
Globalcode

IoT Surfboard API for Arduino

www.globalcode.com.br/surfboard/en

Files for this class

https://portalaluno.toolscloud.net/redmine/projects/iotsurfboard/files

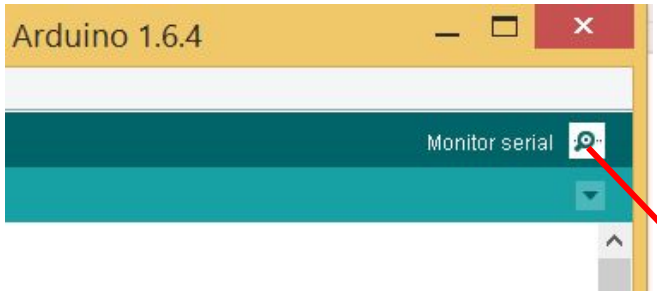
- ☐ presentation: IoT_Surfing_Class_6_en.pdf
- ☐ IoT Surfboard Libraries for Arduino: Arduino.zip

Arduino programming on the IoT Surfboard

- We can upload regular arduino sketches to the IoT Surfboard without the IoT Surfboard API
- The IoT Surfboard API implements the IoT Surfing Protocol (the ability to interact with the board via serial monitor using the surfing protocol) and the multimode capability to upload several sketches to your board.

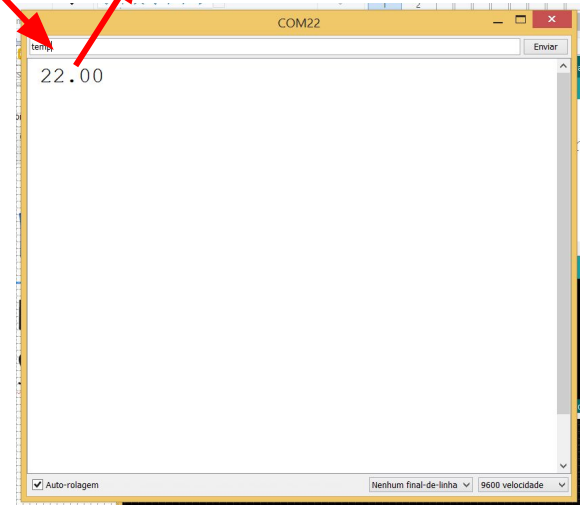
If you upload a sketch like this...

```
void setup() {
  pinMode(10, OUTPUT);
}

void loop() {
  // put your main code here, to run repeatedly:
  digitalWrite(10, HIGH);
  delay(1000);
  digitalWrite(10, LOW);
  delay(1000);

}
```



It will not work

temp [enter]



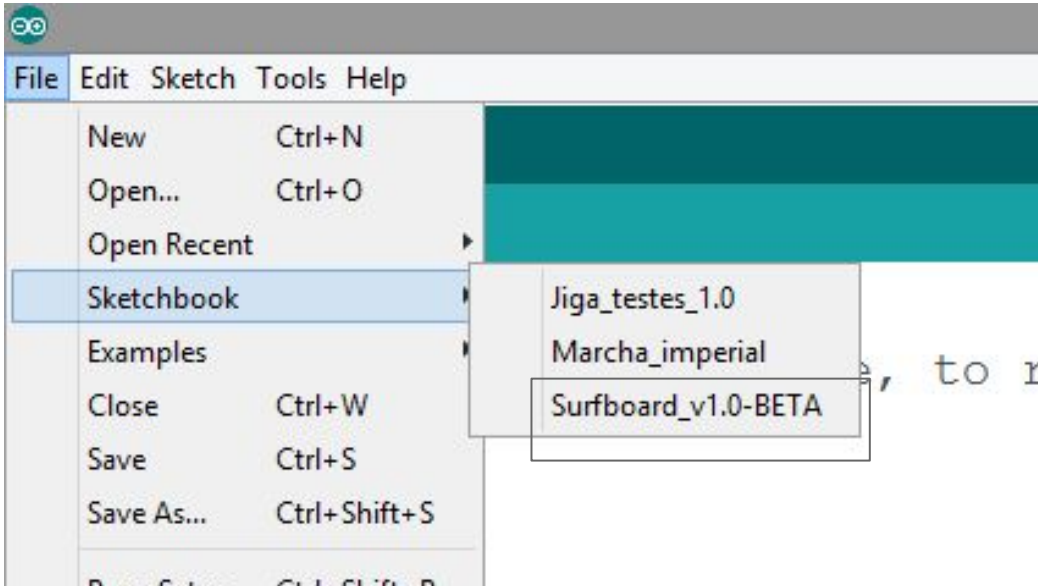
Best practices for programming your surfboard

- We recommend to add your functionality extending the firmware instead of replacing
- You can add a new mode to the Iot surfboard
- In this way you will be able to use the IoT Surfboard protocol

Adding a new mode to the IoT Surfboard

1. Open the Surfboard firmware in the Arduino IDE
2. Create a new function that returns void with no arguments
3. Declare your function as a new mode in the setup ()
4. Update the firmware
5. Press the action button on your surfboard until you listen the number of beeps equivalent to the new mode you have added.

