

# **Desenvolvimento de aplicativo de controle automatizado no processo de produção de cerveja artesanal**

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**Universidade Regional Integrada do Alto Uruguai e das Missões -  
Campus Erechim**

**Jackson Felipe Magnabosco**

**Orientador: Neilor Tonin**

# Só é sexta-feira após o primeiro copo de cerveja

(Tenório Cavalcanti)





# Introdução

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## **Era da Conectividade.**

- **Grandes desafios.**
- **Soluções inovadoras para agregar bons resultados.**
- **Tornar a execução de tarefas da rotina de fabricação de cerveja mais eficientes.**



# Introdução

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**Tecnologia a nosso favor.**

- **Técnnologia e o cotidiano.**
- **Inovação constante aplicada às cervejarias.**
- **Crescimento desejado.**



# Introdução

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**Ranking mundial de produção de cerveja artesanal.**

- **Aumento da demanda do produto.**
- **Maior movimentação financeira no Brasil.**
- **Faturamento de 100 bilhões anual.**



# Introdução

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**Auxiliar o pequeno produtor.**

- **Entender a necessidade da automação.**
- **Tornar possível desde a criação da receita até a venda do produto final pelo aplicativo.**



# Introdução

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**Aplicação de tecnologias modernas.**

- **Abordagem de desenvolvimento híbrido.**
- **Vantagem de executar o aplicativo de forma nativa e podendo utilizar o aplicativo sem conexão à internet.**



# Materials

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- **Hardware**

**Sensor DS18B20**

**Módulo ESP8266**

**BreadBoard**

- **Software**

**Flutter**

**Firebase**

**OneSignal**





# Flutter

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Google



Dart

HYBRID APP

# Flutter

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**Multiplataforma.**

**Fácil aprendizado.**

*Just in Time.*

**Performance e limitação.**

*Widgets* (componentes).





# Flutter


---

## HTML/CSS

```
<div class = "greybox" >  
  Lorem ipsum  
</div>  
  
.greybox {  
  background-color: #e0e0e0;  
  width: 320px;  
  height: 240px;  
  font: 900 24px Georgia;  
}
```

## Flutter

```
var container = Container(  
  child: Text(  
    "Lorem ipsum",  
    style: TextStyle(  
      fontSize: 24.0  
      fontWeight: FontWeight.w900,  
      fontFamily: "Georgio",  
    ),  
  ),  
  width: 320.0,  
  height: 240.0,  
  color: Colors.grey[300]  
);
```



# Firestore

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Firestore



# Firestore

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**Orientado a documentos.**

**Padrão JSON.**

**Melhor performance com grandes volumes de dados.**

**Linguagem de consulta simples.**



# Firebase

The screenshot displays the Firebase console interface. The breadcrumb navigation at the top shows the path: Home > places > gwRDFIEdlCEBtruTLZIN. The interface is divided into three main sections:

- Left Panel (Database Structure):** Shows a tree view of the database. The 'places' collection is selected and highlighted. Other collections visible include 'coupons', 'orders', 'products', 'temperature', and 'users'.
- Middle Panel (Collection Overview):** Displays the 'places' collection. It includes a '+ Adicionar documento' button and a list of documents. The document 'gwRDFIEdlCEBtruTLZIN' is selected and highlighted.
- Right Panel (Document Details):** Shows the details of the selected document. It includes a '+ Adicionar campo' button and a list of fields with their values:
  - address: "Rua Comendador Caetano Munareto, 110"
  - cep: "99711278"
  - city: "Erechim"
  - lat: -27.6357597
  - long: -52.2812656
  - phone: "(54)984354004"
  - title: "Cervejaria Velha Guarda"



# OneSignal

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# OneSignal

# OneSignal

---

**Impulsionar push móvel.  
Integração com Flutter e  
Firebase.**







## New Message

### 1. Audience

- ☒ Send to Subscribed Users  
☐ Send to Particular Segment(s)

### 2. Message

[Add Languages](#)


TITLE

Ultima Stout !

