

오픈소스 SW 개발도구 활용 보고서

빅데이터학과

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(1) 아파치 웹 서버 설치 및 운용

```
krustm7@myserver: ~  
krustm7@myserver:~$ sudo apt update  
Hit:1 https://download.docker.com/linux/ubuntu eoan InRelease  
Hit:2 https://download.docker.com/linux/debian bullseye InRelease  
Hit:3 http://packages.cloud.google.com/apt cloud-sdk-bullseye InRelease  
Hit:4 http://deb.debian.org/debian bullseye InRelease  
Get:5 http://security.debian.org/debian-security bullseye-security InRelease [49.4 kB]  
Get:6 http://deb.debian.org/debian bullseye-updates InRelease [44.1 kB]  
Hit:7 http://packages.cloud.google.com/apt google-cloud-packages-archive-keyring-bullseye InRelease  
Get:8 http://deb.debian.org/debian bullseye-backports InRelease [49.0 kB]  
Hit:9 http://packages.cloud.google.com/apt google-compute-engine-bullseye-stable InRelease  
Get:10 http://security.debian.org/debian-security bullseye-security/main Sources [157 kB]  
Get:11 http://security.debian.org/debian-security bullseye-security/main amd64 Packages [185 kB]  
Get:12 http://deb.debian.org/debian bullseye-backports/main Sources.diff/Index [63.3 kB]  
Get:13 http://deb.debian.org/debian bullseye-backports/main amd64 Packages.diff/Index [63.3 kB]  
Get:14 http://deb.debian.org/debian bullseye-backports/main Sources T-2022-09-23-1115.50-F-2022-09-23-1115.50.pdiff [211 B]  
Get:14 http://deb.debian.org/debian bullseye-backports/main Sources T-2022-09-23-1115.50-F-2022-09-23-1115.50.pdiff [211 B]  
Get:15 http://deb.debian.org/debian bullseye-backports/main amd64 Packages T-2022-09-23-1115.50-F-2022-09-23-1115.50.pdiff [930 B]  
Get:15 http://deb.debian.org/debian bullseye-backports/main amd64 Packages T-2022-09-23-1115.50-F-2022-09-23-1115.50.pdiff [930 B]  
Fetched 611 kB in 1s (472 kB/s)  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
0 packages can be upgraded. Run 'apt list --upgradable' to see them.  
krustm7@myserver:~$ sudo apt install apache2  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
apache2 is already the newest version (2.4.54-1-deb11u1).  
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

Apt get update와 apt get install을 사용하여 apache2 설치

```
krustm7@myserver:/var/www/html$ sudo ufw app list
Available applications:
  AIM
  Bonjour
  CIFS
  DNS
  Deluge
  IMAP
  IMAPS
  IPP
  KTorrent
  Kerberos Admin
  Kerberos Full
  Kerberos KDC
  Kerberos Password
  LDAP
  LDAPS
  LPD
  MSN
  MSN SSL
  Mail submission
  NFS
  OpenSSH
  POP3
  POP3S
  PeopleNearby
  SMTP
  SSH
  Socks
  Telnet
  Transmission
  Transparent Proxy
  VNC
  WWW
  WWW Cache
  WWW Full
  WWW Secure
  XMPP
  Yahoo
  qBittorrent
  svnserve
krustm7@myserver:/var/www/html$ sudo ufw allow 'Apache'
ERROR: Could not find a profile matching 'Apache'
krustm7@myserver:/var/www/html$ sudo ufw status
Status: inactive
```

이 부분은 방화벽 설정하는 부분인데 왜인지는 모르겠으나 apache 가 존재하지 않아 sudo ufw allow 'Apache' 또한 작동하지 않는다.

sudo ufw status를 사용하여 보았을때도 마찬가지로 비활성화되어있음을 확인이 가능하다.

```
krustm7@myserver:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2022-09-23 06:35:13 UTC; 5h 26min ago
     Docs: https://httpd.apache.org/docs/2.4/
    Main PID: 138132 (apache2)
      Tasks: 55 (limit: 4693)
     Memory: 10.2M
        CPU: 1.178s
    CGroup: /system.slice/apache2.service
            └─138132 /usr/sbin/apache2 -k start
              └─138134 /usr/sbin/apache2 -k start
                └─138135 /usr/sbin/apache2 -k start

Sep 23 06:35:13 myserver systemd[1]: Starting The Apache HTTP Server...
Sep 23 06:35:13 myserver systemd[1]: Started The Apache HTTP Server.
```

이 부분은 systemctl을 사용하여 아파치 서버의 활성화 여부를 확인이 가능한데 보다싶이 active상태이다.

```
krustm7@myserver:~$ cd /var/www/html/
krustm7@myserver:/var/www/html$ ls -al
total 12
drwxr-xr-x 2 root root 4096 Sep 23 05:28 .
drwxr-xr-x 3 root root 4096 Sep 23 05:14 ..
-rw-r--r-- 1 root root  93 Sep 23 05:28 index.html
krustm7@myserver:/var/www/html$ nano index.html
```

과제에 나와 있듯이 index.html을 수정하여 웹페이지를 만든다.

