

App Inventor

Software aplicativo para Android

Veremos

1. História
2. Funcionamento
3. Ferramentas
4. Exemplos práticos
5. Integração com ThingSpeak
6. ThingView

1. História



MIT App Inventor, também conhecido como App Inventor for Android, é **uma aplicação código aberto** originalmente criada pela **Google**, e atualmente mantida pelo **Massachusetts Institute of Technology (MIT)**.

Ele permite que os recém-chegados à programação de computador criem aplicativos de software para o **sistema operacional Android**. Ele usa uma **interface gráfica**, muito semelhante ao do zero e da interface do usuário StarLogo TNG, que permite aos usuários **arrastar e soltar** objetos visuais para criar um aplicativo que pode ser executado em dispositivos Android.

1. História

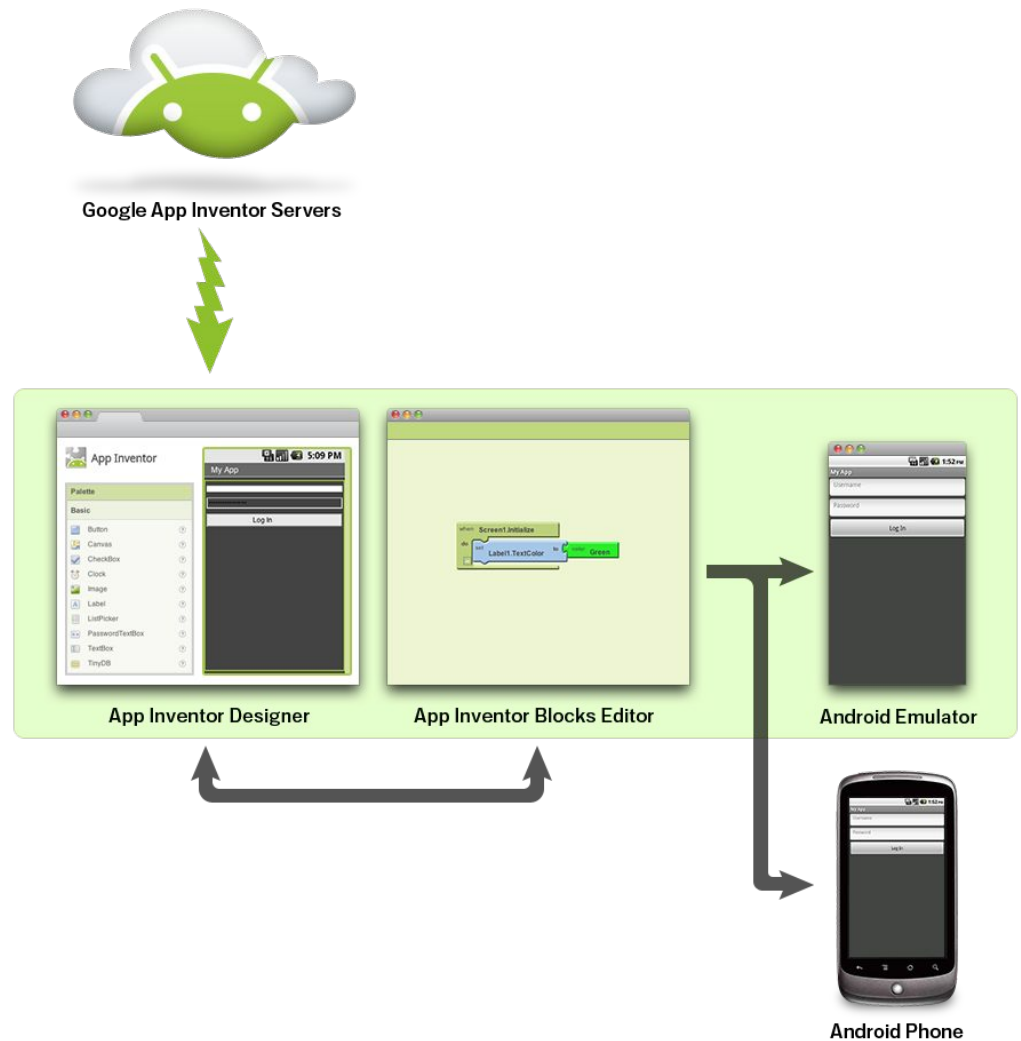


Ao criar o App Inventor, o Google se valeu de pesquisas significativas prévia em **informática educativa**, bem como o trabalho feito dentro do Google em ambientes de desenvolvimento on-line.

A plataforma App Inventor ainda é muito **instável** e **amadora**, focada em desenvolver apenas aplicativos para **pesquisas escolares**, impossibilitando o desenvolvimento de qualquer **aplicativo profissional**.

2. Funcionamento

- Designer
- Blocks
- Emulador



App

Screen1 ▾

Add Screen ...

Remove Screen

Designer

Blocks

Palette

User Interface

- Button ⓘ
- CheckBox ⓘ
- DatePicker ⓘ
- Image ⓘ
- Label ⓘ
- ListPicker ⓘ
- ListView ⓘ
- Notifier ⓘ
- PasswordTextBox ⓘ
- Slider ⓘ
- Spinner ⓘ
- Switch ⓘ
- TextBox ⓘ
- TimePicker ⓘ
- WebView ⓘ

Layout

Media

Drawing and Animation

Maps

Sensors

Social

Storage

Connectivity

LEGO® MINDSTORMS®

Experimental

Extension

Viewer

☐ Display hidden components in Viewer

Components

Screen1

Rename

Delete

Media

Upload File ...

Properties

Screen1

AboutScreen

AccentColor

Default

AlignHorizontal

Left : 1 ▾

AlignVertical

Top : 1 ▾

AppName

App

BackgroundColor

Default

BackgroundImage

None...

CloseScreenAnimation

Default ▾

Icon

None...

OpenScreenAnimation

Default ▾

PrimaryColor

Default

PrimaryColorDark

Default

ScreenOrientation

Unspecified ▾

Scrollable

☐

ShowListsAsJson

☐

ShowStatusBar

☒

Sizing

Fixed ▾

App

Screen1 ▾

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Colors
- Variables
- Procedures

Screen1

Any component

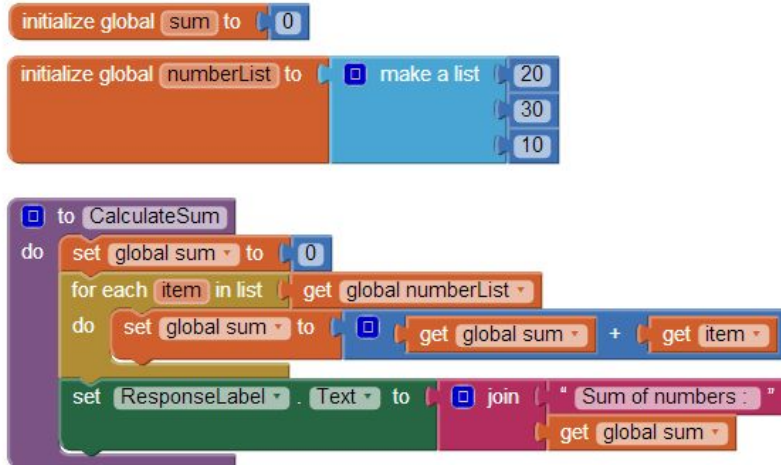
Rename

Delete

Media

Upload File ...