MESSAGE

A cerveja stout está prestes a acabar

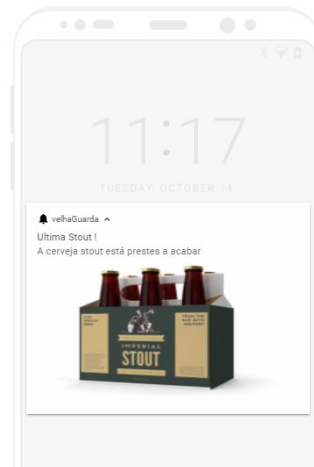
IMAGE

 [X](#)

[+ Upload](#)

LAUNCH URL

http://bit.ly/abc



# OneSignal

OneSignal | velhaGuarda ▾

Dashboard

Messages

Audience

Delivery

Settings

Messages

In-App

A/B Tests

Templates







Automated

## Messages

+ New Push ▾

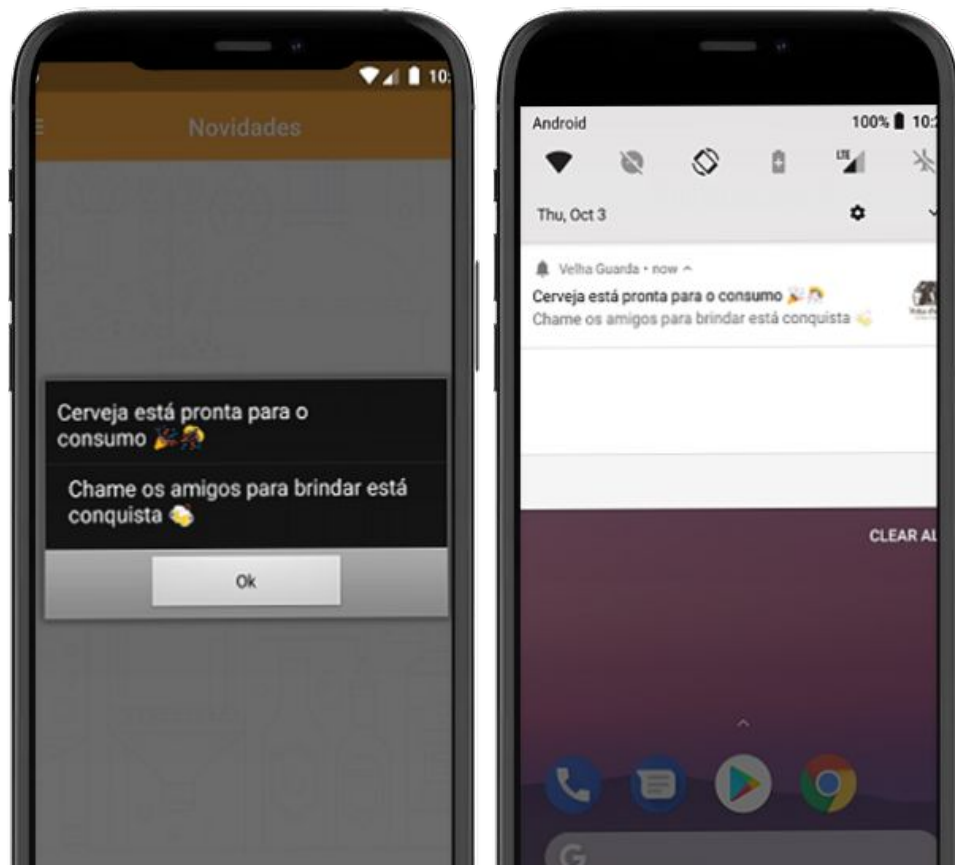
Messages ▾

[See All Messages](#)

	<b>A cerveja stout está prestes a acabar</b> <span>Scheduled</span> 11/06/20, 4:14:32 pm	0 Sent	N/A Clicked	
	<b>Chame os amigos para brindar está conquista 🥳</b> <span>Delivered</span> 10/03/19, 11:27:00 am	2 Sent	50.00 % Clicked	
	<b>Chame os amigos para brindar está conquista 🥳</b> <span>Delivered</span> 10/03/19, 11:26:06 am	2 Sent	50.00 % Clicked	

Messages sent through our API or WordPress Plugin can be found in Delivery.

# OneSignal



# MÓDULO WIFI ESP8266 NODEMCU V3 CP2102 ESP-12E

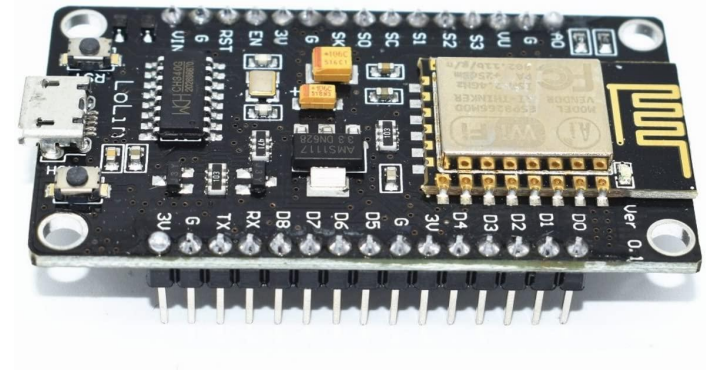


# MÓDULO WIFI ESP8266 NODEMCU V3 CP2102 ESP-12E

Placa de desenvolvimento. 🛠️

Esp8266 📶

Potencial maior que do  
Arduino.

