##

Raspberry Pi ve IoT Başlangıç Eğitim Notları - v1.1

##

Linux dd komutu ile Raspi iamjı yakmak

Birinci terminalde:
$ sudo dd if=~/prj-ev/kapiulu/img/rpi_35_v3_jessie8_kernel_4_1_12.img of=/dev/sdX bs=1M

İkinci terminlade
$ while((1)); do sudo kill -USR1 $(pidof dd); sleep 2; done

UYARI: Burada dd komutu argumani "of=/dev/sdX" ifadesindeki X degeri, disks GUI uygulaması veya "df -H" ile bulunabilir. Yanlis X degeri geri donusu olmayan sonuclar doguracaktir. Dikkatli olun yada noobs kullanmaya devam edin.

##

Simple HTTP Server

$ cd <Paylasmak istdiginiz klasor> #e.g. cd $HOME/Music
$ python -m SimpleHTTPServer 7777
$ ifconfig #ile IP adresinizi ogrenin, genelde eth0 ve wlan0 bloklarının altnda "inet addr:" yaninda yazar.

Browserdan <IP>:<Port> yazin #e.g. 192.168.1.100:7777

##

Raspinize pi kullanicisi olarak SSH ile uzaktan baglanmak

* Windows ve Linux masaüsütünde Putty kullanarak.. http://www.putty.org
* Linux komut satırında ise;
    $ ssh pi@192.168.1.66 #ardindan raspi kullanici sifreniz.

##

GPIO Komut satırı

$ gpio
$ gpio readall

$ while((1)); do gpio readall; sleep 0.25; clear; done
$ gpio mode 0 out
$ gpio write 0 1
$ gpio write 0 0
$ while((1)); do gpio write 0 1; sleep 0.5; gpio write 0 0; sleep 0.5; done

##

Python GPIO Modülleri

- $ sudo apt install ipython
- $ sudo pip install wiringpi2
    - Bu kurulumda karşımıza çıkan Python.h header dosyasının bulunamaması sorunu için örnek bir araştırma/çözüm yolu
        - Yol 1
            - sudo apt-get install python-dev
        - Yol 2
            - $ python --version #komutu ile gelen versiyon bilgisi dikkate alınır
            - $ sudo apt install apt-file
            - $ apt-file -l search Python.h #komutu ile dosyayı içeren paket listesini alırız
            - $ sudo apt install libpython2.7-dev #yukarıdaki listeden bu paketi seçme sebebi: kutuphane paketlerinin “lib” ile başlaması, python versiyonumuzun “2.7” olması ve header dosyalarının “-dev” ile biten paketlerde bulunması.

//
// gpiozero ornegi icin ipython promptuna satir satir yazilacaklar

```
from gpiozero import LED
from time import sleep

led = LED(17)

while True:
   led.on()
   sleep(1)
   led.off()
   sleep(1)
```

//

//

// RPi.GPIO ornegi icin ipython promptuna satir satir yazilacaklar

```
import RPi.GPIO as m_out
m_out.setmode(m_out.BCM)
m_out.setwarnings(False)
m_out.setup(17, m_out.OUT)
m_out.output(17, m_out.HIGH)
m_out.output(17, m_out.LOW)
```

//

//
// wiringpi ornegi icin ipython promptuna satir satir yazilacaklar

```
import wiringpi as wpi
wpi.wiringPiSetup(); wpi.pinMode(0, wpi.OUTPUT)
wpi.digitalWrite(0, wpi.HIGH)
while True:
        wpi.digitalWrite(0, wpi.HIGH)
        wpi.delay(1000)
        wpi.digitalWrite(0, wpi.LOW)
        wpi.delay(1000)
```

//

##

WiringPi Raspi-Arduino uyumu

$ nano blink_rpi_makerhane.c

//
// nano editoru icine yazilacak satirlar

```
#include <wiringPi.h>

void setup(){

        wiringPiSetup () ;
        pinMode (0, OUTPUT) ;
}
```

```
void loop(){
        digitalWrite (0, HIGH);
        delay (500);
        digitalWrite (0,  LOW);
        delay (500) ;
}

int main (void)
{
  setup();

  while(1)
  {
        loop();
  }
  return 0 ;
}
//////////////////////////////////////////
```

```
$ gcc -Wall -o blink_rpi  blink_rpi_makerhane.c -lwiringpi
$ ./blink_rpi
```

##

Raspiyi strese sokmak icin:

```
$ stress --cpu 10 --io 20 --vm 6 --vm-bytes 25M --timeout 120s
```

UYARI: Islemci cok isinabilir.

##

Linkler

* Giriş
** raspberrypi.org/documentation
** github.com/raspberrypi/documentation
** raspberrypi.org/resources
** github.com/raspberrypilearning
** https://www.raspberrypi.org/help/faqs/#introWhatIs
** https://www.raspberrypi.org/weekly/10millionpi/
**
https://www.element14.com/community/docs/DOC-68090/l/raspberry-pi-3-pi-2-b-a-compute-mo

dule-dev-kit-comparison-chart
**
http://hackerboards.com/misc/sbc-survey-june2016/hackerboards.com-june2016-sbc-survey-specs-table.pdf
** https://en.wikipedia.org/wiki/ARM_architecture
** http://www.arm.com/products/processors/cortex-a/cortex-a53-processor.php

