

BusyBox(비지박스/리눅스) - Apache Tomcat 9, 자바 임베디드 1.8 설치, PHP 개발 환경설정 가이드

2021. 03. 04

도도(Dodo)

GNU/GPL v3 License

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1. 문서 이력

2021-03-04 23:13 문서 최초 작성, 도도(Dodo)

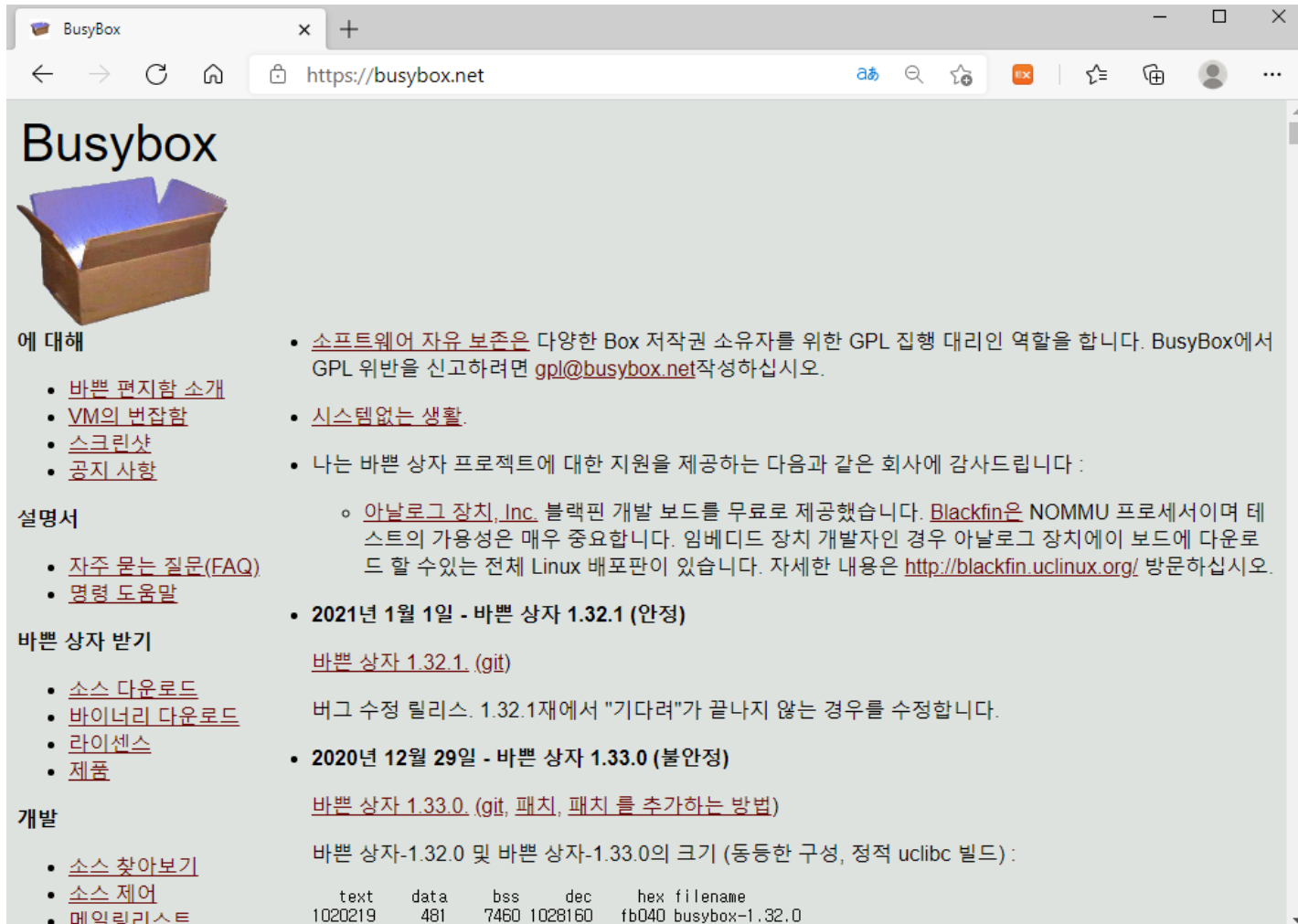
2021-03-04 23:33 문서 작성 완료, 도도(Dodo)

2. 라이선스

해당 없습니다.

3. [BusyBox(비지박스)] 비지박스 소개 (2021-03-04)

BusyBox 프로젝트에 대해서 공식사이트를 통해서 소개하였다.



The screenshot shows the BusyBox website homepage. The browser address bar displays 'https://busybox.net'. The page features a large 'Busybox' title and a logo of a cardboard box. Below the logo, there are several sections: '에 대해' (About), '설명서' (Manual), '바쁜 상자 받기' (Getting BusyBox), and '개발' (Development). The '에 대해' section includes links to '바쁜 편지함 소개' (BusyBox Mailbox Introduction), 'VM의 변잡함' (VM's Messiness), '스크린샷' (Screenshots), and '공지 사항' (Notice). The '설명서' section includes links to '자주 묻는 질문(FAQ)' (Frequently Asked Questions) and '명령 도움말' (Command Help). The '바쁜 상자 받기' section includes links to '소스 다운로드' (Source Download), '바이너리 다운로드' (Binary Download), '라이선스' (License), and '제품' (Product). The '개발' section includes links to '소스 찾아보기' (Source Browse), '소스 제어' (Source Control), and '메일링리스트' (Mailing List). The main content area lists project milestones, including the release of version 1.32.1 in January 2021 and version 1.33.0 in December 2020. A table at the bottom shows the size of the BusyBox binaries.

Busybox

에 대해

- [바쁜 편지함 소개](#)
- [VM의 변잡함](#)
- [스크린샷](#)
- [공지 사항](#)

설명서

- [자주 묻는 질문\(FAQ\)](#)
- [명령 도움말](#)

바쁜 상자 받기

- [소스 다운로드](#)
- [바이너리 다운로드](#)
- [라이선스](#)
- [제품](#)

개발

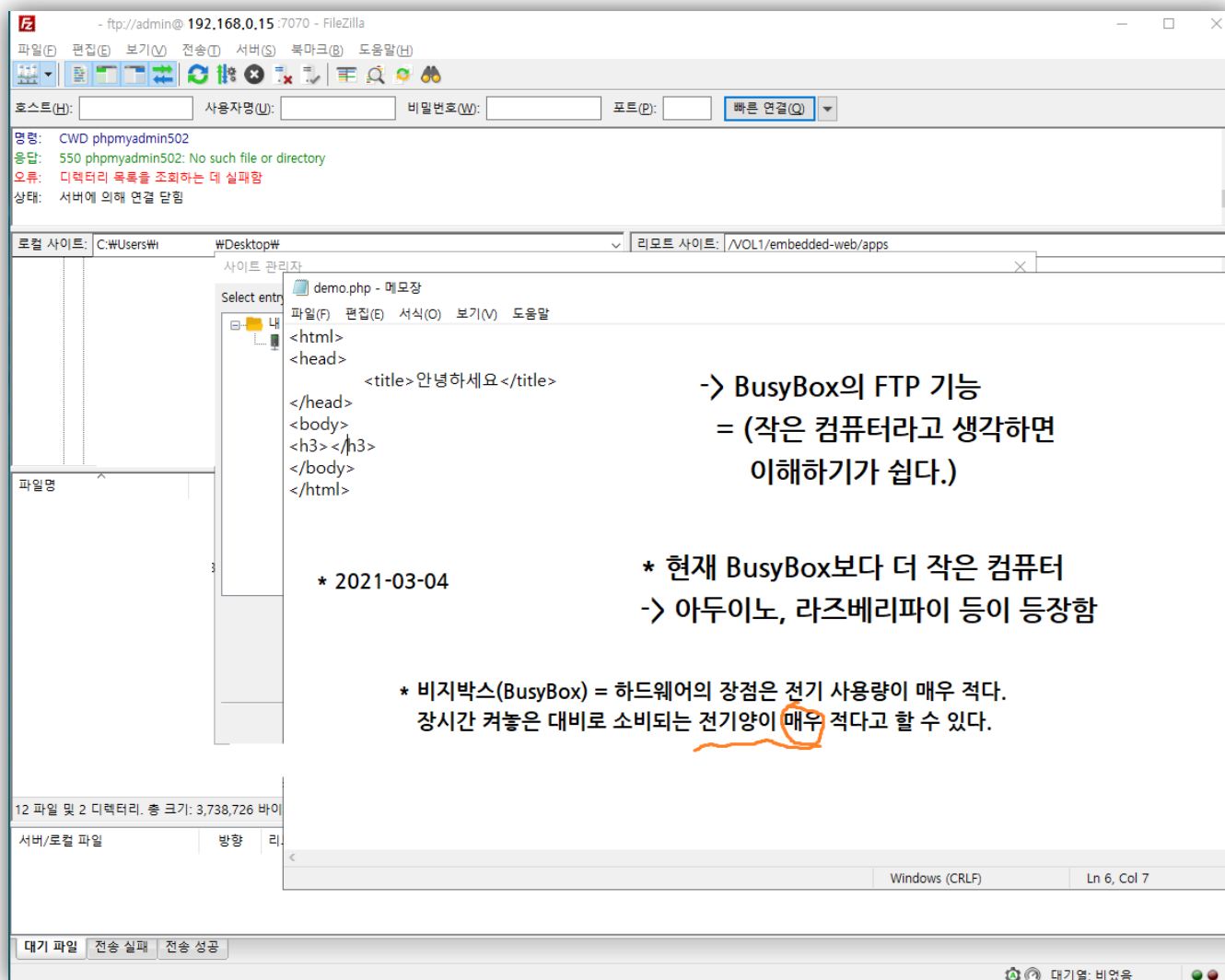
- [소스 찾아보기](#)
- [소스 제어](#)
- [메일링리스트](#)

- **소프트웨어 자유 보증을** 다양한 Box 저작권 소유자를 위한 GPL 집행 대리인 역할을 합니다. BusyBox에서 GPL 위반을 신고하려면 gpl@busybox.net 작성하십시오.
- **시스템없는 생활.**
- 나는 바쁜 상자 프로젝트에 대한 지원을 제공하는 다음과 같은 회사에 감사드립니다 :
 - [아날로그 장치, Inc.](#) 블랙핀 개발 보드를 무료로 제공했습니다. [Blackfin](#)은 NOMMU 프로세서이며 테스트의 가용성은 매우 중요합니다. 임베디드 장치 개발자인 경우 아날로그 장치에이 보드에 다운로드 할 수있는 전체 Linux 배포판이 있습니다. 자세한 내용은 <http://blackfin.uclinux.org/> 방문하십시오.
- **2021년 1월 1일 - 바쁜 상자 1.32.1 (안정)**
 - [바쁜 상자 1.32.1. \(git\)](#)
 - 버그 수정 릴리스. 1.32.1재에서 "기다려"가 끝나지 않는 경우를 수정합니다.
- **2020년 12월 29일 - 바쁜 상자 1.33.0 (불안정)**
 - [바쁜 상자 1.33.0. \(git, 패치, 패치 를 추가하는 방법\)](#)
 - 바쁜 상자-1.32.0 및 바쁜 상자-1.33.0의 크기 (동등한 구성, 정적 uclibc 빌드) :

text	data	bss	dec	hex	filename
1020219	481	7460	1028160	fb040	busybox-1.32.0

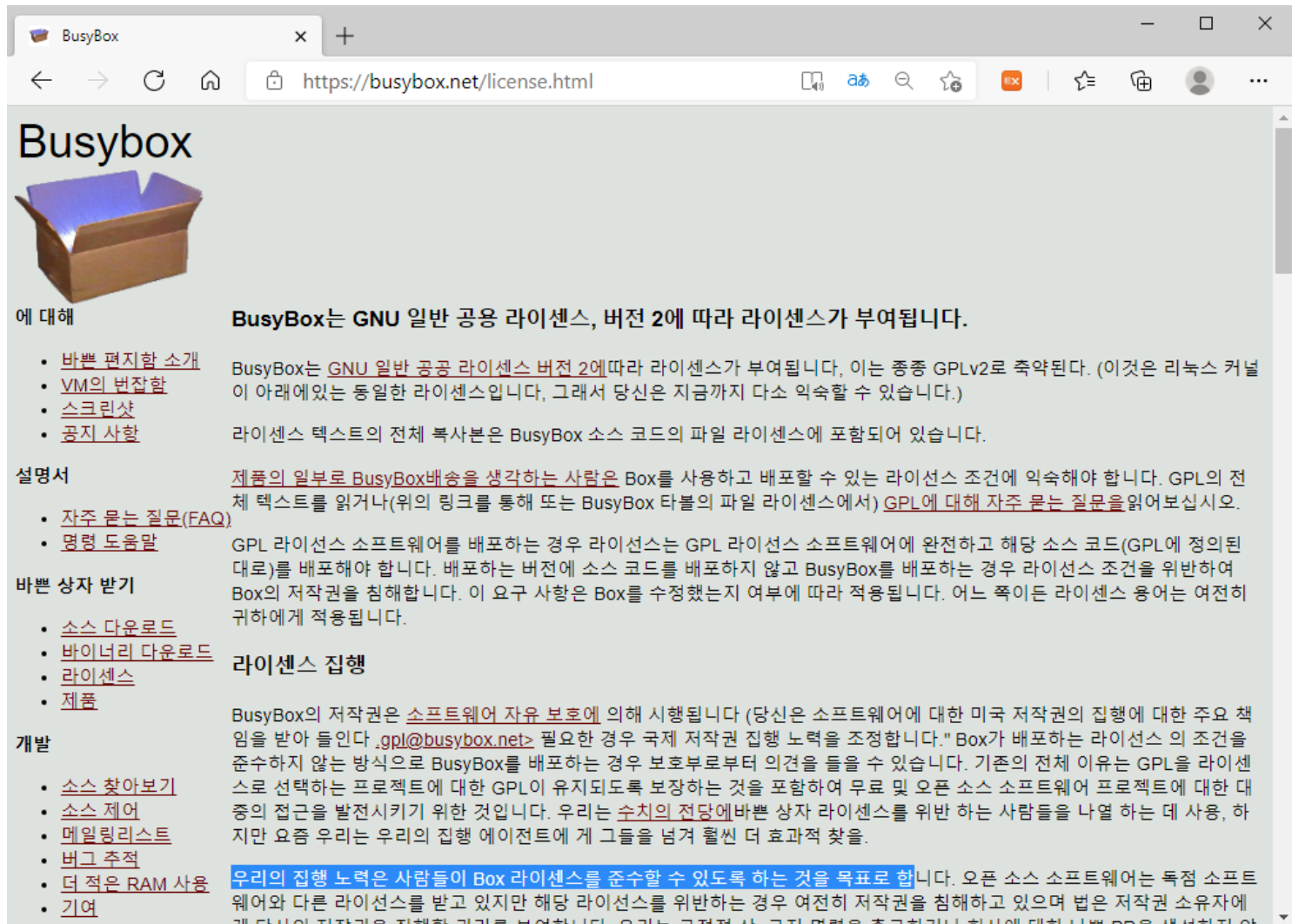
3. [BusyBox(비지박스)] 비지박스 소개 (2021-03-04)

비지박스는 “작은 컴퓨터”에 들어가는 운영체제라고 보면 된다.



4. [BusyBox(비지박스)] 라이선스 - GNU/GPL v2 (2021-03-04)

BusyBox 프로젝트에 대해서 공식사이트를 통해서 소개하였다.



Busybox

에 대해

- [바쁜 편지함 소개](#)
- [VM의 번잡함](#)
- [스크린샷](#)
- [공지 사항](#)

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- [자주 묻는 질문\(FAQ\)](#)
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- [바이너리 다운로드](#)
- [라이선스](#)
- [제품](#)

개발

- [소스 찾아보기](#)
- [소스 제어](#)
- [메일링리스트](#)
- [버그 추적](#)
- [더 적은 RAM 사용](#)
- [기여](#)

BusyBox는 GNU 일반 공중 라이선스, 버전 2에 따라 라이선스가 부여됩니다.

BusyBox는 GNU 일반 공중 라이선스 버전 2에 따라 라이선스가 부여됩니다, 이는 종종 GPLv2로 축약된다. (이것은 리눅스 커널이 아래에있는 동일한 라이선스입니다, 그래서 당신은 지금까지 다소 익숙할 수 있습니다.)

라이선스 텍스트의 전체 복사본은 BusyBox 소스 코드의 파일 라이선스에 포함되어 있습니다.

제품의 일부로 BusyBox배송을 생각하는 사람은 Box를 사용하고 배포할 수 있는 라이선스 조건에 익숙해야 합니다. GPL의 전체 텍스트를 읽거나(위의 링크를 통해 또는 BusyBox 타블의 파일 라이선스에서) GPL에 대해 자주 묻는 질문을 읽어보십시오.

GPL 라이선스 소프트웨어를 배포하는 경우 라이선스는 GPL 라이선스 소프트웨어에 완전하고 해당 소스 코드(GPL에 정의된 대로)를 배포해야 합니다. 배포하는 버전에 소스 코드를 배포하지 않고 BusyBox를 배포하는 경우 라이선스 조건을 위반하여 Box의 저작권을 침해합니다. 이 요구 사항은 Box를 수정했는지 여부에 따라 적용됩니다. 어느 쪽이든 라이선스 용어는 여전히 귀하에게 적용됩니다.

라이선스 집행

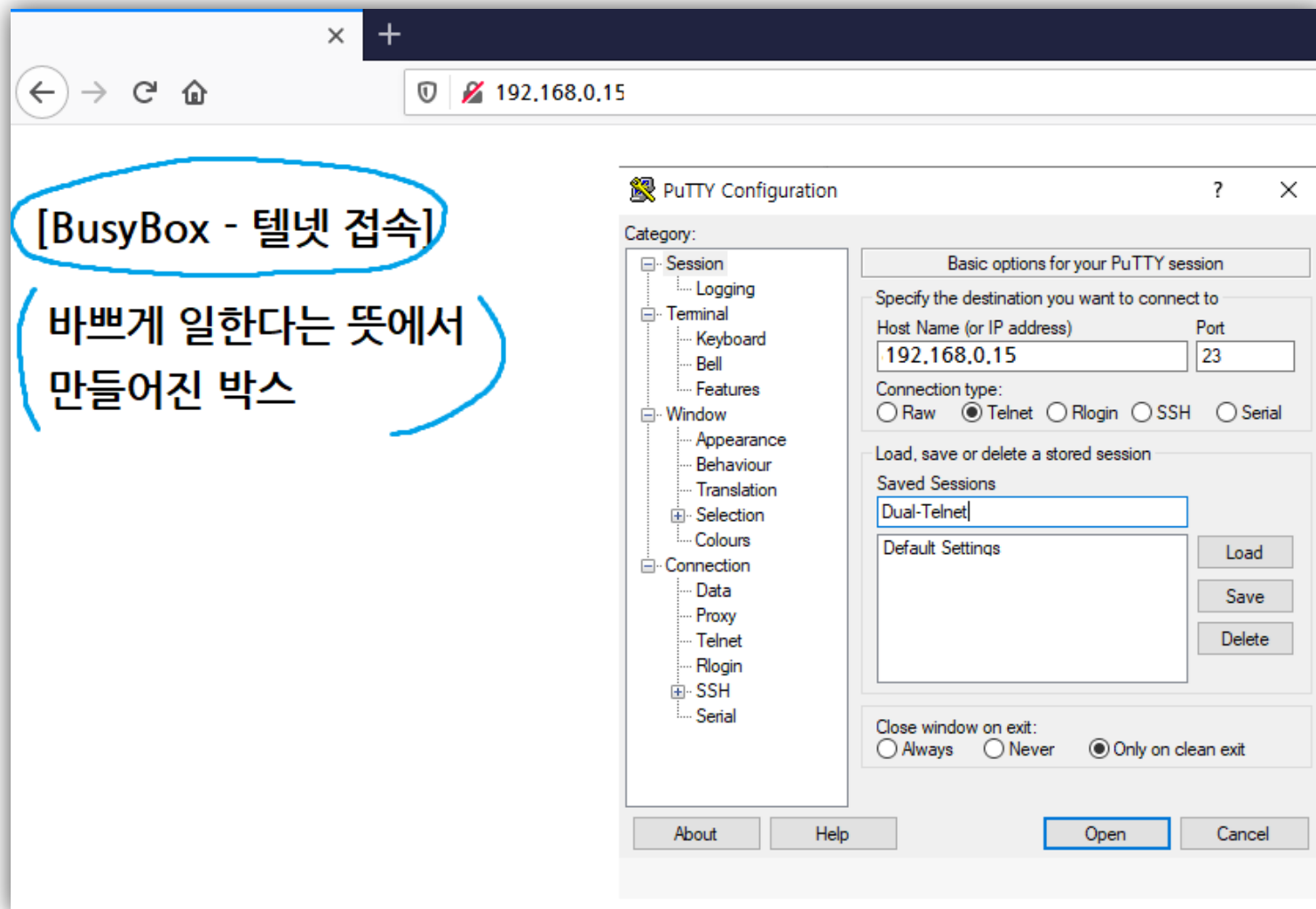
BusyBox의 저작권은 소프트웨어 자유 보호에 의해 시행됩니다 (당신은 소프트웨어에 대한 미국 저작권의 집행에 대한 주요 책임을 받아 들인다, gpl@busybox.net> 필요한 경우 국제 저작권 집행 노력을 조정합니다.) Box가 배포하는 라이선스의 조건을 준수하지 않는 방식으로 BusyBox를 배포하는 경우 보호부로부터 의견을 들을 수 있습니다. 기존의 전체 이유는 GPL을 라이선스로 선택하는 프로젝트에 대한 GPL이 유지되도록 보장하는 것을 포함하여 무료 및 오픈 소스 소프트웨어 프로젝트에 대한 대중의 접근을 발전시키기 위한 것입니다. 우리는 수치의 전당에 바쁜 상자 라이선스를 위반 하는 사람들을 나열 하는 데 사용, 하지만 요즘 우리는 우리의 집행 에이전트에 게 그들을 넘겨 훨씬 더 효과적 찾을.

우리의 집행 노력은 사람들이 Box 라이선스를 준수할 수 있도록 하는 것을 목표로 합니다. 오픈 소스 소프트웨어는 독점 소프트웨어와 다른 라이선스를 받고 있지만 해당 라이선스를 위반하는 경우 여전히 저작권을 침해하고 있으며 법은 저작권 소유자에게 그러한 저작권을 침해한 권리를 부여합니다. 우리는 그것들 상, 그것 명령을 추구하거나 회사에 대한 나쁜 PR을 생성하지 않

5. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 (2021-03-04)

톰캣으로 접속해서 사용할 수 있다.

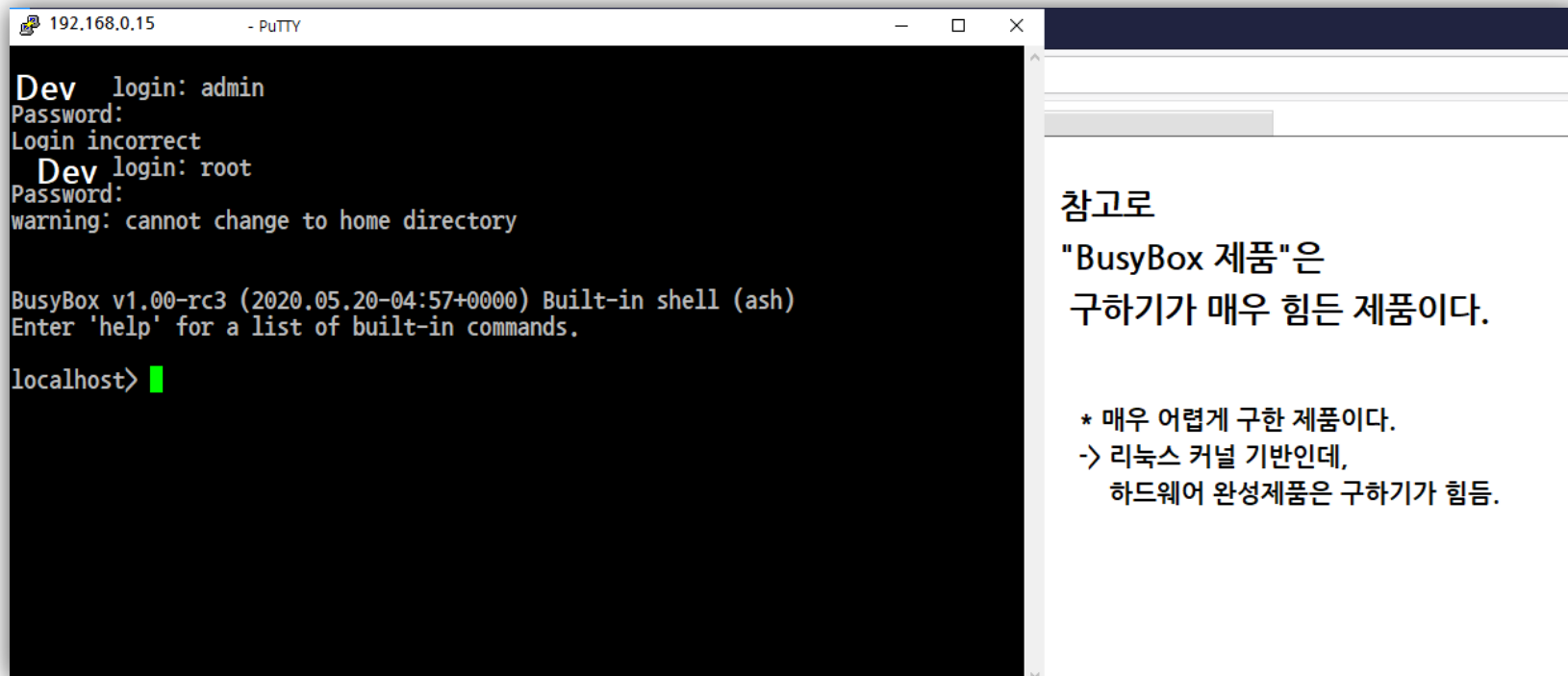
비지박스 텔넷을 개방해주는 하드웨어를 구하기가 조금 힘들다.



5. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 (2021-03-04)

사용방법은 간단하다.