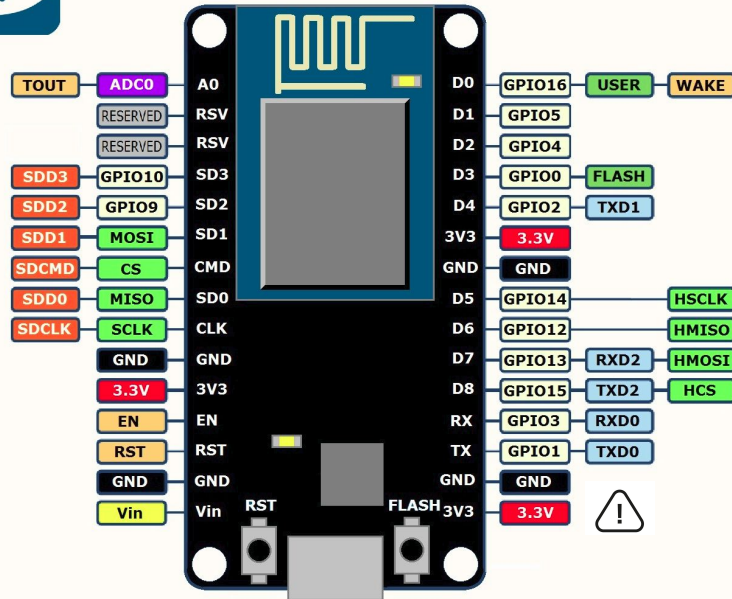


# MÓDULO WIFI ESP8266 NODEMCU V3 CP2102 ESP-12E



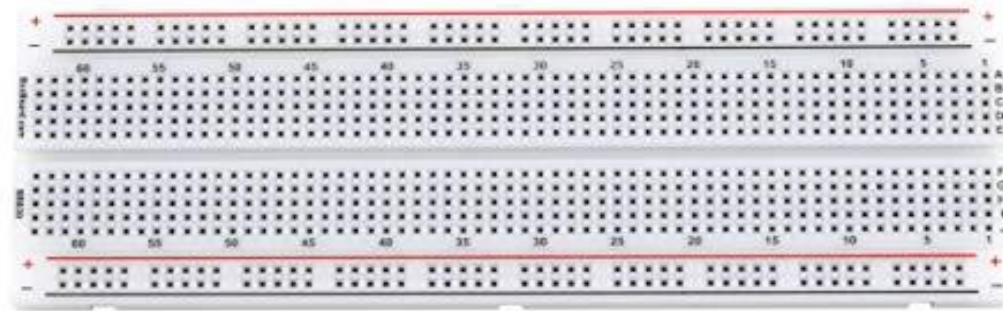
## NodeMCU ESP-12 development kit V1.0

### PIN DEFINITION



# BreadBoard

Alojar e interconectar componentes



# Sensor DS18B20

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**DALLAS**  
Instruments



# Sensor DS18B20

---

**Termometro digital.**

**Calcula temperatura de  $-55^{\circ}\text{C}$  até  $125^{\circ}\text{C}$ .**

**Ótima compatibilidade com o módulo Esp8266.**

**Utiliza o protocolo One Wire.**



# Produção



# Automação



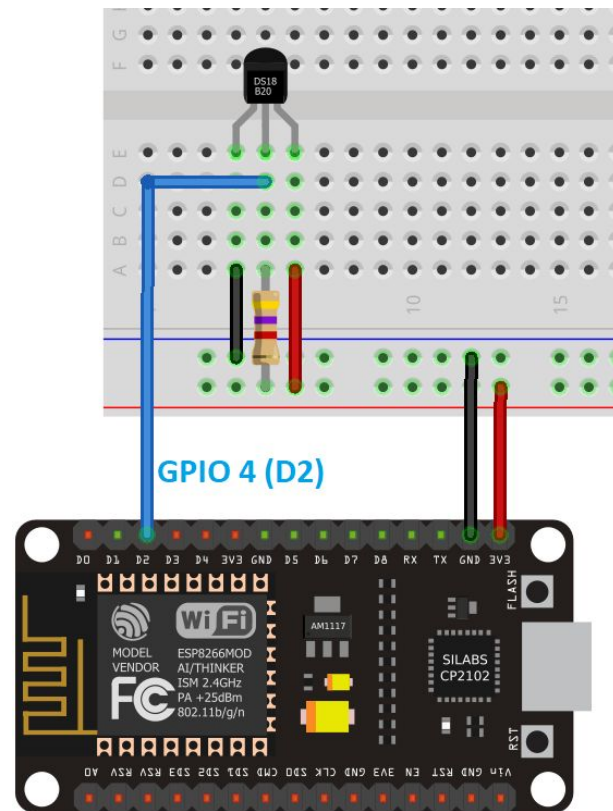
# Automação

O sensor dispõe de três fios.

