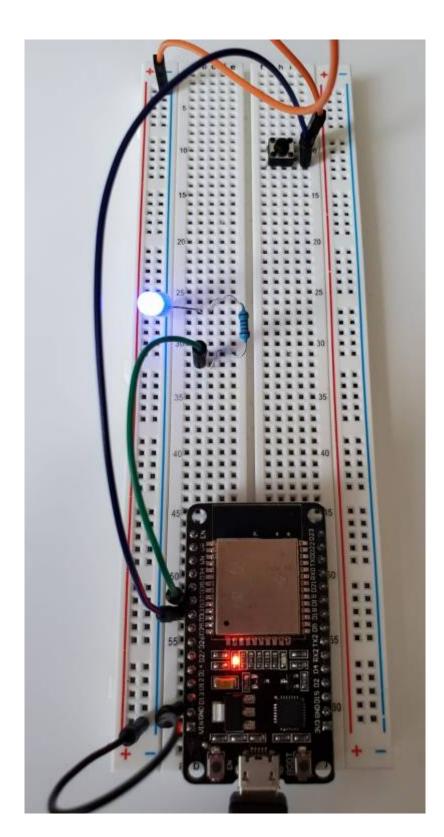
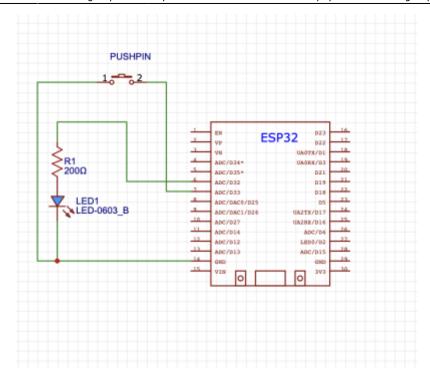
Build



Schematics



Code

```
*//There are 2 ways to wake up a system, those are called Interrupts
*//hardware Interrupts is based on external events where signals are sent to
the GPIO
*//Software Interrupts occur when we program the device like through a wake
up alarm or timer
#define uS TO S FACTOR 1000000 *//Equation to convert milliseconds
to Minutes
#define TIME TO SLEEP
                                        *//Determined amount of minutes at
sleep
RTC DATA_ATTR int bootCount = 0;
*//Keeps data of times awaken in internal RTC
  ****** Wake Up Print
                                           *//Set up to list reasons for
void print wakeup reason(){
system wake-up
  esp sleep wakeup cause t wakeup reason;
  wakeup_reason = esp_sleep_get_wakeup_cause(); *//System wakes up due to
3 reasons
```

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```
switch(wakeup reason)
   case ESP SLEEP WAKEUP EXTO: Serial.println("PUSHED BUTTON caused the
system to WAKEUP"); break;
    case ESP SLEEP_WAKEUP_TIMER : Serial.println("TIMER caused the system to
WAKEUP"); break;
   default : Serial.printf("DeepSleep didn't wake up ESP32:
%d\n",wakeup reason); break; *//Initial Boot will yield this reason
}
}
*//We made the system wake up due to the internal timer and a pushed button,
the reason for the push button is that in the case we want to take a
measurement at our will without having to wait for the timers.
void setup(){
 Serial.begin(115200);
 delay(1000);
  pinMode(32,0UTPUT); *//Illuminates a LED when the system is awake.
For visual confirmation.
  pinMode(33,INPUT PULLUP);
  *//ESP32 has pull-up resistors built on the pins, when we activate it
  *//it avoids the use of external resistors
  *//INPUT PULLUP keeps the signal HIGH by default
  *//floating currents which can produce erroneous readings are avoided by
pull up/down resistors
 for(int i=0;i<5;i++)</pre>
 digitalWrite(32,HIGH); *// This are the parameters for the LED
flashina
 delay(1000);
 digitalWrite(32,LOW);
 delay(1000);
  }
 ++bootCount;
 Serial.println("Reboot count number: " + String(bootCount));
                                                                   *//We
want to know how many times the system has booted
                                                                   *//easy
way to know if there are issues internal or battery
                                                                   *//issues
```

```
print_wakeup_reason();

esp_sleep_enable_ext0_wakeup(GPI0_NUM_33,0);

*//During Sleep only Pins connected to the RTC are operational
*//A General Purpose Input/output pin are used to perform digital readings
and output functions.
*//By default those pins have no predefined purpose.
*//The pin used has to be named after their GPI0

esp_sleep_enable_timer_wakeup(TIME_T0_SLEEP * uS_T0_S_FACTOR);

Serial.println("ESP32 is going into DeepSleep for " +
String(TIME_T0_SLEEP) +
    " Seconds");

Serial.println("Going to sleep now.....");
delay(1000);
Serial.flush();
esp_deep_sleep_start();
}
```

Description

Results

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```
rst:0x1 (POWERON_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0030,len:1344
load:0x40078000,len:13516
load:0x40080400,len:3604
entry 0x400805f0
Reboot count number: 1
DeepSleep didn't wake up ESP32: 0
ESP32 is going into DeepSleep for 10 Seconds
Going to sleep now.....
ets Jun 8 2016 00:22:57
rst:0x5 (DEEPSLEEP_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0030,len:1344
load:0x40078000,len:13516
load:0x40080400,len:3604
entry 0x400805f0
Reboot count number: 2
TIMER caused the system to WAKEUP
ESP32 is going into DeepSleep for 10 Seconds
Going to sleep now.....
ets Jun 8 2016 00:22:57
rst:0x5 (DEEPSLEEP_RESET),boot:0x13 (SPI_FAST_FLASH_BOOT)
configsip: 0, SPIWP:0xee
clk_drv:0x00,q_drv:0x00,d_drv:0x00,cs0_drv:0x00,hd_drv:0x00,wp_drv:0x00
mode:DIO, clock div:1
load:0x3fff0030,len:1344
load:0x40078000,len:13516
load:0x40080400,len:3604
entry 0x400805f0
Reboot count number: 3
PUSHED BUTTON caused the system to WAKEUP
ESP32 is going into DeepSleep for 10 Seconds
Going to sleep now.....
ets Jun 8 2016 00:22:57
```

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