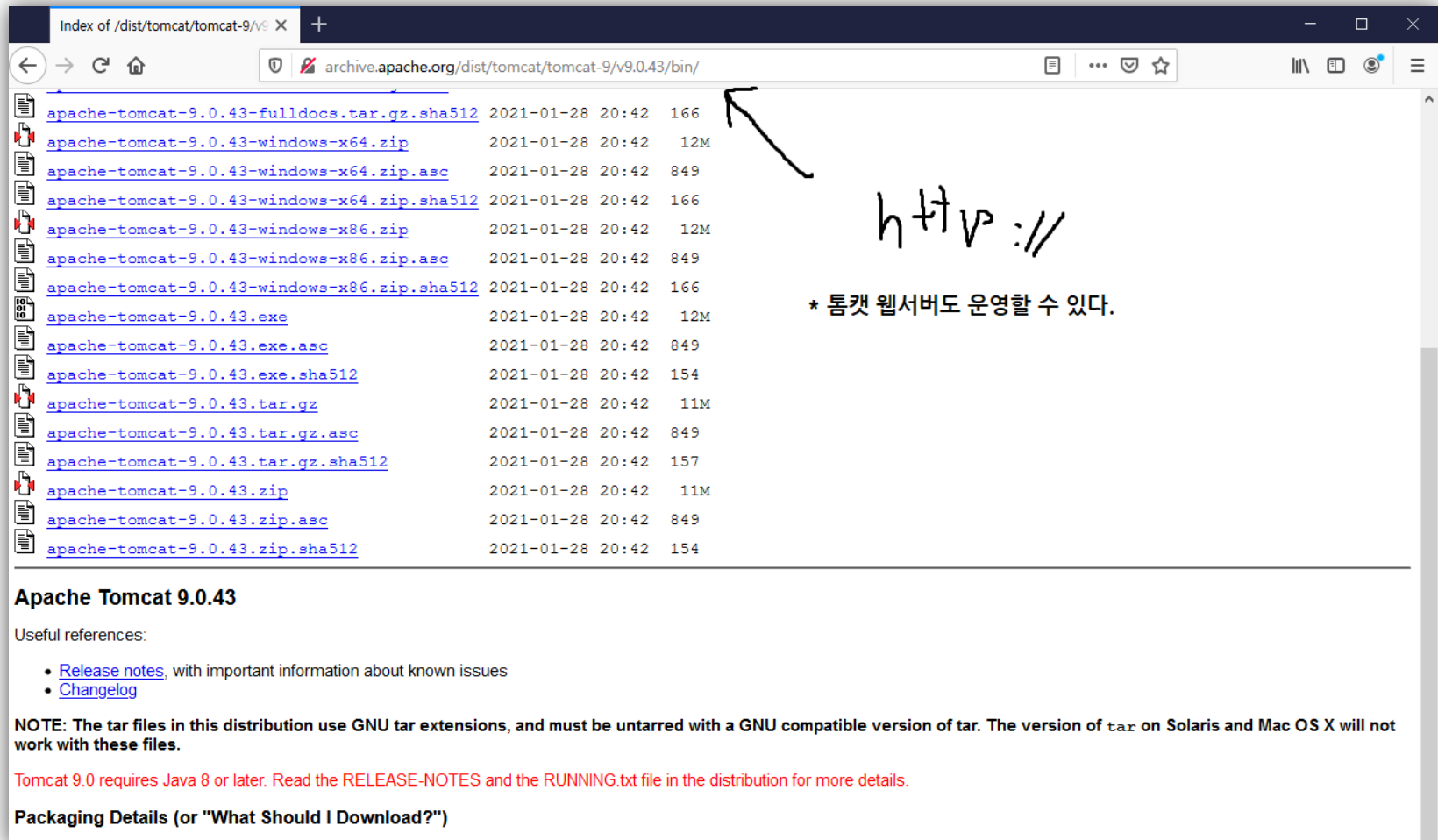
리눅스 명령어를 그대로 적용하고 있다.



6. [BusyBox(비지박스)] 아파치 재단의 공식 사이트(아카이브) (2021-03-04)

아파치 재단의 공식 사이트이다.

<http://archive.apache.org/dist>



Index of /dist/tomcat/tomcat-9/v9 X +

archive.apache.org/dist/tomcat/tomcat-9/v9.0.43/bin/

apache-tomcat-9.0.43-fulldocs.tar.gz.sha512	2021-01-28 20:42	166
apache-tomcat-9.0.43-windows-x64.zip	2021-01-28 20:42	12M
apache-tomcat-9.0.43-windows-x64.zip.asc	2021-01-28 20:42	849
apache-tomcat-9.0.43-windows-x64.zip.sha512	2021-01-28 20:42	166
apache-tomcat-9.0.43-windows-x86.zip	2021-01-28 20:42	12M
apache-tomcat-9.0.43-windows-x86.zip.asc	2021-01-28 20:42	849
apache-tomcat-9.0.43-windows-x86.zip.sha512	2021-01-28 20:42	166
apache-tomcat-9.0.43.exe	2021-01-28 20:42	12M
apache-tomcat-9.0.43.exe.asc	2021-01-28 20:42	849
apache-tomcat-9.0.43.exe.sha512	2021-01-28 20:42	154
apache-tomcat-9.0.43.tar.gz	2021-01-28 20:42	11M
apache-tomcat-9.0.43.tar.gz.asc	2021-01-28 20:42	849
apache-tomcat-9.0.43.tar.gz.sha512	2021-01-28 20:42	157
apache-tomcat-9.0.43.zip	2021-01-28 20:42	11M
apache-tomcat-9.0.43.zip.asc	2021-01-28 20:42	849
apache-tomcat-9.0.43.zip.sha512	2021-01-28 20:42	154

Apache Tomcat 9.0.43

Useful references:

- [Release notes](#), with important information about known issues
- [Changelog](#)

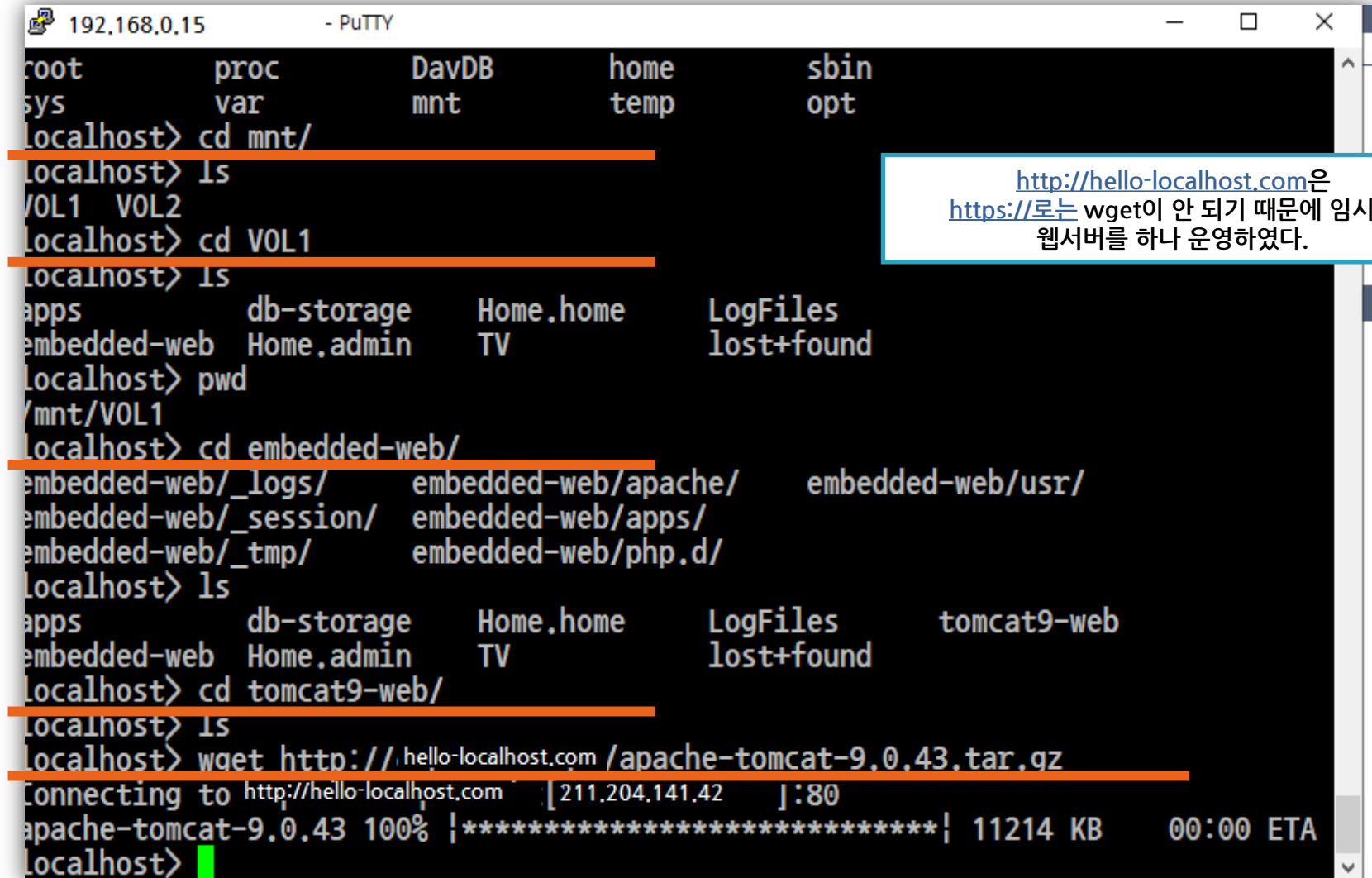
NOTE: The tar files in this distribution use GNU tar extensions, and must be untarred with a GNU compatible version of tar. The version of `tar` on Solaris and Mac OS X will not work with these files.

Tomcat 9.0 requires Java 8 or later. Read the [RELEASE-NOTES](#) and the [RUNNING.txt](#) file in the distribution for more details.

Packaging Details (or "What Should I Download?")

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

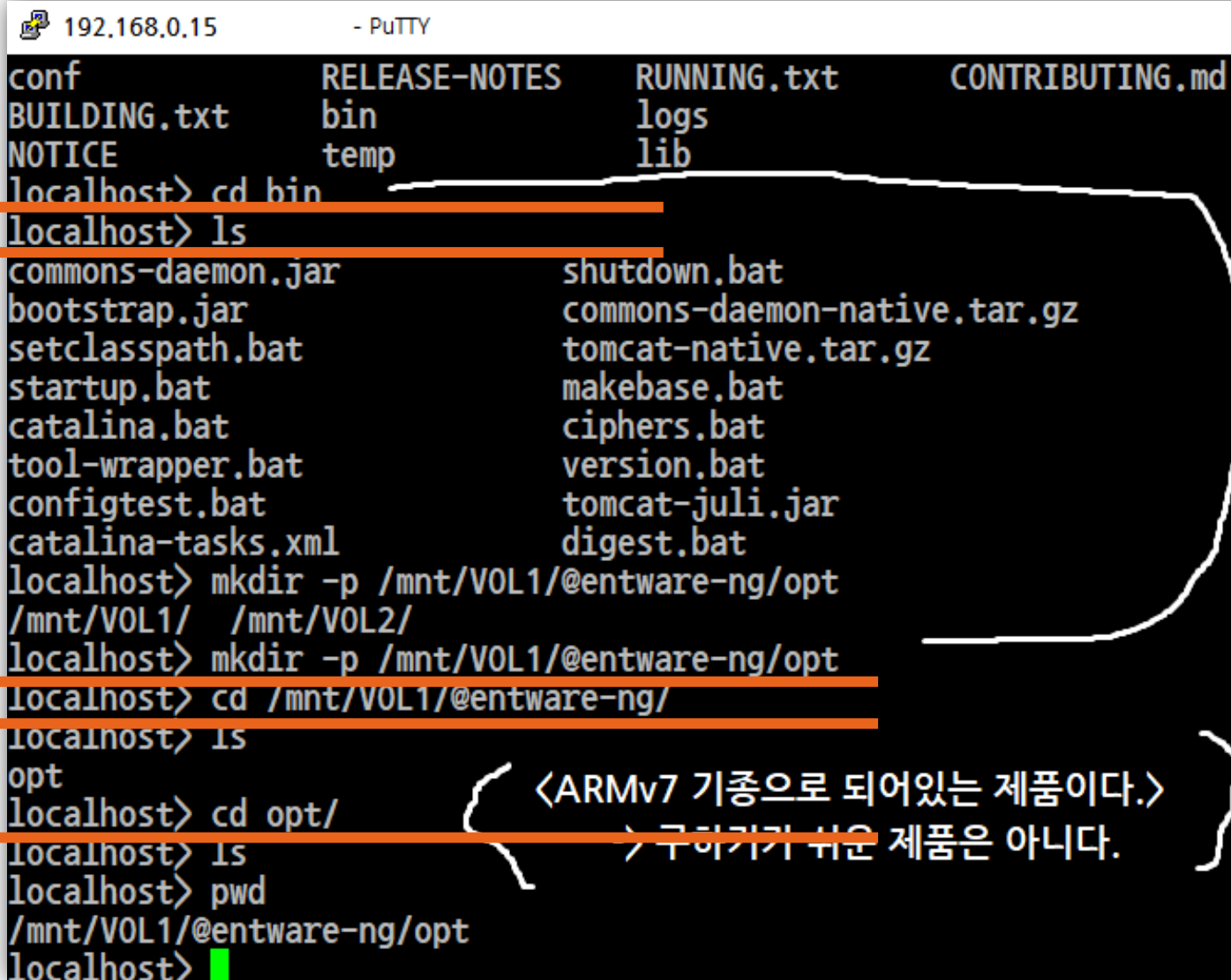


```
192.168.0.15 - PuTTY
root      proc      DavDB     home      sbin
sys       var       mnt       temp      opt
localhost> cd /mnt/
localhost> ls
VOL1 VOL2
localhost> cd VOL1
localhost> ls
apps      db-storage  Home.home  LogFiles
embedded-web Home.admin  TV         lost+found
localhost> pwd
/mnt/VOL1
localhost> cd embedded-web/
embedded-web/_logs/      embedded-web/apache/      embedded-web/usr/
embedded-web/_session/   embedded-web/apps/
embedded-web/_tmp/       embedded-web/php.d/
localhost> ls
apps      db-storage  Home.home  LogFiles  tomcat9-web
embedded-web Home.admin  TV         lost+found
localhost> cd tomcat9-web/
localhost> ls
localhost> wget http://hello-localhost.com/apache-tomcat-9.0.43.tar.gz
Connecting to http://hello-localhost.com [211.204.141.42] :80
apache-tomcat-9.0.43 100% |*****| 11214 KB 00:00 ETA
localhost>
```

<http://hello-localhost.com>은
<https://로>는 wget이 안 되기 때문에 임시로
웹서버를 하나 운영하였다.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

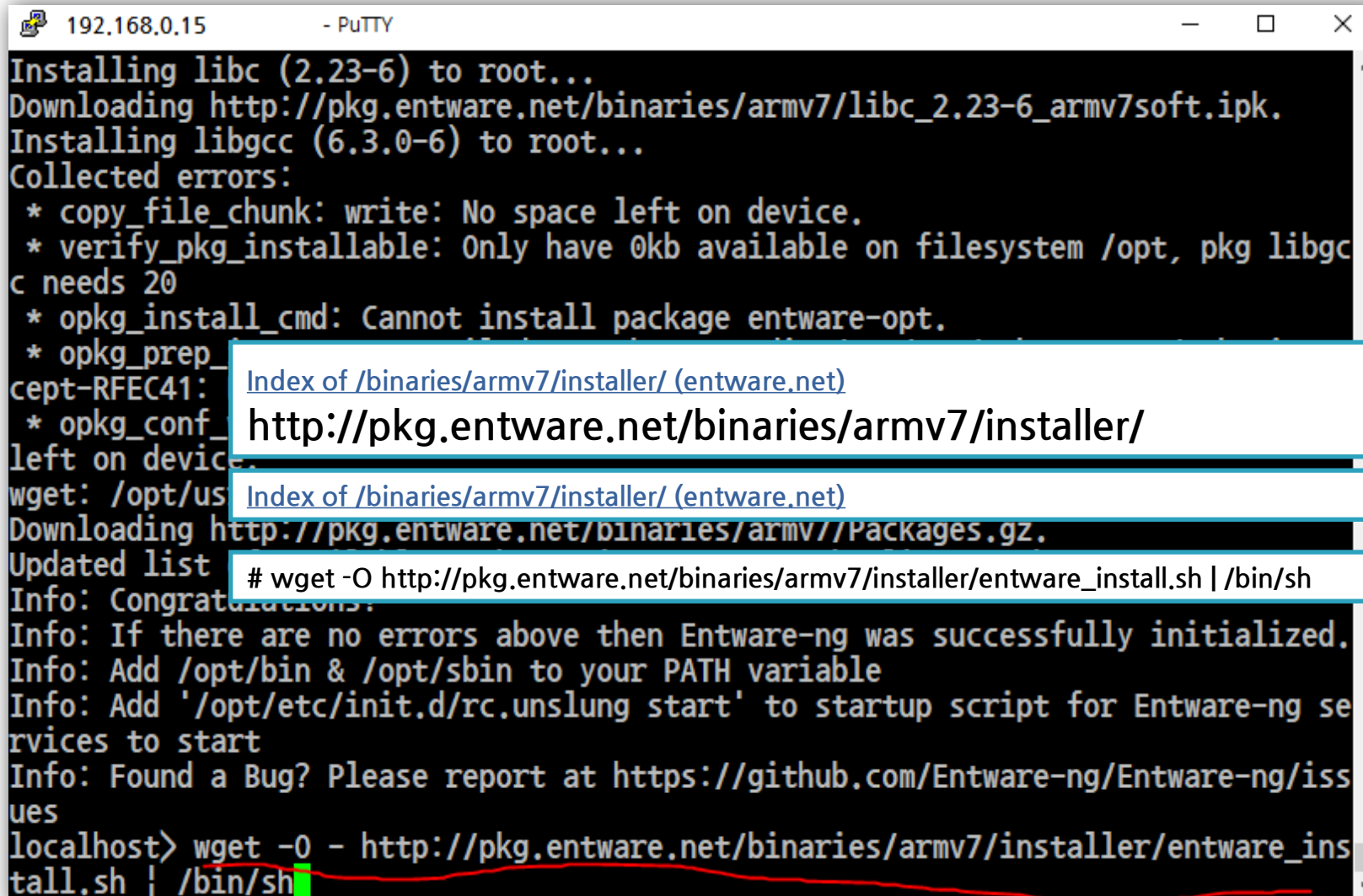


```
192.168.0.15 - PuTTY
conf      RELEASE-NOTES  RUNNING.txt  CONTRIBUTING.md
BUILDING.txt  bin      logs
NOTICE      temp    lib
localhost> cd bin
localhost> ls
commons-daemon.jar      shutdown.bat
bootstrap.jar           commons-daemon-native.tar.gz
setclasspath.bat       tomcat-native.tar.gz
startup.bat            makebase.bat
catalina.bat           ciphers.bat
tool-wrapper.bat       version.bat
configtest.bat         tomcat-juli.jar
catalina-tasks.xml     digest.bat
localhost> mkdir -p /mnt/VOL1/@entware-ng/opt
/mnt/VOL1/  /mnt/VOL2/
localhost> mkdir -p /mnt/VOL1/@entware-ng/opt
localhost> cd /mnt/VOL1/@entware-ng/
localhost> ls
opt
localhost> cd opt/
localhost> ls
localhost> pwd
/mnt/VOL1/@entware-ng/opt
localhost>
```