**Preto** que vai ser unido ao GND.

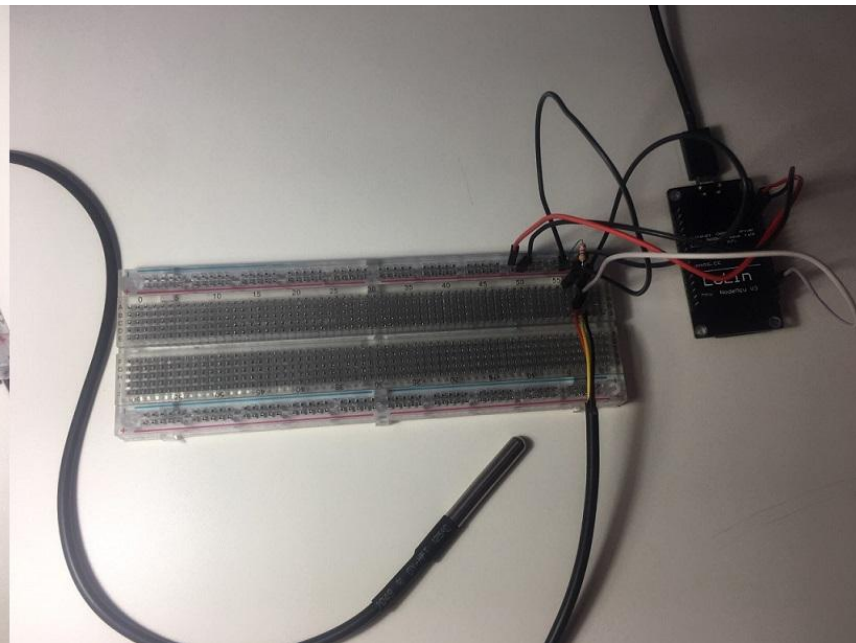
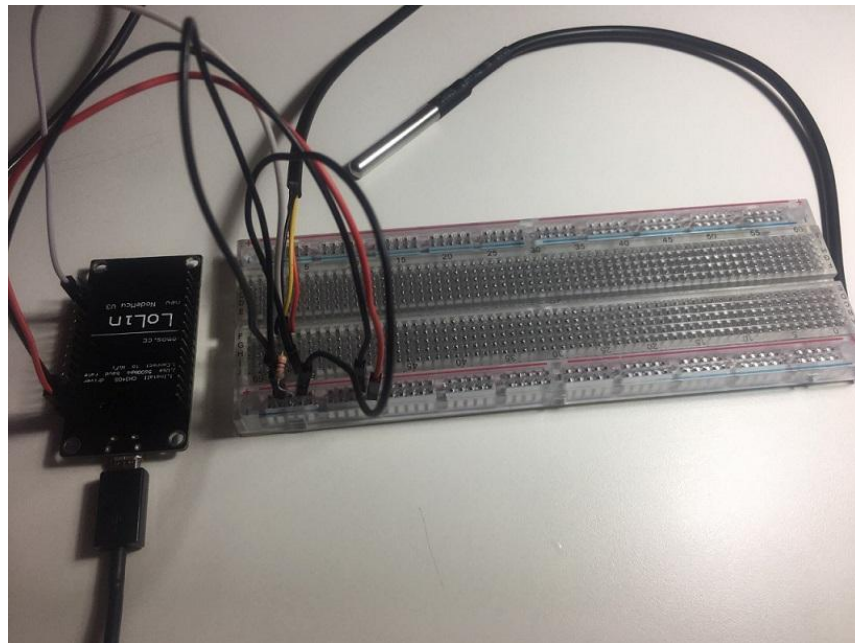
**Vermelho** que vai ser unido ao 3v3.

