

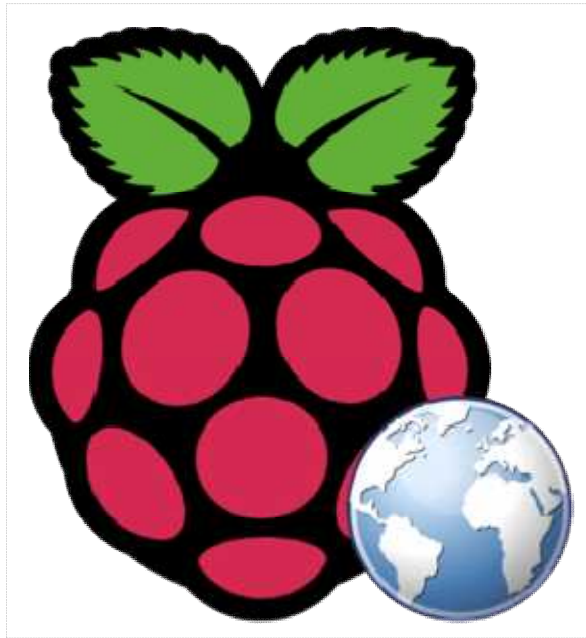
센서와 액추에이터 제어하기

WebIOPi 설치하기
LED와 버튼 제어하기
WebIOPi 깊게 파기
도전해보기

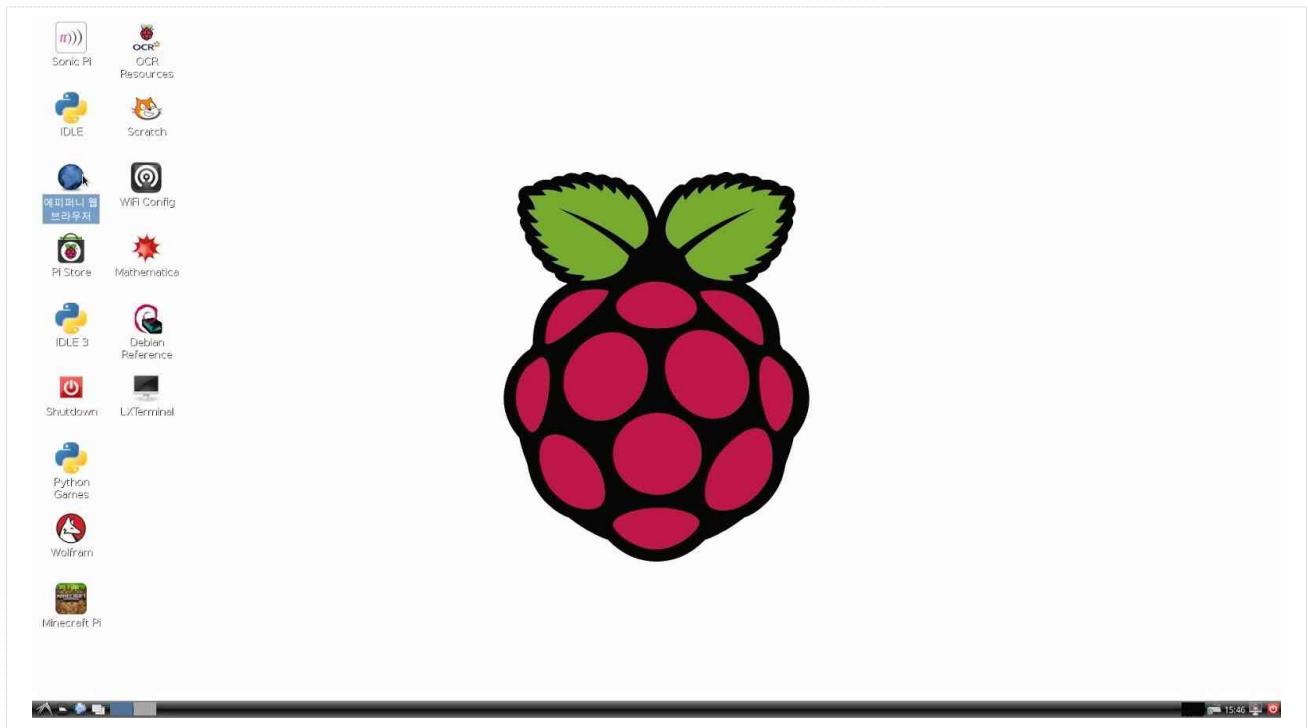


| 센서와 액추에이터 제어하기

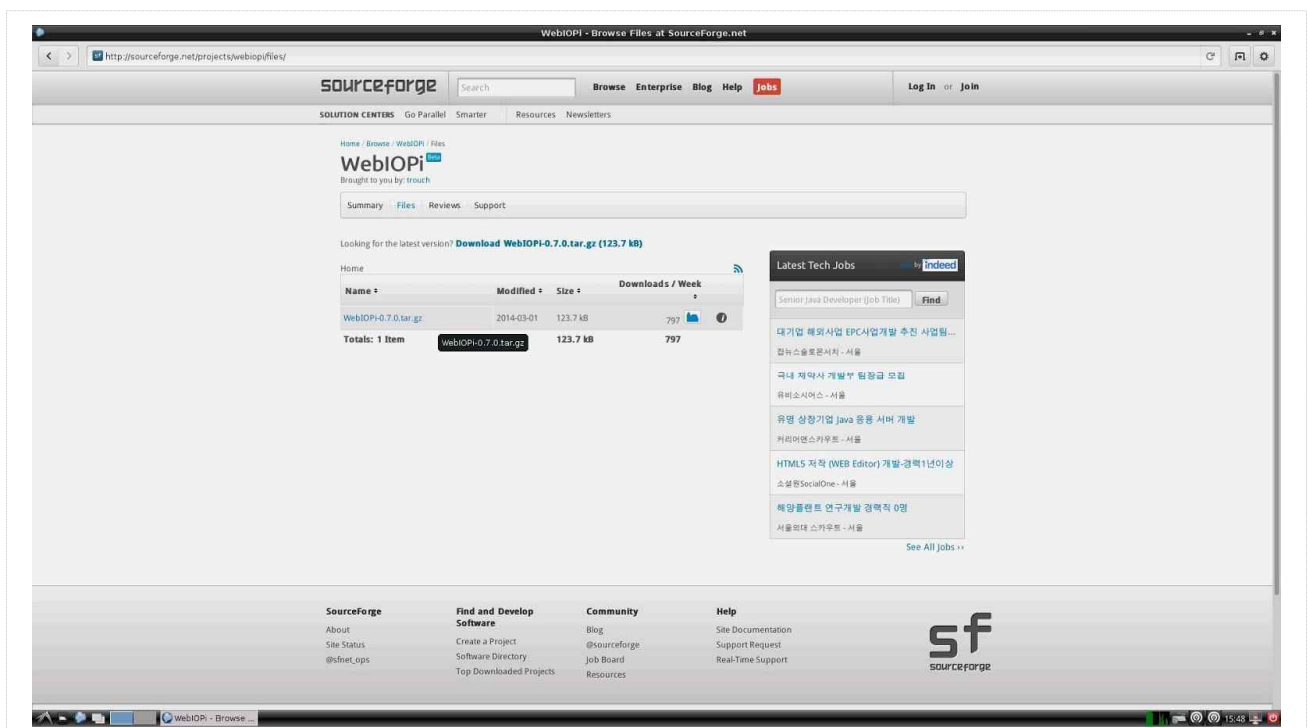
| WebIOPi 설치하기



라즈베리 파이에 연결된 센서와 액추에이터를 웹을 이용해 제어해본다.