<ARMv7 기종으로 되어있는 제품이다.>
> 구하기가 쉬운 제품은 아니다.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
Installing libc (2.23-6) to root...
Downloading http://pkg.entware.net/binaries/armv7/libc_2.23-6_armv7soft.ipk.
Installing libgcc (6.3.0-6) to root...
Collected errors:
* copy_file_chunk: write: No space left on device.
* verify_pkg_installable: Only have 0kb available on filesystem /opt, pkg libgcc needs 20
* opkg_install_cmd: Cannot install package entware-opt.
* opkg_precept-RFEC41:
* opkg_conf left on device.
wget: /opt/us
Downloading http://pkg.entware.net/binaries/armv7/Packages.gz.
Updated list
Info: Congratulations.
Info: If there are no errors above then Entware-ng was successfully initialized.
Info: Add /opt/bin & /opt/sbin to your PATH variable
Info: Add '/opt/etc/init.d/rc.unslung start' to startup script for Entware-ng services to start
Info: Found a Bug? Please report at https://github.com/Entware-ng/Entware-ng/issues
localhost> wget -O - http://pkg.entware.net/binaries/armv7/installer/entware_install.sh | /bin/sh
```

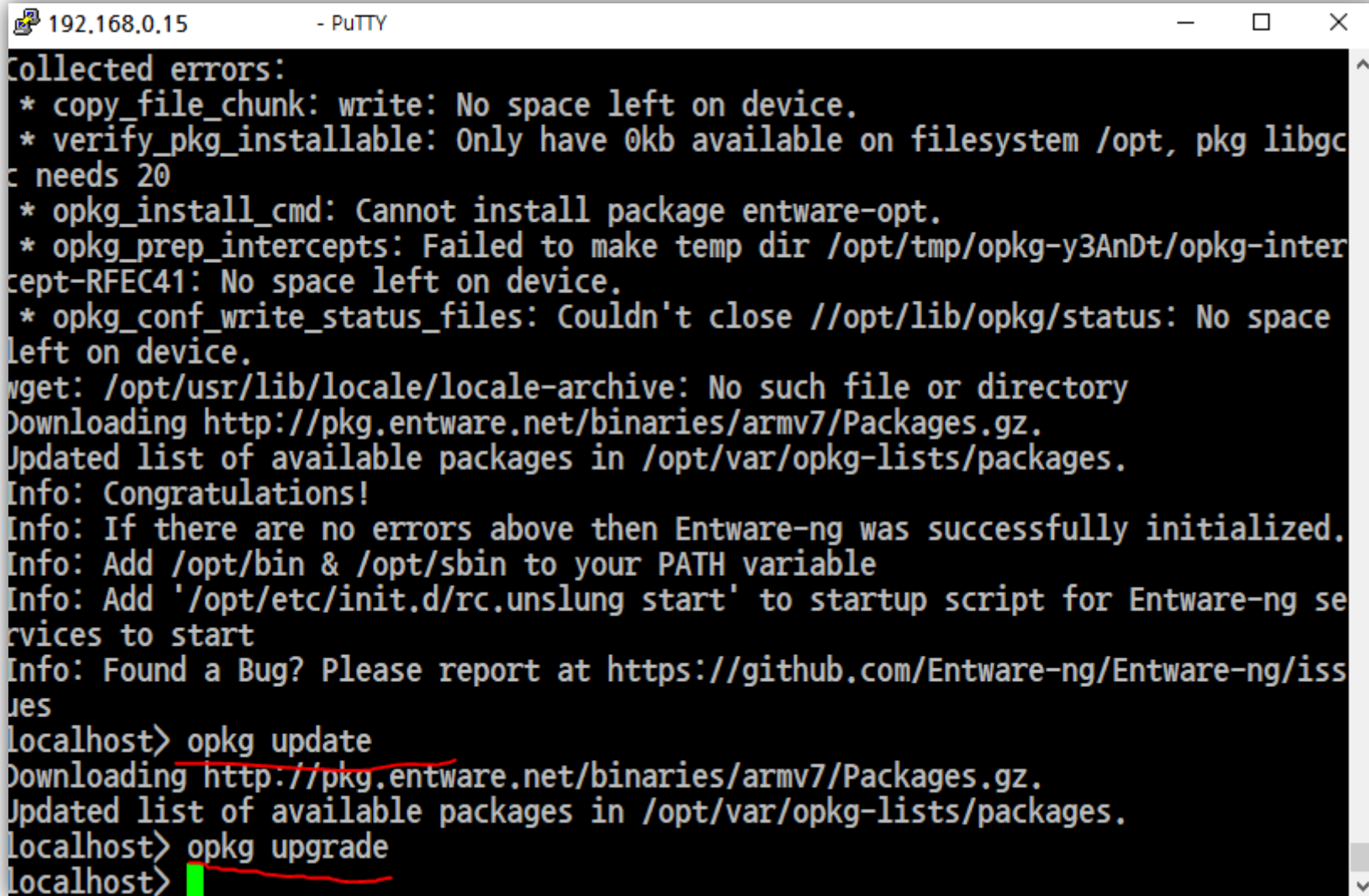
Index of /binaries/armv7/installer/ (entware.net)
<http://pkg.entware.net/binaries/armv7/installer/>

Index of /binaries/armv7/installer/ (entware.net)
<http://pkg.entware.net/binaries/armv7/installer/>

wget -O http://pkg.entware.net/binaries/armv7/installer/entware_install.sh | /bin/sh

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

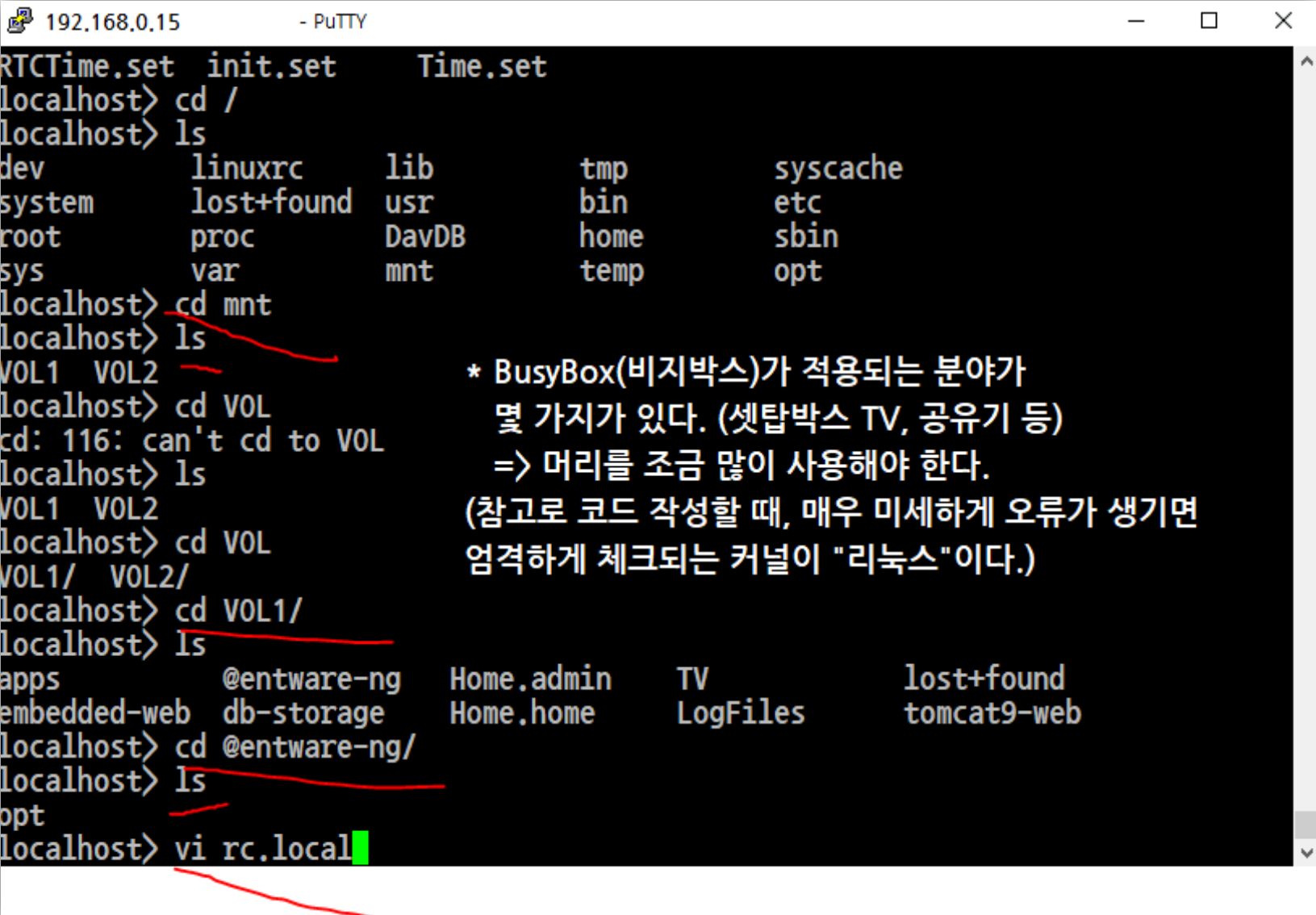
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
Collected errors:
* copy_file_chunk: write: No space left on device.
* verify_pkg_installable: Only have 0kb available on filesystem /opt, pkg libgc
c needs 20
* opkg_install_cmd: Cannot install package entware-opt.
* opkg_prep_intercepts: Failed to make temp dir /opt/tmp/opkg-y3AnDt/opkg-inter
cept-RFEC41: No space left on device.
* opkg_conf_write_status_files: Couldn't close //opt/lib/opkg/status: No space
left on device.
wget: /opt/usr/lib/locale/locale-archive: No such file or directory
Downloading http://pkg.entware.net/binaries/armv7/Packages.gz.
Updated list of available packages in /opt/var/opkg-lists/packages.
Info: Congratulations!
Info: If there are no errors above then Entware-ng was successfully initialized.
Info: Add /opt/bin & /opt/sbin to your PATH variable
Info: Add '/opt/etc/init.d/rc.unslung start' to startup script for Entware-ng se
rvices to start
Info: Found a Bug? Please report at https://github.com/Entware-ng/Entware-ng/iss
ues
localhost> opkg update
Downloading http://pkg.entware.net/binaries/armv7/Packages.gz.
Updated list of available packages in /opt/var/opkg-lists/packages.
localhost> opkg upgrade
localhost>
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

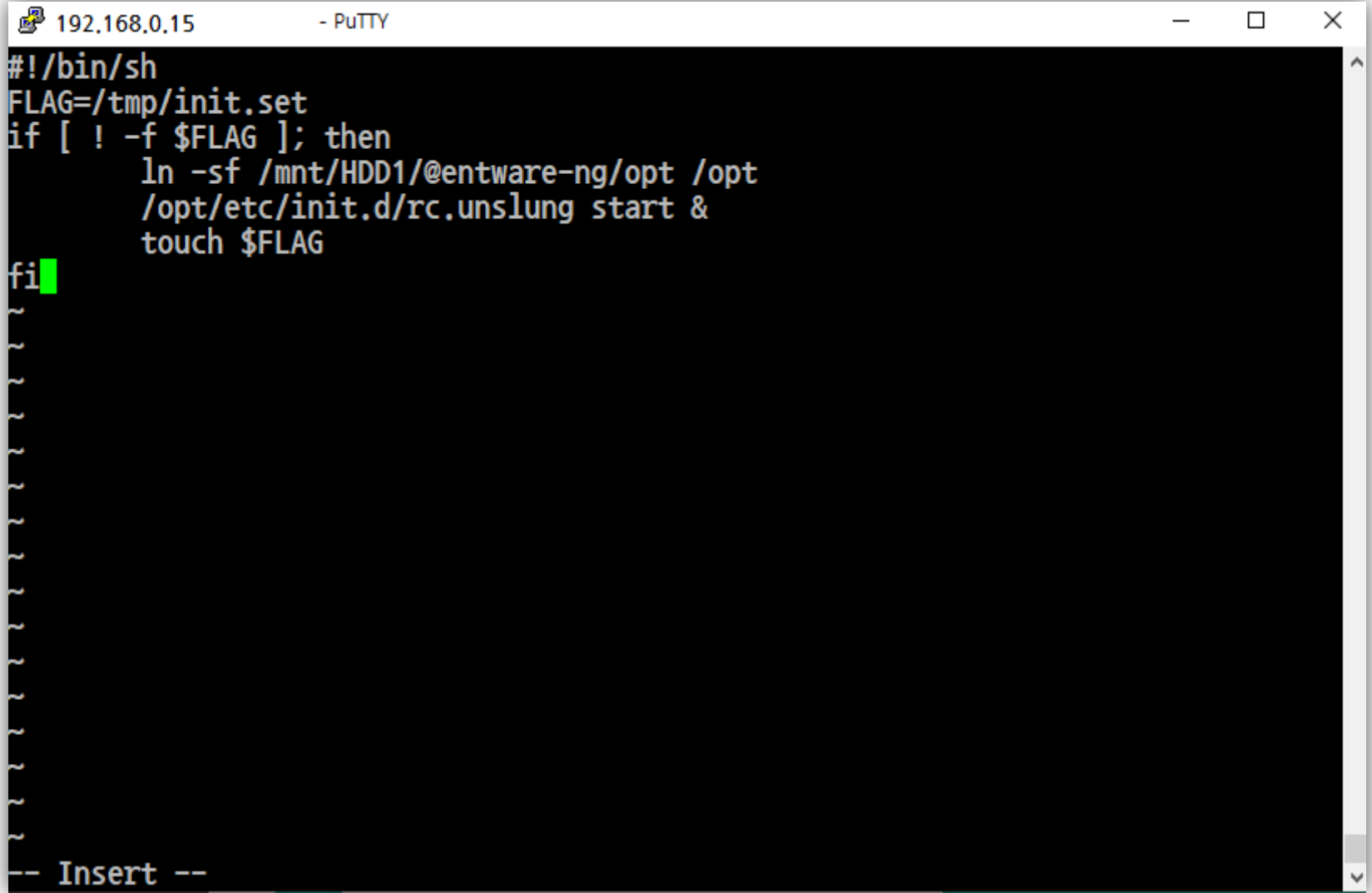


```
192.168.0.15 - PuTTY
RTCTime.set  init.set  Time.set
localhost> cd /
localhost> ls
dev          linuxrc      lib          tmp          syscache
system       lost+found  usr          bin          etc
root         proc        DavDB        home         sbin
sys          var         mnt          temp         opt
localhost> cd mnt
localhost> ls
VOLUME1  VOLUME2
localhost> cd VOLUME1
cd: 116: can't cd to VOLUME1
localhost> ls
VOLUME1  VOLUME2
localhost> cd VOLUME1/
VOLUME1/ VOLUME2/
localhost> cd VOLUME1/
localhost> ls
apps          @entware-ng  Home.admin   TV            lost+found
embedded-web  db-storage   Home.home    LogFiles      tomcat9-web
localhost> cd @entware-ng/
localhost> ls
opt
localhost> vi rc.local
```

* BusyBox(비지박스)가 적용되는 분야가
몇 가지가 있다. (셋탑박스 TV, 공유기 등)
=> 머리를 조금 많이 사용해야 한다.
(참고로 코드 작성할 때, 매우 미세하게 오류가 생기면
엄격하게 체크되는 커널이 "리눅스"이다.)

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

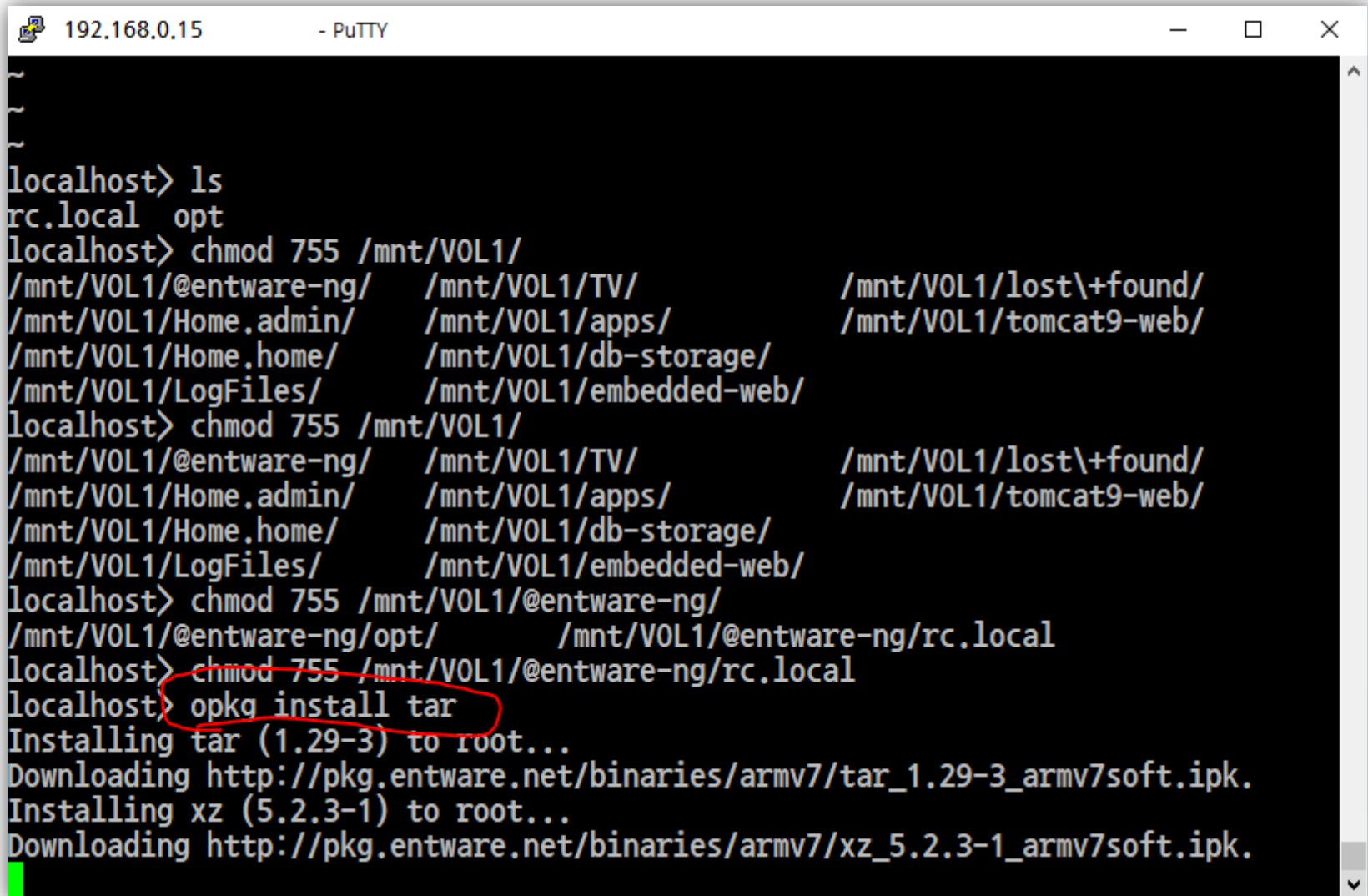
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
#!/bin/sh
FLAG=/tmp/init.set
if [ ! -f $FLAG ]; then
    ln -sf /mnt/HDD1/@entware-ng/opt /opt
    /opt/etc/init.d/rc.unslung start &
    touch $FLAG
fi
-- Insert --
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
~
~
~
localhost> ls
rc.local  opt
localhost> chmod 755 /mnt/VOL1/
/mnt/VOL1/@entware-ng/    /mnt/VOL1/TV/            /mnt/VOL1/lost\+found/
/mnt/VOL1/Home.admin/    /mnt/VOL1/apps/          /mnt/VOL1/tomcat9-web/
/mnt/VOL1/Home.home/    /mnt/VOL1/db-storage/
/mnt/VOL1/LogFiles/      /mnt/VOL1/embedded-web/
localhost> chmod 755 /mnt/VOL1/
/mnt/VOL1/@entware-ng/    /mnt/VOL1/TV/            /mnt/VOL1/lost\+found/
/mnt/VOL1/Home.admin/    /mnt/VOL1/apps/          /mnt/VOL1/tomcat9-web/
/mnt/VOL1/Home.home/    /mnt/VOL1/db-storage/
/mnt/VOL1/LogFiles/      /mnt/VOL1/embedded-web/
localhost> chmod 755 /mnt/VOL1/@entware-ng/
/mnt/VOL1/@entware-ng/opt/    /mnt/VOL1/@entware-ng/rc.local
localhost> chmod 755 /mnt/VOL1/@entware-ng/rc.local
localhost> opkg install tar
Installing tar (1.29-3) to root...
Downloading http://pkg.entware.net/binaries/armv7/tar_1.29-3_armv7soft.ipk.
Installing xz (5.2.3-1) to root...
Downloading http://pkg.entware.net/binaries/armv7/xz_5.2.3-1_armv7soft.ipk.
```

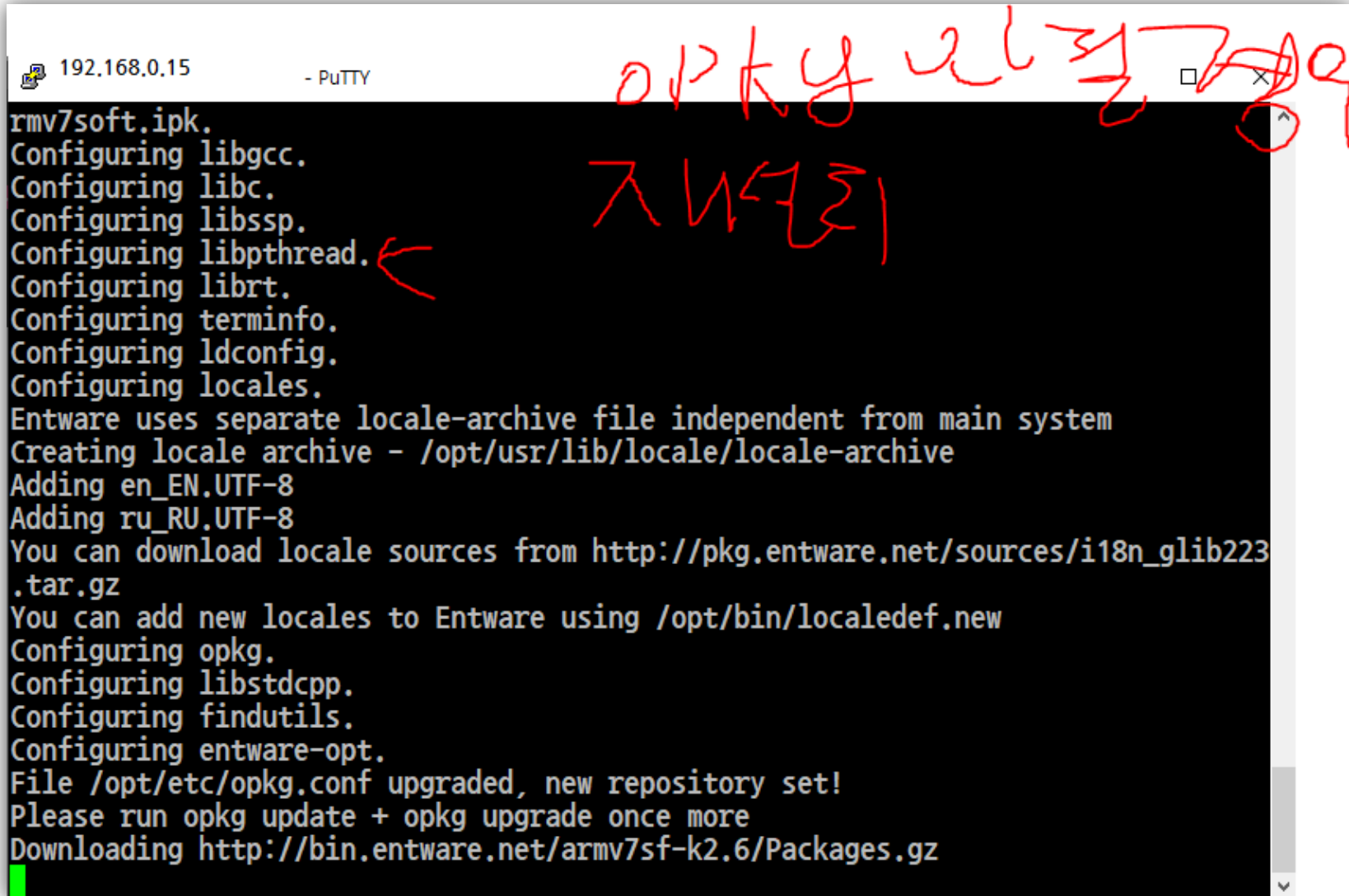
7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
* opkg_conf_write_status_files: Couldn't close //opt/lib/opkg/status: No space
left on device.
localhost> cd /
localhost> ls
dev          linuxrc      lib          tmp          syscache
system       lost+found  usr          bin          etc
root         proc        DavDB        home         sbin
sys          var         mnt          temp         opt
localhost> cd mnt
localhost> ls
VOL1  VOL2
localhost> cd VOL
cd: 130: can't cd to VOL
localhost> cd VOL1/
localhost> ls
apps          @entware-ng  Home.admin   TV            lost+found
embedded-web  db-storage   Home.home    LogFiles      tomcat9-web
localhost> cd tomcat9-web/
localhost> ls
apache-tomcat-9.0.43.tar.gz  apache-tomcat-9.0.43
localhost> rm -rf apache-tomcat-9.0.43
localhost> pwd
/mnt/VOL1/tomcat9-web
localhost> tar xvfz apache-tomcat-9.0.43.tar.gz
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

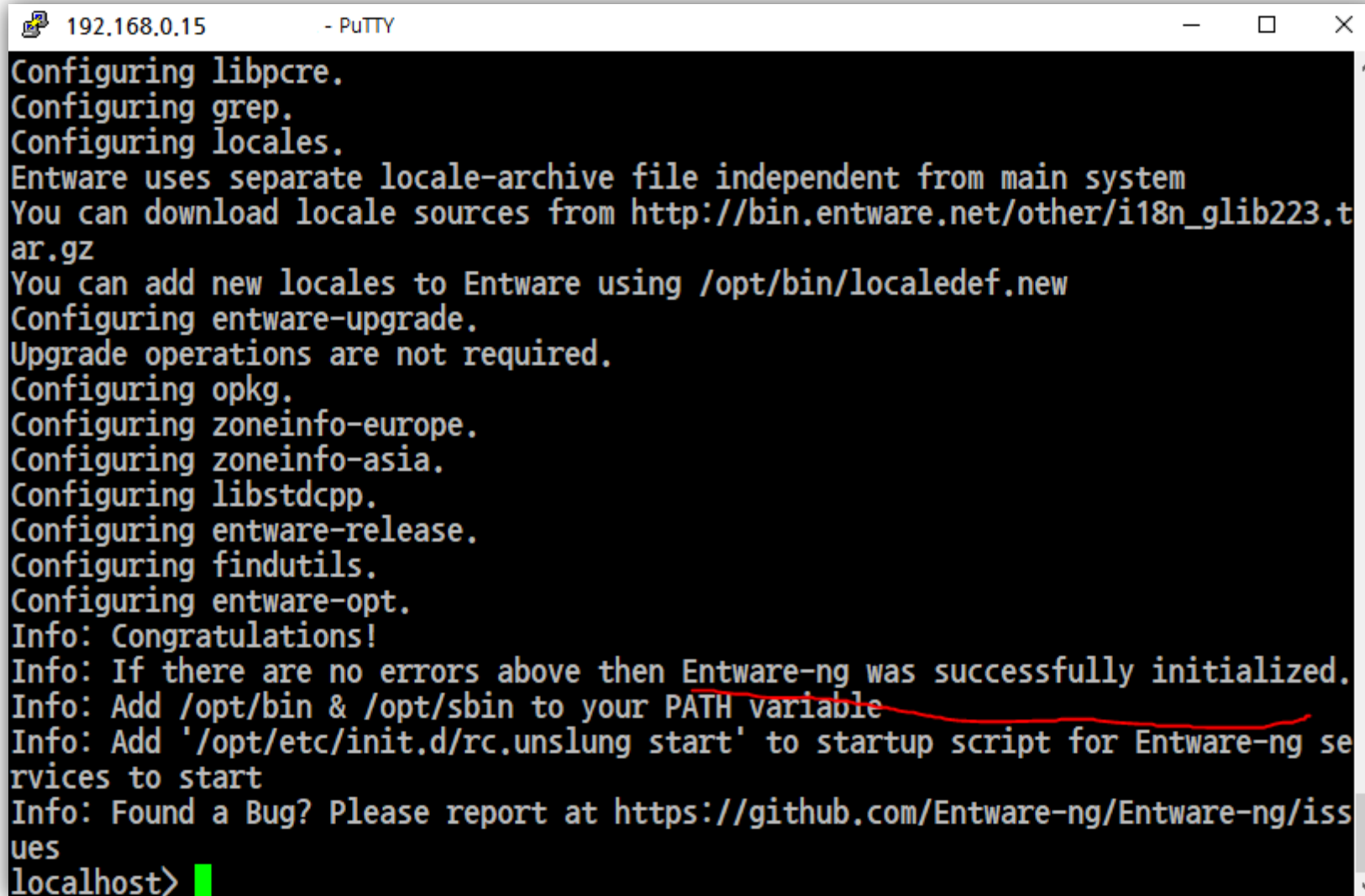
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
rmv7soft.ipk.
Configuring libgcc.
Configuring libc.
Configuring libssp.
Configuring libpthread.
Configuring librt.
Configuring terminfo.
Configuring ldconfig.
Configuring locales.
Entware uses separate locale-archive file independent from main system
Creating locale archive - /opt/usr/lib/locale/locale-archive
Adding en_EN.UTF-8
Adding ru_RU.UTF-8
You can download locale sources from http://pkg.entware.net/sources/i18n_glib223
.tar.gz
You can add new locales to Entware using /opt/bin/localedef.new
Configuring opkg.
Configuring libstdcpp.
Configuring findutils.
Configuring entware-opt.
File /opt/etc/opkg.conf upgraded, new repository set!
Please run opkg update + opkg upgrade once more
Downloading http://bin.entware.net/armv7sf-k2.6/Packages.gz
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

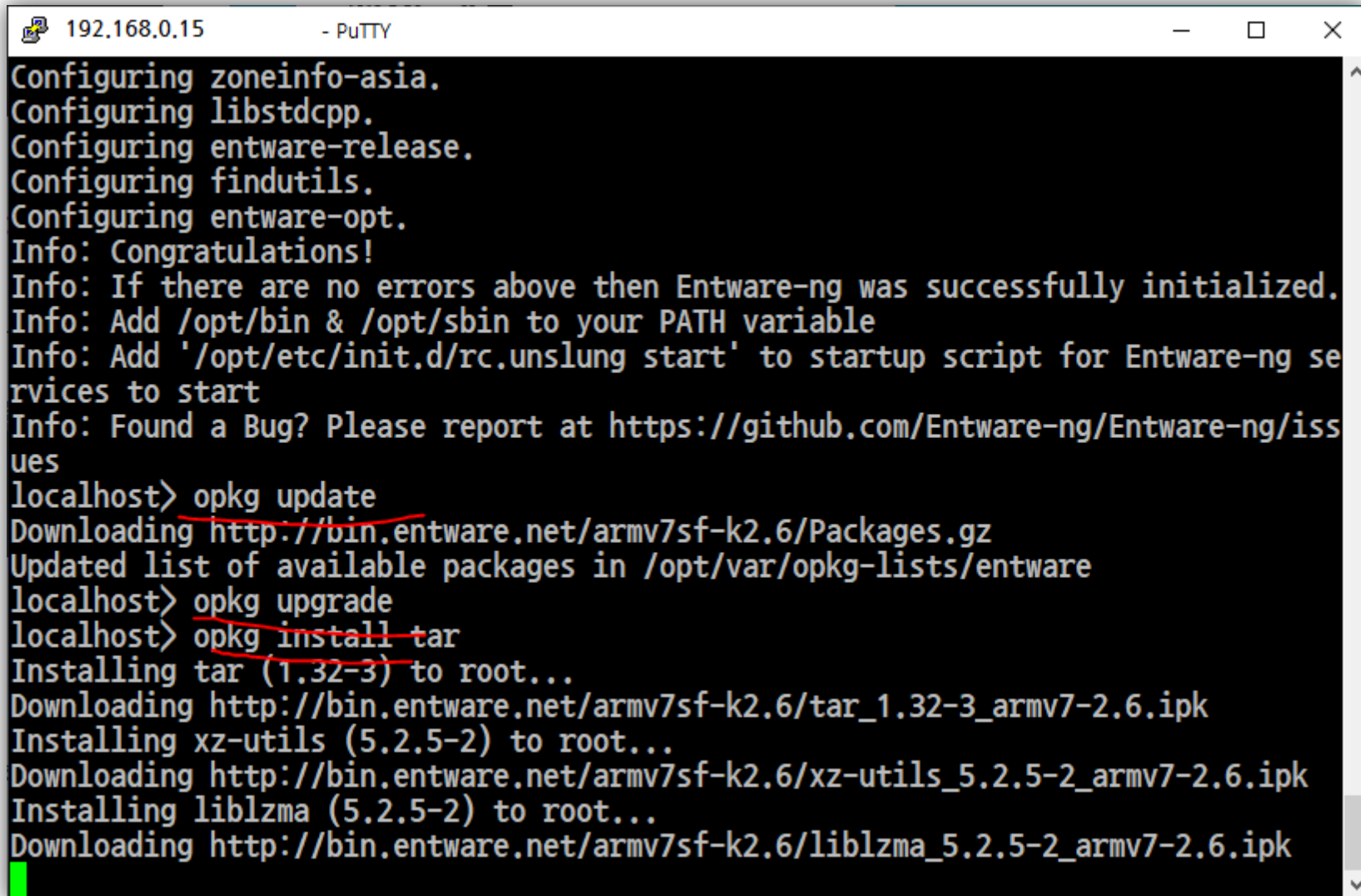
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
Configuring libpcrc.
Configuring grep.
Configuring locales.
Entware uses separate locale-archive file independent from main system
You can download locale sources from http://bin.entware.net/other/i18n_glib223.t
ar.gz
You can add new locales to Entware using /opt/bin/localedef.new
Configuring entware-upgrade.
Upgrade operations are not required.
Configuring opkg.
Configuring zoneinfo-europe.
Configuring zoneinfo-asia.
Configuring libstdc++.
Configuring entware-release.
Configuring findutils.
Configuring entware-opt.
Info: Congratulations!
Info: If there are no errors above then Entware-ng was successfully initialized.
Info: Add /opt/bin & /opt/sbin to your PATH variable
Info: Add '/opt/etc/init.d/rc.unslung start' to startup script for Entware-ng se
rvices to start
Info: Found a Bug? Please report at https://github.com/Entware-ng/Entware-ng/iss
ues
localhost>
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