**Azul** que vai ser unido ao pino digital D2.



Resistor  
4.7k  
Ohms

# Automação





# Automação



```
1 #include <ESP8266WebServer.h>
2 #include <OneWire.h>
3 #include <DallasTemperature.h>
4 #include <FirebaseArduino.h>
5
6 const int oneWireBus = 4;
7 OneWire oneWire(oneWireBus);
8 DallasTemperature sensors(&oneWire);
9 #define FIREBASE_HOST "https://velha-guarda.firebaseio.com/"
10 #define FIREBASE_AUTH "SB4ahzKID0hbPgTtKp7PMQGH10r11"
11
12 float tempSensor1;
13
14 uint8_t sensor1[8] = { 0x28, 0xEE, 0xD5, 0x64, 0x1A, 0x16, 0x02, 0xEC };
15 /*Put your SSID & Password*/
16 const char* ssid = "Nome da rede Wifi"; // Enter SSID here
17 const char* password = "Senha da rede WIFI"; //Enter Password here
18
19 ESP8266WebServer server(80);
20
21 void setup() {
22     // Start the Serial Monitor
23     Serial.begin(115200);
24     // Start the DS18B20 sensor
25     sensors.begin();
26
27     Serial.println("Connecting to ");
28     Serial.println(ssid);
29
30     //connect to your local wi-fi network
31     WiFi.begin(ssid, password);
32 }
```

# Automação

```
33 //check wi-fi is connected to wi-fi network
34 while (WiFi.status() != WL_CONNECTED) {
35   delay(1000);
36   Serial.print(".");
37 }
38 Serial.println("");
39 Serial.println("WiFi connected..!");
40 Serial.print("Got IP: "); Serial.println(WiFi.localIP());
41
42 server.on("/", handle_OnConnect);
43 server.onNotFound(handle_NotFound);
44
45 Firebase.begin(FIREBASE_HOST, FIREBASE_AUTH);
46 server.begin();
47 Serial.println("HTTP server started");
48 }
49
50 void loop() {
51   server.handleClient();
52   sensors.requestTemperatures();
53   float temperatureC = sensors.getTempCByIndex(0);
54   Serial.print(Firebase.getString("situation") + "\n");
55   analogWrite(temperatureC, Firebase.getString("situation").toInt());
56   Serial.print(temperatureC);
57   Serial.println("°C");
58   delay(5000);
59 }
60
```

# Automação

```
61 void handle_OnConnect() {
62     sensors.requestTemperatures();
63     tempSensor1 = sensors.getTempCByIndex(0); // Gets the values of the
        temperature
64     server.send(200, "text/html", SendHTML(tempSensor1));
65 }
66
67 void handle_NotFound(){
68     server.send(404, "text/plain", "Not found");
69 }
70
71 String SendHTML(float tempSensor1){
72     String ptr = "<!DOCTYPE html>";
73     ptr += "<html>";
74     ptr += "<head>";
75     ptr += "<title>Monitor de temperatura</title>";
76     ptr += "<meta charset='UTF-8' />";
77     ptr += "<meta name='viewport' content='width=device-width, initial-scale
        =1.0'>";
78     ptr += "<link href='https://fonts.googleapis.com/css?family=Open+Sans
        :300,400,600' rel='stylesheet'>";
79     ptr += "<link rel='icon' href='favicon.ico' type='image/x-icon'>";
80     ptr += "<style>";
81     ptr += "html { font-family: 'Open Sans', sans-serif; display: block;
        margin: 0px auto; text-align: center; color: #444444; }";
82     ptr += "body { margin-top: 50px; } ";
83     ptr += "h1 { margin: 50px auto 30px; } ";
84     ptr += ".side-by-side { display: table-cell; vertical-align: middle
        ; position: relative; }";
85     ptr += ".text { font-weight: 600; font-size: 19px; width: 200px; }";
86     ptr += ".temperature { font-weight: 300; font-size: 50px; padding-right:
        15px; }";
```



# Automação

```
87 ptr += ".living-room .temperature{color: #F29C1F;}";
88 ptr += ".superscript{font-size: 17px;font-weight: 600;position: absolute
;right: -5px;top: 15px;}";
89 ptr += ".data{padding: 10px;}";
90 ptr += ".container{display: table;margin: 0 auto;}";
91 ptr += ".icon{width:82px}";
92 ptr += "</style>";
93 ptr += "</head>";
94 ptr += "<body>";
95 ptr += "<h1>Monitor de temperatura</h1>";
96 ptr += "<div class='container'>";
97 ptr += "<div class='data living-room'>";
98 ptr += "<div class='side-by-side icon'>";
99 ptr += "<svg xmlns='http://www.w3.org/2000/svg' viewBox='0 0 297 297'>";
100 ptr += "<circle cx='148.5' cy='148.5' r='148.5' fill='#c63c22'/>";
101 ptr += "<path d='M296.703 139.216l-96.66-96.678-104.931 199.82 54.626 54
.626C231.181 296.318 297 230.1 297 148.5c0-3.119-.108-6.212-.297-9
.284z' fill='#9e231d'/>";
102 ptr += "<path d='M207.444 99.107c9.143 0 16.556-7.412 16.556-16.556s-7
.412-16.556-16.556-16.556c-.233 0-.459.025-.689.035.446-1.863.689-3
.805.689-5.805 0-13.715-11.118-24.833-24.833-24.833-8.456 0-15.919
4.23-20.404 10.685-2.92-2.582-6.747-4.163-10.951-4.163a16.462 16
.462 0 00-9.793 3.228c-4.538-5.926-11.683-9.751-19.724-9.751-10.476
0-19.43 6.491-23.079 15.667a16.457 16.457 0 00-7.106-1.62C82.412 49
.44 75 56.852 75 65.996s7.412 16.556 16.556 16.556l115.888 16.555z'
fill='#fff'/>";
```