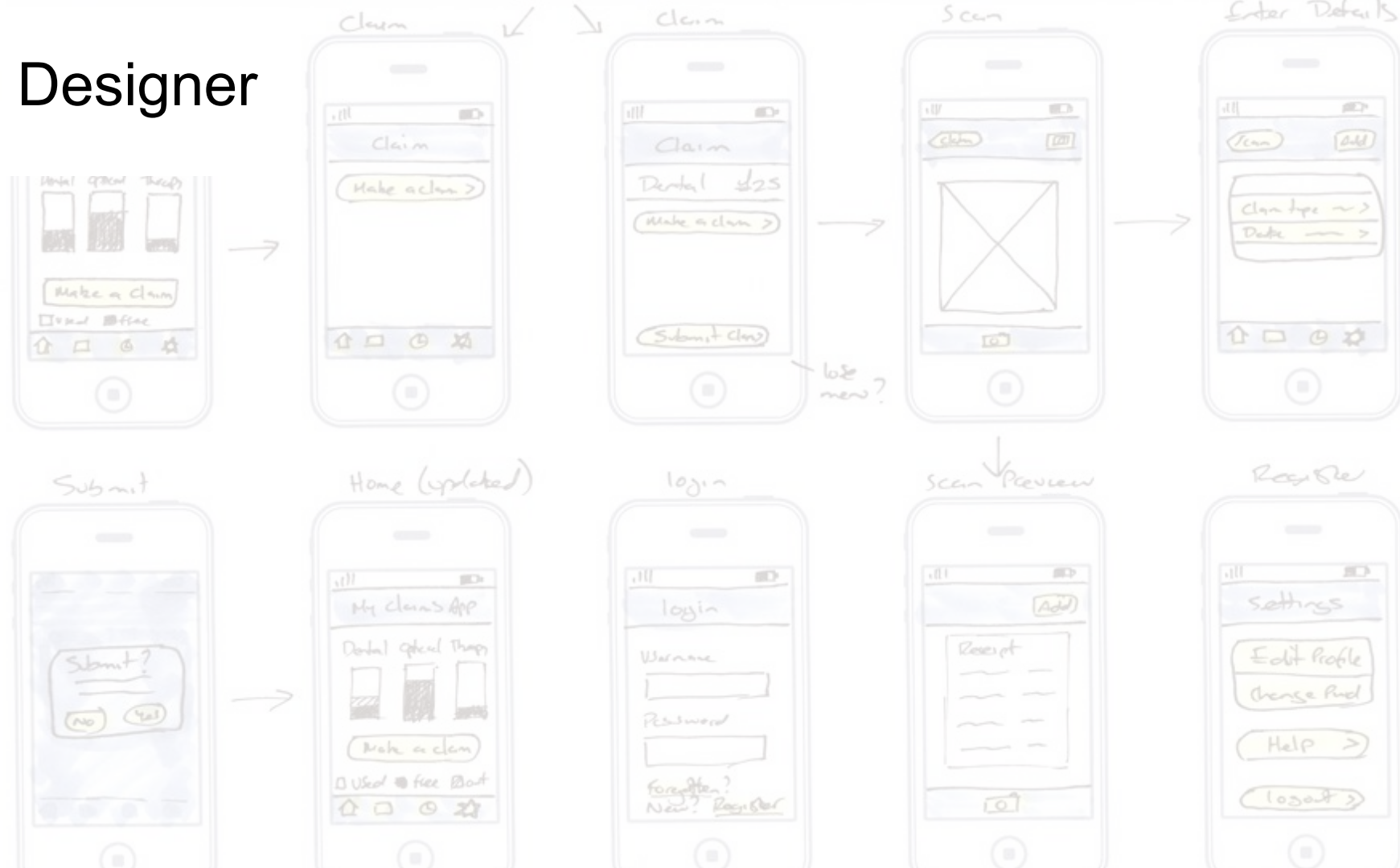
Viewer



Show Warnings



Designer



App

Screen1 ▾

Add Screen ...

Remove Screen

Designer

Blocks

Palette

User Interface

- Button
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Layout

Media

Drawing and Animation

Maps

Sensors

Social

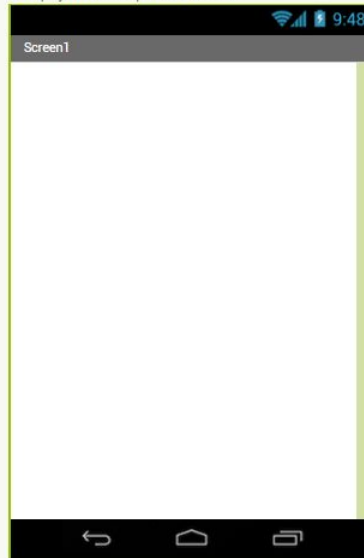
Storage

Connectivity

LEGO® MINDSTORMS®

Experimental

Viewer

☐ Display hidden components in Viewer

Components

Screen1

Rename

Delete

Media

Upload File ...

Properties

Screen1

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CloseScreenAnimation

Default ▾

Icon

None...

OpenScreenAnimation

Default ▾

PrimaryColor

Default

PrimaryColorDark

Default

ScreenOrientation

Unspecified ▾

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☐

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☒

Sizing

Fixed ▾

App

Screen1 ▾

Add Screen ...

Remove Screen

Designer

Blocks

Palette

User Interface

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Layout

Media

Drawing and Animation

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LEGO® MINDSTORMS®

Experimental

Extension

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☐ Display hidden components in Viewer

Components

Screen1

Rename

Delete

Media

Upload File ...

Properties

Screen1

AboutScreen

AccentColor

☐ Default

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AppName

App

BackgroundColor

☐ Default

BackgroundImage

None...

CloseScreenAnimation

Default ▾

Icon

None...

OpenScreenAnimation

Default ▾

PrimaryColor

☐ Default

PrimaryColorDark

☐ Default

ScreenOrientation

Unspecified ▾

Scrollable

☐

ShowListsAsJson

☐

ShowStatusBar

☒

Sizing

Fixed ▾

Blocks



App

Screen1 ▾

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Built-in

- Control
- Logic
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- Text
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- Colors
- Variables
- Procedures
- Screen1
- Any component

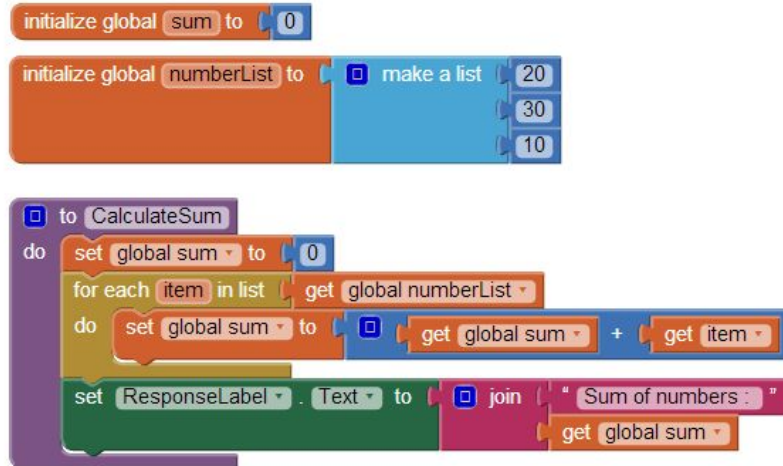
Rename

Delete

Media

Upload File ...

Viewer



App

Screen1

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Built-in

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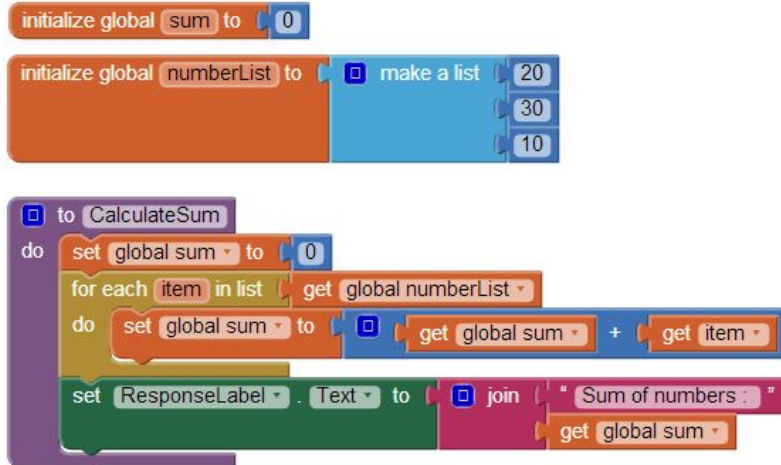
Rename

Delete

Media

Upload File ...