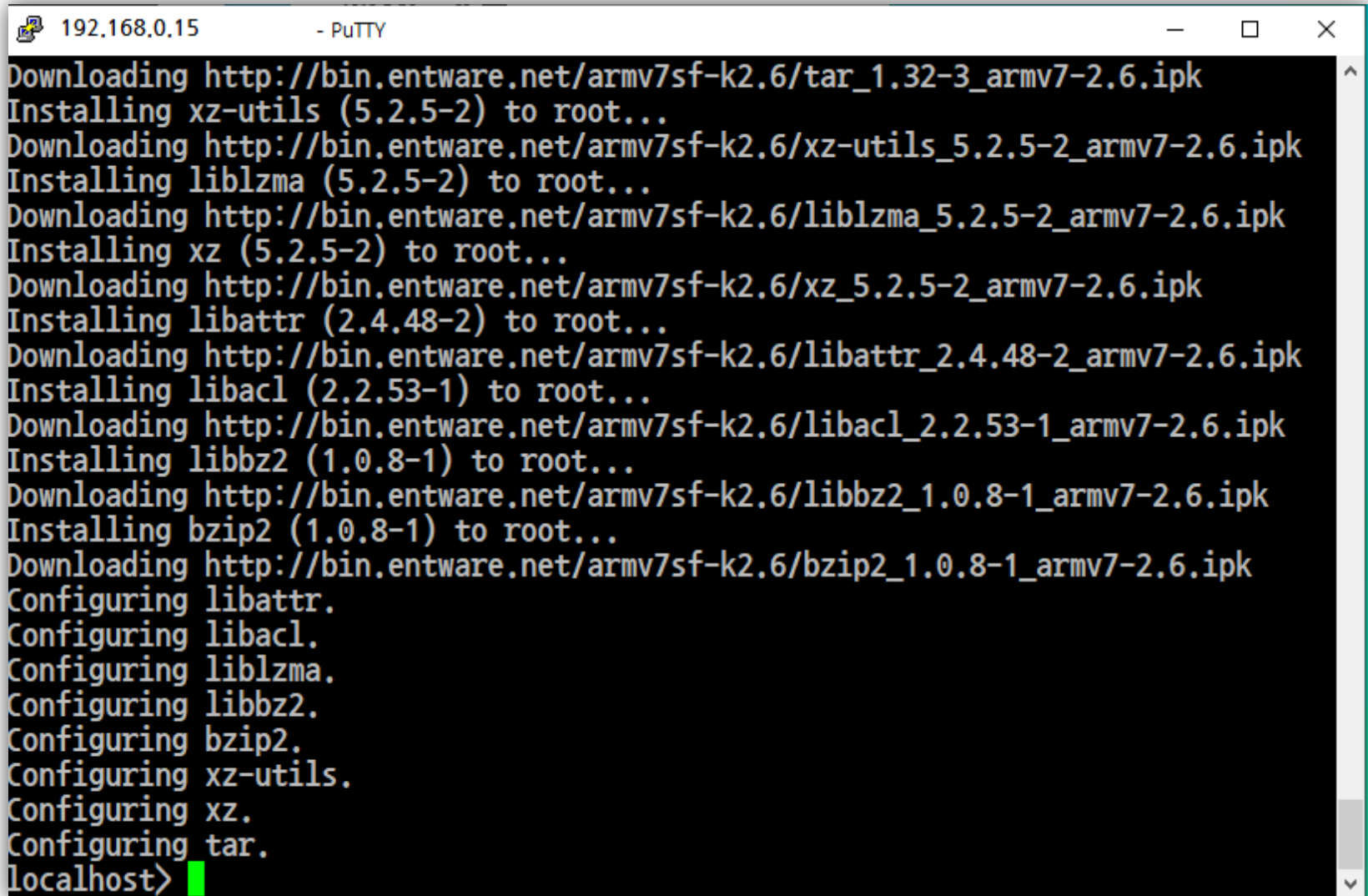
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
Configuring zoneinfo-asia.
Configuring libstdc++.
Configuring entware-release.
Configuring findutils.
Configuring entware-opt.
Info: Congratulations!
Info: If there are no errors above then Entware-ng was successfully initialized.
Info: Add /opt/bin & /opt/sbin to your PATH variable
Info: Add '/opt/etc/init.d/rc.unslung start' to startup script for Entware-ng services to start
Info: Found a Bug? Please report at https://github.com/Entware-ng/Entware-ng/issues
localhost> opkg update
Downloading http://bin.entware.net/armv7sf-k2.6/Packages.gz
Updated list of available packages in /opt/var/opkg-lists/entware
localhost> opkg upgrade
localhost> opkg install tar
Installing tar (1.32-3) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/tar_1.32-3_armv7-2.6.ipk
Installing xz-utils (5.2.5-2) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/xz-utils_5.2.5-2_armv7-2.6.ipk
Installing liblzma (5.2.5-2) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/liblzma_5.2.5-2_armv7-2.6.ipk
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

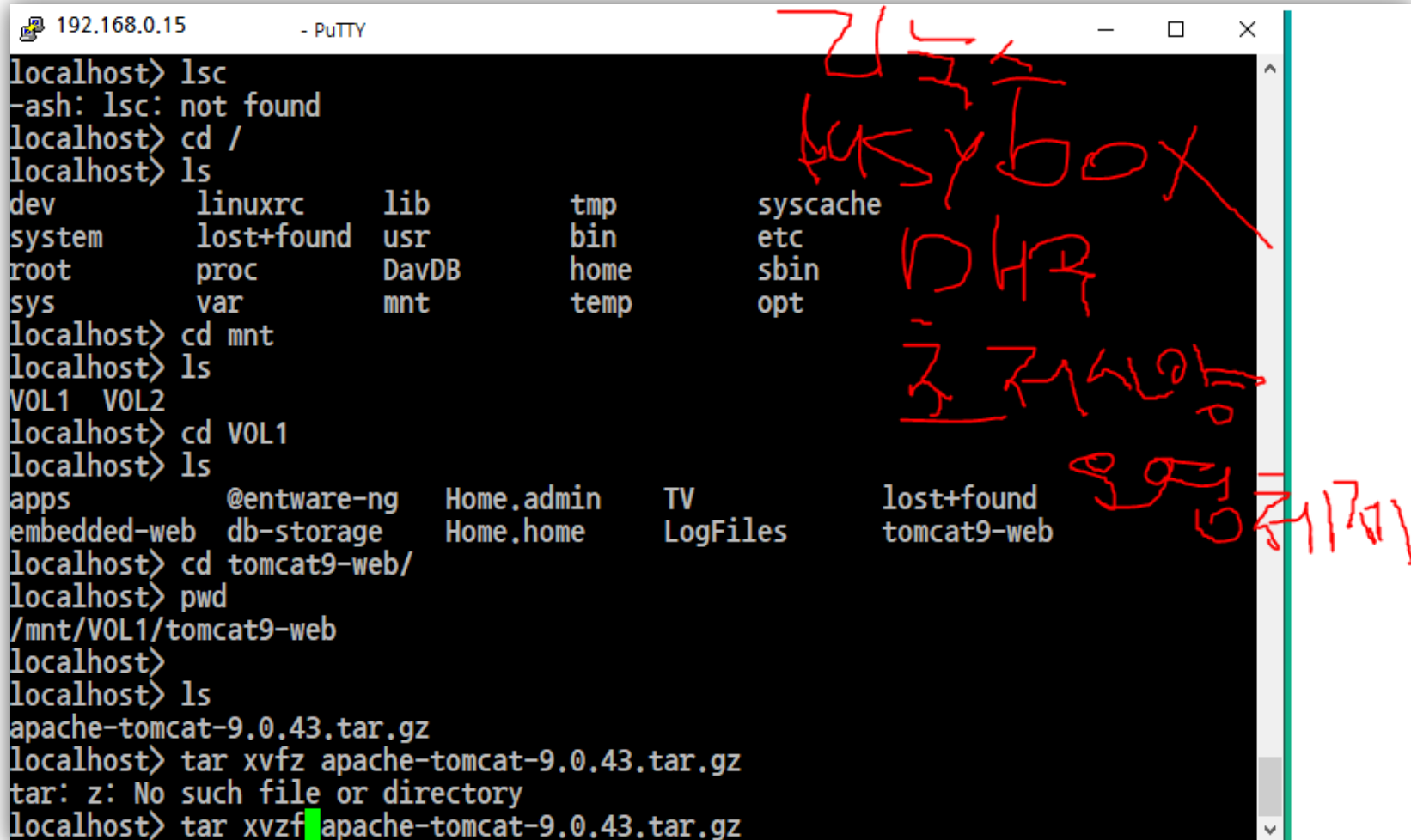
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
Downloading http://bin.entware.net/armv7sf-k2.6/tar_1.32-3_armv7-2.6.ipk
Installing xz-utils (5.2.5-2) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/xz-utils_5.2.5-2_armv7-2.6.ipk
Installing liblzma (5.2.5-2) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/liblzma_5.2.5-2_armv7-2.6.ipk
Installing xz (5.2.5-2) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/xz_5.2.5-2_armv7-2.6.ipk
Installing libattr (2.4.48-2) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libattr_2.4.48-2_armv7-2.6.ipk
Installing libacl (2.2.53-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libacl_2.2.53-1_armv7-2.6.ipk
Installing libbz2 (1.0.8-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libbz2_1.0.8-1_armv7-2.6.ipk
Installing bzip2 (1.0.8-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/bzip2_1.0.8-1_armv7-2.6.ipk
Configuring libattr.
Configuring libacl.
Configuring liblzma.
Configuring libbz2.
Configuring bzip2.
Configuring xz-utils.
Configuring xz.
Configuring tar.
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

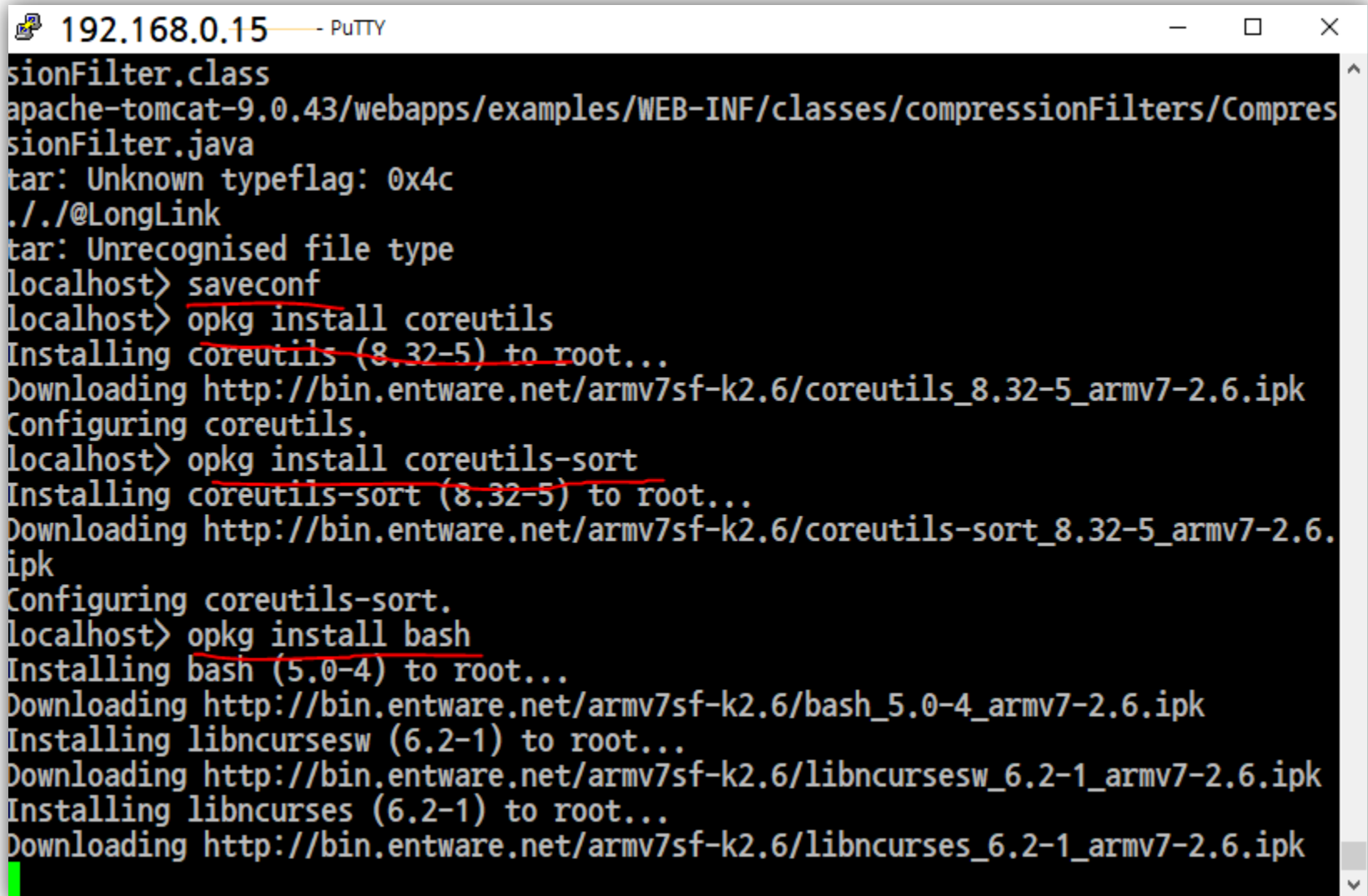


```
192.168.0.15 - PuTTY
localhost> lsc
-bash: lsc: not found
localhost> cd /
localhost> ls
dev      linuxrc   lib      tmp      syscache
system   lost+found  usr     bin      etc
root     proc     DavDB   home     sbin
sys      var      mnt     temp     opt
localhost> cd mnt
localhost> ls
VOL1  VOL2
localhost> cd VOL1
localhost> ls
apps          @entware-ng   Home.admin   TV            lost+found
embedded-web  db-storage    Home.home    LogFiles      tomcat9-web
localhost> cd tomcat9-web/
localhost> pwd
/mnt/VOL1/tomcat9-web
localhost>
localhost> ls
apache-tomcat-9.0.43.tar.gz
localhost> tar xvfz apache-tomcat-9.0.43.tar.gz
tar: z: No such file or directory
localhost> tar xvzf apache-tomcat-9.0.43.tar.gz
```

리눅스
busybox
오픈
구조식
설치

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

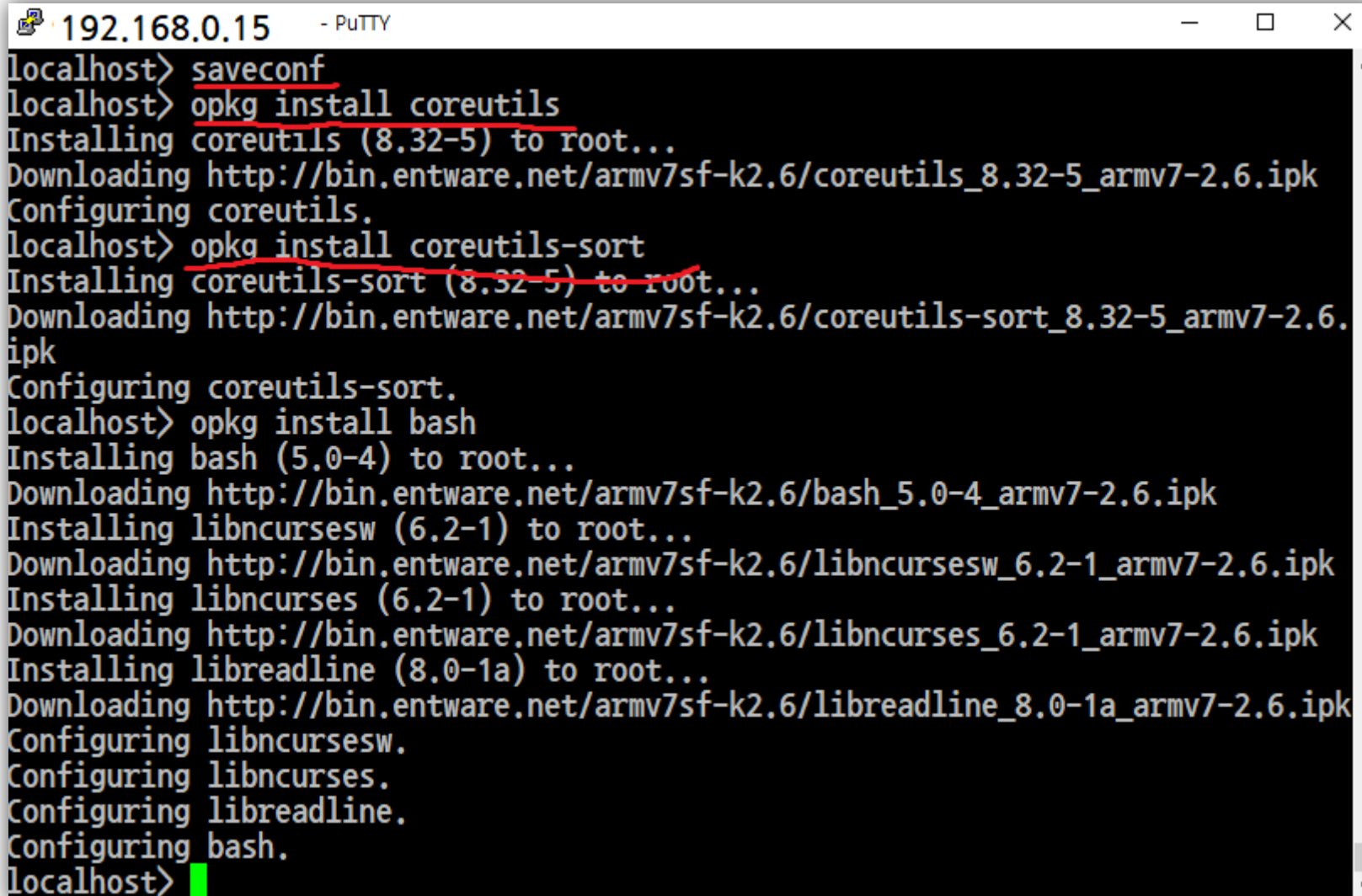
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
sionFilter.class
apache-tomcat-9.0.43/webapps/examples/WEB-INF/classes/compressionFilters/CompressionFilter.java
tar: Unknown typeflag: 0x4c
././@LongLink
tar: Unrecognised file type
localhost> saveconf
localhost> opkg install coreutils
Installing coreutils (8.32-5) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/coreutils_8.32-5_armv7-2.6.ipk
Configuring coreutils.
localhost> opkg install coreutils-sort
Installing coreutils-sort (8.32-5) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/coreutils-sort_8.32-5_armv7-2.6.ipk
Configuring coreutils-sort.
localhost> opkg install bash
Installing bash (5.0-4) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/bash_5.0-4_armv7-2.6.ipk
Installing libncursesw (6.2-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libncursesw_6.2-1_armv7-2.6.ipk
Installing libncurses (6.2-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libncurses_6.2-1_armv7-2.6.ipk
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

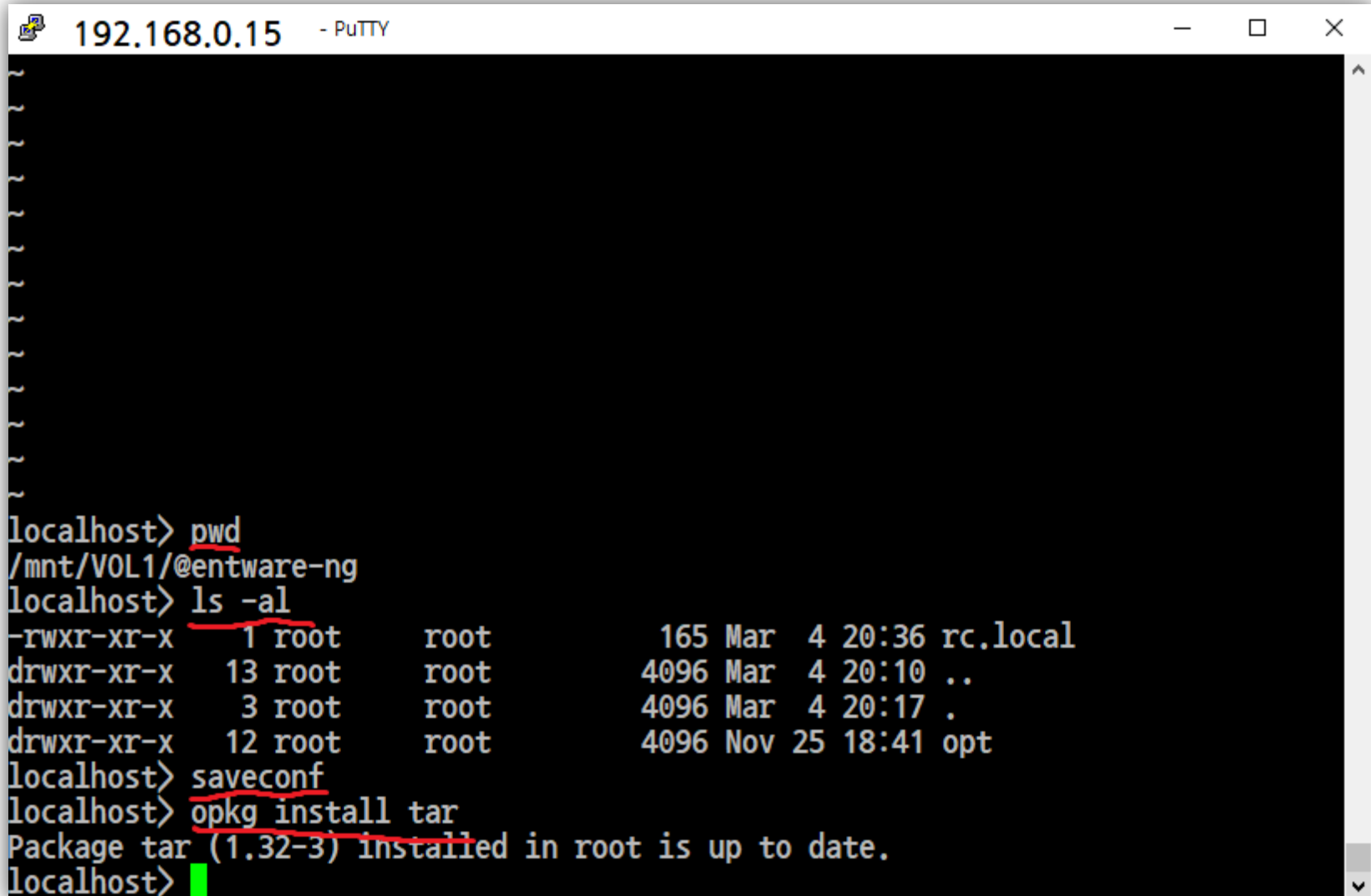
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
localhost> saveconf
localhost> opkg install coreutils
Installing coreutils (8.32-5) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/coreutils_8.32-5_armv7-2.6.ipk
Configuring coreutils.
localhost> opkg install coreutils-sort
Installing coreutils-sort (8.32-5) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/coreutils-sort_8.32-5_armv7-2.6.ipk
Configuring coreutils-sort.
localhost> opkg install bash
Installing bash (5.0-4) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/bash_5.0-4_armv7-2.6.ipk
Installing libncursesw (6.2-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libncursesw_6.2-1_armv7-2.6.ipk
Installing libncurses (6.2-1) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libncurses_6.2-1_armv7-2.6.ipk
Installing libreadline (8.0-1a) to root...
Downloading http://bin.entware.net/armv7sf-k2.6/libreadline_8.0-1a_armv7-2.6.ipk
Configuring libncursesw.
Configuring libncurses.
Configuring libreadline.
Configuring bash.
localhost> █
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY

localhost> pwd
/mnt/VOL1/@entware-ng
localhost> ls -al
-rwxr-xr-x  1 root    root      165 Mar  4 20:36 rc.local
drwxr-xr-x 13 root    root    4096 Mar  4 20:10 ..
drwxr-xr-x  3 root    root    4096 Mar  4 20:17 .
drwxr-xr-x 12 root    root    4096 Nov 25 18:41 opt
localhost> saveconf
localhost> opkg install tar
Package tar (1.32-3) installed in root is up to date.
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