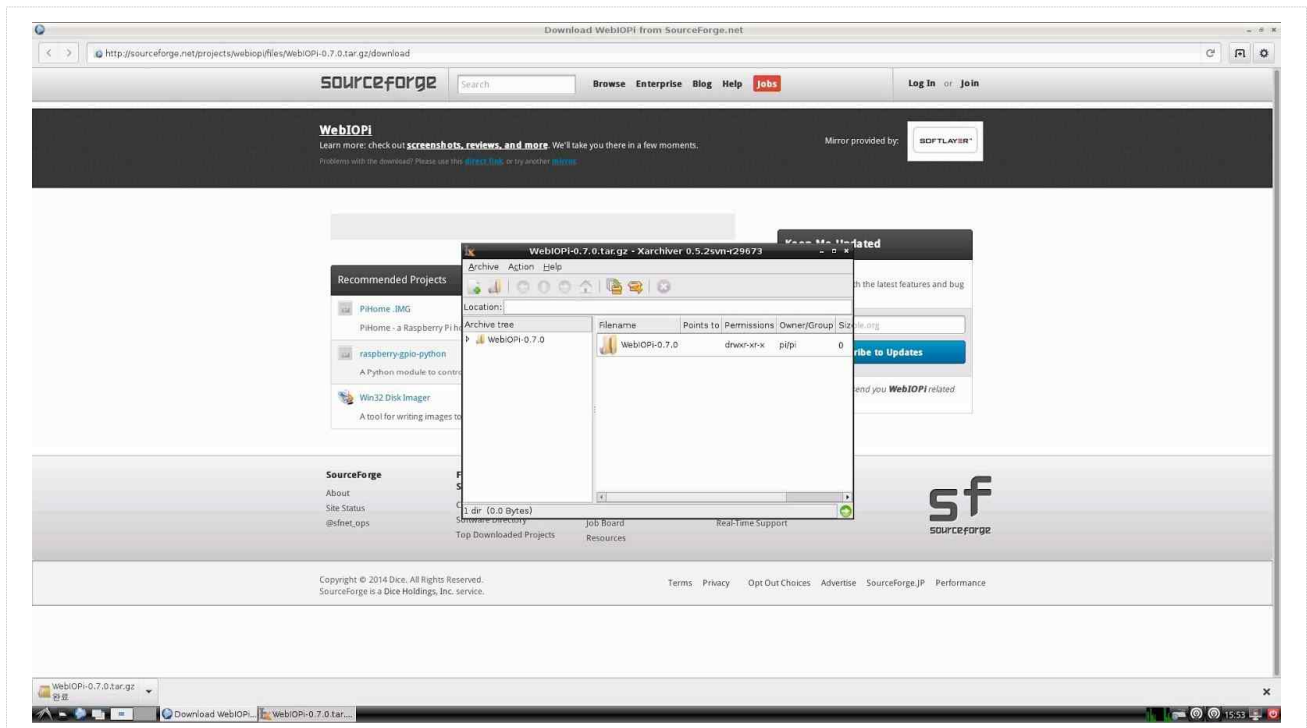


에피퍼니 웹 브라우저 실행

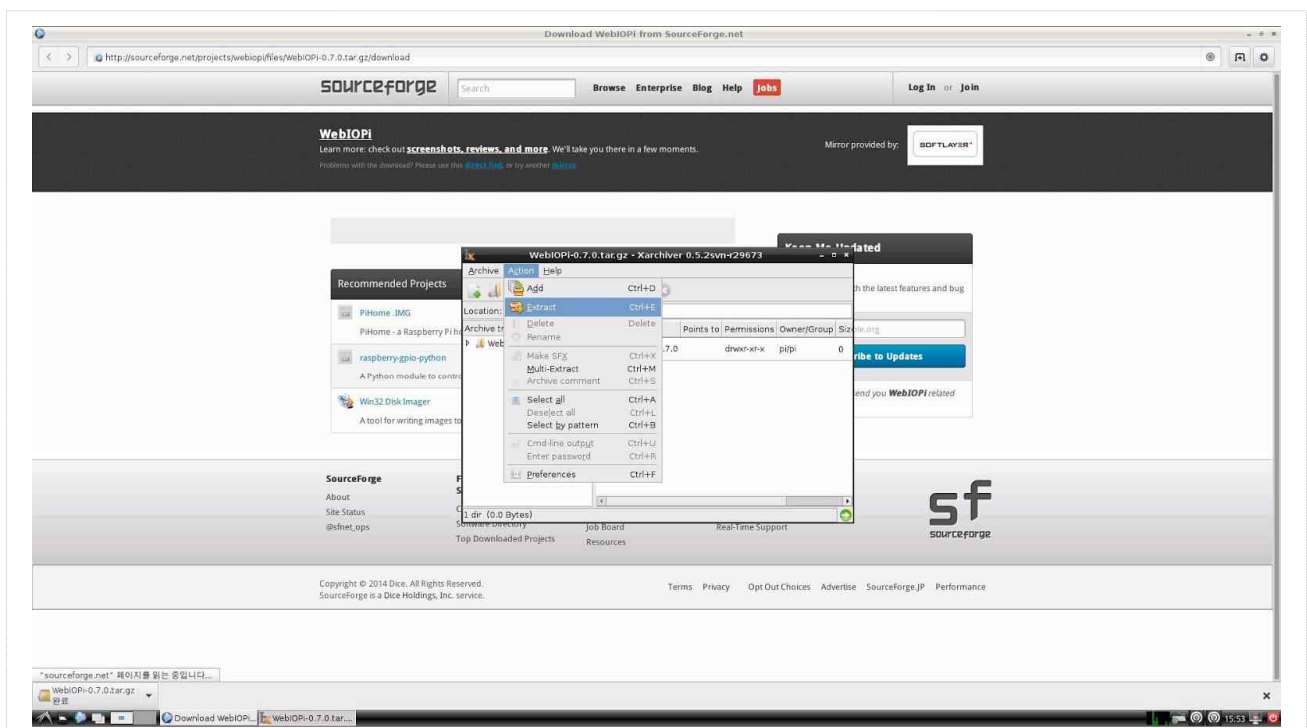


<http://goo.gl/kV4pFy>

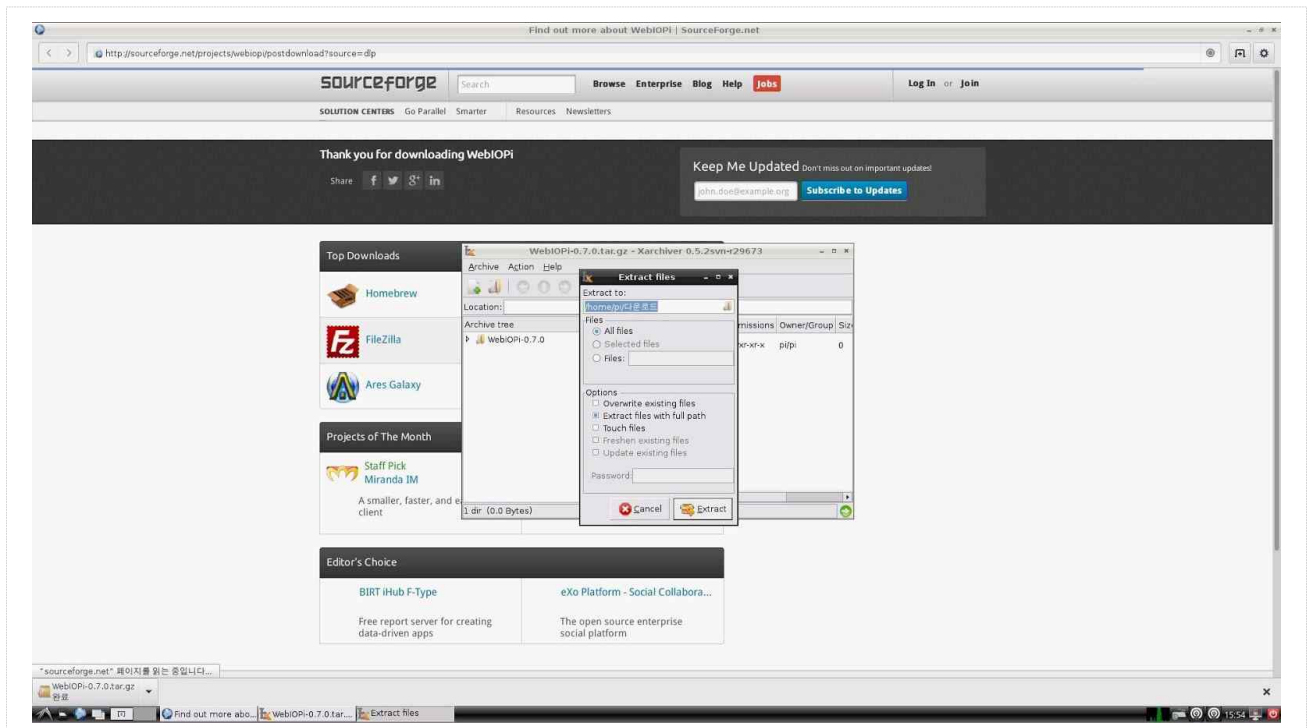
WebIOPi-0.7.0.tar.gz 클릭



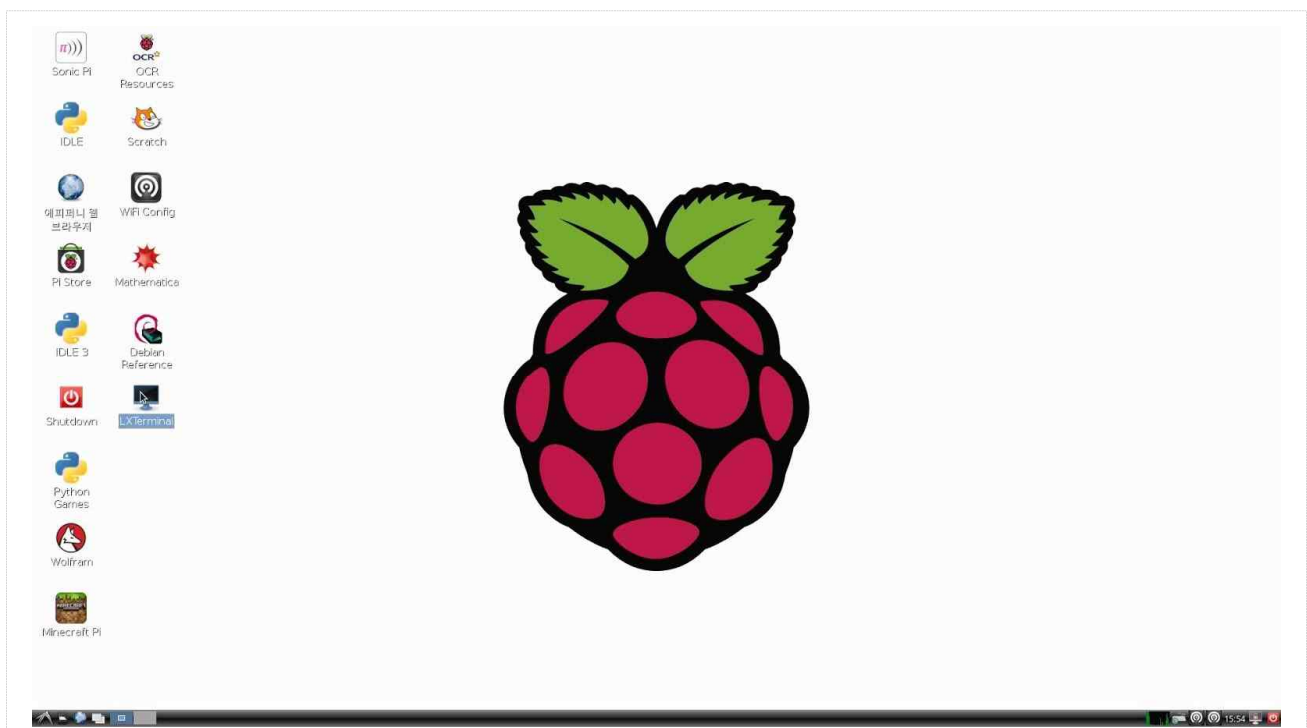
다운로드가 완료되면 자동으로 압축 프로그램이 실행된다.