```
krustm7@myserver:/var/www/html$ sudo apt install wget
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  wget
0 upgraded, 1 newly installed, 0 to remove and 8 not upgraded.
Need to get 964 kB of archives.
After this operation, 3559 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bullseye/main amd64 wget amd64 1.21-1+deb11u1 [964 kB]
Fetched 964 kB in 0s (3775 kB/s)
Selecting previously unselected package wget.
(Reading database ... 58873 files and directories currently installed.)
Preparing to unpack .../wget_1.21-1+deb11u1_amd64.deb ...
Unpacking wget (1.21-1+deb11u1) ...
Setting up wget (1.21-1+deb11u1) ...
Processing triggers for man-db (2.9.4-2) ...
```

Wget을 사용하여 인터넷에서 사진을 받아오고 싶은데 wget이 존재하지 않으므로 설치해준다.

```
krustm7@myserver:/var/www/html$ sudo wget https://www.hallym.ac.kr/.resources/hallym_univ_theme/hallym/ko/img/abouthallym/symbol-ui-mark.png
--2022-09-23 12:15:02-- https://www.hallym.ac.kr/.resources/hallym_univ_theme/hallym/ko/img/abouthallym/symbol-ui-mark.png
Resolving www.hallym.ac.kr (www.hallym.ac.kr)... 210.115.225.177
Connecting to www.hallym.ac.kr (www.hallym.ac.kr)|210.115.225.177|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 11077 (11K) [image/png]
Saving to: 'symbol-ui-mark.png'

symbol-ui-mark.png                               100%[=====]
2022-09-23 12:15:02 (196 MB/s) - 'symbol-ui-mark.png' saved [11077/11077]

krustm7@myserver:/var/www/html$ ls
index.html  symbol-ui-mark.png
```

웹페이지를 만들기 위해 필요한 사진을 wget 링크를 사용하여 사진을 다운로드 받는다.

```
krustm7@myserver:/var/www/html$ sudo mv symbol-ui-mark.png hallym.png
```

사진의 이름을 간단하게 바꾼다.

Kim Young Sik

University [Hallym Univ](#)



My age is 25years old.

My major is Bigdata.

그렇게 간단하게 웹페이지를 만들어 구동 시켜 보았다.

소스 코드

```
<html>
```

```
<head>
```

```
<title> web server</title>
```

```
</head>
```

```
<body>
```

```
<h1> Kim Young Sik </h1>
```

```
<p> University <a href="https://www.hallym.ac.kr">Hallym  
Univ</a> </p>
```

```
<img src = "./hallym.png">
```

```
<p> <mark> <strong>My age is 25years  
old.</strong> </mark> </p>
```

```
<p> My major is Bigdata.</p>
```

```
</body>
```

```
</html>
```

(2) 도커를 사용해서 httpd 설치 및 운용

도커 설치방법은 이미 수업시간에 진행되었기 때문에 넘기도록 하고 httpd의 설치부터 진행한다.

```
krustm7@myserver:/var/www/html$ sudo usermod -aG docker $USER
krustm7@myserver:/var/www/html$ groups krustm7
krustm7 : krustm7 adm dip video plugdev google-sudoers docker
```

Sudo 명령어를 사용하지 않기 위해서 따로 처리한다.

```
krustm7@myserver:/var/www/html$ sudo docker pull httpd
Using default tag: latest
latest: Pulling from library/httpd
31b3flad4cel: Already exists
f29089ecfcbf: Pull complete
a9fcd580eflc: Pull complete
a19138bf3164: Pull complete
5bfb2ce98078: Pull complete
Digest: sha256:71e882df50adc606c57e46e5deb3c933288e2c7775472a639326d9e4e40a47c2
Status: Downloaded newer image for httpd:latest
docker.io/library/httpd:latest
```

도커에 httpd이미지 다운로드한다.

```
krustm7@myserver:/var/www/html$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
krustm7@myserver:/var/www/html$ sudo docker run -d httpd
af0a22231c31a67c83340896a4fe8e01c0d302f913c952d8aa49d45476c41583
krustm7@myserver:/var/www/html$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
af0a22231c31   httpd     "httpd-foreground"   2 seconds ago    Up 2 seconds    80/tcp    exciting_yalow
```

Run 명령어를 이용하여 httpd 실행한다.

```
krustm7@myserver:~$ docker exec -it 79 /bin/bash
root@7906dlc55b3b:/usr/local/apache2# ls
bin  build  cgi-bin  conf  error  htdocs  icons  include  logs  modules
root@7906dlc55b3b:/usr/local/apache2# cd htdocs/
root@7906dlc55b3b:/usr/local/apache2/htdocs# ls -al
total 16
drwxr-xr-x 2 root    root    4096 Sep 13 13:16 .
drwxr-xr-x 1 www-data www-data 4096 Sep 13 13:16 ..
-rw-r--r-- 1        504 staff   45 Jun 11  2007 index.html
```

exec명령어를 사용하여 79의 컨테이너 아이디를 가지고 있는 httpd를 bash셸을 이용하여 실행한다.

그리고 실행한 bash셸에서 index.html파일을 찾는다.

그 파일의 내용을 수정하여 (1)번과 같이 만들어준다.

Kim Young Sik

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My age is 25years old.

My major is Bigdata.

IP:80포트로 들어가면 이 화면이 그대로 나온다.