# Automação

```
103 ptr += "<path d='M207.444 65.996c-.233 0-.459.025-.689.035.446-1.863.689  
-3.805.689-5.804 0-13.715-11.118-24.833-24.833-24.833-8.455 0-15  
.919 4.23-20.404 10.685-2.92-2.583-6.747-4.163-10.951-4.163-.882 0  
-1.745.073-2.589.208V90.71158.777 8.397c9.143 0 16.556-7.412 16.556  
-16.556s-7.412-16.555-16.556-16.555z' fill='#d0d5d9'/><path d='M238  
.282 115.5H206.25v-33H90.75v148.792c0 8.952 7.257 16.208 16.208 16  
.208h83.083c8.952 0 16.208-7.257 16.208-16.208V198h32.032a9.218 9  
.218 0 009.218-9.218v-64.064a9.216 9.216 0 00-9.217-9.218zm-2.429  
61.532a6.718 6.718 0 01-6.718 6.718h-19.488v-54h19.488a6.718 6.718  
0 016.718 6.718v40.564z' fill='#f0deb4'/>";  
104 ptr += "<path d='M238.282 115.5H206.25v-33h-57.583v165h41.375c8.952 0 16  
.208-7.257 16.208-16.208V198h32.032a9.218 9.218 0 009.218-9.218v-64  
.064a9.218 9.218 0 00-9.218-9.218zm-2.429 61.532a6.718 6.718 0 01-6  
.718 6.718h-19.488v-54h19.488a6.718 6.718 0 016.718 6.718v40.564z'  
fill='#d8c49c'/><path d='M111.814 237.857h73.372c7.905 0 14.314-6  
.409 14.314-14.314v-92.4h-102v92.4c0 7.906 6.409 14.314 14.314 14  
.314z' fill='#ffa800'/>";  
105 ptr += "<path d='M148.667 131.143v106.714h36.519c7.905 0 14.314-6.409 14  
.314-14.314v-92.4h-50.833z' fill='#c63c22'/></svg>";  
106 ptr += "</div>";  
107 ptr += "<div class='side-by-side text'>Rampas de temperatura</div>";  
108 ptr += "<div class='side-by-side temperature'>";  
109 ptr += (int)tempSensor1;  
110 ptr += "<meta http-equiv='refresh' content='2'>";  
111 ptr += "<span class='superscript'>&deg;C</span></div>";  
112 ptr += "</div>";  
113 ptr += "</div>";  
114 ptr += "</body>";  
115 ptr += "</html>";  
116 return ptr;  
117 }
```

# Automação



The image shows a screenshot of a terminal window titled "COM4". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. Below the title bar is a text input field and an "Enviar" (Send) button. The main area of the window displays the following text:

```
....  
WiFi connected..!  
Got IP: 192.168.0.36  
HTTP server started  
77.00°C  
77.13°C  
77.13°C  
77.00°C  
76.88°C  
76.63°C  
76.50°C  
76.31°C  
75.94°C  
75.63°C
```

At the bottom of the window, there is a status bar with several controls:

- ☒ Auto-rolagem
- ☐ Show timestamp
- Nova-linha (dropdown menu)
- 115200 velocidade (dropdown menu)
- Deleta a saída