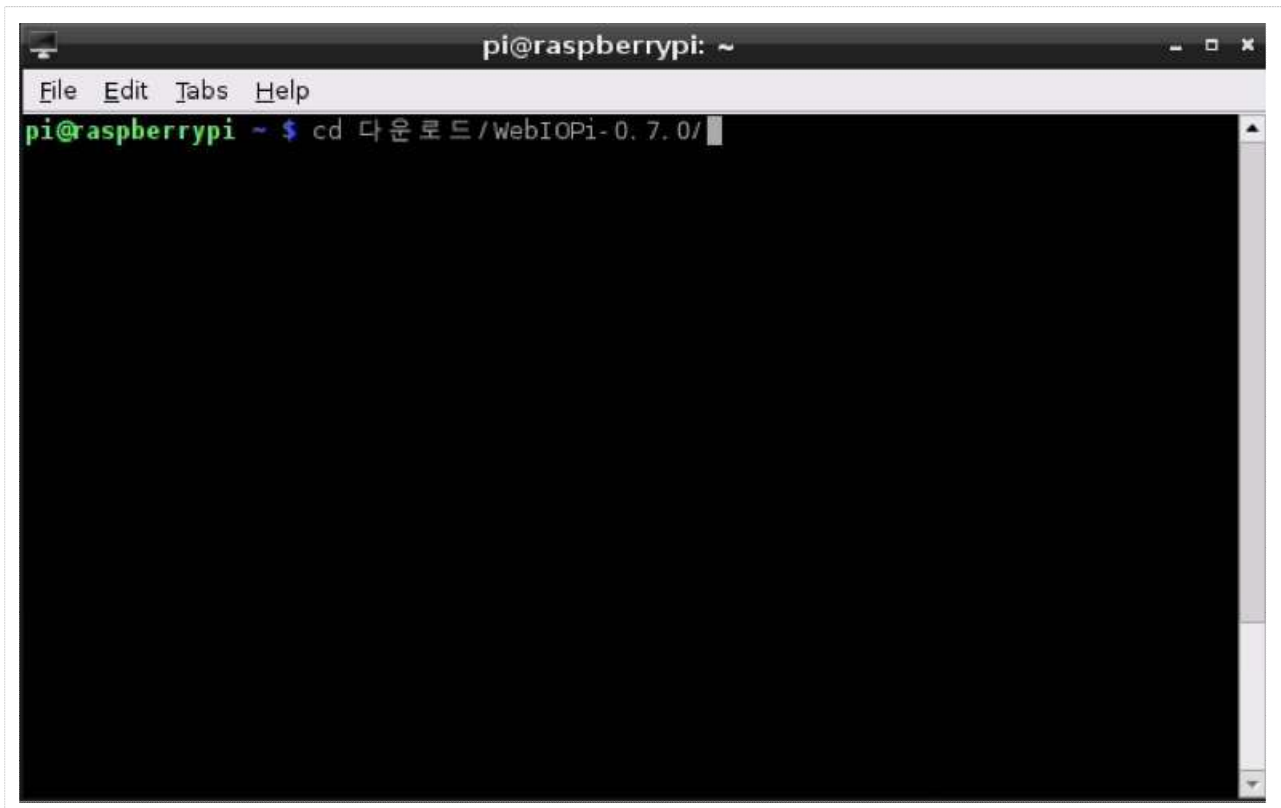
Action – Extract 선택



Extract 선택. "/home/pi/다운로드"에 압축이 풀린다.



LXTerminal 실행

A terminal window titled 'pi@raspberrypi: ~' with a menu bar containing 'File', 'Edit', 'Tabs', and 'Help'. The command prompt shows 'pi@raspberrypi ~ \$' followed by the command 'cd 다운로드/WebIOPi-0.7.0/' and a cursor. The terminal background is black.

```
pi@raspberrypi ~ $ cd 다운로드/WebIOPi-0.7.0/
```

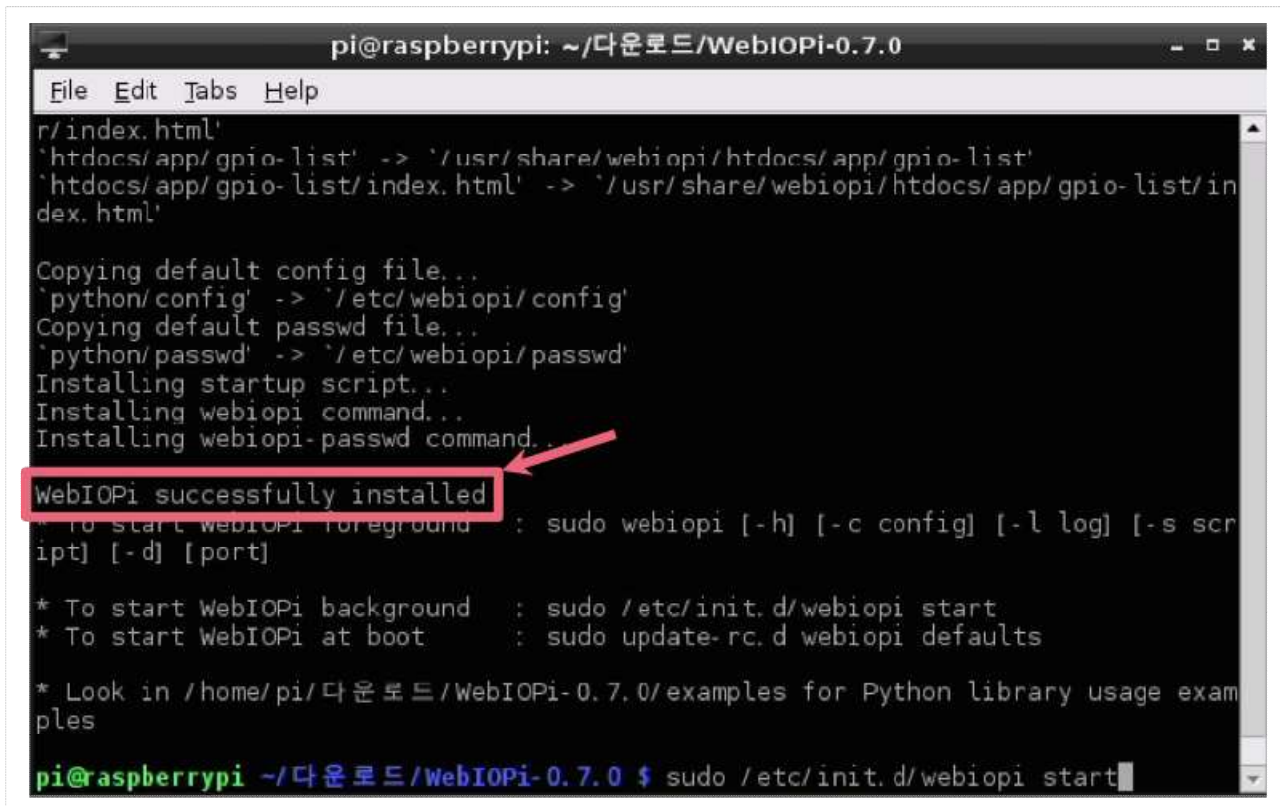
cd 다운로드/WebIOPi-0.7.0/
WebIOPi 압축을 푼 폴더로 이동한다.



A terminal window titled "pi@raspberrypi: ~/다운로드/WebIOPi-0.7.0" with a menu bar (File, Edit, Tabs, Help). The terminal shows the following commands and output:

```
pi@raspberrypi ~ $ cd 다운로드/WebIOPi-0.7.0/  
pi@raspberrypi ~/다운로드/WebIOPi-0.7.0 $ sudo ./setup.sh
```

sudo ./setup.sh
WebIOPi를 설치한다.



The image shows a terminal window on a Raspberry Pi. The title bar reads 'pi@raspberrypi: ~/다운로드/WebIOPi-0.7.0'. The terminal output shows the installation process: copying config and passwd files, installing startup scripts, and installing commands. A red box highlights the message 'WebIOPi successfully installed', with a red arrow pointing to it. Below this, instructions for starting WebIOPi in foreground, background, or at boot are provided. The prompt at the bottom shows the command 'sudo /etc/init.d/webiopi start' being entered.

