

BADGE HACKING 0x66

First Things First:

- Your 0xB badge
- Micro USB cable
- Laptop
- Arduino IDE:
<https://www.arduino.cc/en/Main/Software>
- Some sketches to play with: rudyard.shinyoku.com/TC0xB/

https://dl.espressif.com/dl/package_esp32_index.json

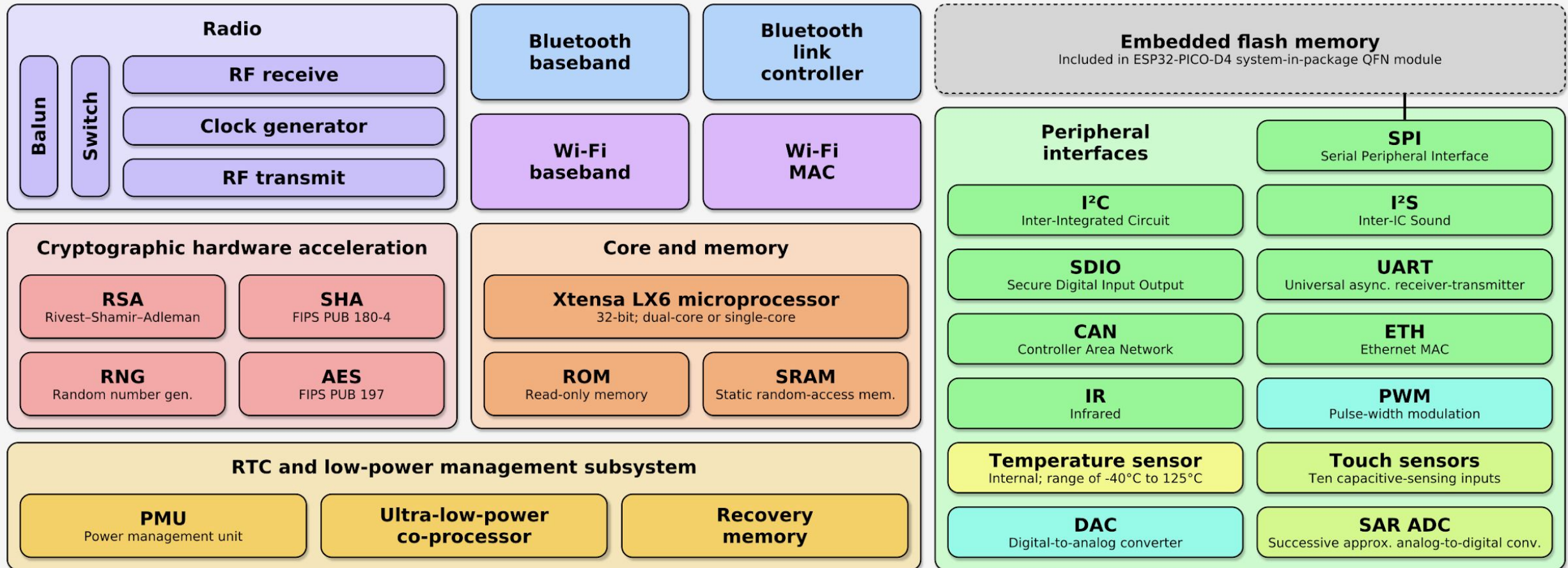
Libraries

https://dl.espressif.com/dl/package_esp32_index.json

```
#include <SparkFunLIS3DH.h>
```

```
#include <Tone32.h>
```