Viewer



App

Screen1 ▾

Add Screen ...

Remove Screen

Designer

Blocks

Blocks

Built-in

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- Any component

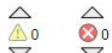
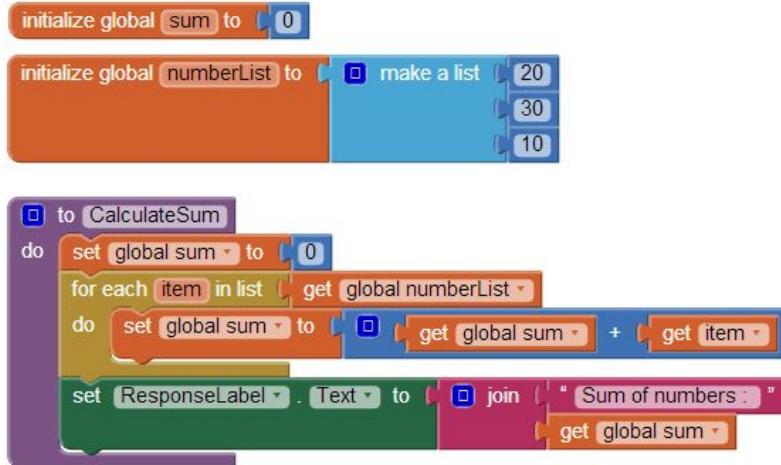
Rename

Delete

Media

Upload File ...

Viewer



Show Warnings



3. Ferramentas



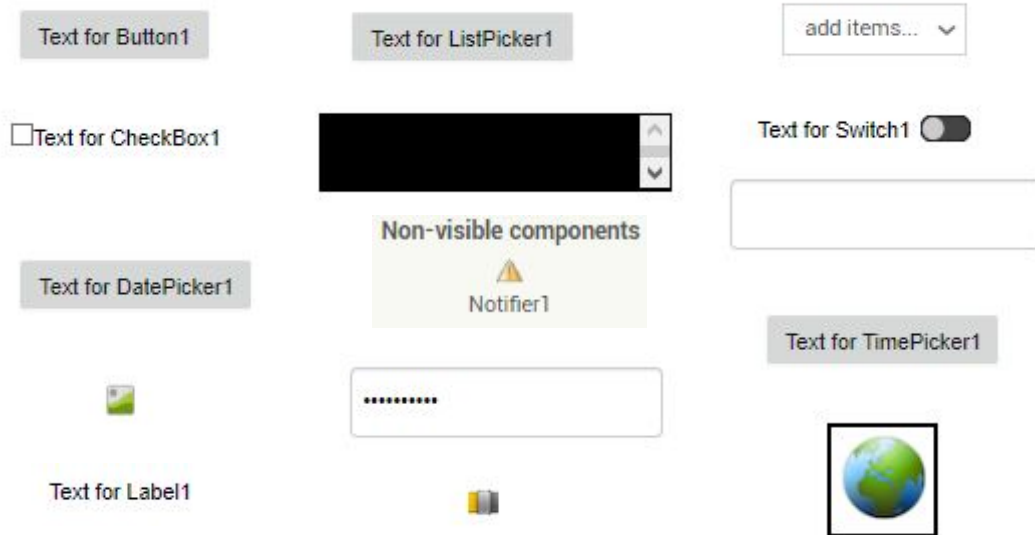
→ Designer

- ◆ Pallet
- ◆ viewer
- ◆ components
- ◆ Média
- ◆ Properties

→ Blocks

- ◆ Blocks
- ◆ Media
- ◆ Viewer

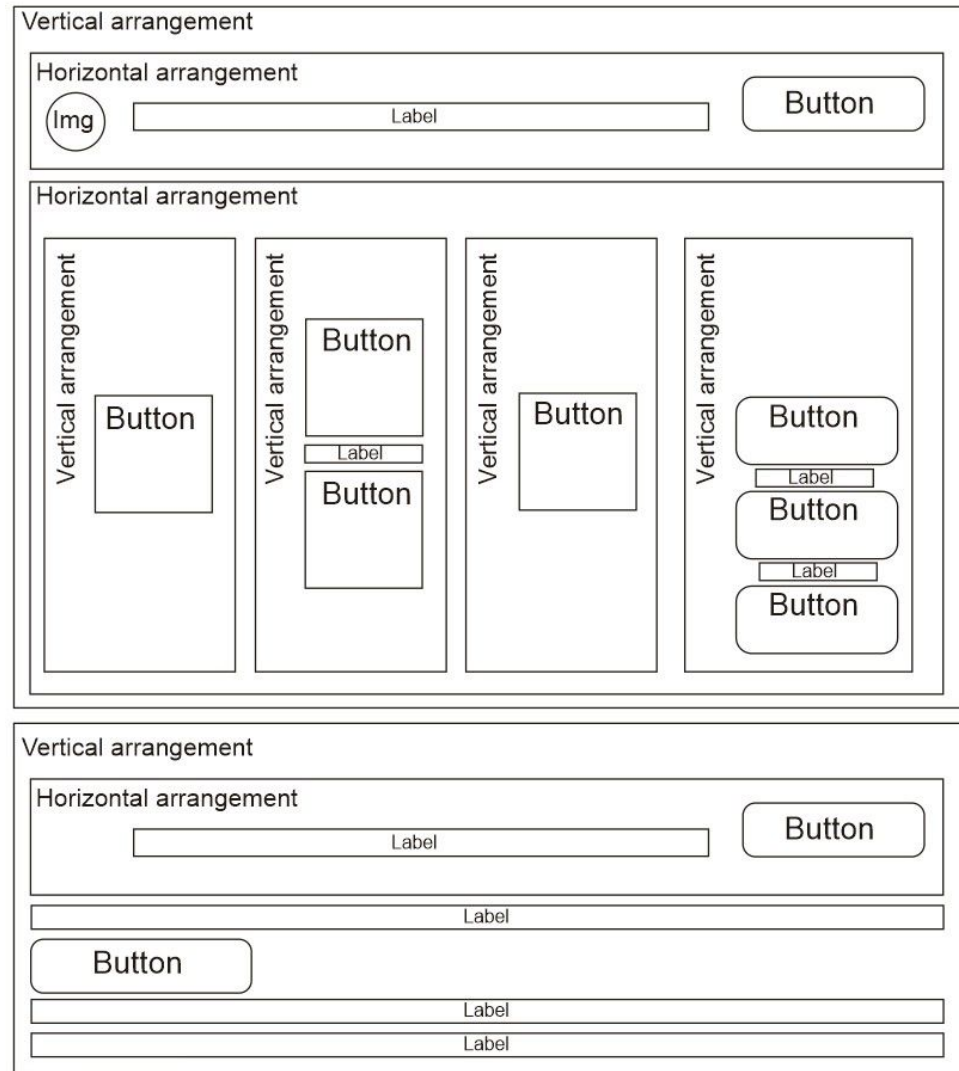
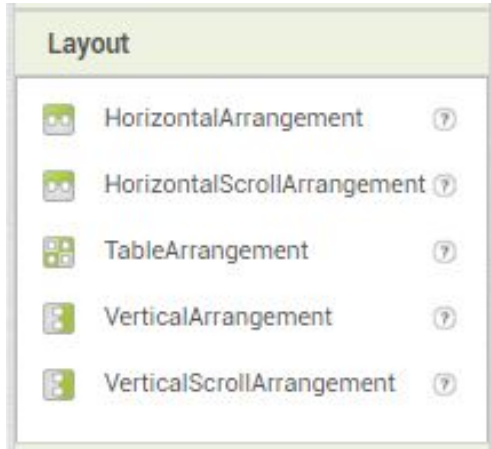
→ Designer: Pallet



Help **User Interface**

<http://ai2.appinventor.mit.edu/reference/components/userinterface.html>

User Interface		
	Button	?
	CheckBox	?
	DatePicker	?
	Image	?
	Label	?
	ListPicker	?
	ListView	?
	Notifier	?
	PasswordTextBox	?
	Slider	?
	Spinner	?
	Switch	?
	TextBox	?
	TimePicker	?
	WebView	?