1. Open the Surfboard firmware in the Arduino IDE



2. Create a new function that returns void with no arguments

```
void meuPiscaLed() {

   //seu código!

}
```

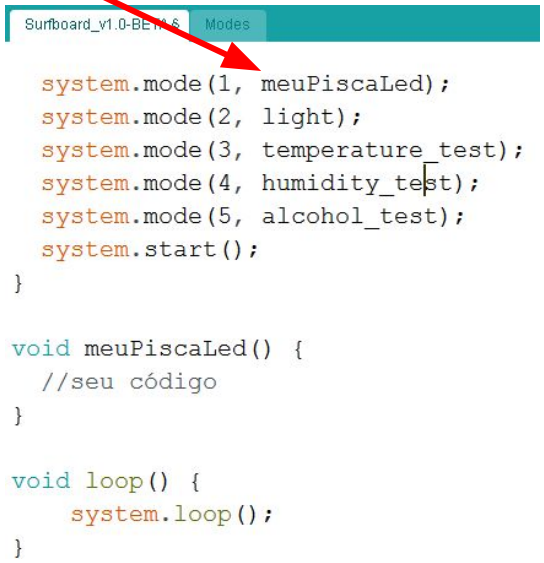
Surfboard_v1.0-BETA§ | Modes

```
system.mode(1, meuPiscaLed);
system.mode(2, light);
system.mode(3, temperature_test);
system.mode(4, humidity_test);
system.mode(5, alcohol_test);
system.start();
}

void meuPiscaLed() {
  //seu código
}

void loop() {
    system.loop();
}
```

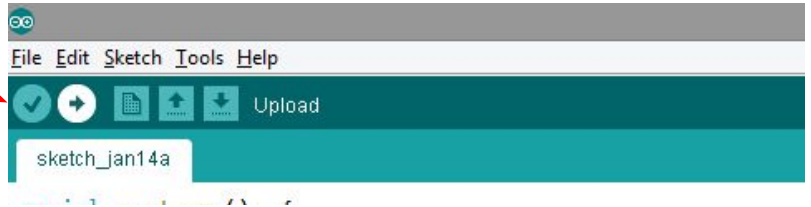
3. Declare your function as a new mode in the setup ()

```
system.mode(1, meuPiscaLed);
system.mode(2, light);
system.mode(3, temperature_test);
system.mode(4, humidity_test);
system.mode(5, alcohol_test);
system.start();
```

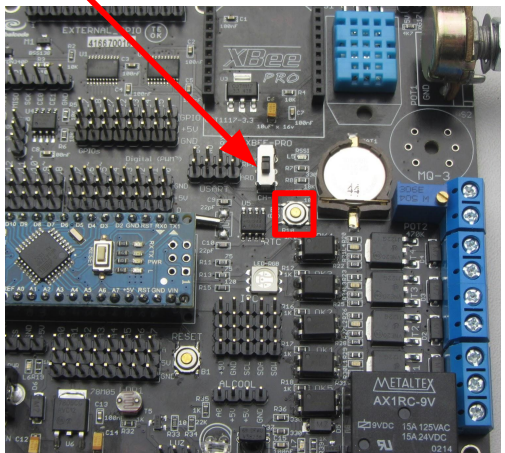
(In this case we replaced the original mode 1)



4. Upload the firmware



5. Press the action button on your surfboard until you listen the number of beeps equivalent to the new mode you have added.



The IoT Surfboard API for Arduino

- We developed an API that facilitates the use of the components of your IoT Surfboard
- Your code becomes more clear

```
board.speaker(1); //turn on the speaker!
board.temperature(); //gets the temperature
```

Blinking a LED Arduino vs. Surfboard

```
void meuPiscaLed() {
  digitalWrite(10, HIGH);
  delay(1000);
  digitalWrite(10, LOW);
  delay(1000);
}
```

If **Action Button is pressed while the delay method is executing the action associated to the button will not be executed**

```
void meuPiscaLed() {
  board.red(255);
  system.wait(1000);
  board.red(0);
  system.wait(1000);
}
```

If **Action Button is pressed while the wait method is executing the action associated to the button will be executed anyway**

IoT Surfboard API for ARduino - Main Functions

- More than 15 functions to facilitate access to the sensors and actuators of a surfboard!

```
// Controls the servo
board.servo(255);
//gets the value from Humidity sensor
board.humidity();
```

Function	Returns	Exemple of use
temperature()	Temperatura Celsius	float temp = board.temperature();
temperatureC()	Temperature Celsius	float temp = board.temperatureC();
temperatureF()	Temperature fahrenheit	float temp = board.temperatureF();
humidity()	Percentage of Humidity	float humidity = board.humidity();
alcohol()	Value from 0 to 1023	int alcohol = board.alcohol();
light()	Value from 0 to 1023	int light = board.light();
potentiometer()	Valor 0-1023 do sensor	int pot = board.**potentiometer**();

FUNCTION	RETURNS	EXAMPLE OF USE
relay(boolean ligar)	void	board.relay(true); board.relay(false);
speaker(boolean ligar)	void	board.speaker(true); board.speaker(false);
red(int valuePWM)	void	board.red(100); board.red(0);
green(int valuePWM)	void	board.green(100); board.green(0);
blue(int valuePWM)	void	board.blue(100); board.blue(0);
rgb(int r, int g, int b)	void	board.rgb(100,0,200);

Function	Returns	Example of use
servo(int posicao)	void	board.servo(90);
distance()	The value of the distance sensor in Centimeters	int distance= board.distance();
printJSON()	void	board.printJSON(“key”, “value”);

LIVE DEMOS

Summary

- You learned how to create and add a new mode to your IoT Surfboard
- The APIs let use access all the IoT Surfboard components in a much easier way

IoT Surfboard API = The easy even easier