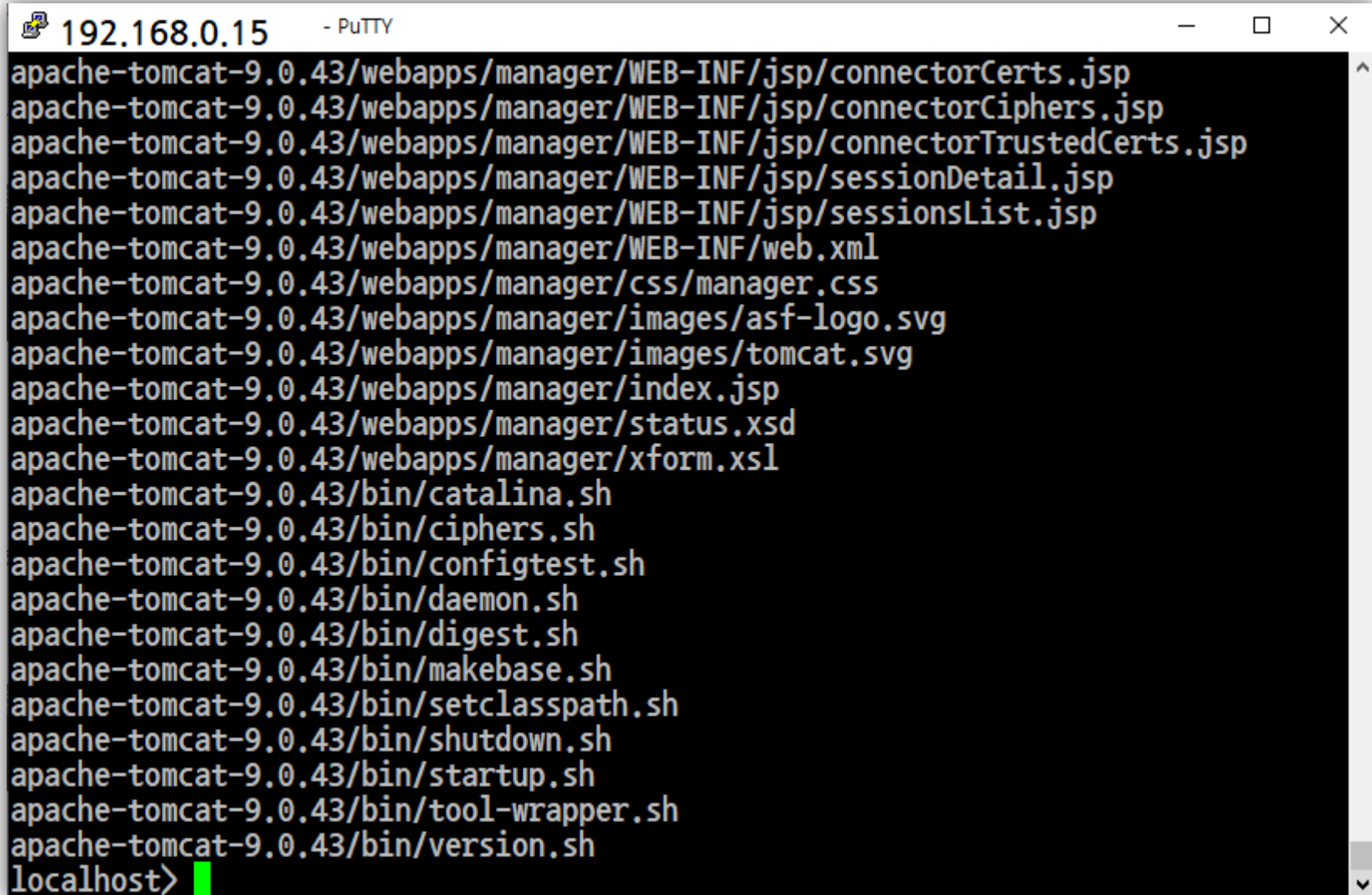
아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
~
localhost> pwd
/mnt/VOL1/@entware-ng
localhost> ls -al
-rwxr-xr-x  1 root    root      165 Mar  4 20:36 rc.local
drwxr-xr-x 13 root    root     4096 Mar  4 20:10 ..
drwxr-xr-x  3 root    root     4096 Mar  4 20:17 .
drwxr-xr-x 12 root    root     4096 Nov 25 18:41 opt
localhost> saveconf
localhost> opkg install tar
Package tar (1.32-3) installed in root is up to date.
localhost> ls
rc.local  opt
localhost> cd ..
localhost> ls
apps          @entware-ng  Home.admin   TV            lost+found
embedded-web  db-storage   Home.home    LogFiles      tomcat9-web
localhost> cd tomcat9-web/
localhost> ls
apache-tomcat-9.0.43.tar.gz  apache-tomcat-9.0.43
localhost> rm -rf apache-tomcat-9.0.43
localhost> ls
apache-tomcat-9.0.43.tar.gz
localhost> /opt/bin/tar xvfz apache-tomcat-9.0.43.tar.gz
```

내장 tar로 압축해제하면, 안 된다.
opkg로 설치한 최신 tar(타르)로 압축을 해제한다.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
apache-tomcat-9.0.43/webapps/manager/WEB-INF/jsp/connectorCerts.jsp
apache-tomcat-9.0.43/webapps/manager/WEB-INF/jsp/connectorCiphers.jsp
apache-tomcat-9.0.43/webapps/manager/WEB-INF/jsp/connectorTrustedCerts.jsp
apache-tomcat-9.0.43/webapps/manager/WEB-INF/jsp/sessionDetail.jsp
apache-tomcat-9.0.43/webapps/manager/WEB-INF/jsp/sessionsList.jsp
apache-tomcat-9.0.43/webapps/manager/WEB-INF/web.xml
apache-tomcat-9.0.43/webapps/manager/css/manager.css
apache-tomcat-9.0.43/webapps/manager/images/asf-logo.svg
apache-tomcat-9.0.43/webapps/manager/images/tomcat.svg
apache-tomcat-9.0.43/webapps/manager/index.jsp
apache-tomcat-9.0.43/webapps/manager/status.xsd
apache-tomcat-9.0.43/webapps/manager/xform.xsl
apache-tomcat-9.0.43/bin/catalina.sh
apache-tomcat-9.0.43/bin/ciphers.sh
apache-tomcat-9.0.43/bin/configtest.sh
apache-tomcat-9.0.43/bin/daemon.sh
apache-tomcat-9.0.43/bin/digest.sh
apache-tomcat-9.0.43/bin/makebase.sh
apache-tomcat-9.0.43/bin/setclasspath.sh
apache-tomcat-9.0.43/bin/shutdown.sh
apache-tomcat-9.0.43/bin/startup.sh
apache-tomcat-9.0.43/bin/tool-wrapper.sh
apache-tomcat-9.0.43/bin/version.sh
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
work      LICENSE      README.md    webapps
conf      RELEASE-NOTES  RUNNING.txt  CONTRIBUTING.md
BUILDING.txt  bin          logs
NOTICE      temp         lib

localhost> cd bin
localhost> ls
ciphers.sh      configtest.bat  catalina-tasks.xml  version.sh
commons-daemon.jar  makebase.sh     shutdown.bat        commons-daemon-native.tar.gz
bootstrap.jar    setclasspath.bat  tomcat-native.tar.gz  catalina.sh
startup.bat      catalina.bat      makebase.bat        ciphers.bat
shutdown.sh      digest.sh         tool-wrapper.bat    version.bat
digest.sh        tool-wrapper.sh  tomcat-juli.jar     digest.bat
localhost> ./startup.sh
Neither the JAVA_HOME nor the JRE_HOME environment variable is defined
At least one of these environment variable is needed to run this program
localhost>
```

Handwritten red notes on the right side of the terminal output:

- Neither the JAVA_HOME (자바도) At Least(적어도)
- => 동물 해석: = 자바(JRE 설치해라)
- 500K
- 자바설치필요함
- X

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
root      proc      DavDB     home      sbin
sys       var         mnt       temp      opt
localhost> cd mnt
localhost> ls
VOL1 VOL2
localhost> cd VOL1/
localhost> ls
apps      @entware-ng  Home.admin  TV         lost+found
embedded-web  db-storage  Home.home   LogFiles   tomcat9-web
localhost> cd @entware-ng/
localhost> ls
app      rc.local  opt
localhost> cd app/
localhost> ls
jdk-15.0.2  openjdk-15.0.2_linux-x64_bin.tar.gz
localhost> rm -rf *
localhost> ls
localhost> wget https:// java-배포사이트.com/otn/java/ejdk/8u211-b12/478a62b7d4e3
4b78b671c754eaa38ab/ejdk-8u211-linux-arm-sflt.tar.gz
wget: not an http or ftp url: https://
/otn/java/ejdk/8u211-b1
2/478a62b7d4e34b78b671c754eaa38ab/ejdk-8u211-linux-arm-sflt.tar.gz
localhost> wget http://hello.localhost.com/ejdk-8u211-linux-arm-sflt.tar.gz
Connecting to
ejdk-8u211-linux-arm 32% |*****| :80 | 33982 KB 00:06 ETA
```

Handwritten notes in the image:

- Blue circle around the failed wget command with a note: "요령으로 https:// 보안SSL 접속이 안 되면, 요령으로 살짝 'http://'으로 작업하면 된다."
- Yellow arrow pointing to the file name in the failed command.
- Yellow text: "https:// 만 되면, 새 서버 손질하기가 쉬워요"

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

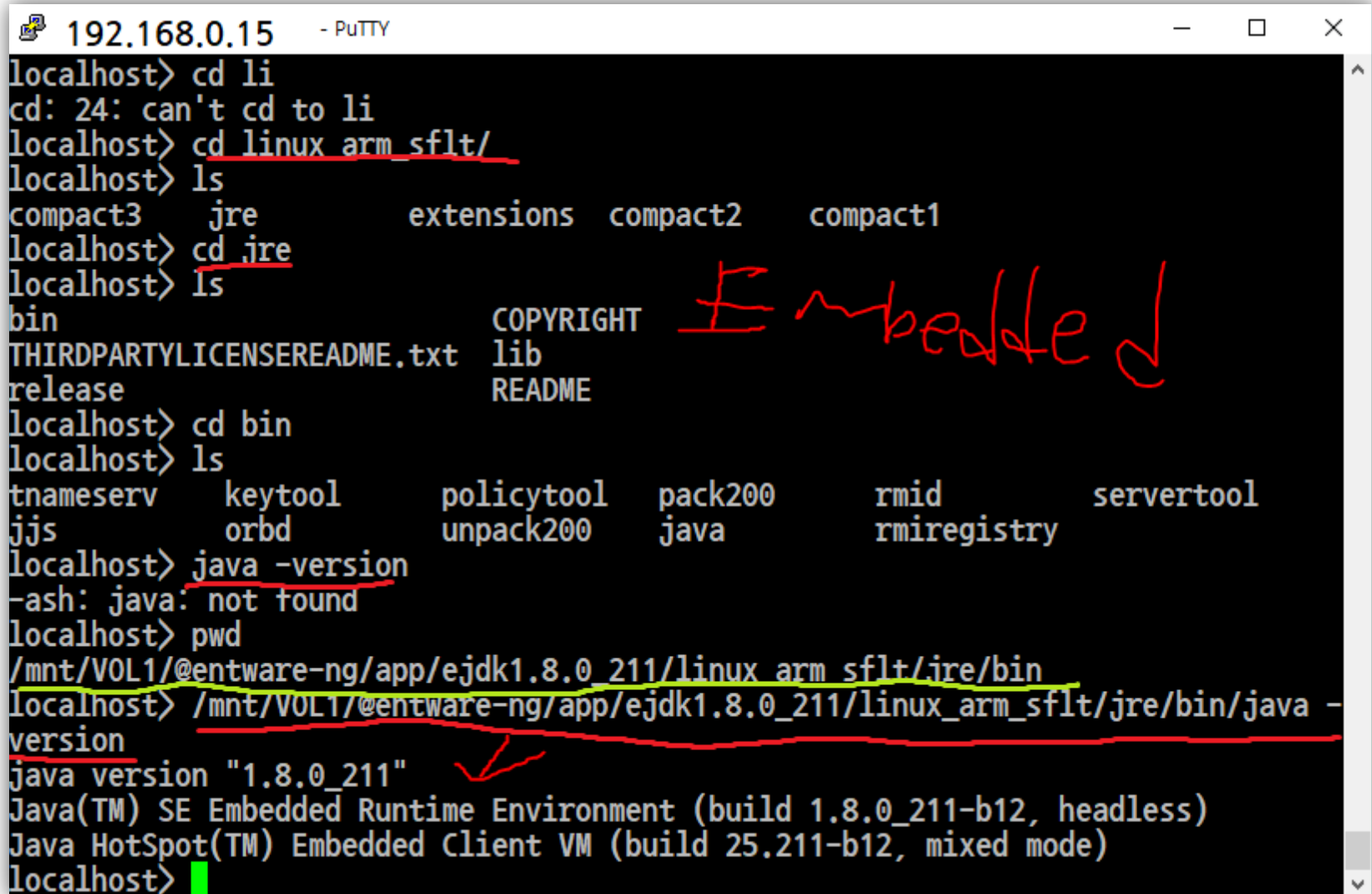
아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
localhost> cd VOL1/
localhost> ls
apps          @entware-ng  Home.admin   TV            lost+found
embedded-web  db-storage   Home.home    LogFiles      tomcat9-web
localhost> cd @entware-ng/
localhost> ls
app          rc.local  opt
localhost> cd app/
localhost> ls
jdk-15.0.2          openjdk-15.0.2_linux-x64_bin.tar.gz
localhost> rm -rf *
localhost> ls
localhost> wget https://Java배포사이트.com/otn/java/ejdk/8u211-b12/478a62b7d4e3
4b78b671c754eaaf38ab/ejdk-8u211-linux-arm-sflt.tar.gz
wget: not an http or ftp url: https://Java배포사이트.com/otn/java/ejdk/8u211-b1
2/478a62b7d4e34b78b671c754eaaf38ab/ejdk-8u211-linux-arm-sflt.tar.gz
localhost> wget http://hello.localhost.com/ejdk-8u211-linux-arm-sflt.tar.gz
Connecting to hello.localhost.com [192.168.0.4] :80
ejdk-8u211-linux-arm 100% |*****| 102 MB 00:00 ETA
localhost> ls
ejdk-8u211-linux-arm-sflt.tar.gz
localhost> tar xvfz ejdk-8u211-linux-arm-sflt.tar.gz
tar: z: No such file or directory
localhost> /opt/bin/tar xvfz ejdk-8u211-linux-arm-sflt.tar.gz
```

✕ 접속이 잘 안 되면,
정석적인 방법으로 하지 말고,
요령으로 접속하면 된다.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

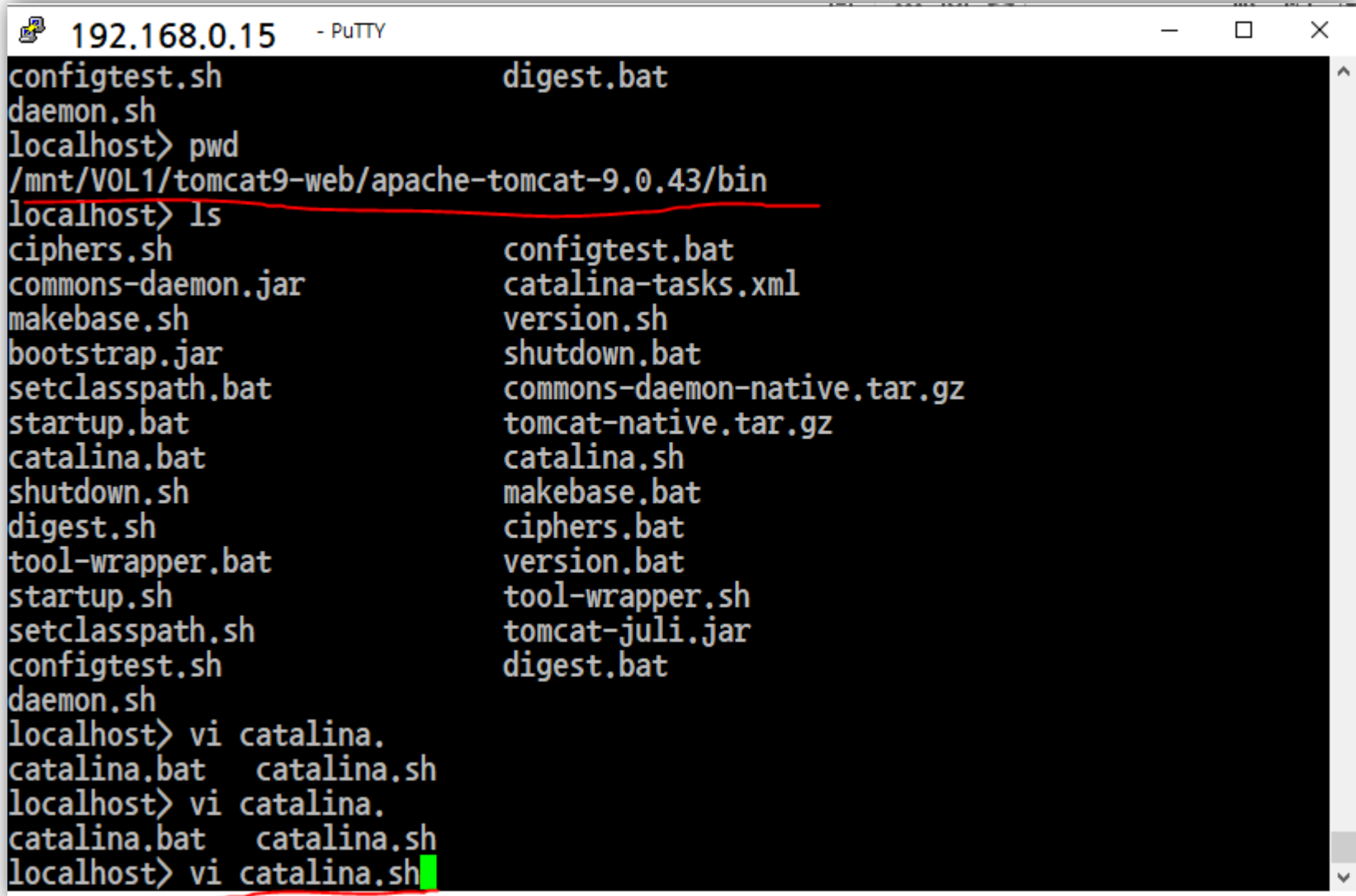
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
localhost> cd li
cd: 24: can't cd to li
localhost> cd linux arm sflt/
localhost> ls
compact3      jre            extensions    compact2      compact1
localhost> cd jre
localhost> ls
bin            COPYRIGHT      Embedded
THIRDPARTYLICENSEREADME.txt  lib
release       README
localhost> cd bin
localhost> ls
tnameserv     keytool        policytool     pack200        rmid            servertool
jjs           orbd           unpack200      java           rmiregistry
localhost> java -version
-bash: java: not found
localhost> pwd
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre/bin
localhost> /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre/bin/java -version
java version "1.8.0_211"
Java(TM) SE Embedded Runtime Environment (build 1.8.0_211-b12, headless)
Java HotSpot(TM) Embedded Client VM (build 25.211-b12, mixed mode)
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

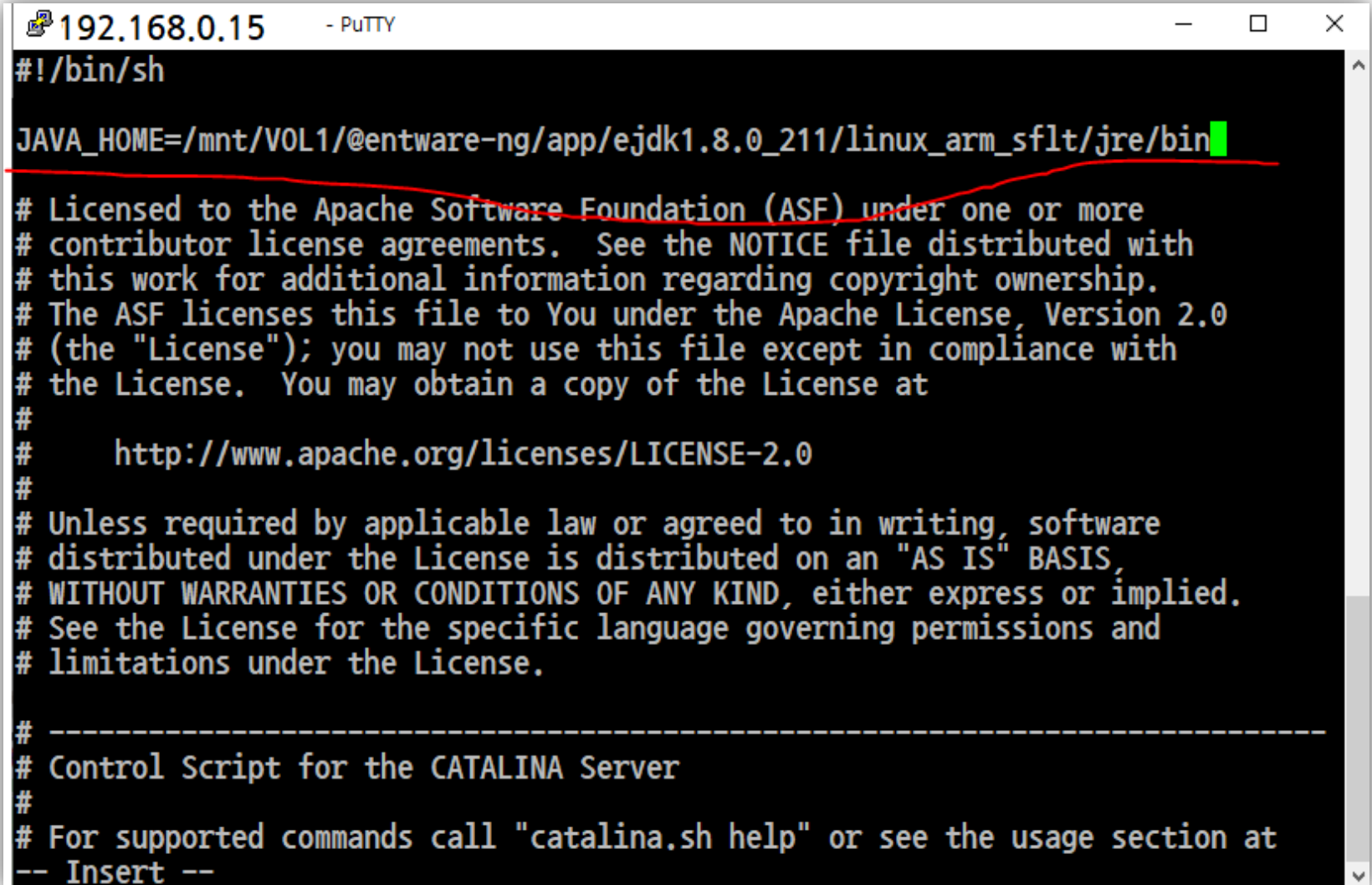
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
configtest.sh          digest.bat
daemon.sh
localhost> pwd
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin
localhost> ls
ciphers.sh             configtest.bat
commons-daemon.jar     catalina-tasks.xml
makebase.sh            version.sh
bootstrap.jar          shutdown.bat
setclasspath.bat       commons-daemon-native.tar.gz
startup.bat            tomcat-native.tar.gz
catalina.bat           catalina.sh
shutdown.sh            makebase.bat
digest.sh              ciphers.bat
tool-wrapper.bat       version.bat
startup.sh             tool-wrapper.sh
setclasspath.sh        tomcat-juli.jar
configtest.sh          digest.bat
daemon.sh
localhost> vi catalina.
catalina.bat  catalina.sh
localhost> vi catalina.
catalina.bat  catalina.sh
localhost> vi catalina.sh
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
#!/bin/sh