Help **Layout**

<http://ai2.appinventor.mit.edu/reference/components/layout.html>

Media	Maps	Social	Connectivity	LEGO® MINDSTORMS®
Camcorder ? Camera ? ImagePicker ? Player ? Sound ? SoundRecorder ? SpeechRecognizer ? TextToSpeech ? VideoPlayer ? YandexTranslate ?	Circle ? FeatureCollection ? LineString ? Map ? Marker ? Polygon ? Rectangle ?	ContactPicker ? EmailPicker ? PhoneCall ? PhoneNumberPicker ? Sharing ? Texting ? Twitter ?	ActivityStarter ? BluetoothClient ? BluetoothServer ? Web ?	NxtDrive ? NxtColorSensor ? NxtLightSensor ? NxtSoundSensor ? NxtTouchSensor ? NxtUltrasonicSensor ? NxtDirectCommands ? Ev3Motors ? Ev3ColorSensor ? Ev3GyroSensor ? Ev3TouchSensor ? Ev3UltrasonicSensor ? Ev3Sound ? Ev3UI ? Ev3Commands ?
Drawing and Animation	Sensors	Storage	Experimental	Extension
Ball ? Canvas ? ImageSprite ?	AccelerometerSensor ? BarcodeScanner ? Clock ? GyroscopeSensor ? LocationSensor ? NearField ? OrientationSensor ? Pedometer ? ProximitySensor ?	File ? FusiontablesControl ? TinyDB ? TinyWebDB ?	CloudDB ? FirebaseDB ?	Import extension

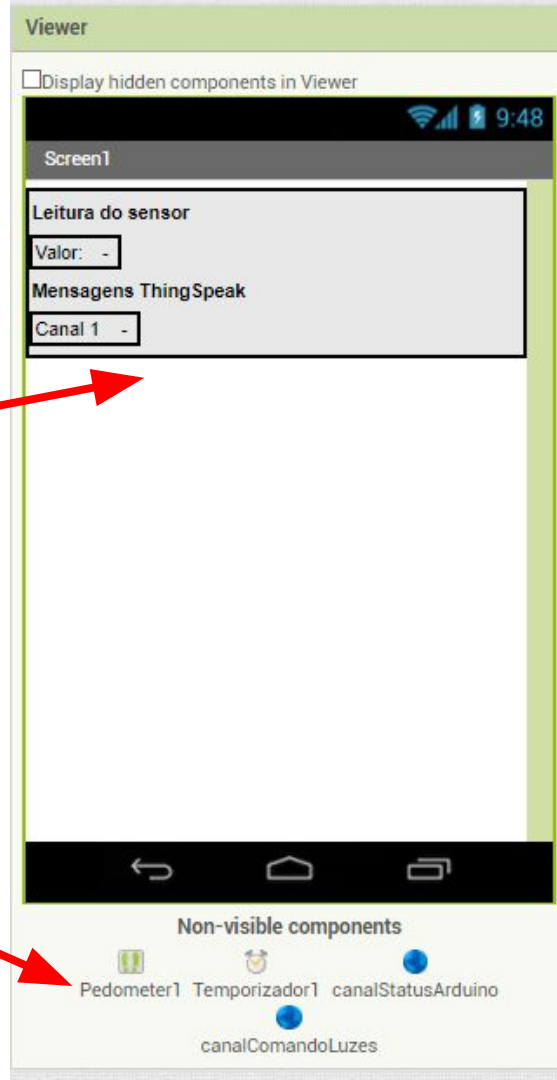
Help **Layout**

<http://ai2.appinventor.mit.edu/reference/components/>

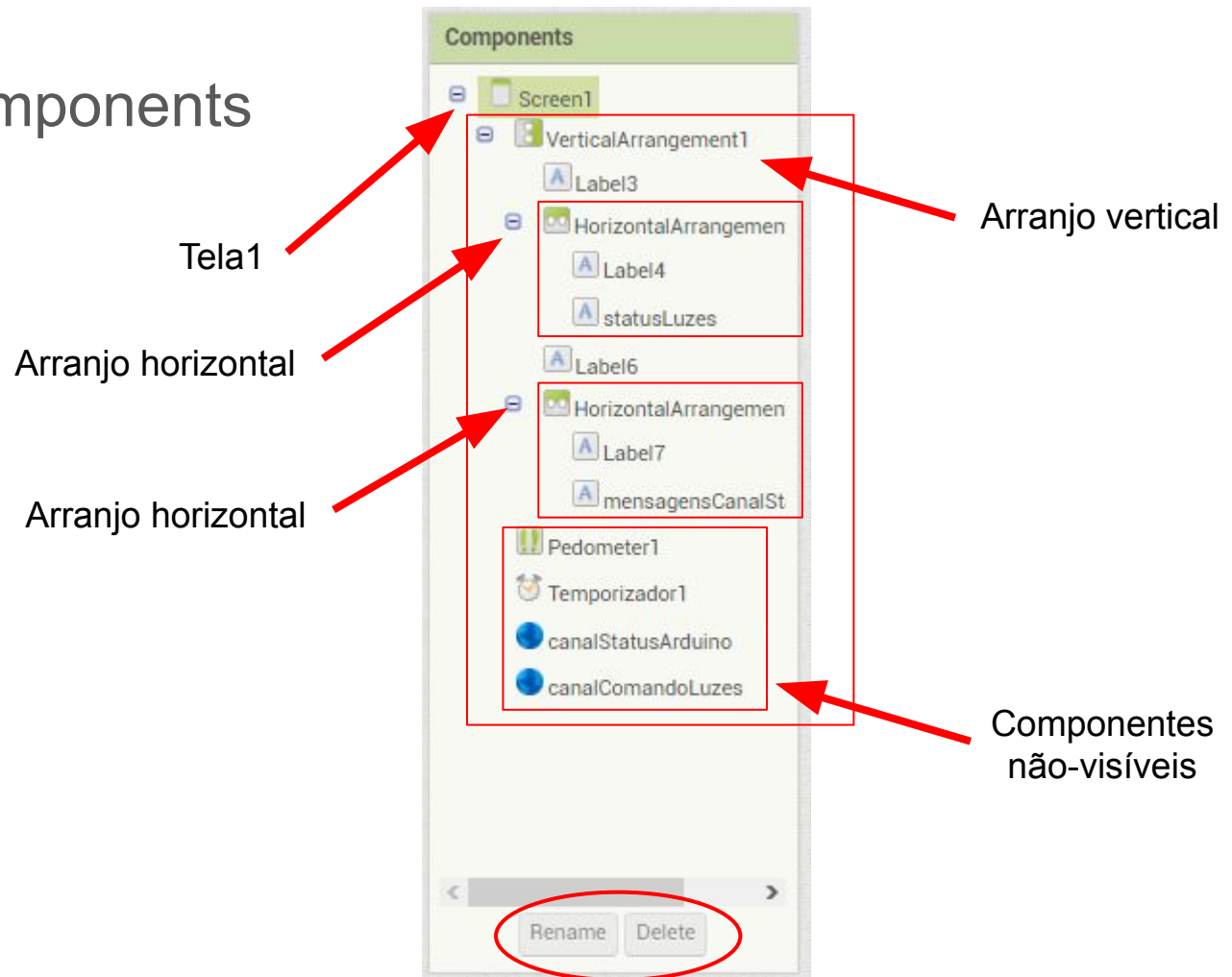
→ Designer: Viewer

Componentes
visíveis

Componentes
não visíveis

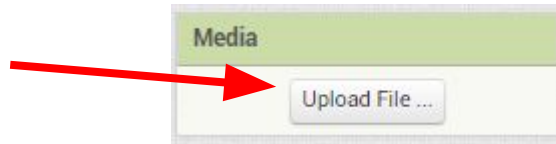


→ Designer: Components



→ Designer: Media

Mídias do projeto
(imagem, áudio,
vídeo, ...)



