GPS clock on Raspi

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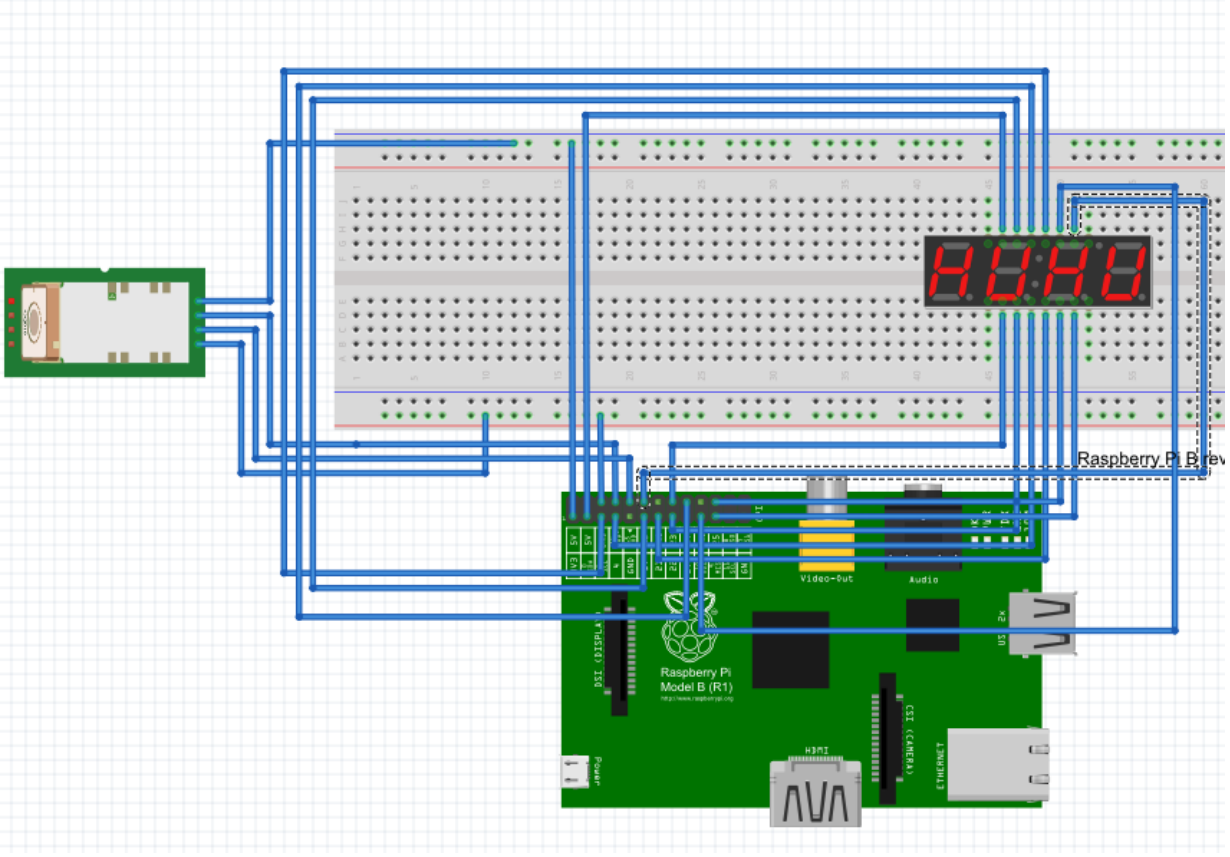
Wiring your board with GPS device and 7-segments.



Note that the graph is just a hint for the wiring. The actual location of a specific wire might not be accurate.

Use python to read/write gpio

we use `RIP.GPIO` lib on raspi to help the program access gpio. You may install it by

```
$ sudo apt-get install rpi.gpio
```

or

```
$ wget
https://pypi.python.org/packages/source/R/RPi.GPIO/RPi.GPIO-
0.5.11.tar.gz
$ tar -xvf RPi.GPIO-0.5.11.tar.gz$
$ cd RPi.GPIO-0.5.11
$ sudo python setup.py install
$ cd ~
$ sudo rm -rf RPi.GPIO-0.*
```

Then use

```
import RPi.GPIO as GPIO
```

to emjoy the fun.

Read from GPS device through serial port

We use a `thread` to read from the serial port.

First of all, we need to set the configutation

```
port = serial.Serial('/dev/ttyAMA0')
port.baudrate = 9600
port.timeout = 3
```

`define` a `global` variable, to make sure messages from serial port will be sent out, use

```
global date
```

write a function to read from serial port

```
def read_time:
    while True:
        try:
            tmp = port.readline()
            if tmp.find('GPRMC') == 1:
                print tmp
                buf = tmp.split(',')
                tm = buf[1]
                if len(tm) == 6:
                    date = tm[2:6]
        except Exception as e:
            print e
            port = serial.Serial('/dev/ttyAMA0')
               # reopen the port
        time.sleep(5)
```

Display the date in main thread

```
led_num = [0x3f,0x06,0x5b,0x4f,0x66,0x6d,0x7d,0x07,0x7f,0x6f]
# map your sement to gpio on a list named gpioMap

def light(n, seg):
    num = led_num[n]
    GPIO.output(gpio_ucf[ind], True) # light one segment
    for i in range(0, 8):
        if (num>>i)&1:
            GPIO.output(gpioMap[i], False) #ON
        else:
            GPIO.output(gpioMap[i], True) #ON

def display(num):
    for i in range(0, 4):
        light(int(num[i]), i+8)
        time.sleep(0.005)

while True:
    if num!='0000':
        print num
    try:
        display(num)
    except Exception as e:
        print e
```