JAVA_HOME=/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre/bin

# Licensed to the Apache Software Foundation (ASF) under one or more
# contributor license agreements. See the NOTICE file distributed with
# this work for additional information regarding copyright ownership.
# The ASF licenses this file to You under the Apache License, Version 2.0
# (the "License"); you may not use this file except in compliance with
# the License. You may obtain a copy of the License at
#
#     http://www.apache.org/licenses/LICENSE-2.0
#
# Unless required by applicable law or agreed to in writing, software
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.
# -----
# Control Script for the CATALINA Server
#
# For supported commands call "catalina.sh help" or see the usage section at
-- Insert --
```

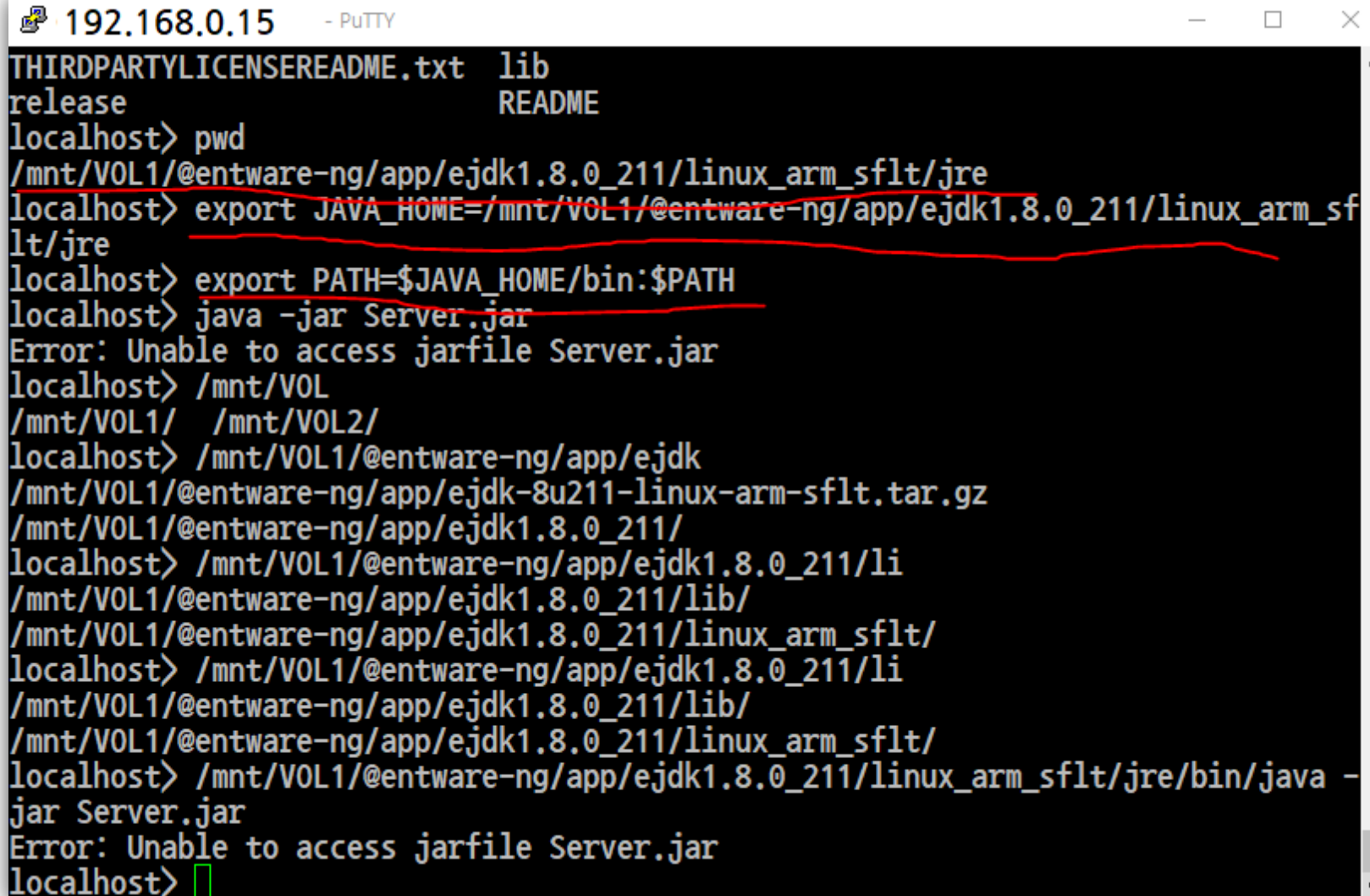
7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
-rw-r----- 1 root root 1664 Jan 29 05:29 catalina-tasks.xml
-rwxr-x--- 1 root root 1908 Jan 29 05:28 version.sh
-rw-r----- 1 root root 2020 Jan 29 05:28 shutdown.bat
-rw-r----- 1 root root 207420 Jan 29 05:28 commons-daemon-native.ta
r.gz
-rw-r----- 1 root root 423135 Jan 29 05:28 tomcat-native.tar.gz
-rwxr-x--- 1 root root 25368 Mar 4 21:10 catalina.sh
-rw-r----- 1 root root 3606 Jan 29 05:28 makebase.bat
-rw-r----- 1 root root 2123 Jan 29 05:28 ciphers.bat
-rw-r----- 1 root root 2026 Jan 29 05:28 version.bat
-rwxr-x--- 1 root root 5540 Jan 29 05:28 tool-wrapper.sh
-rw-r----- 1 root root 46756 Jan 29 05:28 tomcat-juli.jar
-rw-r----- 1 root root 2091 Jan 29 05:28 digest.bat
localhost> ./startup.sh
Using CATALINA_BASE: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_HOME: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_TMPDIR: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp
Using JRE_HOME: /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jr
e/bin
Using CLASSPATH: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.
jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
localhost> █
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

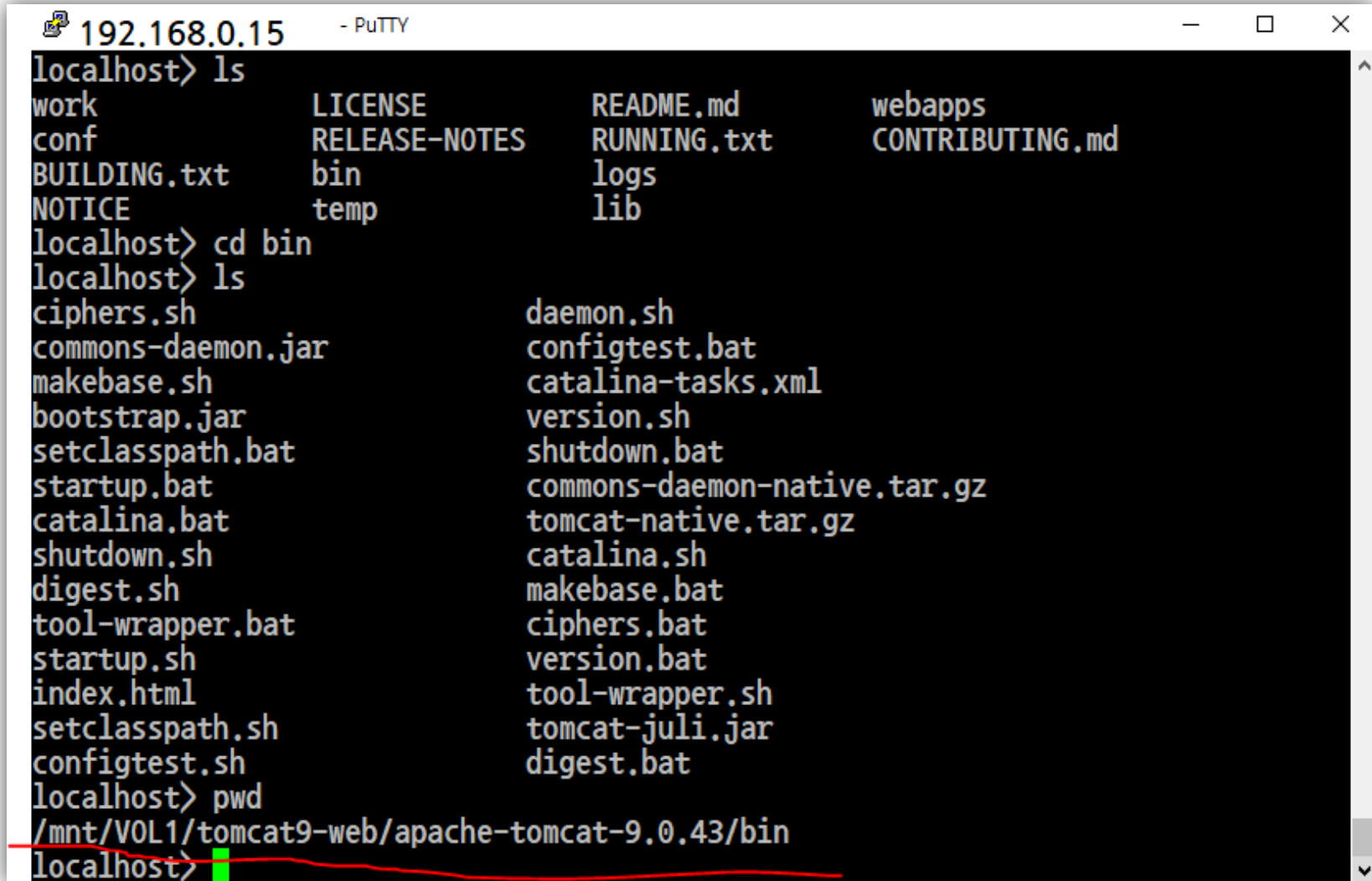
아래의 명령어로 설치를 진행해볼 수 있다.



```
THIRDPARTYLICENSEREADME.txt  lib
release                        README
localhost> pwd
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre
localhost> export JAVA_HOME=/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre
localhost> export PATH=$JAVA_HOME/bin:$PATH
localhost> java -jar Server.jar
Error: Unable to access jarfile Server.jar
localhost> /mnt/VOL
/mnt/VOL1/  /mnt/VOL2/
localhost> /mnt/VOL1/@entware-ng/app/ejdk
/mnt/VOL1/@entware-ng/app/ejdk-8u211-linux-arm-sflt.tar.gz
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/
localhost> /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/li
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/lib/
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/
localhost> /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/li
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/lib/
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/
localhost> /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre/bin/java -
jar Server.jar
Error: Unable to access jarfile Server.jar
localhost> 
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

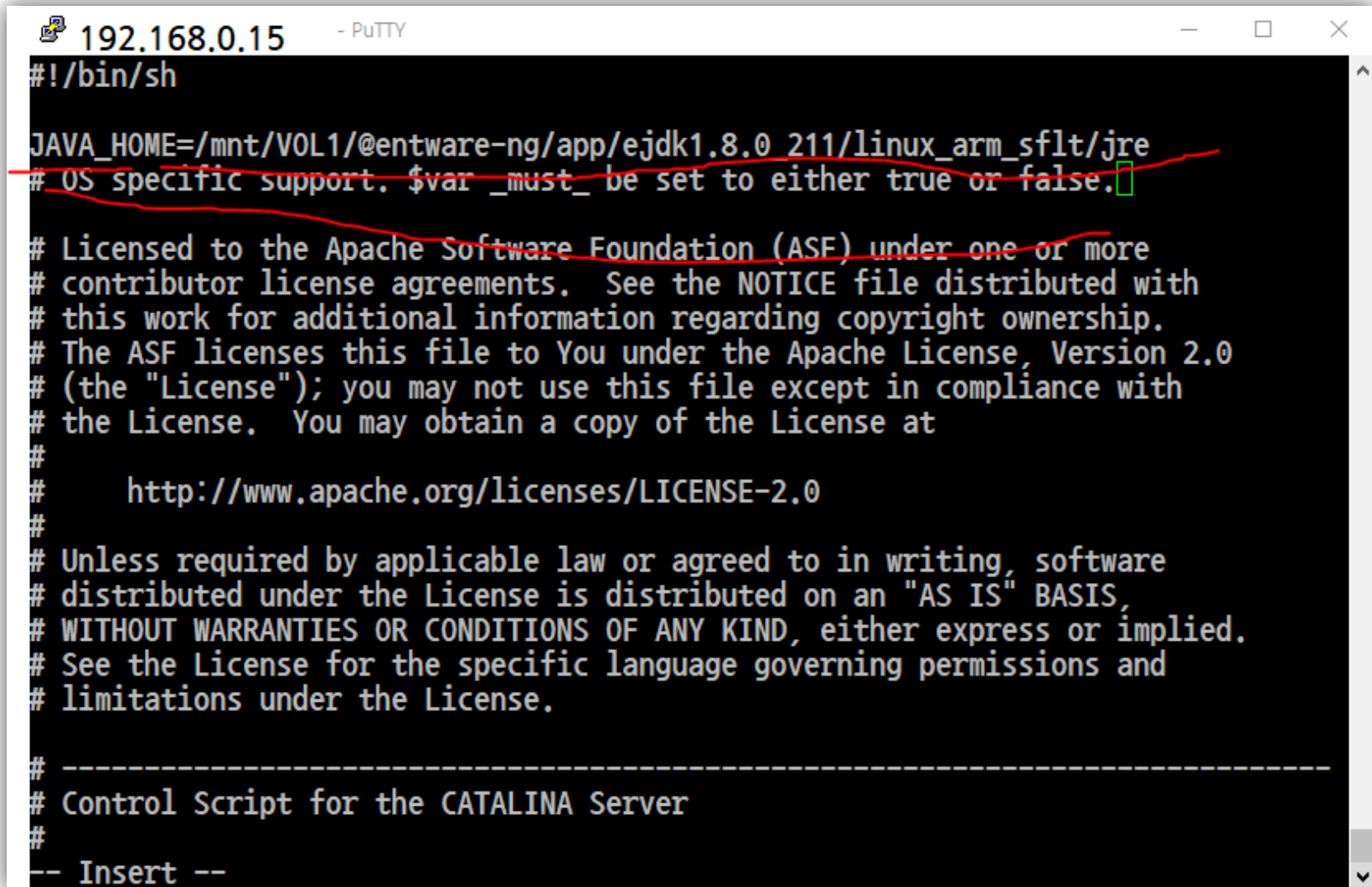
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
localhost> ls
work          LICENSE      README.md    webapps
conf          RELEASE-NOTES RUNNING.txt   CONTRIBUTING.md
BUILDING.txt  bin          logs
NOTICE        temp         lib
localhost> cd bin
localhost> ls
ciphers.sh          daemon.sh
commons-daemon.jar  configtest.bat
makebase.sh         catalina-tasks.xml
bootstrap.jar       version.sh
setclasspath.bat    shutdown.bat
startup.bat         commons-daemon-native.tar.gz
catalina.bat        tomcat-native.tar.gz
shutdown.sh         catalina.sh
digest.sh           makebase.bat
tool-wrapper.bat    ciphers.bat
startup.sh          version.bat
index.html          tool-wrapper.sh
setclasspath.sh     tomcat-juli.jar
configtest.sh       digest.bat
localhost> pwd
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



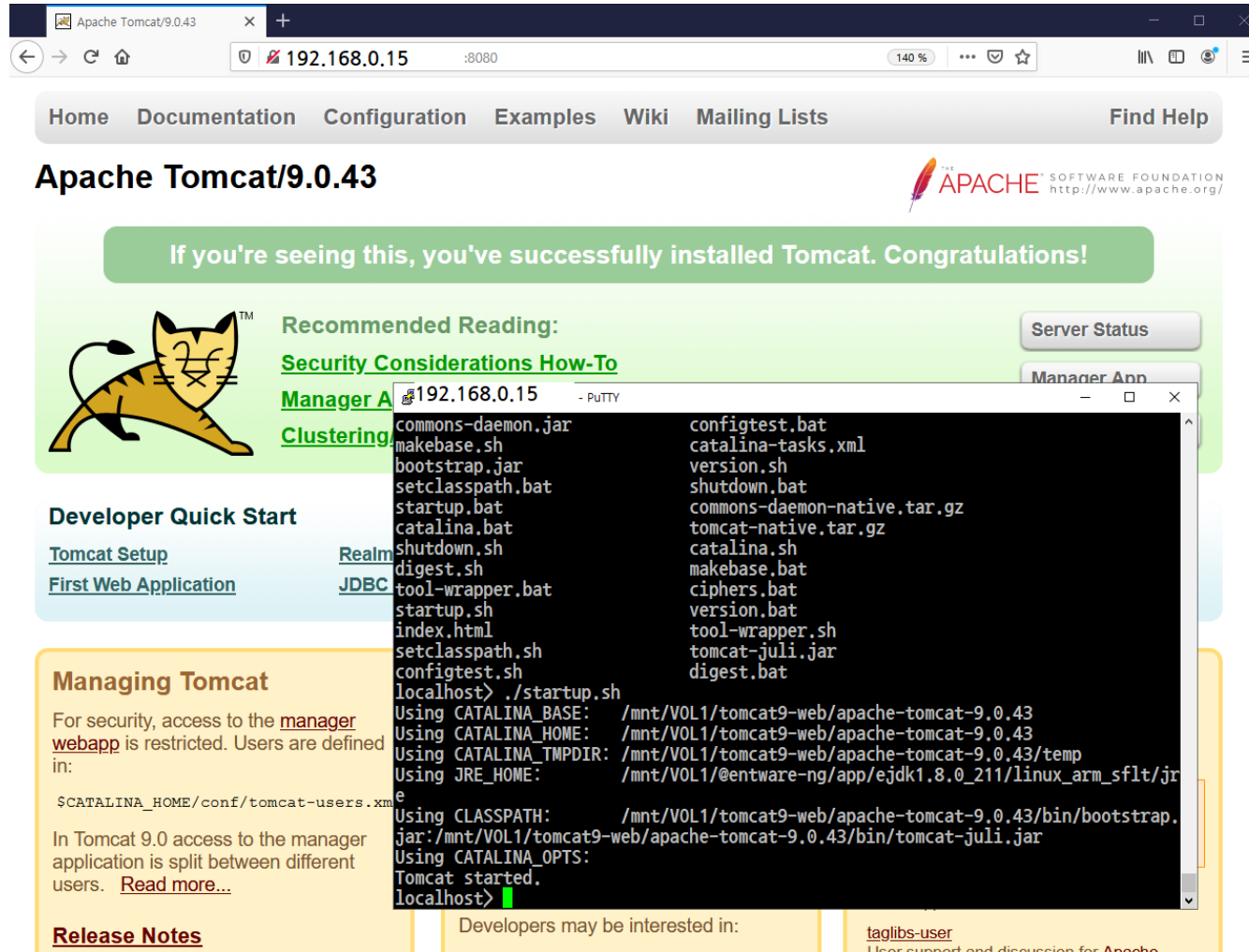
```
192.168.0.15 - PuTTY
#!/bin/sh

JAVA_HOME=/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre
# OS specific support. $var _must_ be set to either true or false.

# Licensed to the Apache Software Foundation (ASF) under one or more
# contributor license agreements. See the NOTICE file distributed with
# this work for additional information regarding copyright ownership.
# The ASF licenses this file to You under the Apache License, Version 2.0
# (the "License"); you may not use this file except in compliance with
# the License. You may obtain a copy of the License at
#
# http://www.apache.org/licenses/LICENSE-2.0
#
# Unless required by applicable law or agreed to in writing, software
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.
# -----
# Control Script for the CATALINA Server
#
-- Insert --
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

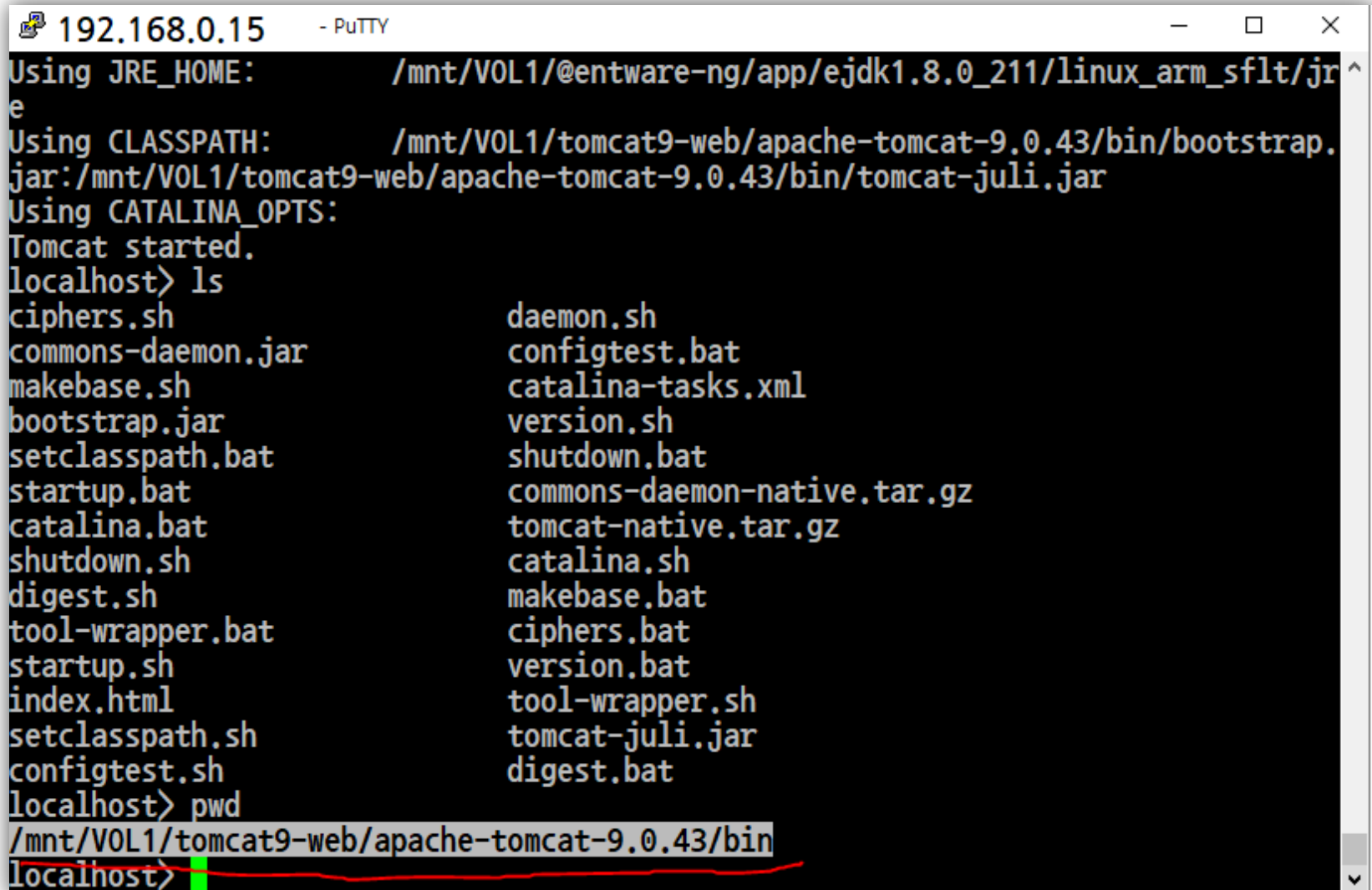
아래의 명령어로 설치를 진행해볼 수 있다.



The screenshot shows the Apache Tomcat/9.0.43 web interface in a browser window. The address bar shows the URL `192.168.0.15:8080`. The page has a navigation bar with links: Home, Documentation, Configuration, Examples, Wiki, Mailing Lists, and a Find Help button. The main content area features a green banner that says "If you're seeing this, you've successfully installed Tomcat. Congratulations!". Below this, there is a section for "Recommended Reading" with links to "Security Considerations", "How-To", "Manager App", and "Clustering". To the left of these links is a cartoon cat logo. Below the recommended reading, there is a "Developer Quick Start" section with links to "Tomcat Setup" and "First Web Application". At the bottom left, there is a "Managing Tomcat" section with text about security and access to the manager webapp, and a "Release Notes" section. On the right side of the page, there are buttons for "Server Status" and "Manager App". Overlaid on the bottom right of the browser window is a terminal window titled "192.168.0.15 - PUTTY". The terminal shows the output of the `./startup.sh` command, which sets various environment variables and starts the Tomcat service. The output includes: `Using CATALINA_BASE: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43`, `Using CATALINA_HOME: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43`, `Using CATALINA_TMPDIR: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp`, `Using JRE_HOME: /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre`, `Using CLASSPATH: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar`, and finally `Tomcat started.` The prompt `localhost>` is visible at the bottom of the terminal.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
Using JRE_HOME:      /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jr
e
Using CLASSPATH:     /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.
jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
localhost> ls
ciphers.sh                daemon.sh
commons-daemon.jar        configtest.bat
makebase.sh               catalina-tasks.xml
bootstrap.jar             version.sh
setclasspath.bat          shutdown.bat
startup.bat               commons-daemon-native.tar.gz
catalina.bat              tomcat-native.tar.gz
shutdown.sh               catalina.sh
digest.sh                 makebase.bat
tool-wrapper.bat          ciphers.bat
startup.sh                version.bat
index.html                tool-wrapper.sh
setclasspath.sh           tomcat-juli.jar
configtest.sh             digest.bat
localhost> pwd
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

```

192.168.0.15 - PuTTY
root      proc      DavDB     home      sbin
sys       var        mnt       temp
localhost> cd usr
localhost> ls
hddapp2   local      zoneinfo  bin        sbin
hddapp    lib        share     webroot
localhost> cd bin
localhost> ls
upscmd    tftp       head      env        time
usbhid-ups hostid     cut       awk        tty
basename  cpcow     find      bunzip2    killall
id         passwd   printf    dirname    tee
expr      du        tail      [          upsw
md5sum    wc        logger    crontab    test
wget      upsc      bzcata    upssched-cmd

localhost> ls
upscmd    tftp       head      env        time
usbhid-ups hostid     cut       awk        tty
basename  cpcow     find      bunzip2    killall
id         passwd   printf    dirname    tee
expr      du        tail      [          upsw
md5sum    wc        logger    crontab    test
wget      upsc      bzcata    upssched-cmd
localhost>
  
```

Handwritten red text in the terminal window:

- BusyBox
- systemctl
- adb

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

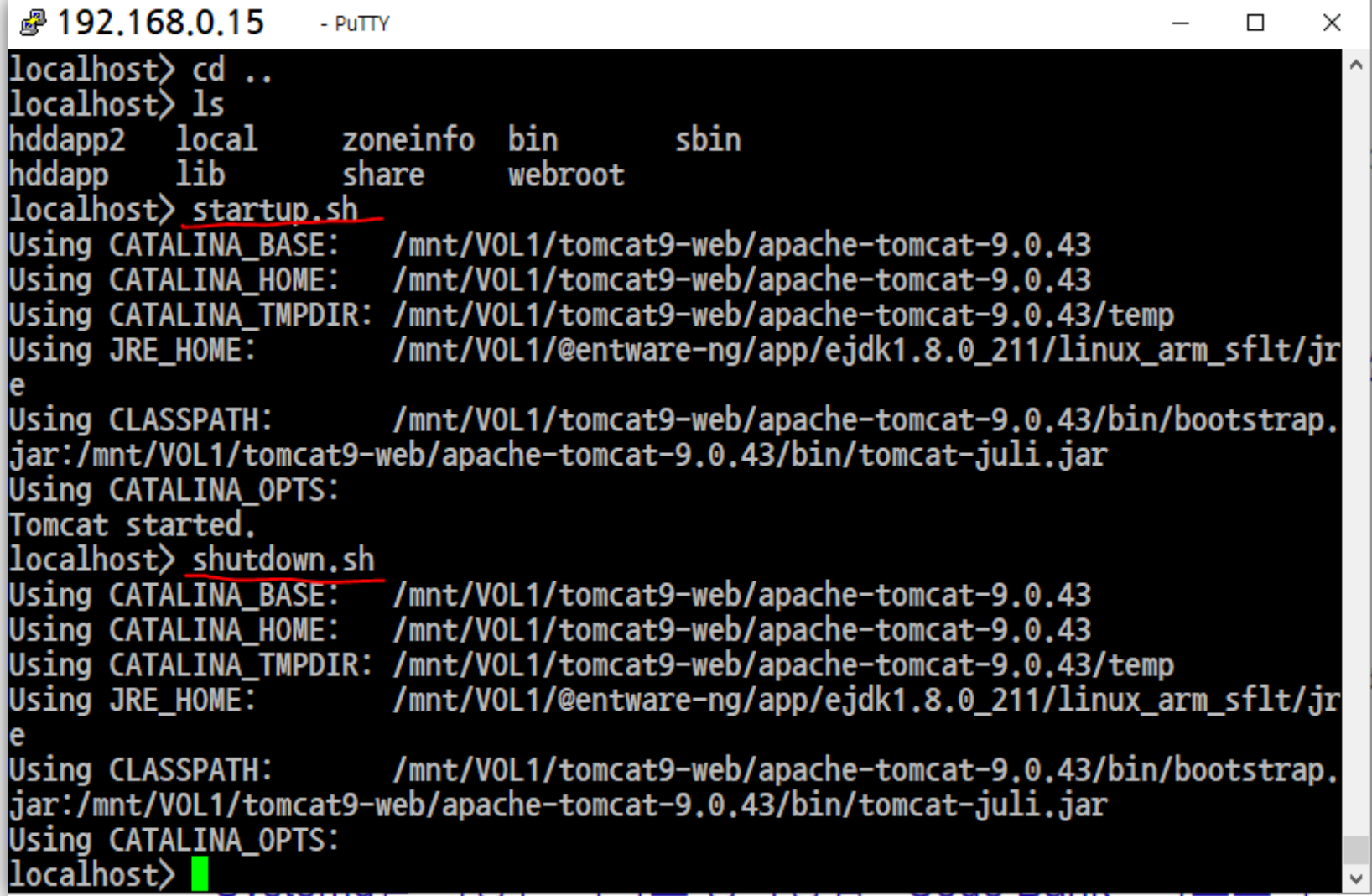
아래의 명령어로 설치를 진행해볼 수 있다.