→ Designer: Properties

Properties

VerticalArrangement1

AlignHorizontal
Left : 1 ▾

AlignVertical
Top : 1 ▾

BackgroundColor
■ Default

Height
Automatic...

Width
Fill parent...

Image
None...

Visible
☒

Properties

HorizontalArrangement4

AlignHorizontal
Left : 1 ▾

AlignVertical
Top : 1 ▾

BackgroundColor
■ Default

Height
Automatic...

Width
Automatic...

Image
None...

Visible
☒

Properties

Label3

BackgroundColor
☐ None

FontBold
☒

FontItalic
☐

FontSize
14.0

FontTypeface
default ▾

HTMLFormat
☐

HasMargins
☒

Height
Automatic...

Width
Automatic...

Text
Leitura do sensor

TextAlignment
left : 0 ▾

TextColor
■ Default

Visible
☒

Properties

Temporizador1

TimerAlwaysFires
☒

TimerEnabled
☒

TimerInterval
1000

Properties

Pedometer1

StopDetectionTimeout
2000

StrideLength
0.73

Properties

canalStatusArduino

AllowCookies
☐

ResponseFileName

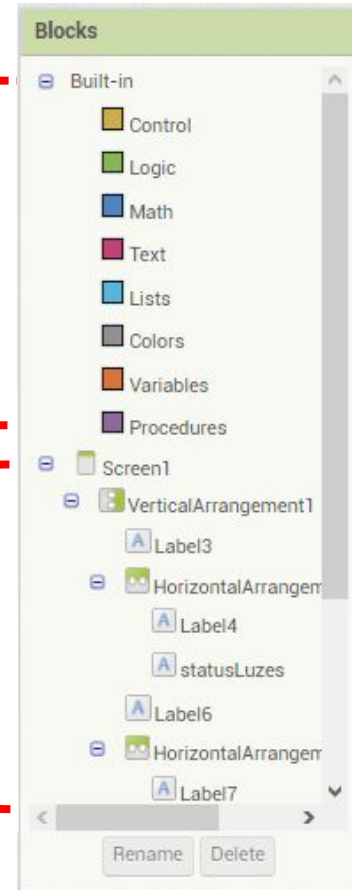
SaveResponse
☐

Url

→ Blocks: Blocks

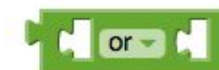
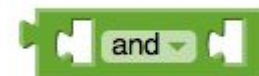
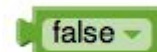
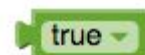
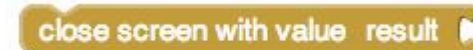
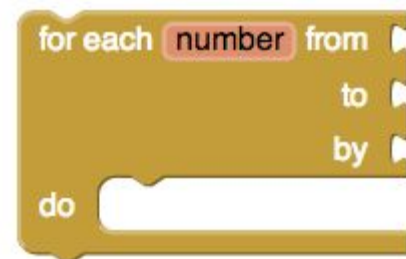
Blocos
disponíveis

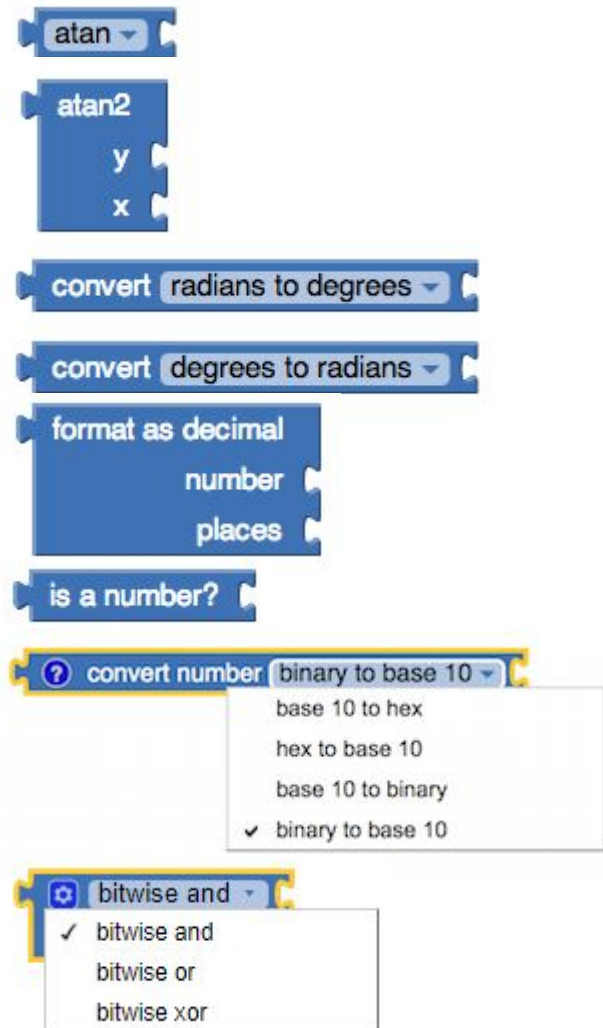
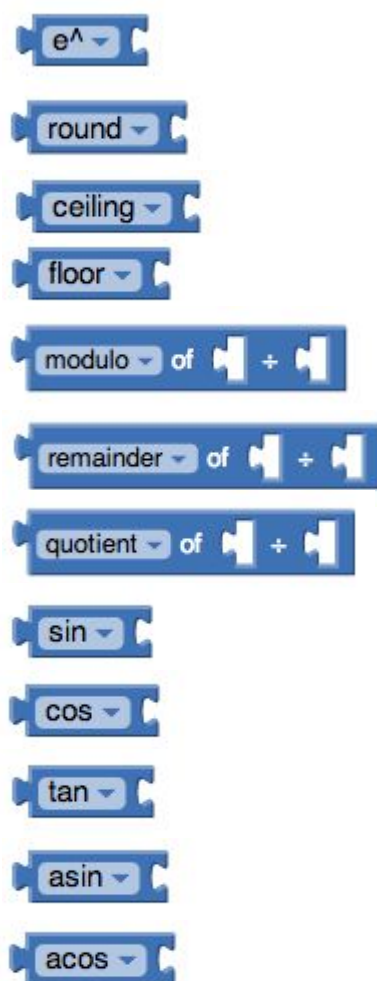
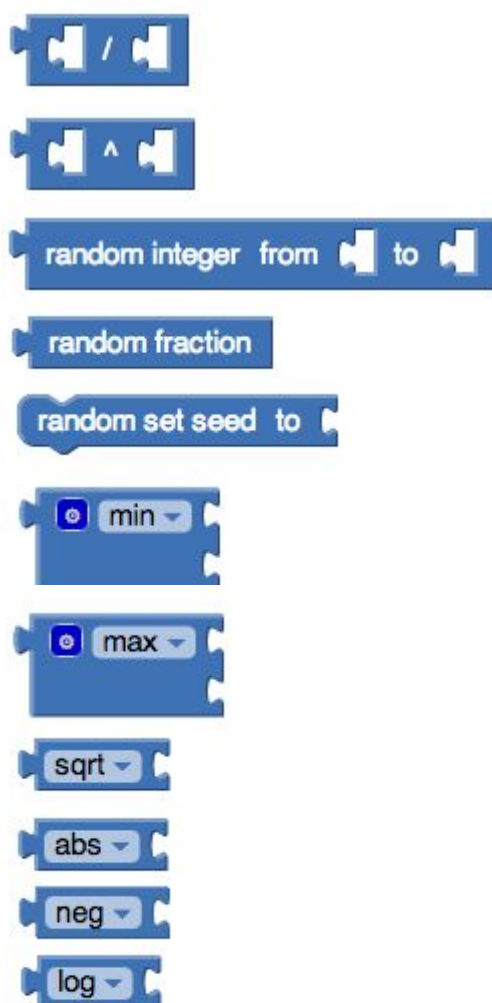
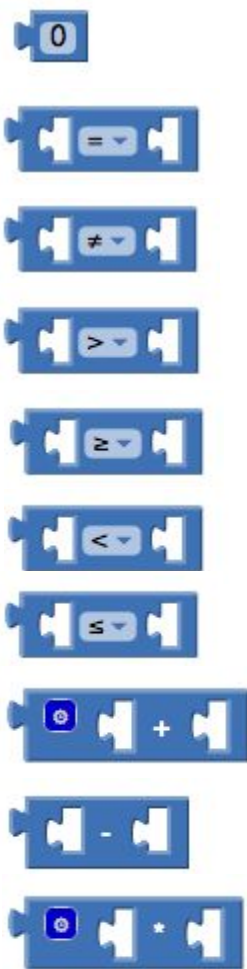
Elementos
Designer