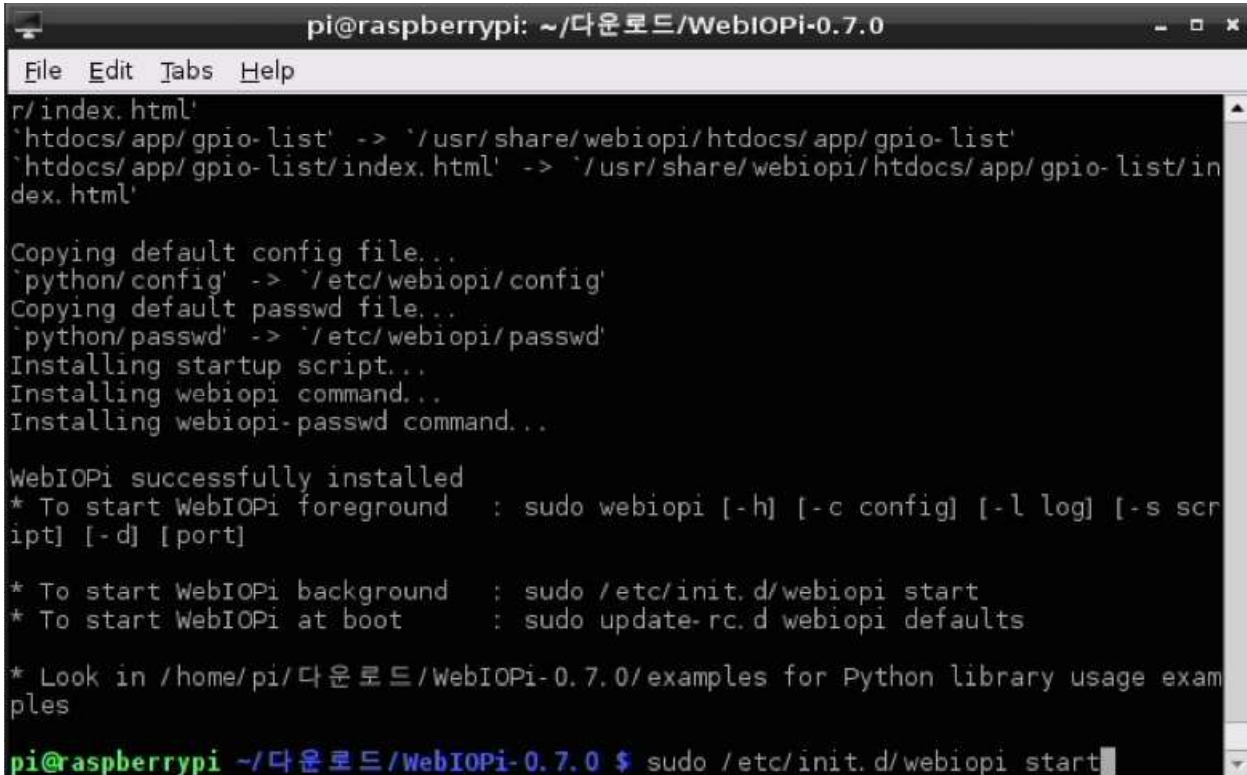
```
pi@raspberrypi: ~/다운로드/WebIOPi-0.7.0
File Edit Tabs Help
r/index.html'
'htdocs/app/gpio-list' -> '/usr/share/webiopi/htdocs/app/gpio-list'
'htdocs/app/gpio-list/index.html' -> '/usr/share/webiopi/htdocs/app/gpio-list/index.html'

Copying default config file...
'python/config' -> '/etc/webiopi/config'
Copying default passwd file...
'python/passwd' -> '/etc/webiopi/passwd'
Installing startup script...
Installing webiopi command...
Installing webiopi-passwd command...
WebIOPi successfully installed
* To start WebIOPi foreground : sudo webiopi [-h] [-c config] [-l log] [-s script] [-d] [port]
* To start WebIOPi background : sudo /etc/init.d/webiopi start
* To start WebIOPi at boot : sudo update-rc.d webiopi defaults

* Look in /home/pi/다운로드/WebIOPi-0.7.0/examples for Python library usage examples

pi@raspberrypi ~/다운로드/WebIOPi-0.7.0 $ sudo /etc/init.d/webiopi start
```

WebIOPi successfully installed
설치가 정상적으로 완료되면 다음과 같이 표시된다.



```
pi@raspberrypi: ~/다운로드/WebIOPi-0.7.0
File Edit Tabs Help
r/index.html'
'htdocs/app/gpio-list' -> '/usr/share/webiopi/htdocs/app/gpio-list'
'htdocs/app/gpio-list/index.html' -> '/usr/share/webiopi/htdocs/app/gpio-list/index.html'

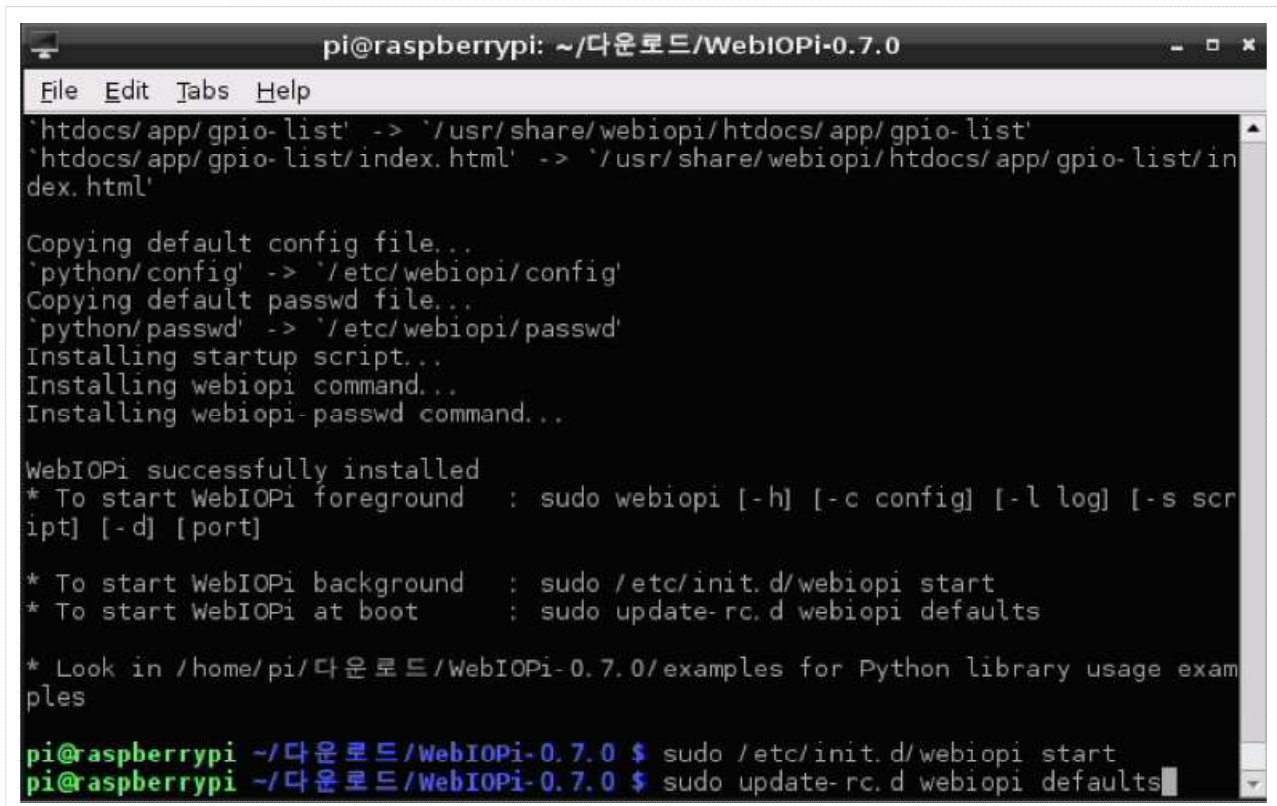
Copying default config file...
'python/config' -> '/etc/webiopi/config'
Copying default passwd file...
'python/passwd' -> '/etc/webiopi/passwd'
Installing startup script...
Installing webiopi command...
Installing webiopi-passwd command...

WebIOPi successfully installed
* To start WebIOPi foreground : sudo webiopi [-h] [-c config] [-l log] [-s script] [-d] [port]
* To start WebIOPi background : sudo /etc/init.d/webiopi start
* To start WebIOPi at boot : sudo update-rc.d webiopi defaults

* Look in /home/pi/다운로드/WebIOPi-0.7.0/examples for Python library usage examples

pi@raspberrypi ~/다운로드/WebIOPi-0.7.0 $ sudo /etc/init.d/webiopi start
```

