

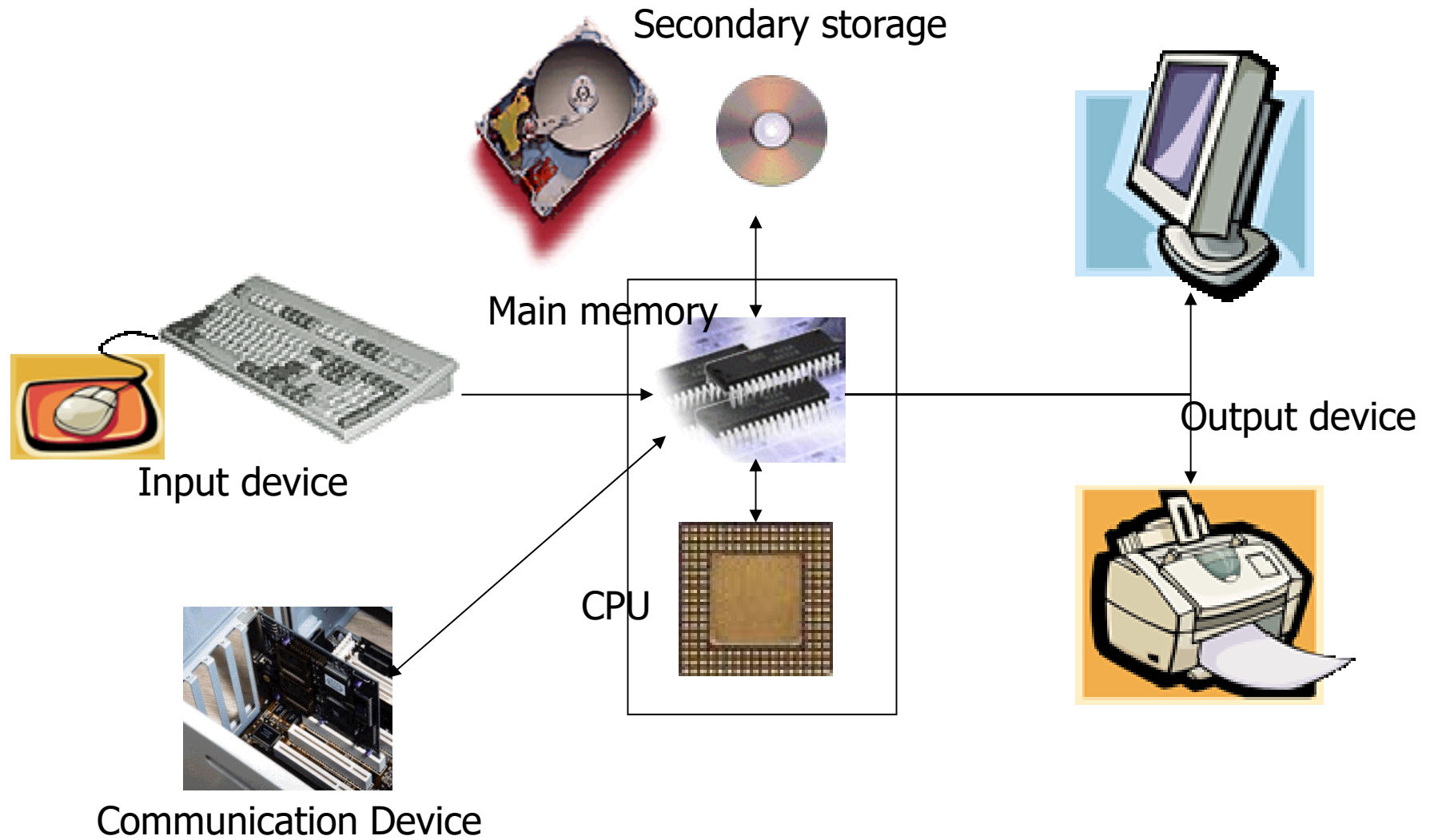
# Linux Kernel Architecture

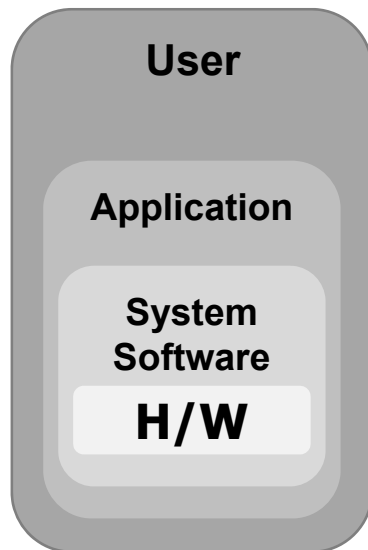
March, 2016  
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Dankook University