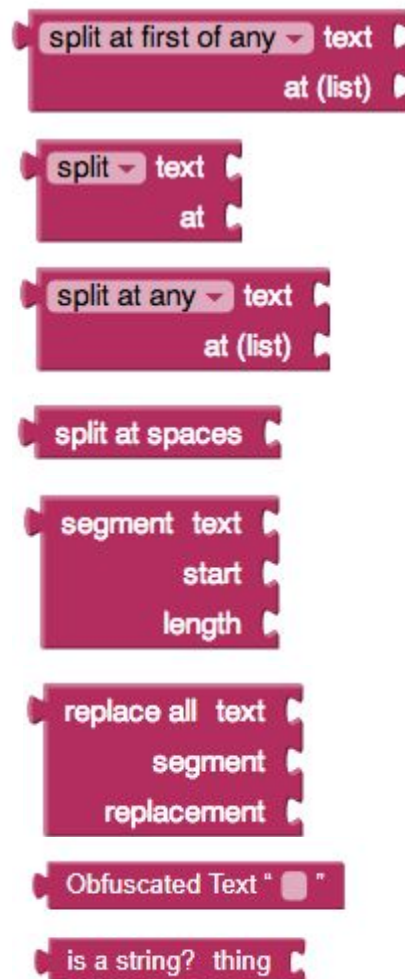
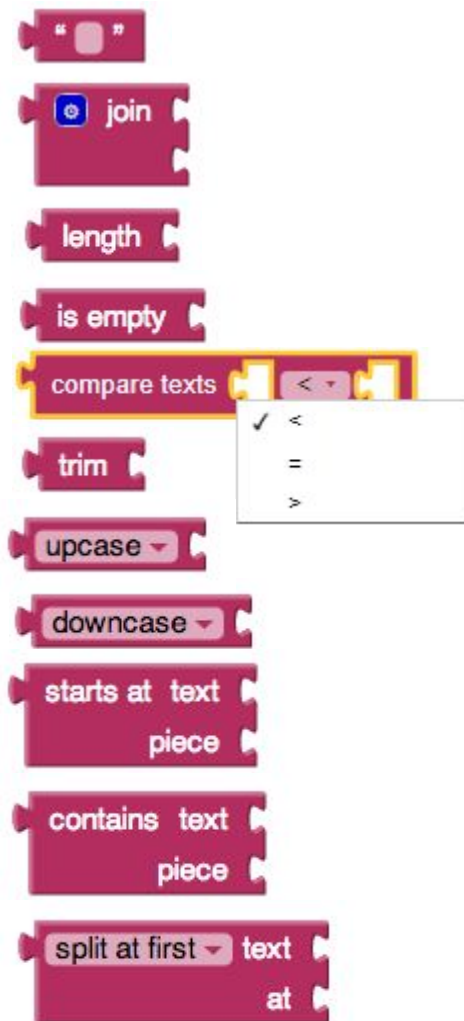