sudo /etc/init.d/webiopi start
WebIOPi를 시작한다.



```
pi@raspberrypi: ~/다운로드/WebIOPi-0.7.0
File Edit Tabs Help
'htdocs/app/gpio-list' -> '/usr/share/webiopi/htdocs/app/gpio-list'
'htdocs/app/gpio-list/index.html' -> '/usr/share/webiopi/htdocs/app/gpio-list/index.html'

Copying default config file...
'python/config' -> '/etc/webiopi/config'
Copying default passwd file...
'python/passwd' -> '/etc/webiopi/passwd'
Installing startup script...
Installing webiopi command...
Installing webiopi-passwd command...

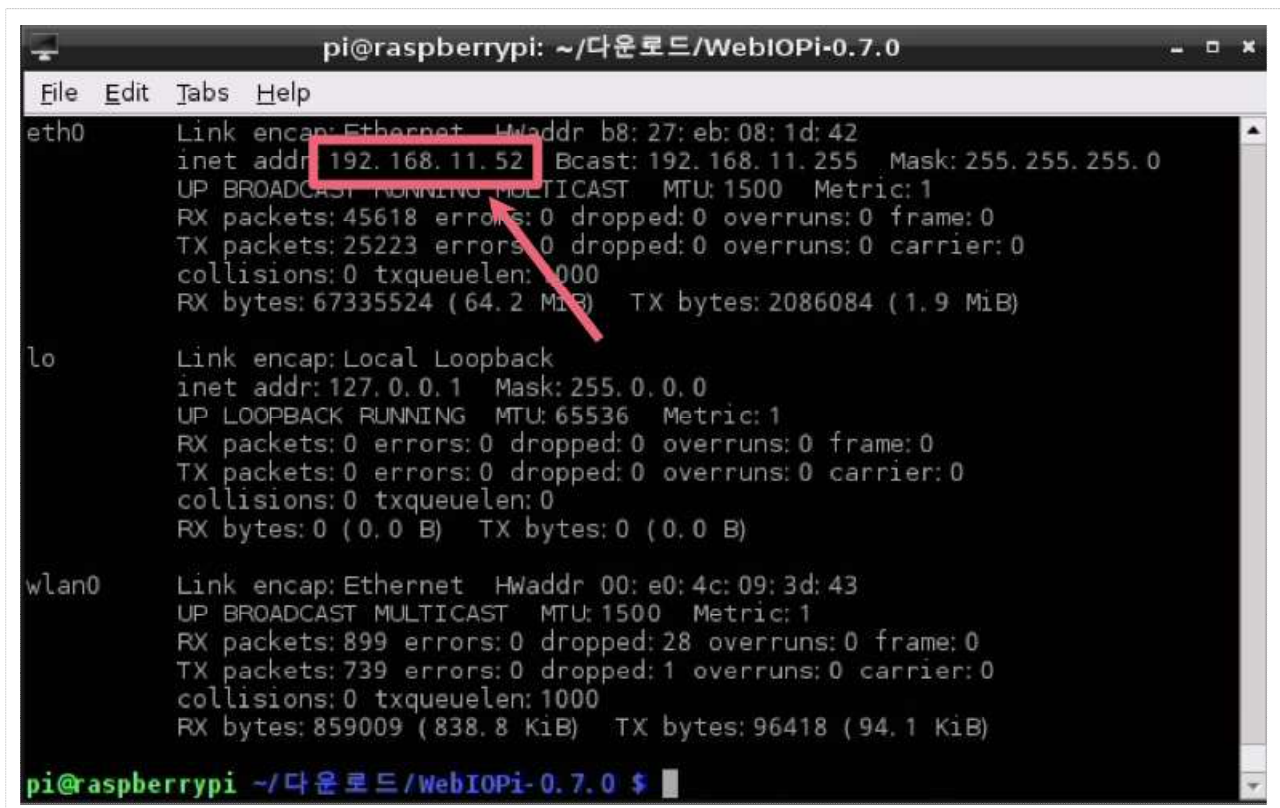
WebIOPi successfully installed
* To start WebIOPi foreground : sudo webiopi [-h] [-c config] [-l log] [-s script] [-d] [port]
* To start WebIOPi background : sudo /etc/init.d/webiopi start
* To start WebIOPi at boot : sudo update-rc.d webiopi defaults

* Look in /home/pi/다운로드/WebIOPi-0.7.0/examples for Python library usage examples

pi@raspberrypi ~/다운로드/WebIOPi-0.7.0 $ sudo /etc/init.d/webiopi start
pi@raspberrypi ~/다운로드/WebIOPi-0.7.0 $ sudo update-rc.d webiopi defaults
```

`sudo update-rc.d webiopi defaults`

라즈베리 파이가 켜지면 자동으로 WebIOPi가 실행되도록 설정한다.



```
pi@raspberrypi: ~/다운로드/WebIOPi-0.7.0
File Edit Tabs Help
eth0      Link encap:Ethernet  HWaddr b8:27:eb:08:1d:42
          inet addr:192.168.11.52  Bcast:192.168.11.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:45618 errors:0 dropped:0 overruns:0 frame:0
          TX packets:25223 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:67335524 (64.2 MiB)  TX bytes:2086084 (1.9 MiB)

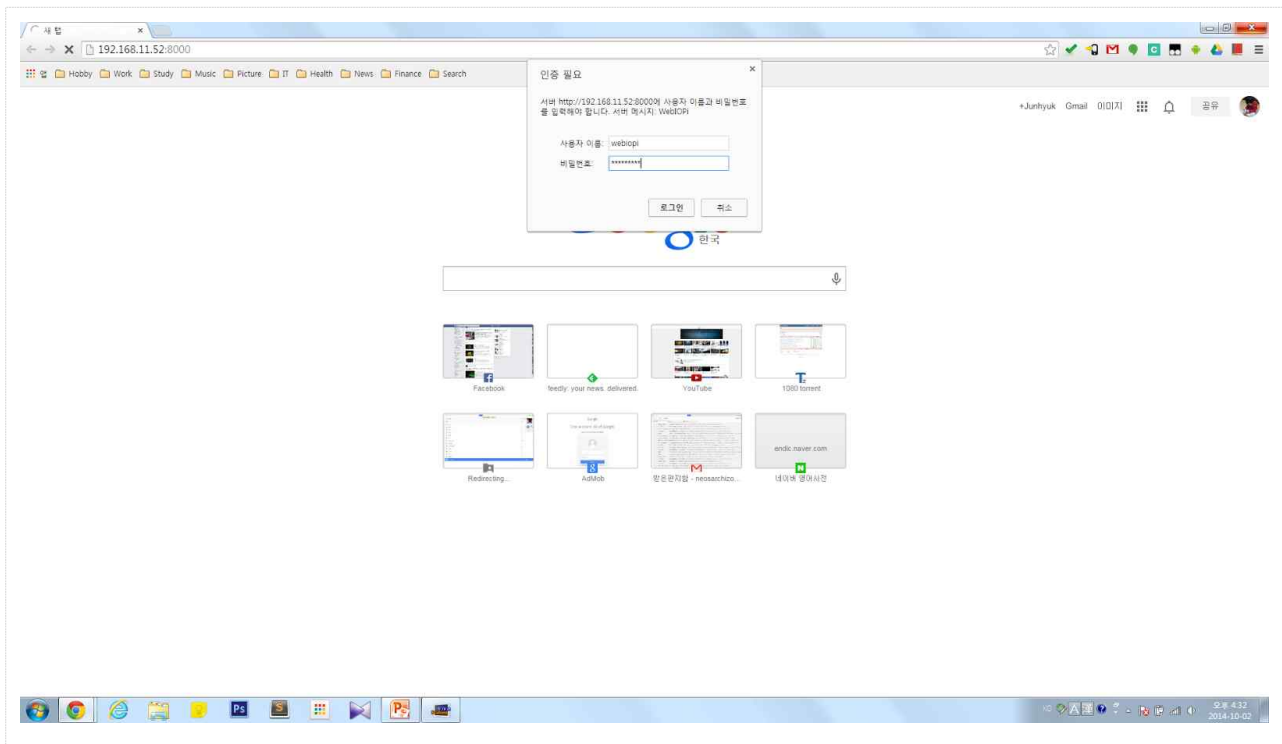
lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

wlan0     Link encap:Ethernet  HWaddr 00:e0:4c:09:3d:43
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:899 errors:0 dropped:28 overruns:0 frame:0
          TX packets:739 errors:0 dropped:1 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:859009 (838.8 KiB)  TX bytes:96418 (94.1 KiB)

pi@raspberrypi ~/다운로드/WebIOPi-0.7.0 $
```

ifconfig

라즈베리 파이의 현재 IP주소가 표시된다.

