduino – familiarization project (blinking LED, etc.) 3. Demonstration of Arduino coding platform – short – familiarization project by students **Lesson 3** 1. Snap4Arduino and/or coding platform to implement project (fire management system) 2. Testing the solutions 3. Discussion – conclusions – How realistic is such a project?
10. Feedback	Lesson 1: Through discussion, teacher can determine if students have realized the importance of natural environment. Lesson 2: The amount of the small projects' success (construction and programming) Lesson 3: How close is every team's project to the project goal
11. Assessment & Evaluation	Lesson 1: Short questionnaire for fires in forests Lesson 2: evaluation of the team group Lesson 3: evaluation of the final project






-- Select Board or Port --
SHARE
flame_sensor.ino
ReadMe.adoc
#include<SoftwareSerial.h>
int sensorPin2 = A2;
int sensorPin3 = A3;
int sensorValue2 = 0; // variable to store the value coming from the sensor
int sensorValue3 = 0;
int led1 = 9; // Output pin for LED
int led2 = 10;
int led3 = 11;
const int buzzer = 12; // Output pin for Buzzer
void setup() {
// declare the ledPin and buzzer as an OUTPUT:
pinMode(led1, OUTPUT);
pinMode(led2, OUTPUT);
pinMode(led3, OUTPUT);
pinMode(buzzer, OUTPUT);
Serial.begin(9600);
}
void loop()
{
sensorValue1 = analogRead(sensorPin1);
sensorValue2 = analogRead(sensorPin2);
sensorValue3 = analogRead(sensorPin3);
if (sensorValue1 < 250)
{
digitalWrite(led1, HIGH);
CREATE




```
  digitalWrite(led1, HIGH);
  tone(buzzer, 1000); // Send 1KHz sound signal...
  delay(1000);        // ...for 1 sec
  noTone(buzzer);     // Stop sound...
  delay(1000);
 }

 digitalWrite(led1, LOW);
 digitalWrite(buzzer, LOW);
 delay(sensorValue1);

if (sensorValue2 < 250)
 {
  digitalWrite(led2, HIGH);
  tone(buzzer, 1000); // Send 1KHz sound signal...
  delay(1000);        // ...for 1 sec
  noTone(buzzer);     // Stop sound...
  delay(1000);
 }

 digitalWrite(led2, LOW);
 digitalWrite(buzzer, LOW);
 delay(sensorValue2);


 if (sensorValue3 < 250)
 {
  digitalWrite(led3, HIGH);
  tone(buzzer, 1000); // Send 1KHz sound signal...
  delay(1000);        // ...for 1 sec
  noTone(buzzer);     // Stop sound...
  delay(1000);
 }

 digitalWrite(led3, LOW);
 digitalWrite(buzzer, LOW);
 delay(sensorValue3);

}
```