Help **blocks**

<http://ai2.appinventor.mit.edu/reference/blocks/>

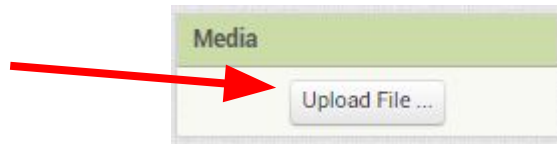






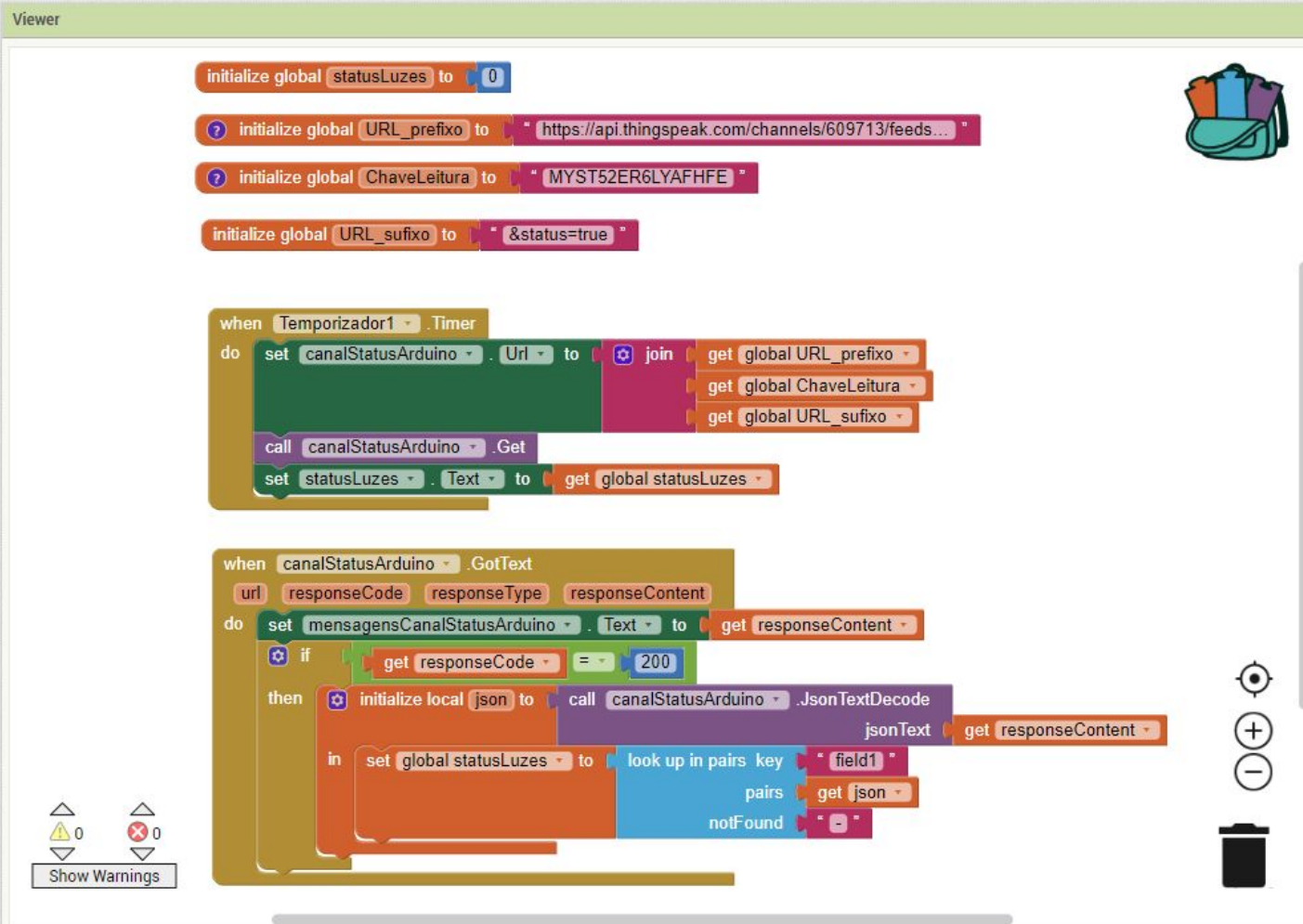
→ Blocks: Media

Mídias do projeto
(imagem, áudio,
vídeo, ...)



→ Blocks: Viewer


Viewer



The image shows a code editor window titled "Viewer" containing a sequence of blocks for initializing global variables and handling HTTP requests to ThingSpeak. The blocks are as follows:

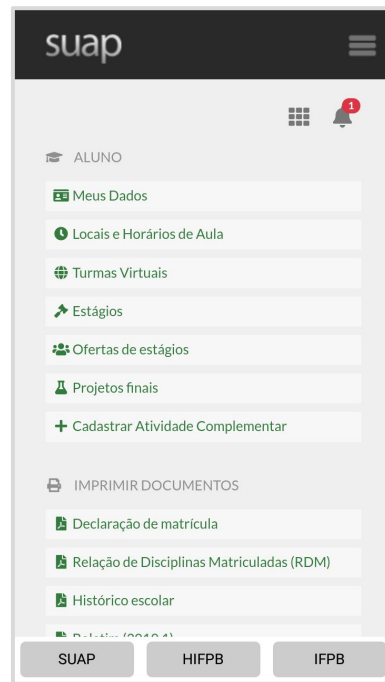
- initialize global** `statusLuzes` to `0`
- initialize global** `URL_prefixo` to `"https://api.thingspeak.com/channels/609713/feeds..."`
- initialize global** `ChaveLeitura` to `"MYST52ER6LYAFHFE"`
- initialize global** `URL_sufixo` to `"&status=true"`
- when** `Temporizador1` `.Timer`
 - do**
 - set** `canalStatusArduino` `.Url` to `join` (`get global URL_prefixo`, `get global ChaveLeitura`, `get global URL_sufixo`)
 - call** `canalStatusArduino` `.Get`
 - set** `statusLuzes` `.Text` to `get global statusLuzes`
- when** `canalStatusArduino` `.GotText`
 - `url` `responseCode` `responseType` `responseContent`
 - do**
 - set** `mensagensCanalStatusArduino` `.Text` to `get responseContent`
 - if** `get responseCode` `=` `200`
 - then**
 - initialize local** `json` to `call canalStatusArduino .JsonTextDecode` (`jsonText` `get responseContent`)
 - in** `set global statusLuzes` to `look up in pairs` (`key` `field1`, `pairs` `get json`, `notFound` `" "`)

0 0
Show Warnings



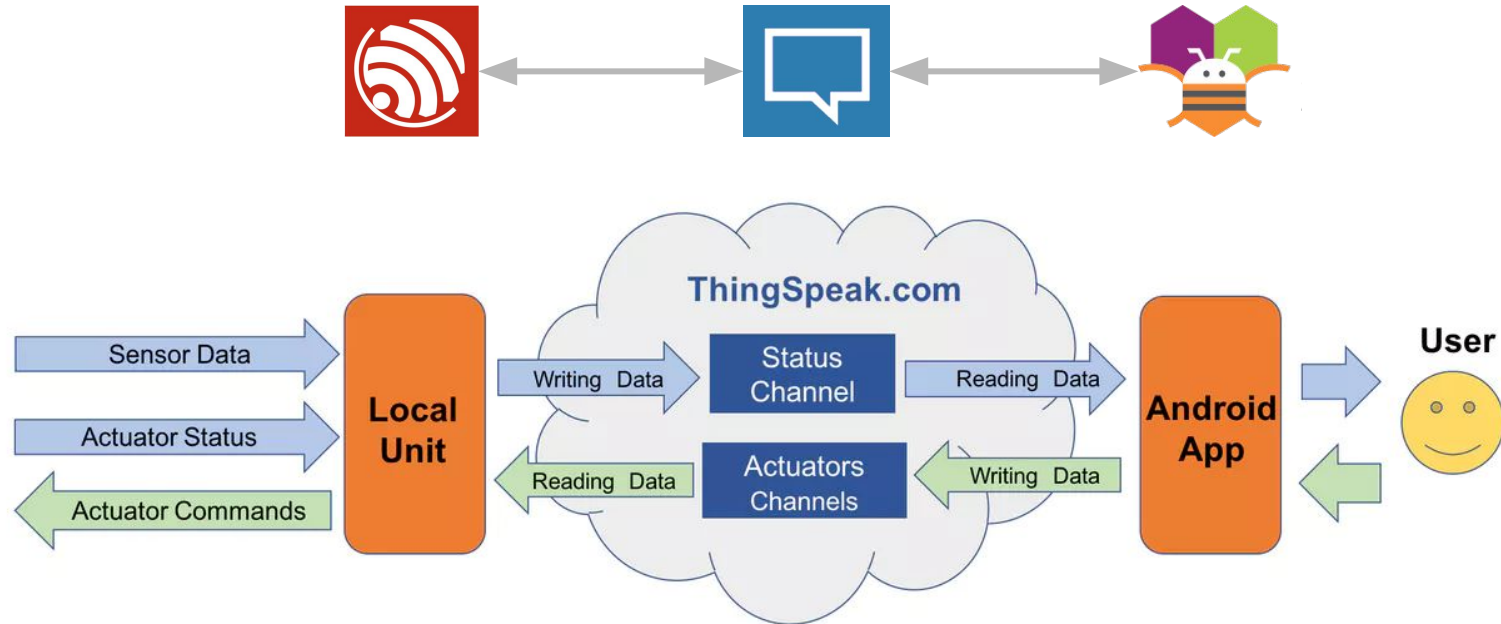
4. Exemplos práticos

- SUAP+HIFPB+IFPB
- Quanto gasta de energia no mês?



The screenshot shows a form for calculating energy costs. The title is 'Quanto gasta de energia no mês?'. The form has five input fields: 'Potência (W)' with the value '6', 'Uso diário (h)' with the value '3', 'Preço kWh (R\$)' with the value '0.85', and 'Conta de energia (R\$)' with the value '150'. The 'Conta de energia (R\$)' field is highlighted with an orange border. Below the input fields is a 'calcular' button. At the bottom, there's a grey bar displaying the results: 'R\$ 0.46' and '0.31 %'.