Getting to know the SoC



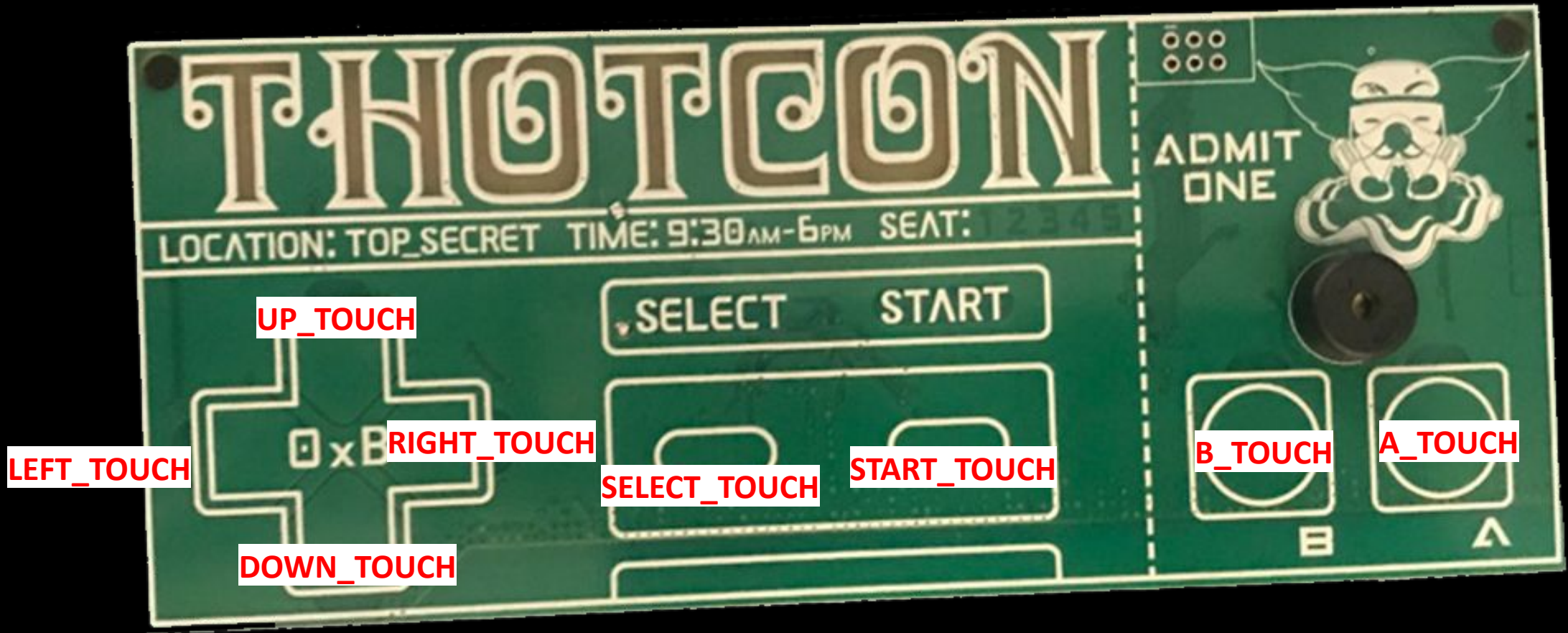
Exercises

- Capacitive touch
- LEDs
- RGB LEDs
- Buzzer
- Accelerometer
- (probably not) Radios