* Raspbian
** https://www.raspberrypi.org/downloads/noobs/
** http://futurist.se/gldt/wp-content/uploads/12.10/gldt1210.svg
** http://distrowatch.com/
** https://www.raspberrypi.org/documentation/configuration/raspi-config.md
** https://www.raspberrypi.org/documentation/configuration/config-txt.m
** https://www.raspberrypi.org/documentation/linux/software/apt.md

* Çevre Birimleri
** http://elinux.org/RPiconfig
** https://www.raspberrypi.org/documentation/remote-access/vnc/
** https://www.realvnc.com/download/viewer/

* GPIO
** http://tr.pinout.xyz
** http://wiringpi.com/examples/blink/
** https://pypi.python.org/pypi/gpiozero/1.3.1
** https://www.raspberrypi.org/learning/physical-computing-with-python/worksheet/
** https://gpiozero.readthedocs.io/en/v1.3.1/
** https://goo.gl/6h7hPd
** https://goo.gl/iM4xXy

* IoT
** http://www.cayenne-mydevices.com/docs/#introduction
** https://developer.ibm.com/recipes/tutorials/raspberry-pi-4/
**
https://github.com/ibm-messaging/iot-raspberrypi/tree/master/samples/c#note-for-users-who-want-to-change-the-code-compile-and-build-the-deb-file
** https://quickstart.internetofthings.ibmcloud.com/#/device/b827eb3370b8/sensor/
** https://console.ng.bluemix.net/catalog/starters/internet-of-things-platform-starter

* Hackaday Pojeleri
** https://hackaday.io/project/9314-babymon
** https://hackaday.io/project/9315-kapikulu

* Kapanış

** https://goo.gl/mHecjW
** http://elinux.org/RPi_Hub
** http://raspberrypi.stackexchange.com

##

Komut satırı alıştırmaları

```
  1  whoami
  2  sudo raspi-config
  3  more /etc/sudoers
  4  whoami
  5  sudo more /etc/sudoers
  6  ls /etc/
  7  ls /
  8  pwd
  9  echo $HOME
 10  pwd
 11  cd /
 12  pwd
 13  echo $HOME
 14  ls
 15  ls /home/pi/
 16  cd ~
 17  cd /
 18  pwd
 19  ls
 20  more /etc/sudoers
 21  sudo more /etc/sudoers
 22  cd
 23  cd /
 24  cd ~
 25  cd
 26  cd ~
 27  cd /home/pi/
 28  cd $HOME
 29  cd /
 30  ped
 31  pwd
 32  ls
 33  cd opt/sonic-pi/
 34  ls
 35  pwd
```

```
36  ls
37  cd /sys/devices/armv7_cortex_a7/power/
38  ls
39  pwd
40  ls
41  cd
42  ls /sys/devices/armv7_cortex_a7/power
43  clear
44  cd home
45  cd home/pi
46  cd /home/pi
47  sudo raspi-config
48  sudo su
49  sudo raspi-config
50  df -h
51  sudo raspi-config
52  df -h
53  df --help
54  df -H
55  df -h
56  df -H
57  df --help
58  df -h
59  gparted
60  sudo raspi-config
61  more /etc/passwd
62  more /etc/passwd | grep pi
63  more /etc/shadow
64  sudo more /etc/shadow
65  passwd
66  sudo more /etc/shadow | grep pi
67  sudo raspi-config
68  more /etc/timezone
69  date
70  sudo raspi-config
71  more /etc/timezone
72  sudo raspi-config
73  lsmod
74  sudo raspi-config
75  more /etc/modules
76  reboot
77  lsmod
78  more .bash_history
```

```
 79  history
 80  lsmod
 81  sudo raspi-config
 82  lsmod
 83  lsmod >Desktop/sil2.txt
 84  diff Desktop/sil Desktop/sil2.txt
 85  more Desktop/sil2.txt | grep d0
 86  more Desktop/sil | grep d0
 87  diff Desktop/sil Desktop/sil2.txt
 88  lsmod
 89  sudo raspi-config
 90  more /etc/hostname
 91  sudo raspi-config
 92  more /etc/hostname
 93  more /etc/hosts
 94  reboot
 95  touch Desktop/mb_buradaydi
 96  exit
 97  find / -name wiringPi.h -type f
 98  sudo find / -name wiringPi.h -type f
 99  arm-linux-gnueabihf-gcc
100  gcc
101  whereis gcc
102  file /usr/bin/gcc
103  file /usr/bin/gcc-4.9
104  cd Desktop/
105  mkdir src
106  cd src/
107  nano blink_rpi_makerhane.c
108  gcc -Wall -o blink_rpi  blink_rpi_makerhane.c -lwiringpi
109  gcc -Wall -o blink_rpi  blink_rpi_makerhane.c -lwiringPi
110  ls
111  ./blink_rpi
112  sudo ./blink_rpi
113  nano blink_rpi_makerhane.c
114  gcc -Wall -o blink_rpi  blink_rpi_makerhane.c -lwiringPi
115  sudo ./blink_rpi
116  history >> history_15ekim.txt
117  gpio
118  gpio readall
119  while((1)); do gpio readall; sleep 0.25; clear; done
120  while((1)); do gpio readall; sleep 2; clear; done
121  while((1)); do gpio readall; clear sleep 2; done
```

```
  122  while((1)); do gpio readall; sleep 0.25; clear; done
  123  ls
  124  history
  125  more history_ekim.txt
  126  history > history_ekim.txt
```

##

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##