5. Integração com ThingSpeak



```
#include <ESP8266WiFi.h>
#include <ThingSpeak.h>

// WIFI
const char* ssid = "APtelefonica"; // rede wifi
const char* password = "Projeto360AP"; // senha wifi

// Variáveis
int count, val, LDRpin = A0, LED = 16, ledStatus=0;

// Canal 1
unsigned long myChannelNumber1 = 773444; // ID do
const char * myWriteAPIKey1 = "UKXTT7UAOM24JY40"; // chave de escrita
const char * myReadAPIKey1 = "FB800MW0GYFK5CXN"; // chave de leitura

// Canal 2
unsigned long myChannelNumber2 = 774516; // ID do canal 2
const char * myWriteAPIKey2 = "PQYQ84TOF21TPHNJ"; // chave de escrita
const char * myReadAPIKey2 = "0PLPFQIR3E3GFHZ7"; // chave de leitura

WiFiClient client;

void setup(){

  pinMode(LED, OUTPUT);
  digitalWrite(LED, LOW);

  // conecta wifi
  WiFi.begin(ssid, password);
```

Código Arduino

```
ThingSpeak.begin(client);
```

```
delay(100);
```

```
Serial.begin(115200);
```

```
}
```

```
void loop(){
```

```
  if(count==10){
```

```
    val = analogRead(LDRpin); // Lê valor LDR
```

```
    Serial.println(val); //imprimi na serial
```

```
    // ID do canal, campo, valor, chave de escrita
```

```
    ThingSpeak.writeField(myChannelNumber1, 1,val, myWriteAPIKey1); //Update
```

```
    count=0;
```

```
  }
```

```
  // Lê estatus LED
```

```
  ledStatus = int(ThingSpeak.readIntField(myChannelNumber2, 1, myReadAPIKey2));
```

```
  Serial.println(ledStatus); // imprimi na serial
```

```
  digitalWrite(LED, ledStatus); // Controla LED
```

```
  delay(2000);
```

```
  count++;
```

```
}
```

Aplicativo: LeituraThingSpeak



Viewer

☐ Display hidden components in Viewer

Tablet size (675,480) ▾

Screen1

Leitura do sensor

Valor: -

Mensagens ThingSpeak

Canal 1 -

Components

- Screen1
 - VerticalArrangement1
 - Label3
 - HorizontalArrangement1
 - Label4
 - statusLuzes
 - Label6
 - HorizontalArrangement1
 - Label7
 - mensagensCanalSt
 - Pedometer1
 - Temporizador1
 - canalStatusArduino
 - canalComandoLuzes

Rename Delete

Media

Upload File ...

Non-visible components

- Pedometer1
- Temporizador1
- canalStatusArduino
- canalComandoLuzes

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Colors
- Variables
- Procedures

Screen1

VerticalArrangement1

Label3

HorizontalArrangement1

Label4

statusLuzes

Label6

HorizontalArrangement1

Label7

Rename Delete

Media

Upload File ...

Viewer

initialize global statusLuzes to 0

initialize global URL_prefixo to "https://api.thingspeak.com/channels/773444/feeds..."

initialize global ChaveLeitura to "FB800MW0GYFK5CXN"

initialize global URL_sufixo to "&status=true"

when Temporizador1.Timer

do

set canalStatusArduino.Url to join

- get global URL_prefixo
- get global ChaveLeitura
- get global URL_sufixo

call canalStatusArduino.Get

set statusLuzes.Text to get global statusLuzes

when canalStatusArduino.GoText

url responseCode responseType responseContent

do

set mensagensCanalStatusArduino.Text to get responseContent

if

- get responseCode = 200

then

initialize local json to call canalStatusArduino.JsonTextDecode

jsonText get responseContent

in

set global statusLuzes to look up in pairs key "field1"

pairs get json

notFound ""



Show Warnings



Aplicativo: ControleThingSpeak



Viewer

☐ Display hidden components in Viewer

Tablet size (675,480) ▾

Screen1

Comando para controle do atuador

Ligar Desligar

Non-visible components

canalComandoAtuador

Components

- Screen1
 - VerticalArrangement1
 - Label2
 - HorizontalArrangement1
 - Liga
 - Desliga
 - canalComandoAtuador

Rename Delete

Media

Upload File ...

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Colors
- Variables
- Procedures

Screen1

- VerticalArrangement1
 - Label2
- HorizontalArrangement1
 - Liga
 - Desliga
- canalComandoAtuador

Any component

< >

Rename

Delete

Media

Upload File ...

Viewer

initialize global URL_prefixo to " https://api.thingspeak.com/update?api_key= "

initialize global ChaveEscrita to " PQYQ84TOF21TPHNJ "

initialize global Campo to " &field1= "

when Liga .Click

do

set canalComandoAtuador . Url to join get global URL_prefixo
get global ChaveEscrita
get global Campo
" 1 "

call canalComandoAtuador .Get

when Desliga .Click

do

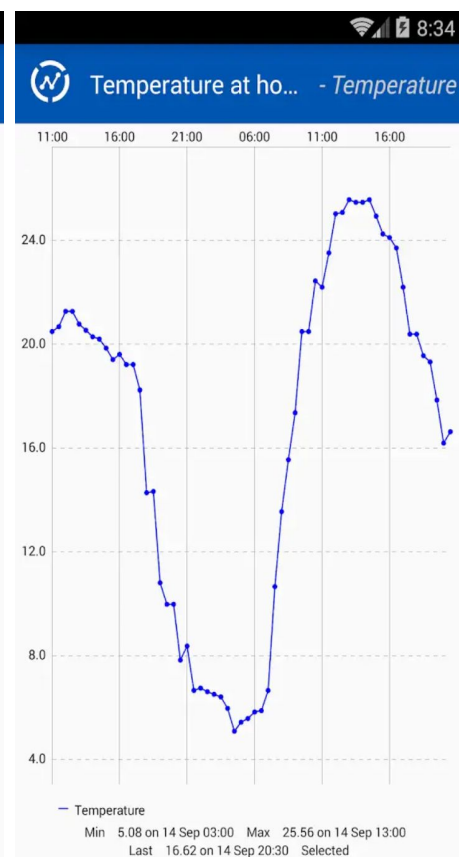
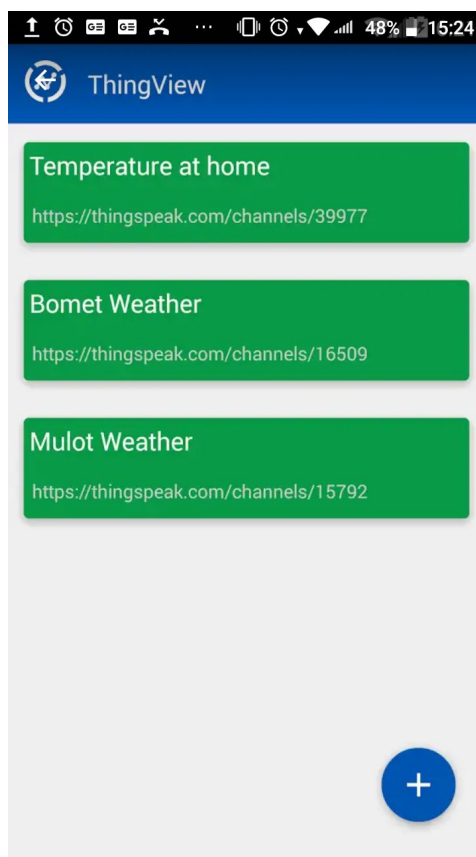
set canalComandoAtuador . Url to join get global URL_prefixo
get global ChaveEscrita
get global Campo
" 0 "

call canalComandoAtuador .Get





Projeto **AQUA**





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*"Existem cinco níveis ascendentes de inteligência:
esperto, inteligente, brilhante, gênio e simples"*

- Albert Einstein



Avalie esta apresentação

<https://docs.google.com/forms/d/e/1FAIpQLSdG5fmifW4g6fkdKozGuOSyL2IRZJ56xS7eSa4oxtoGgrZn7w/viewform>