see: TC_0XB_into

example: `if (checkTouch(DOWN_TOUCH, TOUCH_THRESH));`

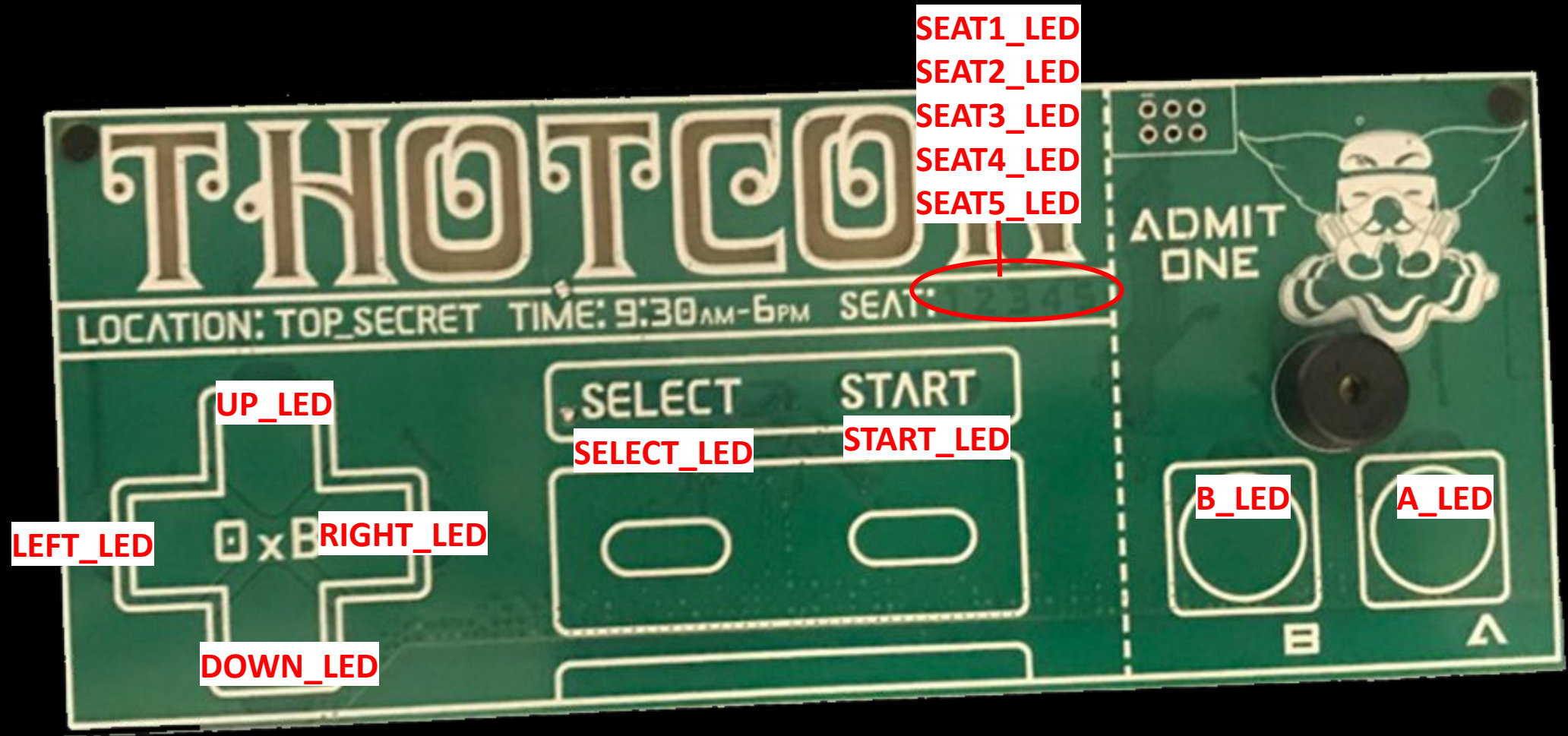
Touch Pads



see: `TC_0XB_into`

example: `tcleds.setBadgeLED(DOWN_LED, 250, 0);`

Touch Pad LEDs



Try it

- Change LED Intensity
- Make left LED turn on when the wrong touch (right?) is pressed

RGB LED Field



Try it

- Turn LEDs on when A is pressed
- Turn LEDs off when B is pressed
- Change LED color when up/down are pressed

Buzzer

see: `startup.cpp`

example: `tone(BUZZER_PIN, circusTune[i].note, circusTune[i].hold*60, BUZZER_CHANNEL);`



Try it

- Play a sound when A is pressed

Tones

Learn to play music.

(there are also places you can go to convert audio files to chords, notes, etc.)

How to use audio library:

<https://github.com/lbernstone/Tone32/blob/master/src/pitches.h>

example: **buzzer.h** file

Accelerometer

```
#include <SparkFunLIS3DH.h>  
see: shakeit  
example: LIS3DH myIMU;
```

```
myIMU.begin();  
  lastAccelVal =  
myIMU.readFloatAccelX();
```

How to use accelerometer:

<https://learn.sparkfun.com/tutorials/lis3dh-hookup-guide/all#example-i2c-analog-and-interrupts>

Try it

- Shake and play music
- Shake and change color intensity?

Stay in touch with us:

The Twitters:

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