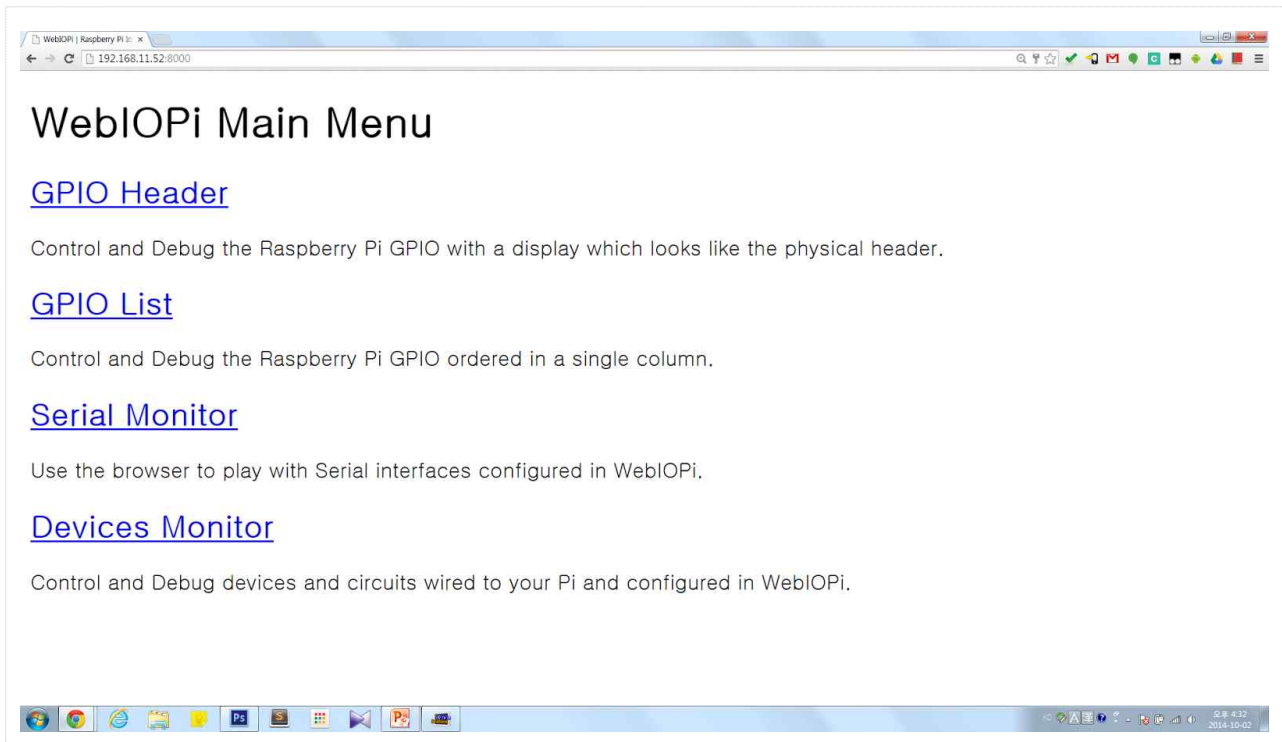


http://[라즈베리 파이 주소]:8000

여기서는 앞서 확인한 http://192.168.11.52:8000 으로 이동한다.

아이디 : webiopi

비밀번호 : raspberry

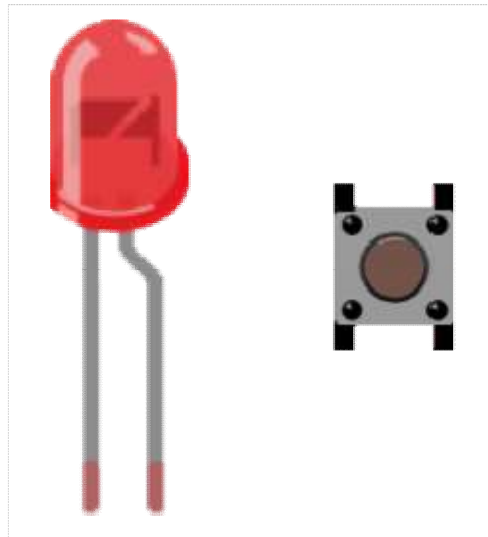


WebIOPi Main Menu

이와 같은 화면이 뜨면 정상적으로 설치된 것이다.

2 LED와 버튼 제어하기

| LED와 버튼 제어하기



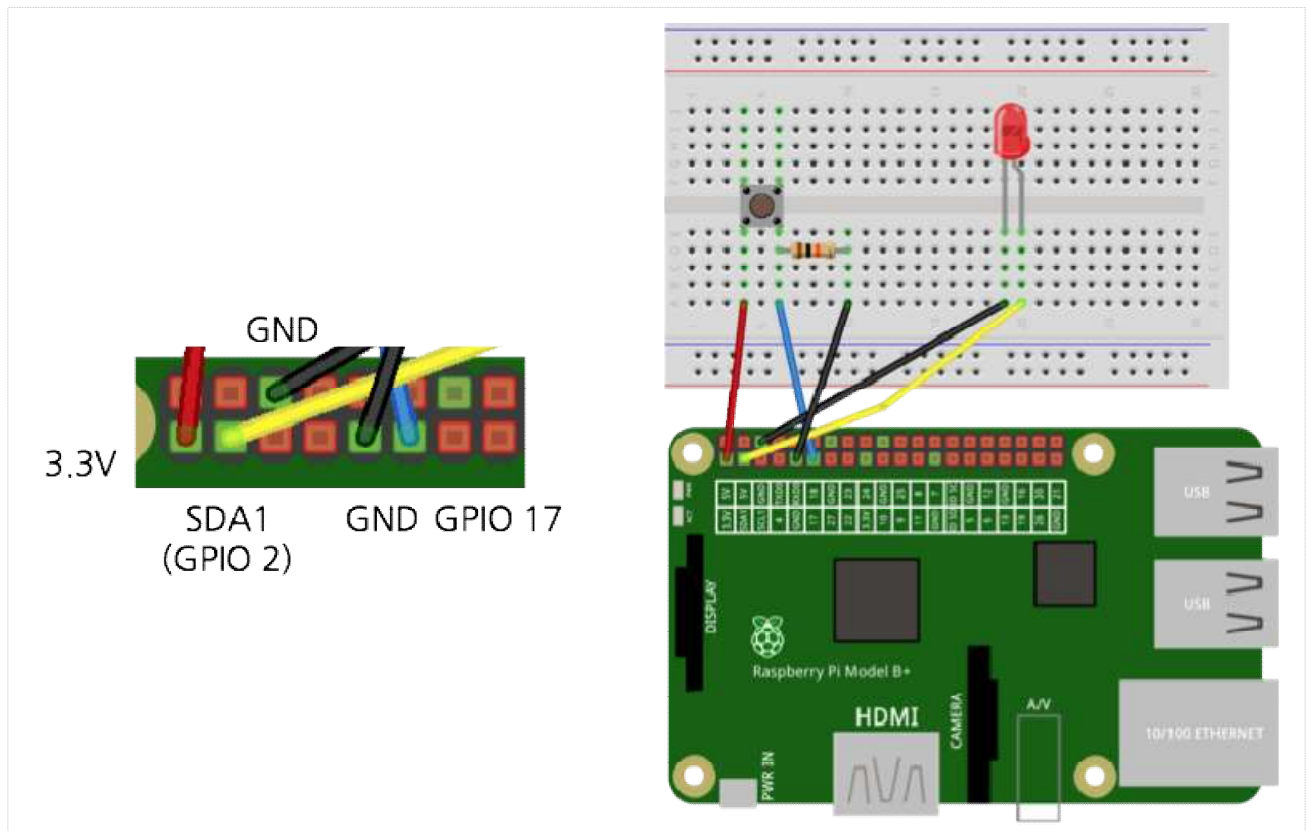
WebIOPi로 LED와 버튼을 제어해본다.