# Automação

← → × ⚠ Não seguro | 192.168.0.36

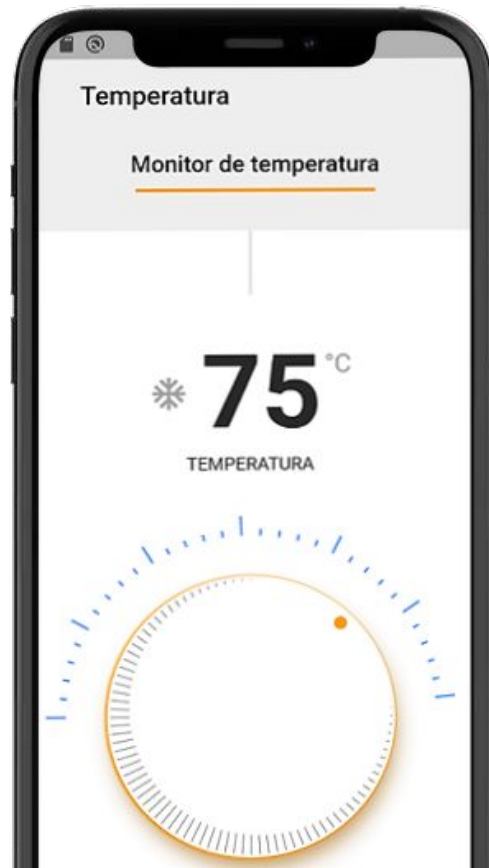
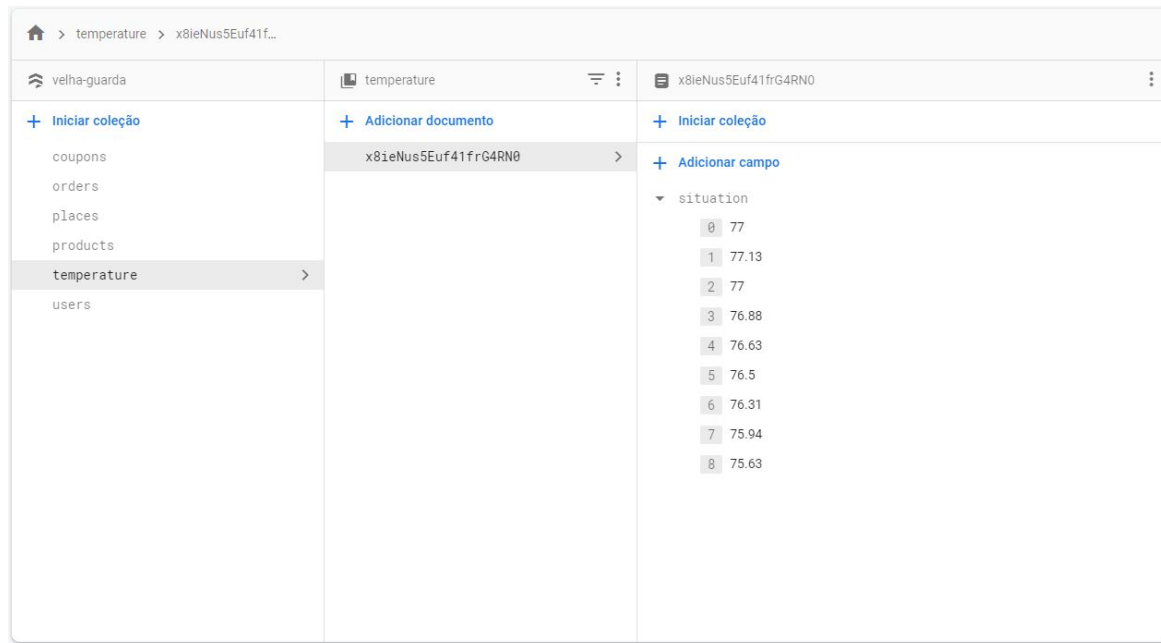
## Monitor de temperatura