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# Hardware 추상화





## ■ System Software

- ✓ 컴파일러(compiler), 어셈블러(assembler)
- ✓ 링커(linker or linkage editor)
- ✓ 로더(loader)
- ✓ 라이브러리(library)
- ✓ 시스템 유틸리티(system utility): 디버거, make 등
- ✓ 운영체제(operating system)
- ✓ 데이터베이스(database)
- ✓ file system, device driver (a portion of OS)

## ■ 운영체제란?

- ✓ 자원 관리자 (Resource Manager or Resource Allocator)
- ✓ 응용에게 자원에 대한 서비스 제공 (Computing Environment)

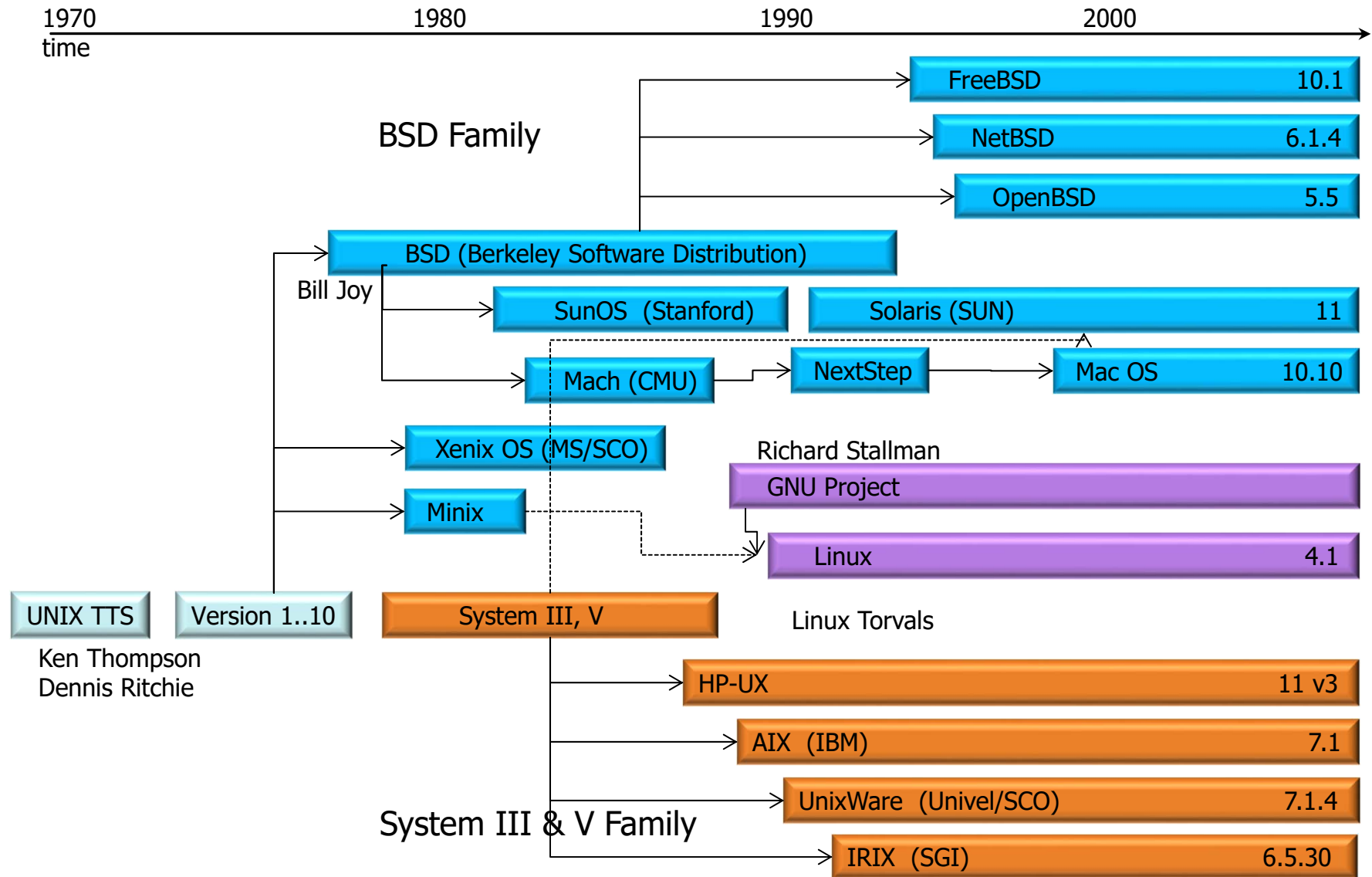
## ■ 자원의 종류

- ✓ 물리적인 자원 : 처리기, 메모리, 디스크, 터미널, 네트워크, ...
- ✓ 추상적인 자원 : 태스크, 세그먼트/페이지, 파일, 드라이버, 통신 프로토콜, 패킷, 보안, ...