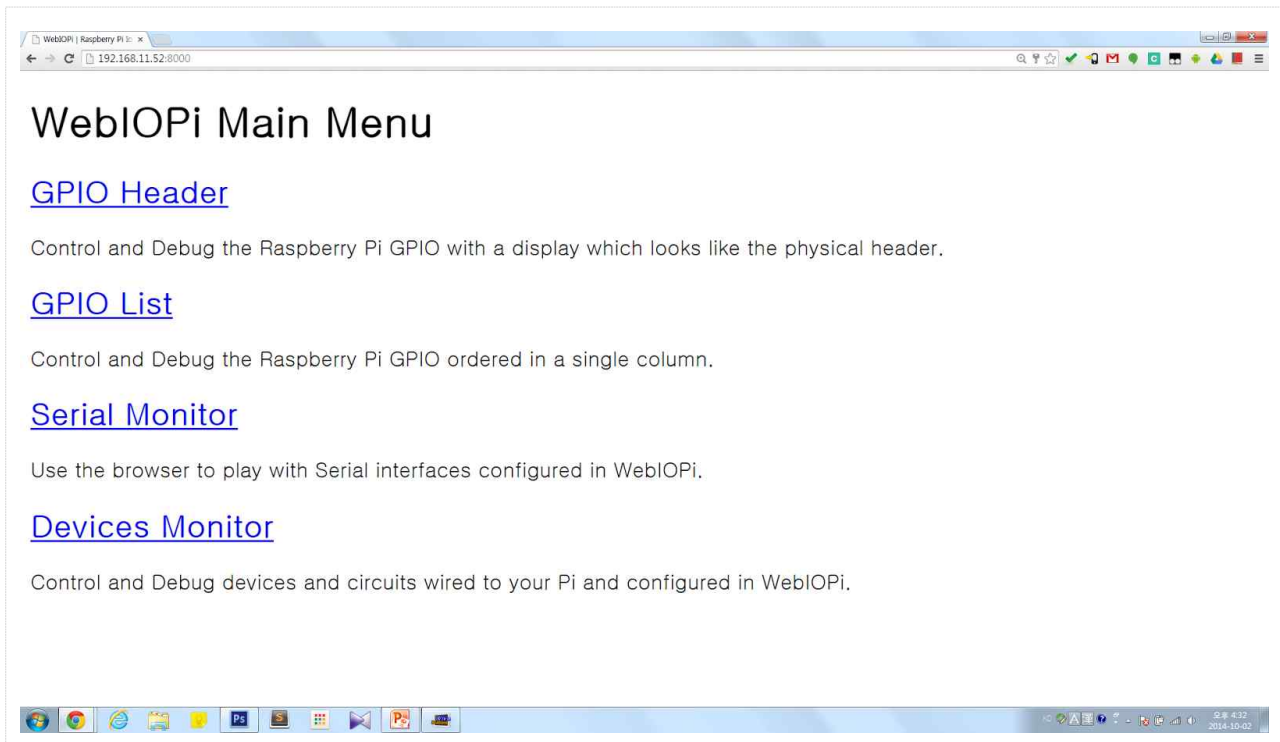
| 재료



2 LED와 버튼 제어하기

▪ 회로도





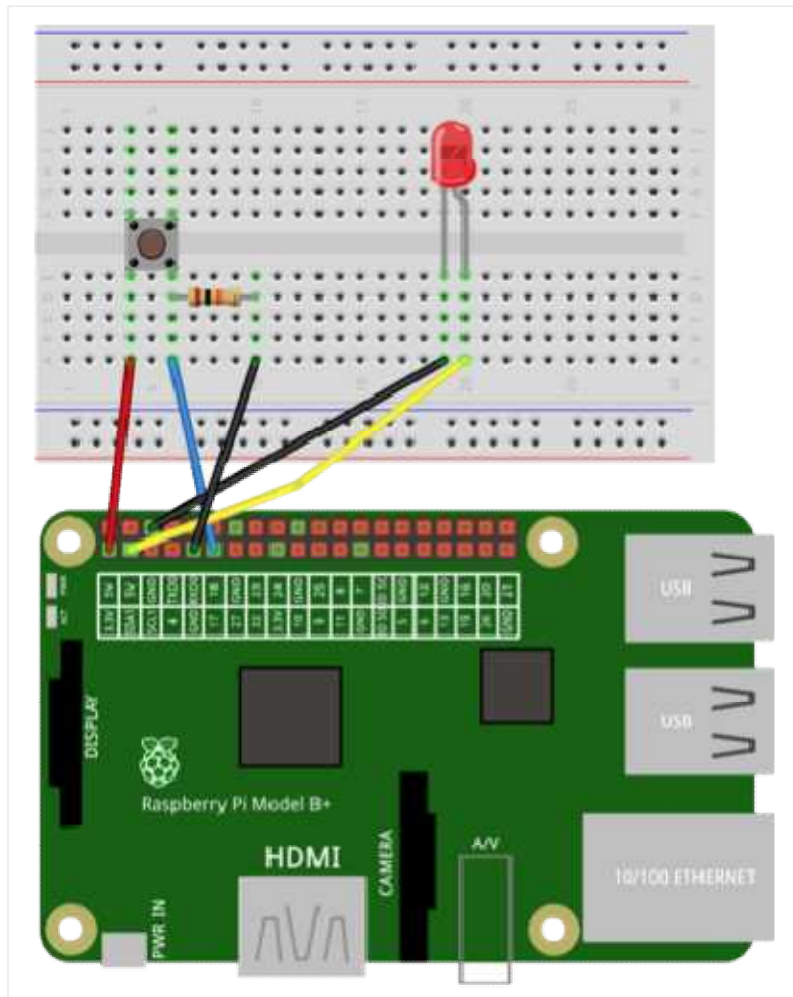
GPIO Header 클릭





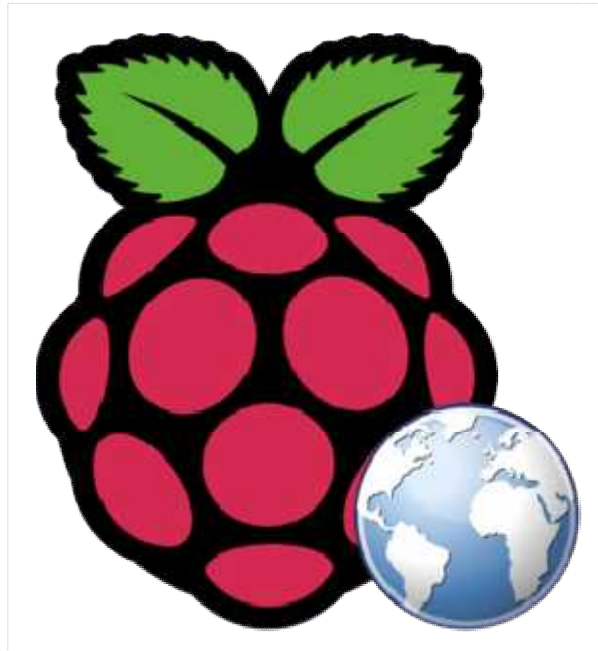
2 LED와 버튼 제어하기

| 확인하기

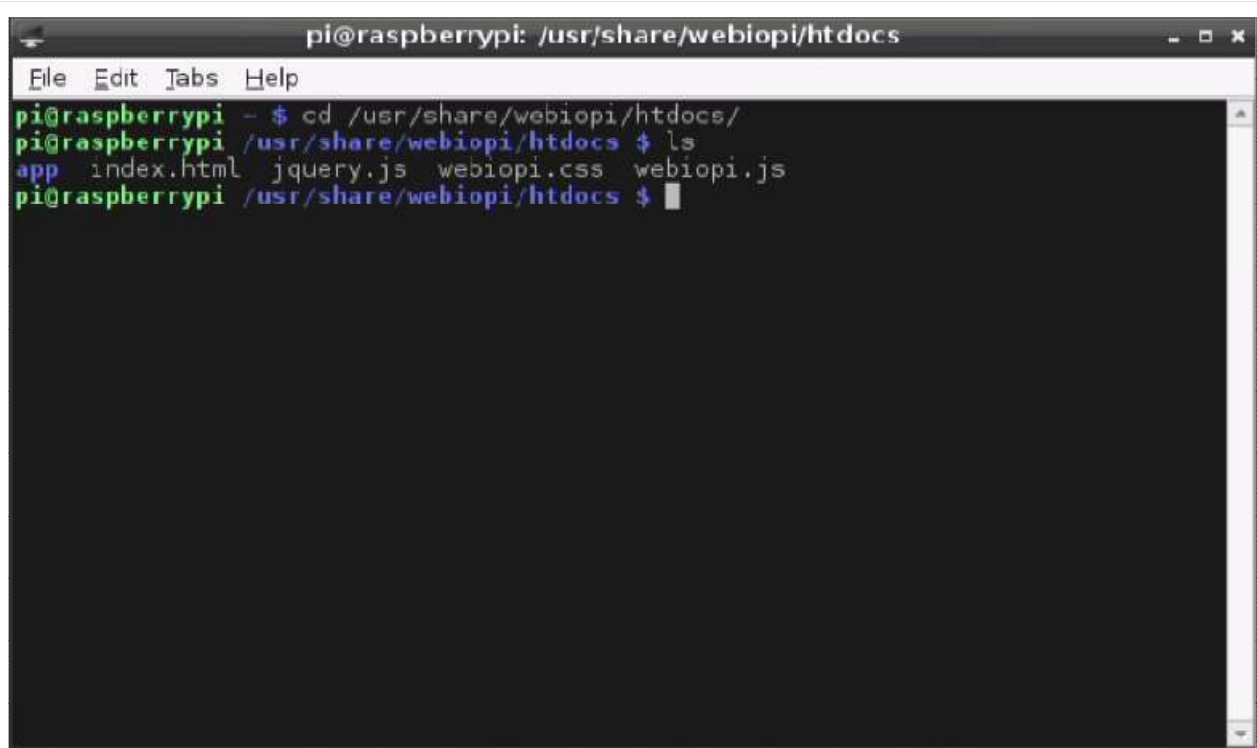


웹 페이지와 LED, 버튼이 연동되어 작동한다.

| WebIOPi 깊게 파기



WebIOPi의 웹페이지를 수정하거나, 서버에 바로 요청해서 제어하는 것을 배워본다.

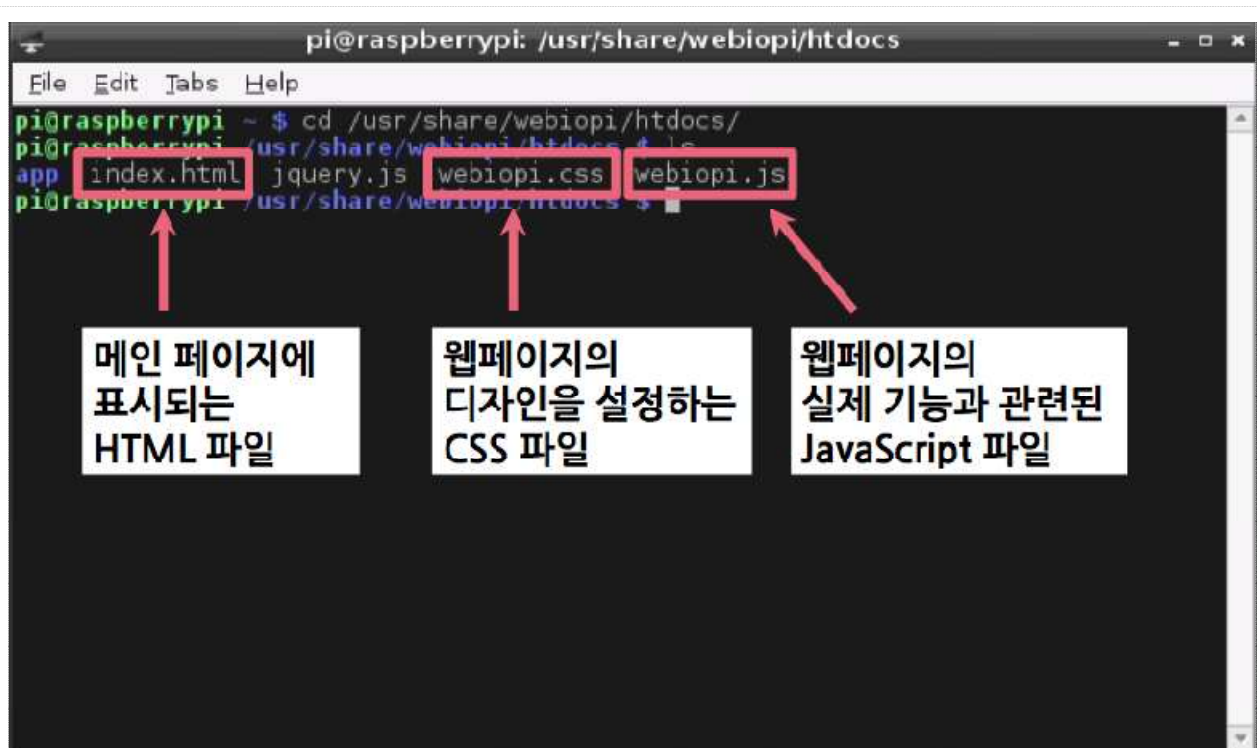


```

pi@raspberrypi: /usr/share/webiopi/htdocs
File Edit Tabs Help
pi@raspberrypi ~ $ cd /usr/share/webiopi/htdocs/
pi@raspberrypi /usr/share/webiopi/htdocs $ ls
app index.html jquery.js webiopi.css webiopi.js
pi@raspberrypi /usr/share/webiopi/htdocs $