Rampas de  
temperatura

75°C

# Aplicativo



# Demonstração

---



# Animações

← → ↺ rive.app/a/jacksonn123/files/recent/all



Jackson Felipe Magnabosco

@jacksonn123

<https://jacksonn455.github.io/>

<https://jacksonn455.github.io/>

Public Files Following Followers Likes



products

Jackson Felipe Magnabosco

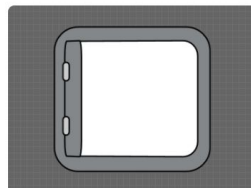
0 0 0 11



carteira

Jackson Felipe Magnabosco

0 0 0 15



door

Jackson Felipe Magnabosco

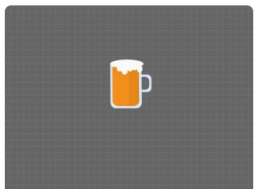
0 0 0 45



beer8

Jackson Felipe Magnabosco

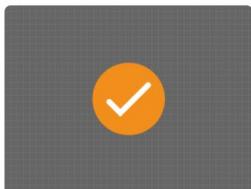
2 0 0 142



beer3

Jackson Felipe Magnabosco

0 0 0 66



ok8

Jackson Felipe Magnabosco

0 0 0 22

beer8

DESIGN

ANIMATE

HIERARCHY

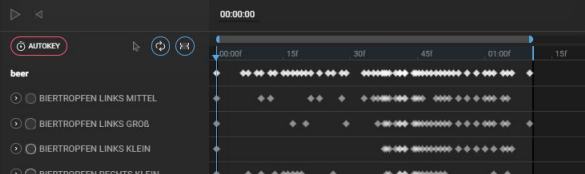
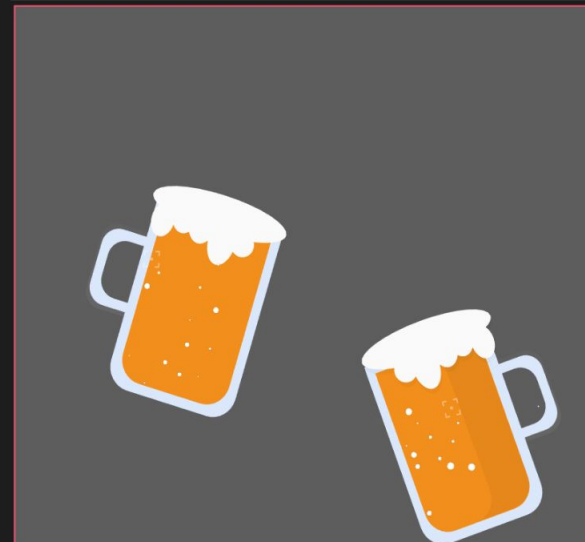
DRAW ORDER

Artboard

- BIERTROPFEN LINKS MITTEL
- BIERTROPFEN LINKS GROß
- BIERTROPFEN LINKS KLEIN
- BIERTROPFEN RECHTS KLEIN
- BIERTROPFEN RECHTS GROß
- BIERTROPFEN RECHTS MITTEL
- BIER SCHATTEN GROß
- Group
- Gruppe 245
- Group
- Gruppe 245
- Ellipse

ANIMATIONS

beer





# Produto Rótulo

## *Belgian Dark Strong Ale*

### *Ingredientes*

Água  
malte de cevada  
lúpulo  
levedura

### *Vol / alc*

600 ml • 12%

### *Fabricado*

Julho de 2020

### *Validade*

Dezembro de 2021

### *Fabricado em Erechim*

#### ALÉRGICOS:

CONTÉM DERIVADOS DE  
CEVADA, PODE CONTER  
TRIGO, AVEIA E CENTEIO

CONSERVAR AO ABRIGO DO SOL  
EM LOCAL SECO E AREJADO  
NÃO CONGELAR



## Velha Guarda





# Produto Pasteurizado

---



# Kit Produto Final





# Conclusão

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**Acervo tecnológico.**

**Vantagens do desenvolvimento híbrido.**

**Aprofundamento de conhecimento em Flutter.**



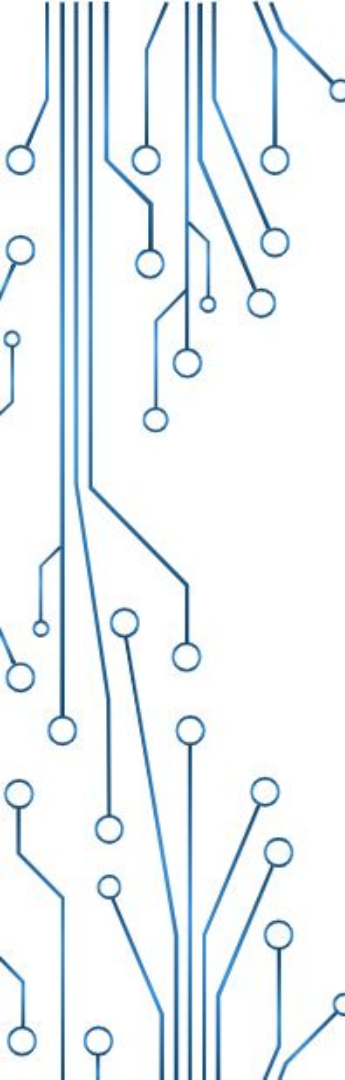
# Trabalhos Futuros

---

**Fluxo de caixa completo com parcelamento e lançamento de nota fiscal eletrônica.**

**Implementar mais sensores.**

**Publicar na App Store e na Google Play.**



# **Desenvolvimento de aplicativo de controle automatizado no processo de produção de cerveja artesanal**

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