```
192.168.0.15 - PuTTY
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/setclasspath.bat
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/setclasspath.sh
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/shutdown.bat
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/shutdown.sh
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.bat
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.sh
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-native.tar.gz
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tool-wrapper.bat
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tool-wrapper.sh
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/version.bat
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/version.sh
localhost> ln -sf /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.sh
localhost> ln -sf /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/shutdown.sh
localhost> ls
upscmd      hostid      startup.sh  awk         killall
usbhid-ups  cpcow      cut         bunzip2     tee
basename    passwd     find        dirname     upsrw
id          du         printf      [           test
expr        wc         tail        crontab
md5sum      shutdown.sh logger      upssched-cmd
wget        upsc       bzip2      time
tftp        head       env         tty
localhost>
```

참고로 재부팅하면 지워짐.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

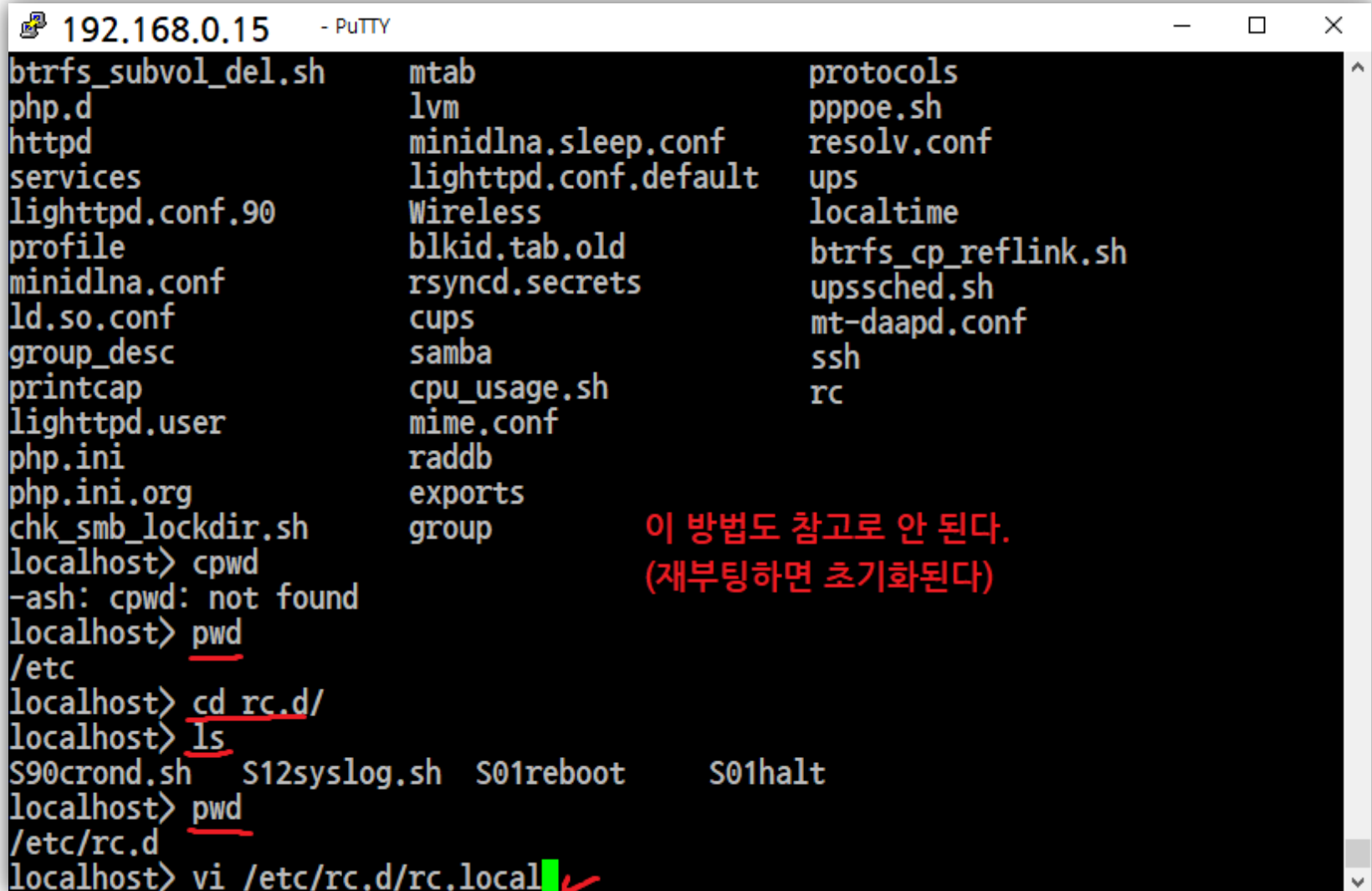
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
localhost> cd ..
localhost> ls
hddapp2  local      zoneinfo  bin        sbin
hddapp   lib        share     webroot
localhost> startup.sh
Using CATALINA_BASE:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_HOME:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_TMPDIR: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp
Using JRE_HOME:        /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jr
e
Using CLASSPATH:       /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.
jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
localhost> shutdown.sh
Using CATALINA_BASE:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_HOME:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_TMPDIR: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp
Using JRE_HOME:        /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jr
e
Using CLASSPATH:       /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.
jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
Using CATALINA_OPTS:
localhost>
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

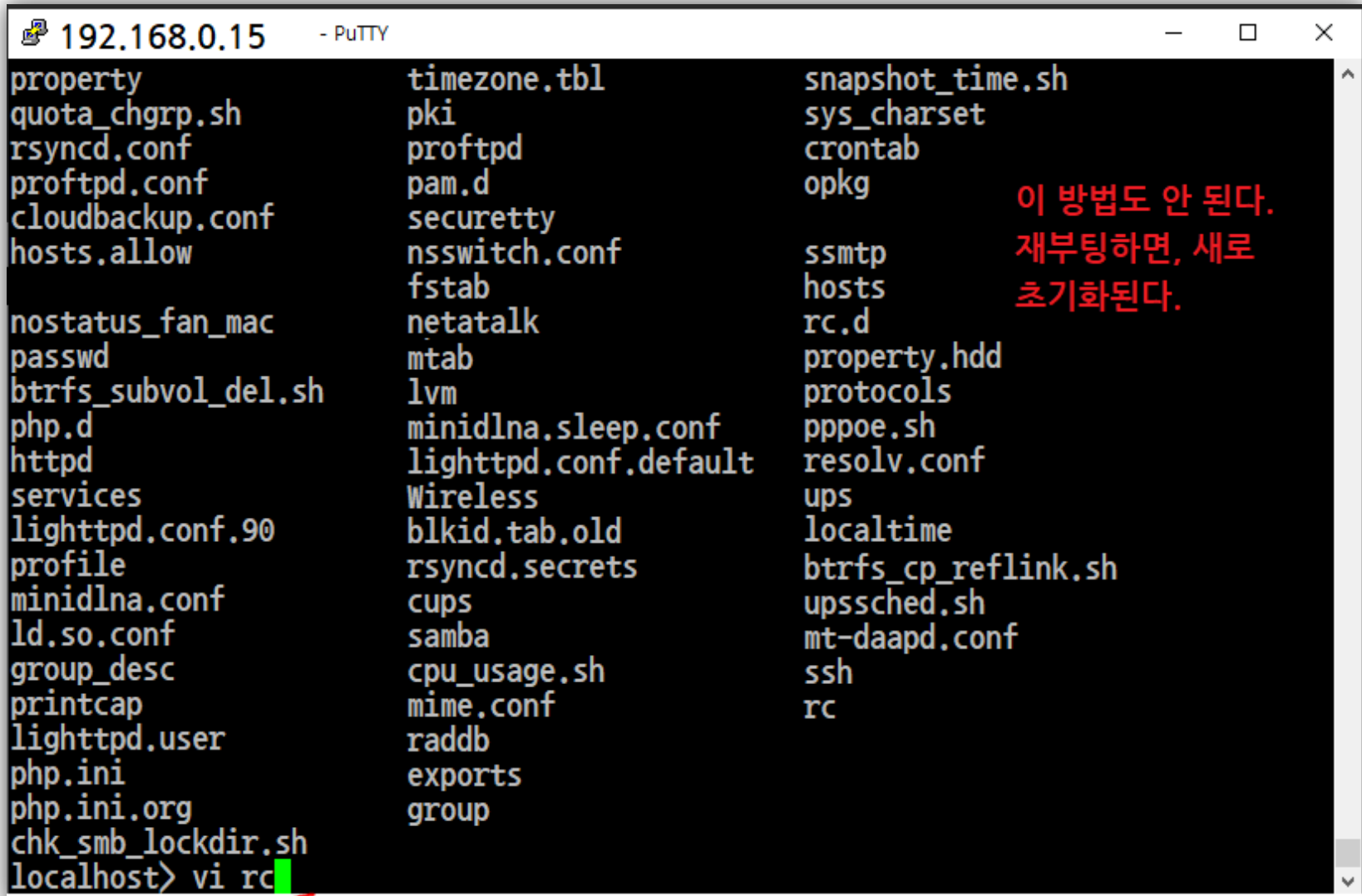


```
192.168.0.15 - PuTTY
btrfs_subvol_del.sh  mtab                protocols
php.d                lvm                  pppoe.sh
httpd                 minidlna.sleep.conf resolv.conf
services             lighttpd.conf.default ups
lighttpd.conf.90     Wireless            localtime
profile              blkid.tab.old        btrfs_cp_reflink.sh
minidlna.conf         rsyncd.secrets       upssched.sh
ld.so.conf            cups                 mt-daapd.conf
group_desc            samba                ssh
printcap              cpu_usage.sh         rc
lighttpd.user         mime.conf
php.ini               raddb
php.ini.org           exports
chk_smb_lockdir.sh   group
localhost> cpwd
-ash: cpwd: not found
localhost> pwd
/etc
localhost> cd rc.d/
localhost> ls
S90crond.sh  S12syslog.sh  S01reboot    S01halt
localhost> pwd
/etc/rc.d
localhost> vi /etc/rc.d/rc.local
```

이 방법도 참고로 안 된다.
(재부팅하면 초기화된다)

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
property
quota_chgrp.sh
rsyncd.conf
proftpd.conf
cloudbackup.conf
hosts.allow

nostatus_fan_mac
passwd
btrfs_subvol_del.sh
php.d
httpd
services
lighttpd.conf.90
profile
minidlna.conf
ld.so.conf
group_desc
printcap
lighttpd.user
php.ini
php.ini.org
chk_smb_lockdir.sh
localhost> vi rc

timezone.tbl
pki
proftpd
pam.d
securetty
nsswitch.conf
fstab
netatalk
mtab
lvm
minidlna.sleep.conf
lighttpd.conf.default
Wireless
blkid.tab.old
rsyncd.secrets
cups
samba
cpu_usage.sh
mime.conf
raddb
exports
group

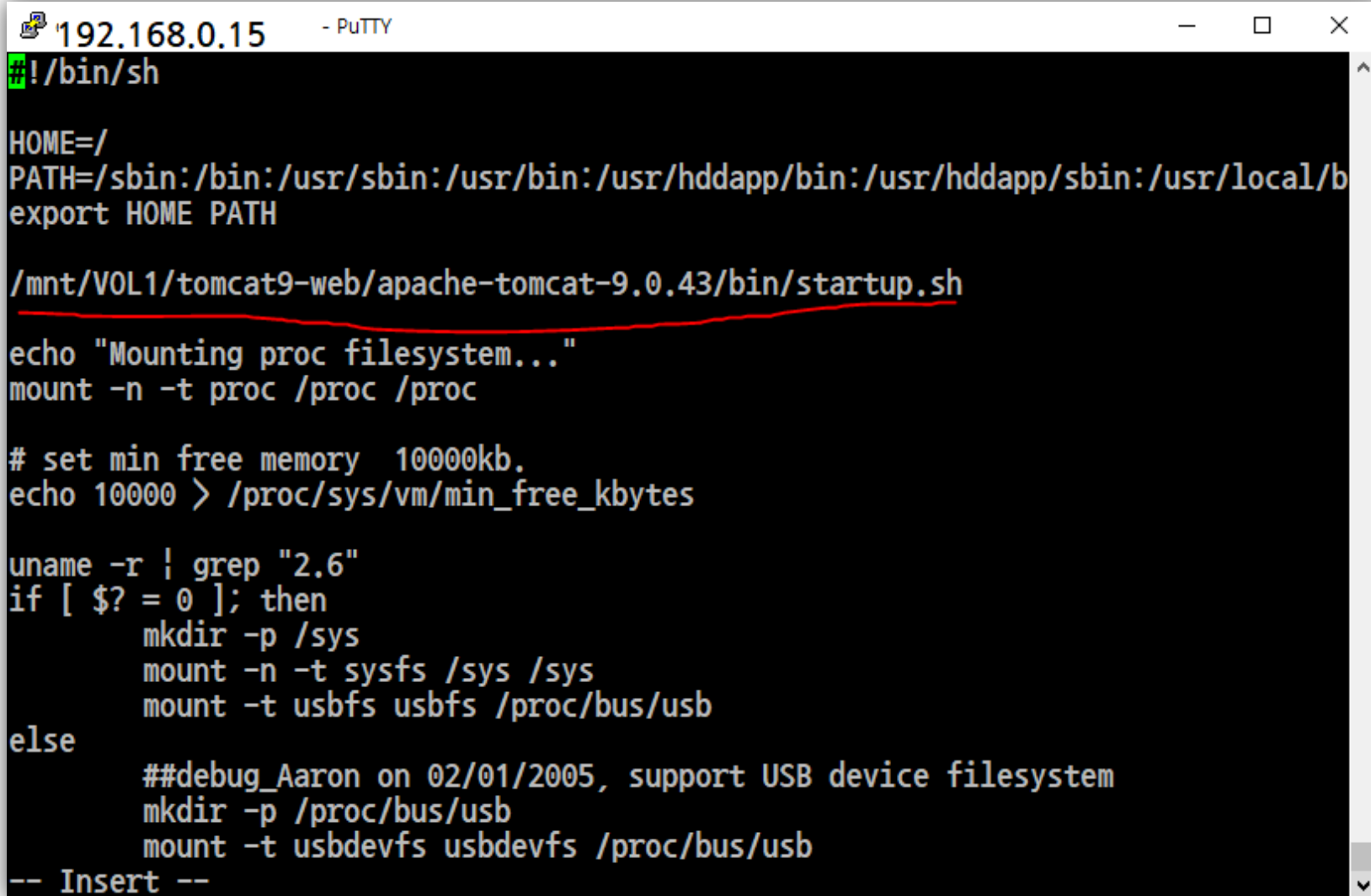
snapshot_time.sh
sys_charset
crontab
opkg

ssmtp
hosts
rc.d
property.hdd
protocols
pppoe.sh
resolv.conf
ups
localtime
btrfs_cp_reflink.sh
upssched.sh
mt-daapd.conf
ssh
rc
```

이 방법도 안 된다.
재부팅하면, 새로
초기화된다.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
#!/bin/sh

HOME=/
PATH=/sbin:/bin:/usr/sbin:/usr/bin:/usr/hddapp/bin:/usr/hddapp/sbin:/usr/local/b
export HOME PATH

/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.sh

echo "Mounting proc filesystem..."
mount -n -t proc /proc /proc

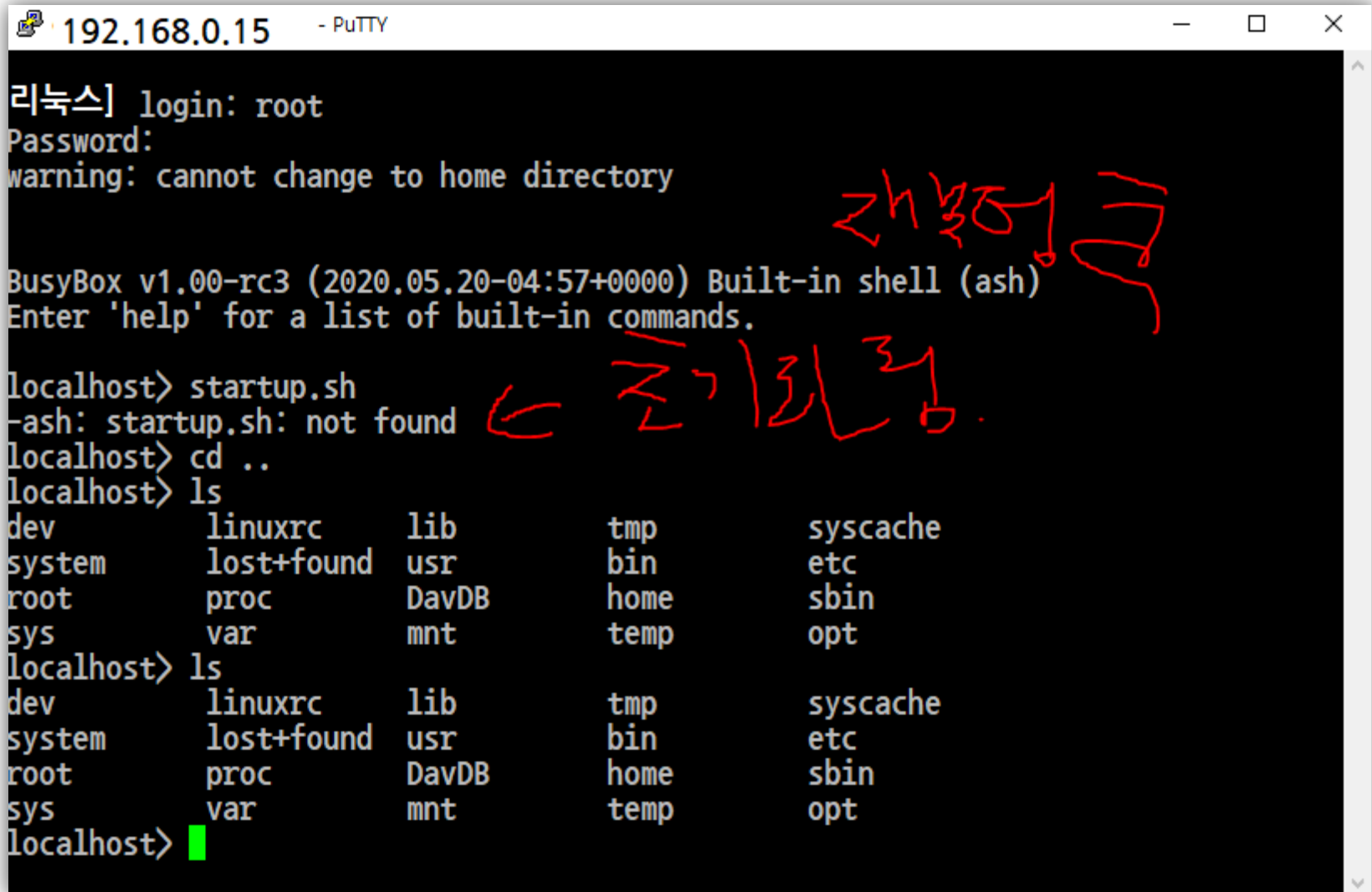
# set min free memory 10000kb.
echo 10000 > /proc/sys/vm/min_free_kbytes

uname -r | grep "2.6"
if [ $? = 0 ]; then
    mkdir -p /sys
    mount -n -t sysfs /sys /sys
    mount -t usbfs usbfs /proc/bus/usb
else
    ##debug_Aaron on 02/01/2005, support USB device filesystem
    mkdir -p /proc/bus/usb
    mount -t usbdevfs usbdevfs /proc/bus/usb

-- Insert --
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
리눅스] login: root
Password:
warning: cannot change to home directory

BusyBox v1.00-rc3 (2020.05.20-04:57+0000) Built-in shell (ash)
Enter 'help' for a list of built-in commands.

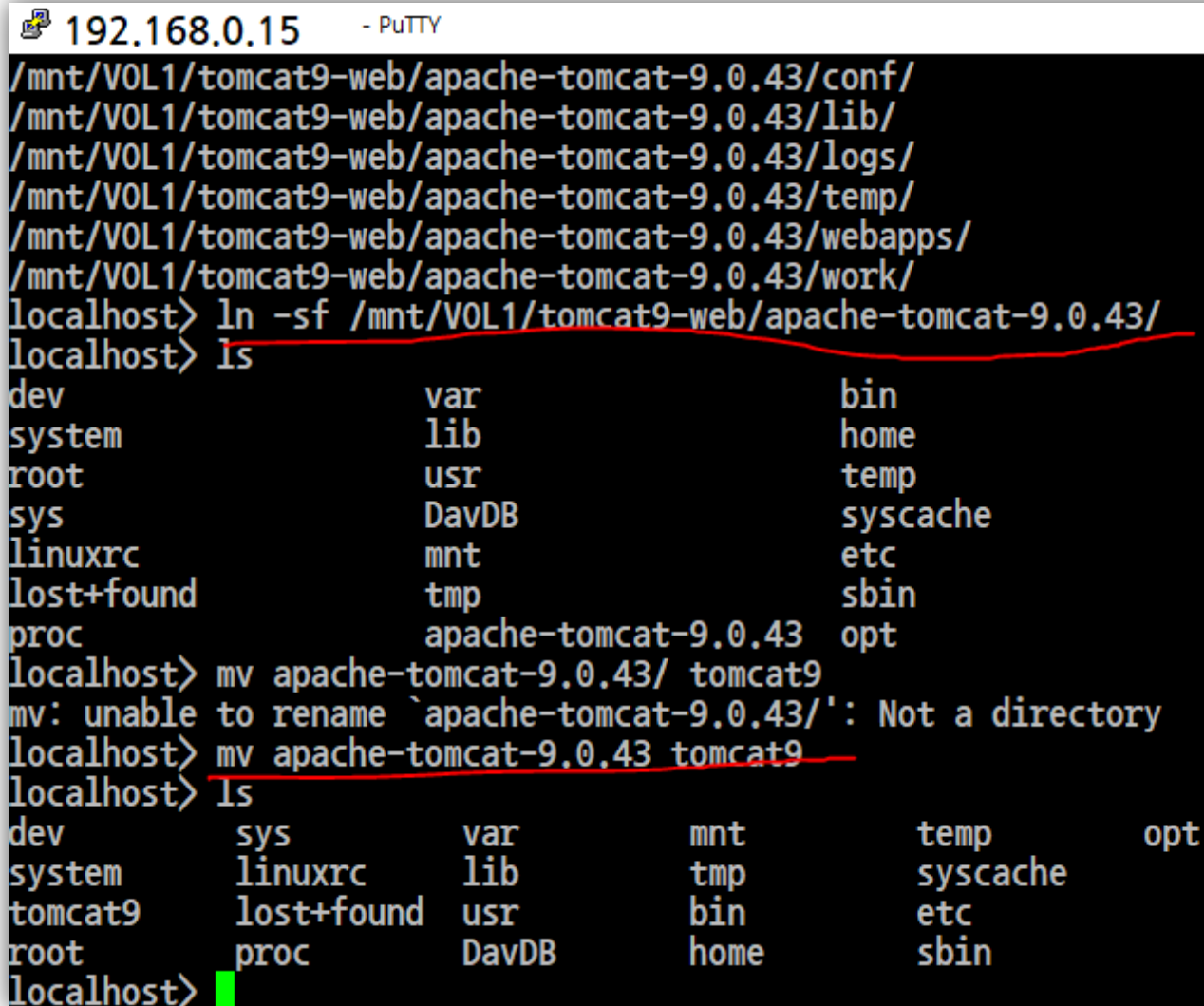
localhost> startup.sh
-ash: startup.sh: not found
localhost> cd ..
localhost> ls
dev      linuxrc  lib      tmp      syscache
system   lost+found  usr      bin      etc
root     proc     DavDB    home     sbin
sys      var      mnt      temp     opt
localhost> ls
dev      linuxrc  lib      tmp      syscache
system   lost+found  usr      bin      etc
root     proc     DavDB    home     sbin
sys      var      mnt      temp     opt
localhost>
```

재부팅

← 준비

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

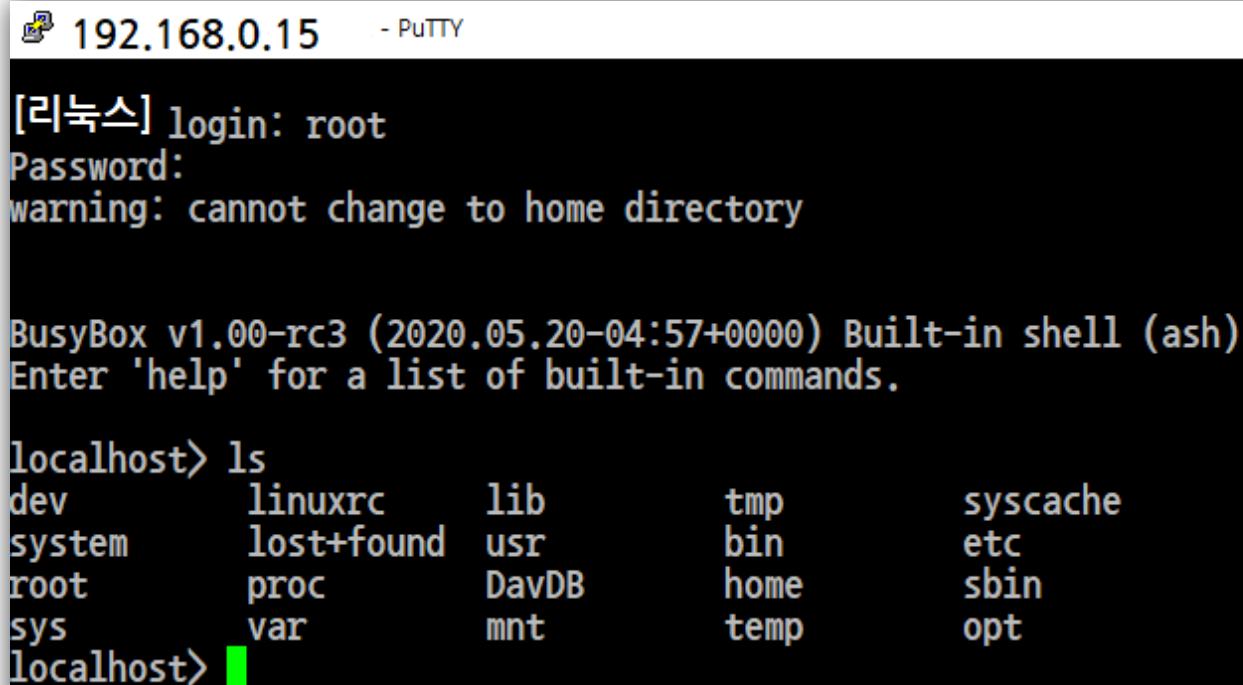
아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/conf/
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/lib/
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/logs/
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp/
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/webapps/
/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/work/
localhost> ln -sf /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/
localhost> ls
dev                var                bin
system            lib                home
root              usr                temp
sys               DavDB             syscache
linuxrc           mnt                etc
lost+found        tmp                sbin
proc              apache-tomcat-9.0.43  opt
localhost> mv apache-tomcat-9.0.43/ tomcat9
mv: unable to rename `apache-tomcat-9.0.43/': Not a directory
localhost> mv apache-tomcat-9.0.43 tomcat9
localhost> ls
dev      sys      var      mnt      temp      opt
system  linuxrc  lib      tmp      syscache
tomcat9 lost+found  usr      bin      etc
root    proc     DavDB    home     sbin
localhost>
```