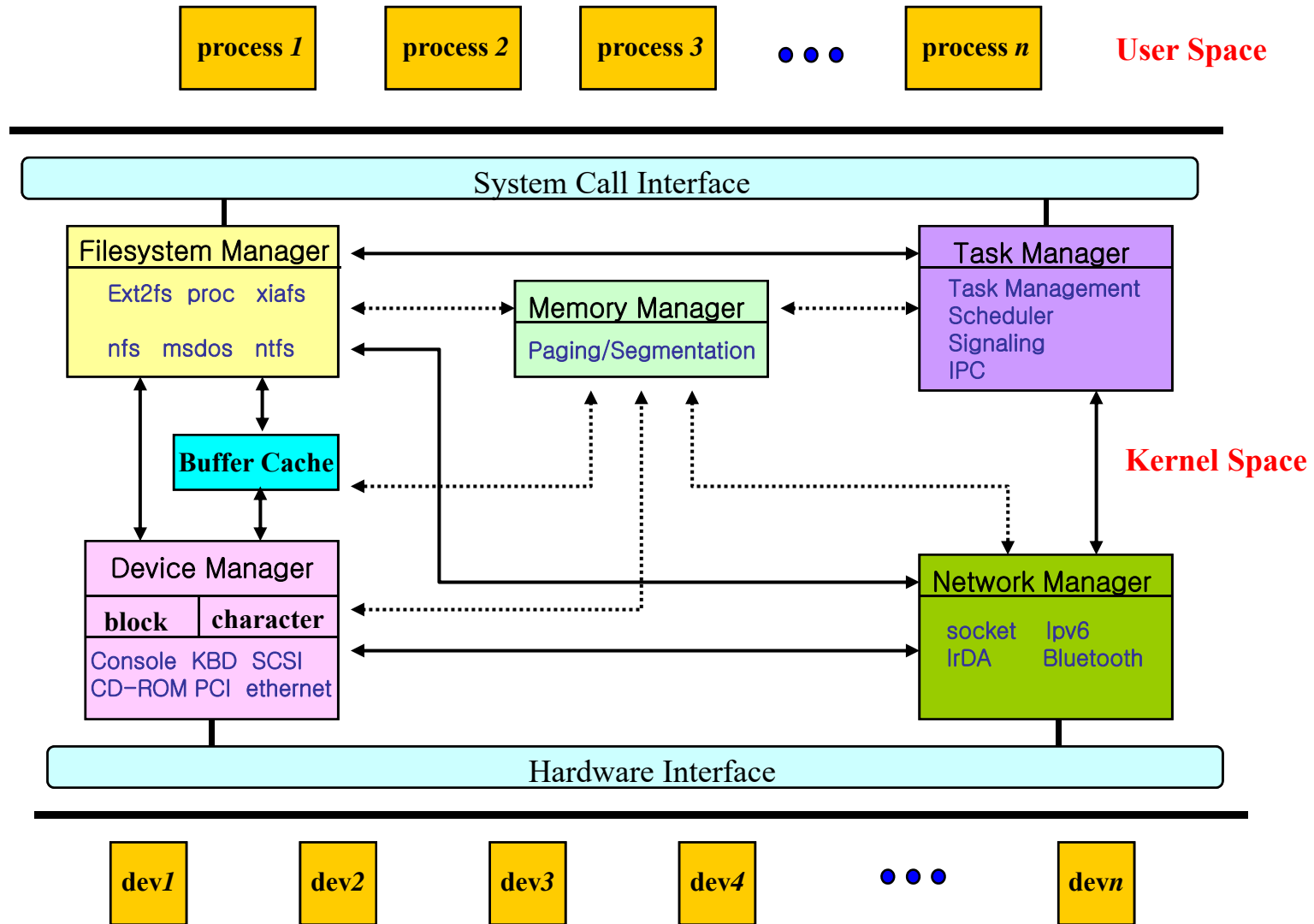
## ■ 운영체제의 목표

- ✓ Efficiency
- ✓ Fairness
- ✓ Convenience

# UNIX 계열 OS의 계보