```

cd /usr/share/webiopi/htdocs/
 WebIOPi의 웹페이지들이 저장된 폴더로 이동한다.



```

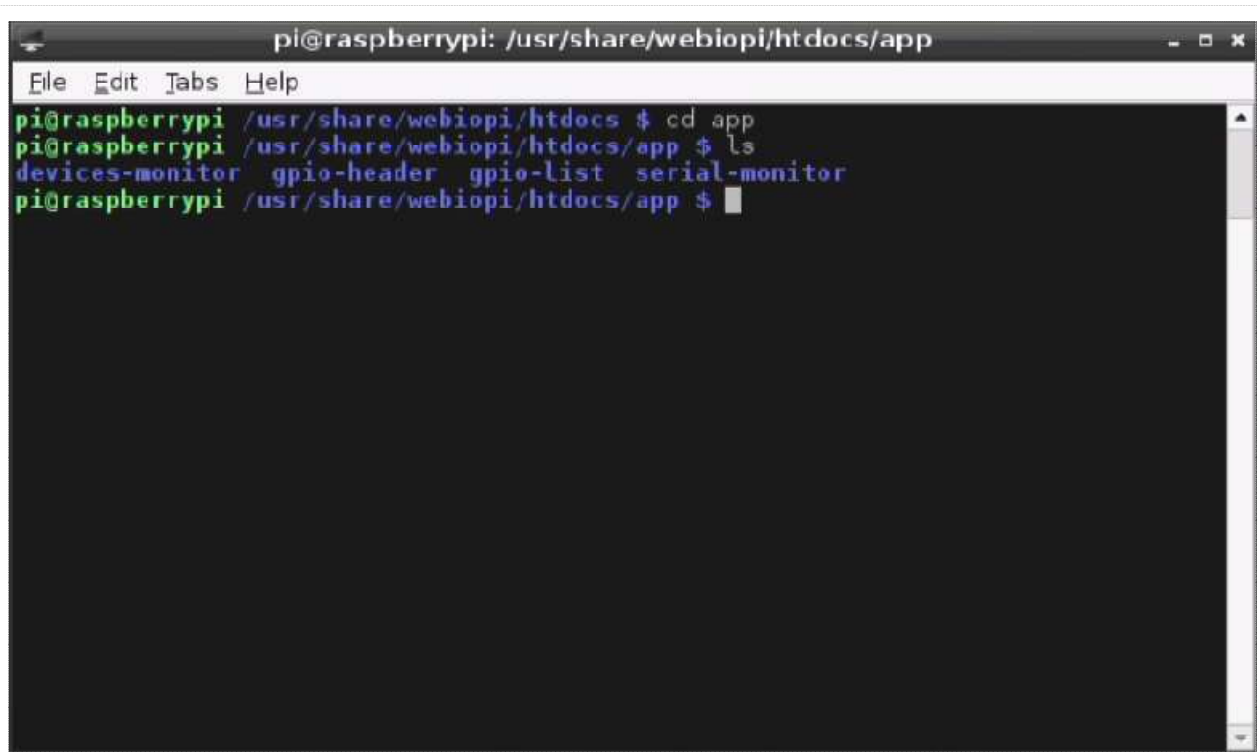
pi@raspberrypi: /usr/share/webiopi/htdocs
File Edit Tabs Help
pi@raspberrypi ~ $ cd /usr/share/webiopi/htdocs/
pi@raspberrypi /usr/share/webiopi/htdocs $ ls
app index.html jquery.js webiopi.css webiopi.js
pi@raspberrypi /usr/share/webiopi/htdocs $

```

Annotations:

- index.html**: 메인 페이지에 표시되는 HTML 파일
- webiopi.css**: 웹페이지의 디자인을 설정하는 CSS 파일
- webiopi.js**: 웹페이지의 실제 기능과 관련된 JavaScript 파일

index.html 파일을 수정해 메인 페이지 내용을 바꿔줄 수 있다.



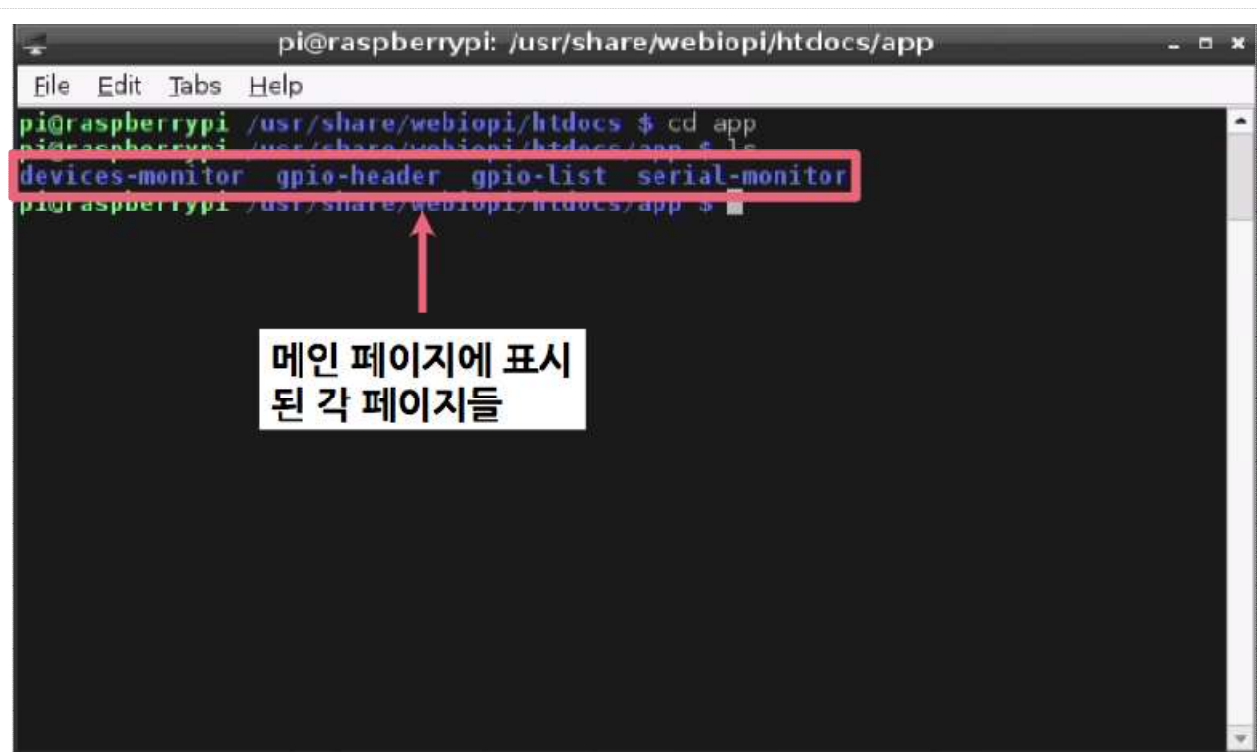
```

pi@raspberrypi: /usr/share/webiopi/htdocs/app
File Edit Tabs Help
pi@raspberrypi /usr/share/webiopi/htdocs $ cd app
pi@raspberrypi /usr/share/webiopi/htdocs/app $ ls
devices-monitor  gpio-header  gpio-list  serial-monitor
pi@raspberrypi /usr/share/webiopi/htdocs/app $

```

`cd /usr/share/webiopi/htdocs/app/`

메인 페이지에 표시된 각 페이지들이 저장된 경로로 이동한다.



```

pi@raspberrypi: /usr/share/webiopi/htdocs/app
File Edit Tabs Help
pi@raspberrypi /usr/share/webiopi/htdocs $ cd app
pi@raspberrypi /usr/share/webiopi/htdocs/app $ ls
devices-monitor  gpio-header  gpio-list  serial-monitor
pi@raspberrypi /usr/share/webiopi/htdocs/app $

```

메인 페이지에 표시
된 각 페이지들

별도의 페이지를 추가하고 싶다면 이 경로에 폴더를 추가해서 HTML 파일을 만들면 된다.

▪ 서버에 바로 요청하기 [POST]

- 모드 설정

/GPIO/[핀 번호]/function/IN

/GPIO/[핀 번호]/function/OUT

- 출력 전압 설정

/GPIO/[핀 번호]/value/0

/GPIO/[핀 번호]/value/1

▪ 서버에 바로 요청하기 [GET]

-라즈베리 파이의 현재 입출력 정보
/*

| 도전해보기

다른 센서와 액추에이터를 연결해서 제어해본다.

웹페이지를 수정해서 사용해본다.

서버에 직접 요청해서 제어해본다.