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



```
192.168.0.15 - PuTTY

[리눅스] login: root
Password:
warning: cannot change to home directory

BusyBox v1.00-rc3 (2020.05.20-04:57+0000) Built-in shell (ash)
Enter 'help' for a list of built-in commands.

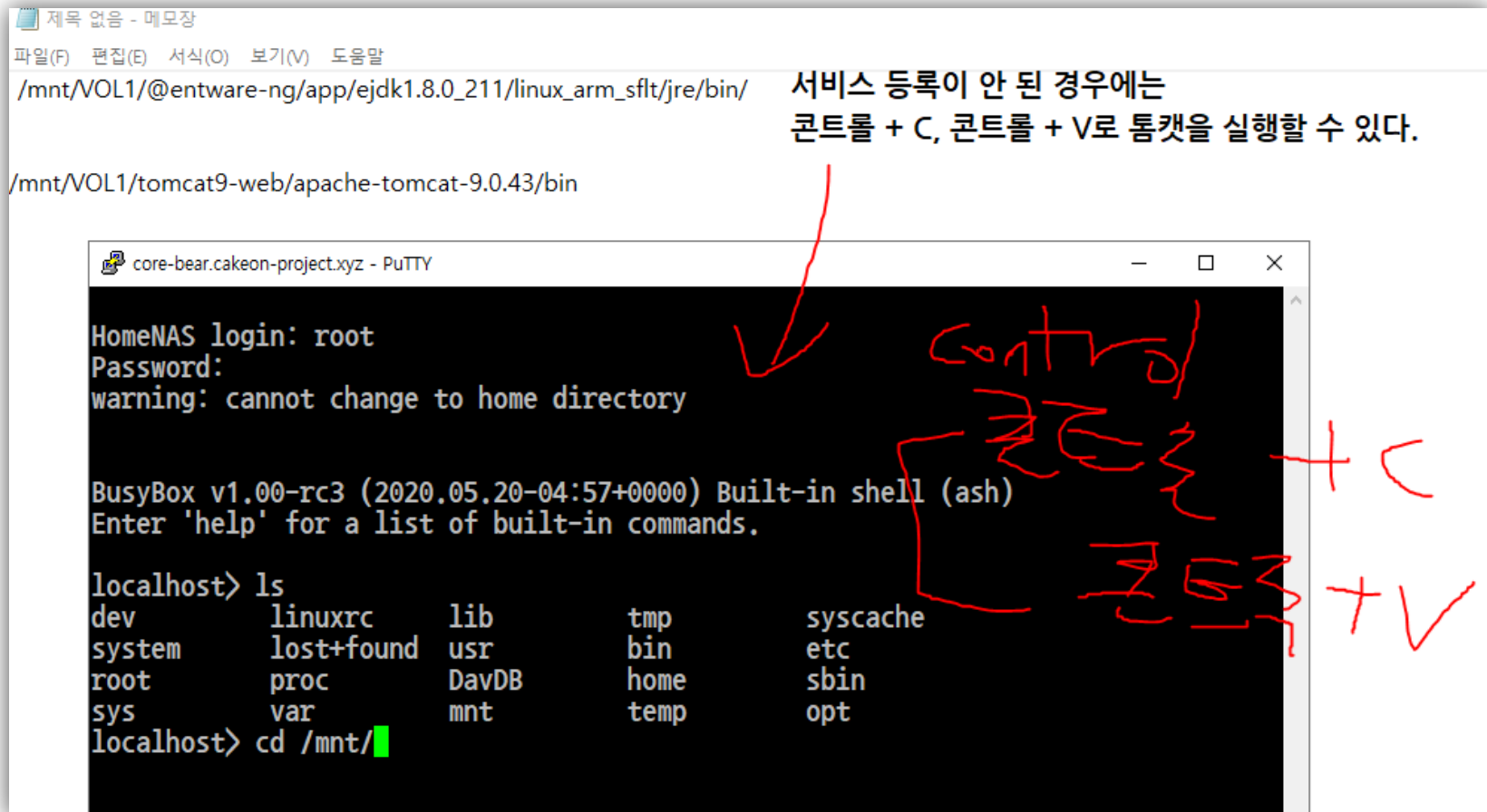
localhost> ls
dev          linuxrc      lib          tmp          syscache
system       lost+found  usr          bin          etc
root         proc        DavDB        home         sbin
sys          var         mnt          temp         opt
localhost> █
```

재부팅 후 , 초기화 되는 모습이다.

[비지박스로 개발되는
하드웨어의 장점은 전기 사용량이
매우 적게 소요된다는 점이다.]

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.



제목 없음 - 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말

/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre/bin/ 서비스 등록이 안 된 경우에는
콘트롤 + C, 콘트롤 + V로 톰캣을 실행할 수 있다.

/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin

core-bear.cakeon-project.xyz - PuTTY

HomeNAS login: root
Password:
warning: cannot change to home directory

BusyBox v1.00-rc3 (2020.05.20-04:57+0000) Built-in shell (ash)
Enter 'help' for a list of built-in commands.

localhost> ls

dev	linuxrc	lib	tmp	syscache
system	lost+found	usr	bin	etc
root	proc	DavDB	home	sbin
sys	var	mnt	temp	opt

localhost> cd /mnt/

Handwritten red notes and arrows: A red arrow points from the text '서비스 등록이 안 된 경우에는 콘트롤 + C, 콘트롤 + V로 톰캣을 실행할 수 있다.' to the terminal output. The notes include 'Control' and '컨트롤' written in red, with '+C' and '+V' indicating the key combinations.

7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

```
제목 없음 - 메모장
파일(F) 편집(E) 서식(O) 보기(V) 도움말
/mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre/bin/

/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.sh

core-bear.cakeon-project.xyz - PuTTY
HomeNAS login: root
Password:
warning: cannot change to home directory

BusyBox v1.00-rc3 (2020.05.20-04:57+0000) Built-in shell (ash)
Enter 'help' for a list of built-in commands.

localhost> ls
dev      linuxrc  lib      tmp      syscache
system   lost+found  usr      bin      etc
root     proc    DavDB    home     sbin
sys      var     mnt      temp     opt
localhost> /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.sh
Using CATALINA_BASE:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_HOME:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_TMPDIR: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp
Using JRE_HOME:        /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre
Using CLASSPATH:       /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
localhost>
```


7. [BusyBox(비지박스)] 텔넷(Telnet) 접속 / 아파치 톰캣9 설치하기 [2] (2021-03-04)

아래의 명령어로 설치를 진행해볼 수 있다.

The screenshot shows a terminal window (PUTTY) connected to 192.168.0.15. The terminal output shows the BusyBox v1.00-rc3 shell and the execution of the startup script for Apache Tomcat 9.0.43. The script sets various environment variables and starts the Tomcat service. The web browser in the background shows the Apache Tomcat 9.0.43 homepage, which includes a green banner stating "If you're seeing this, you've successfully installed Tomcat. Congratulations!".

```
192.168.0.15 - PUTTY
BusyBox v1.00-rc3 (2020.05.20-04:57+0000) Built-in shell (ash)
Enter 'help' for a list of built-in commands.

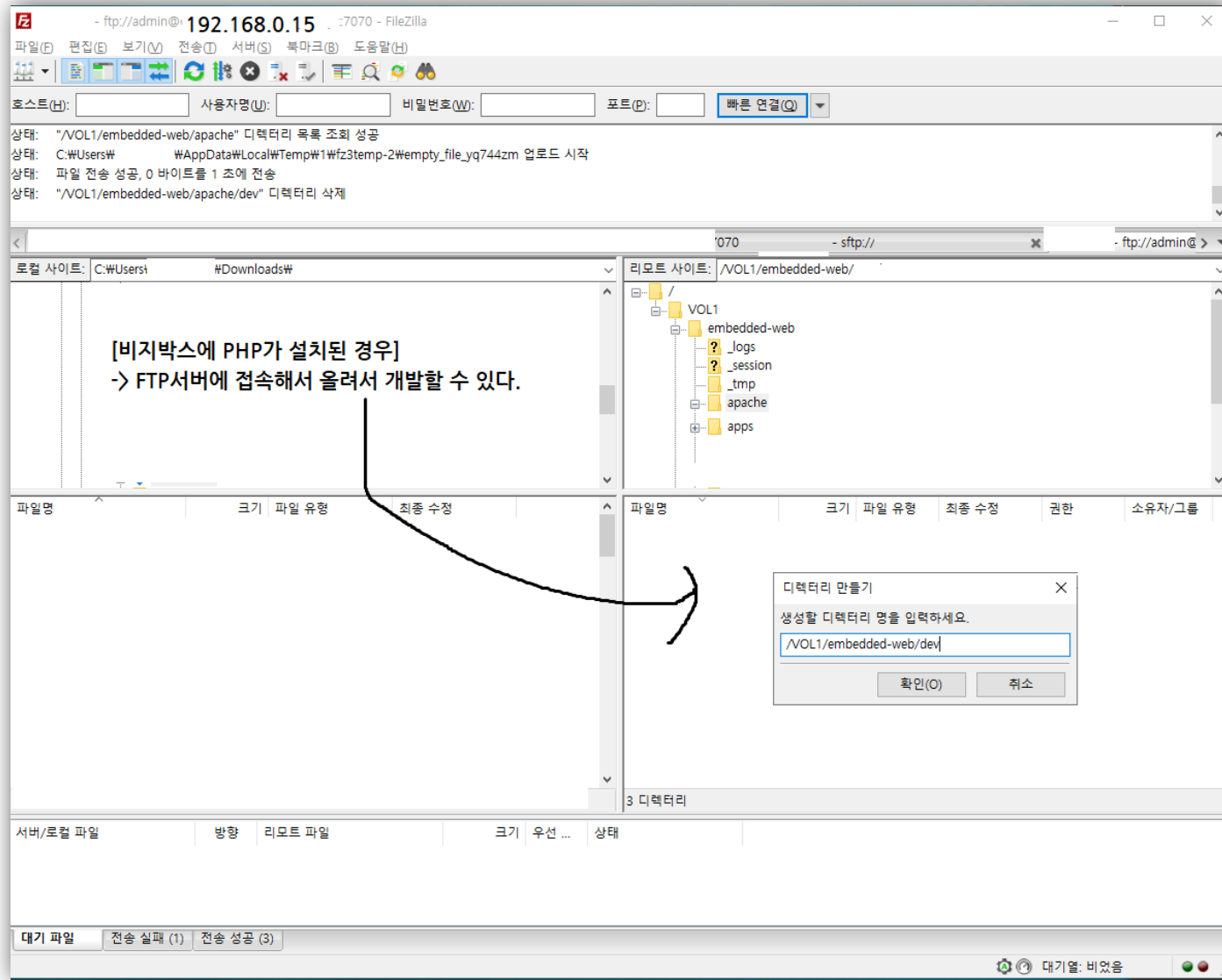
localhost> ls
dev      linuxrc  lib      tmp      syscache
system   lost+found  usr     bin      etc
root     proc     home    sbin
sys       var      mnt     temp     opt

localhost> /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/startup.sh
Using CATALINA_BASE:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_HOME:   /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43
Using CATALINA_TMPDIR: /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/temp
Using JRE_HOME:        /mnt/VOL1/@entware-ng/app/ejdk1.8.0_211/linux_arm_sflt/jre
Using CLASSPATH:       /mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/bootstrap.jar:/mnt/VOL1/tomcat9-web/apache-tomcat-9.0.43/bin/tomcat-juli.jar
Tomcat started.
localhost> ls
dev      linuxrc  lib      tmp      syscache
system   lost+found  usr     bin      etc
root     proc     home    sbin
sys       var      mnt     temp     opt
localhost>
```

The web browser shows the Apache Tomcat 9.0.43 homepage. The address bar is 192.168.0.15:8080. The page includes a green banner with the text "If you're seeing this, you've successfully installed Tomcat. Congratulations!". Below the banner, there are links for "Recommended Reading" (Security Considerations How-To, Manager Application How-To, Clustering/Session Replication How-To) and "Start" (Realms & AAA, Examples, Servlet Specifications, JDBC DataSources, Tomcat Versions). There are also buttons for "Server Status", "Manager App", and "Host Manager".

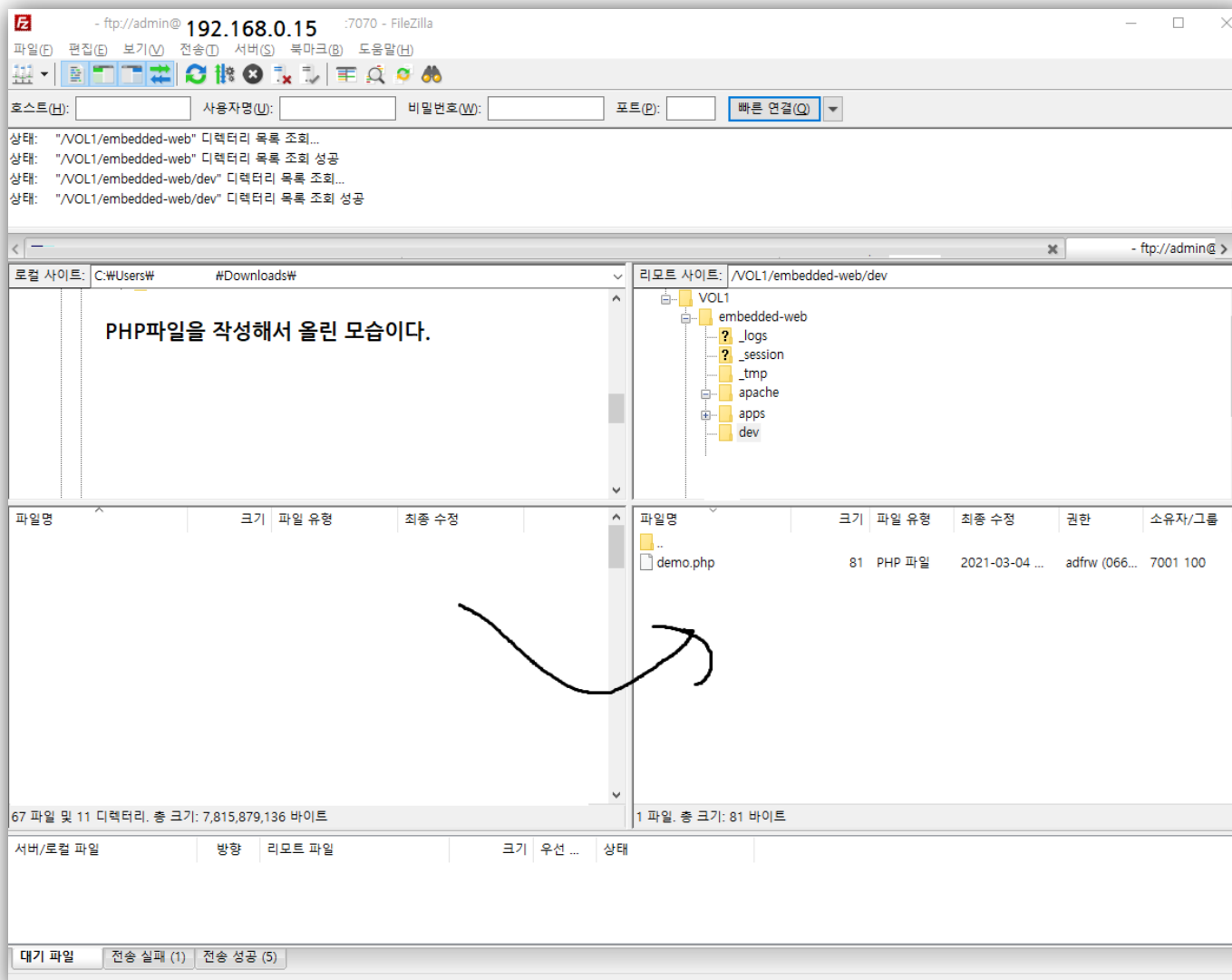
8. [BusyBox(비지박스)] PHP가 설치된 경우 개발하기 (2021-03-04)

PHP가 비지박스에 설치된 경우에는 다음처럼 첨부하여 개발을 할 수 있다.



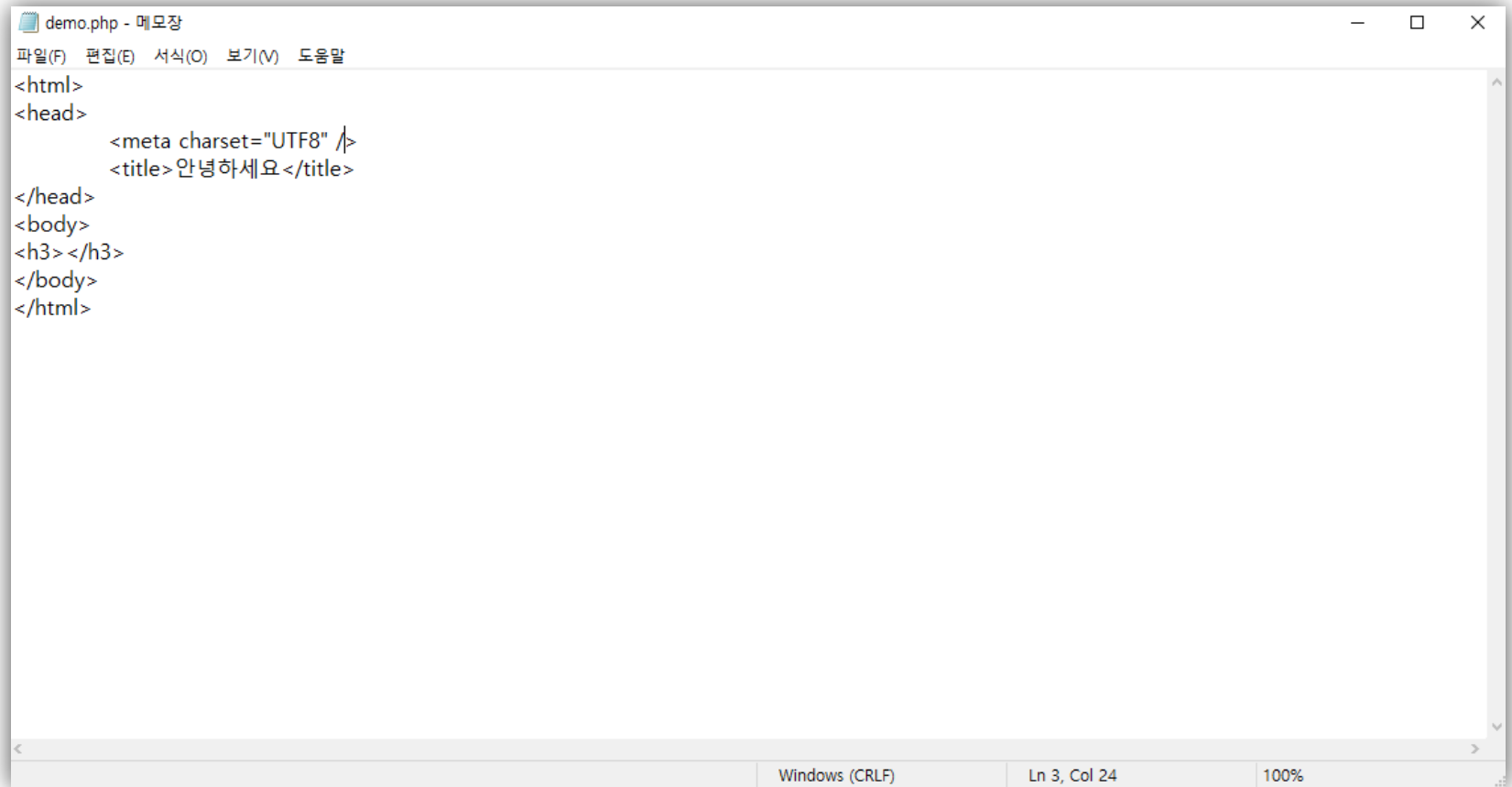
8. [BusyBox(비지박스)] PHP가 설치된 경우 개발하기 (2021-03-04)

PHP가 비지박스에 설치된 경우에는 다음처럼 첨부하여 개발을 할 수 있다.



8. [BusyBox(비지박스)] PHP가 설치된 경우 개발하기 (2021-03-04)

PHP가 비지박스에 설치된 경우에는 다음처럼 첨부하여 개발을 할 수 있다.

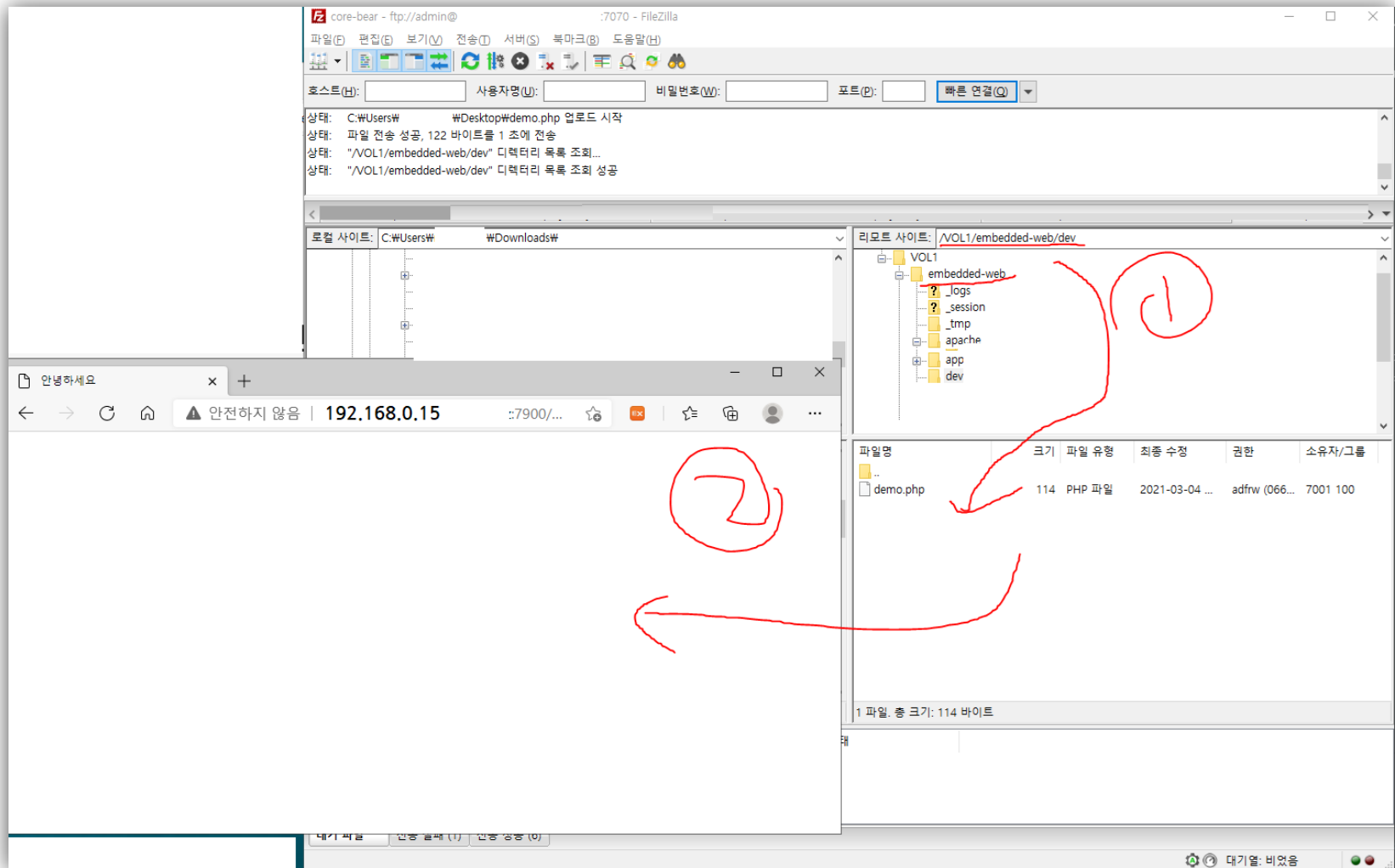


```
demo.php - 메모장
파일(F) 편집(E) 서식(O) 보기(V) 도움말
<html>
<head>
    <meta charset="UTF8" />
    <title>안녕하세요</title>
</head>
<body>
<h3></h3>
</body>
</html>
```

Windows (CRLF) Ln 3, Col 24 100%

8. [BusyBox(비지박스)] PHP가 설치된 경우 개발하기 (2021-03-04)

PHP가 비지박스에 설치된 경우에는 다음처럼 첨부하여 개발을 할 수 있다.



감사합니다