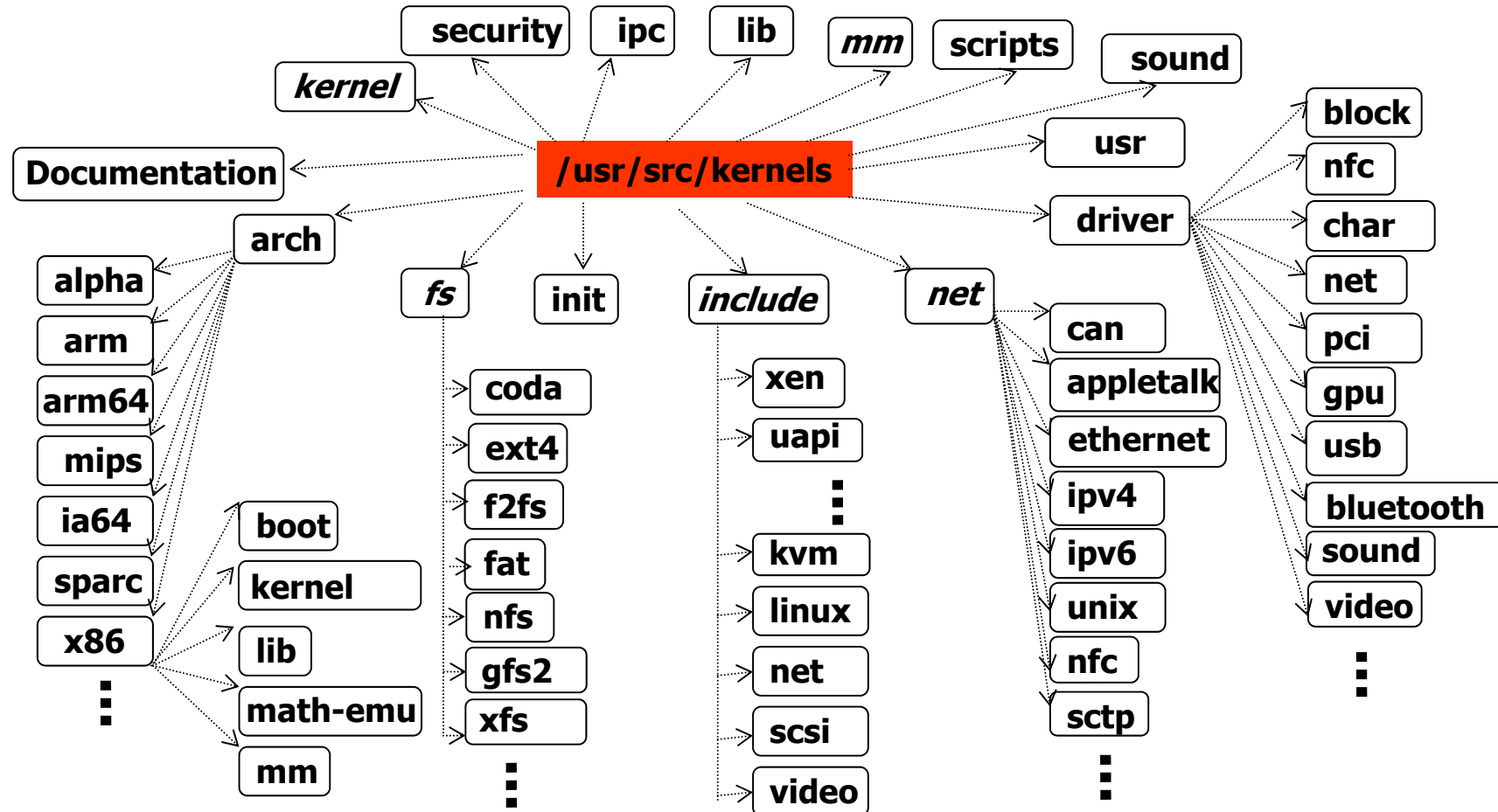


# Linux의 개념적인 구조



(Source : Linux Kernel Internals)

## ■ 커널 소스 코드의 주요 디렉토리

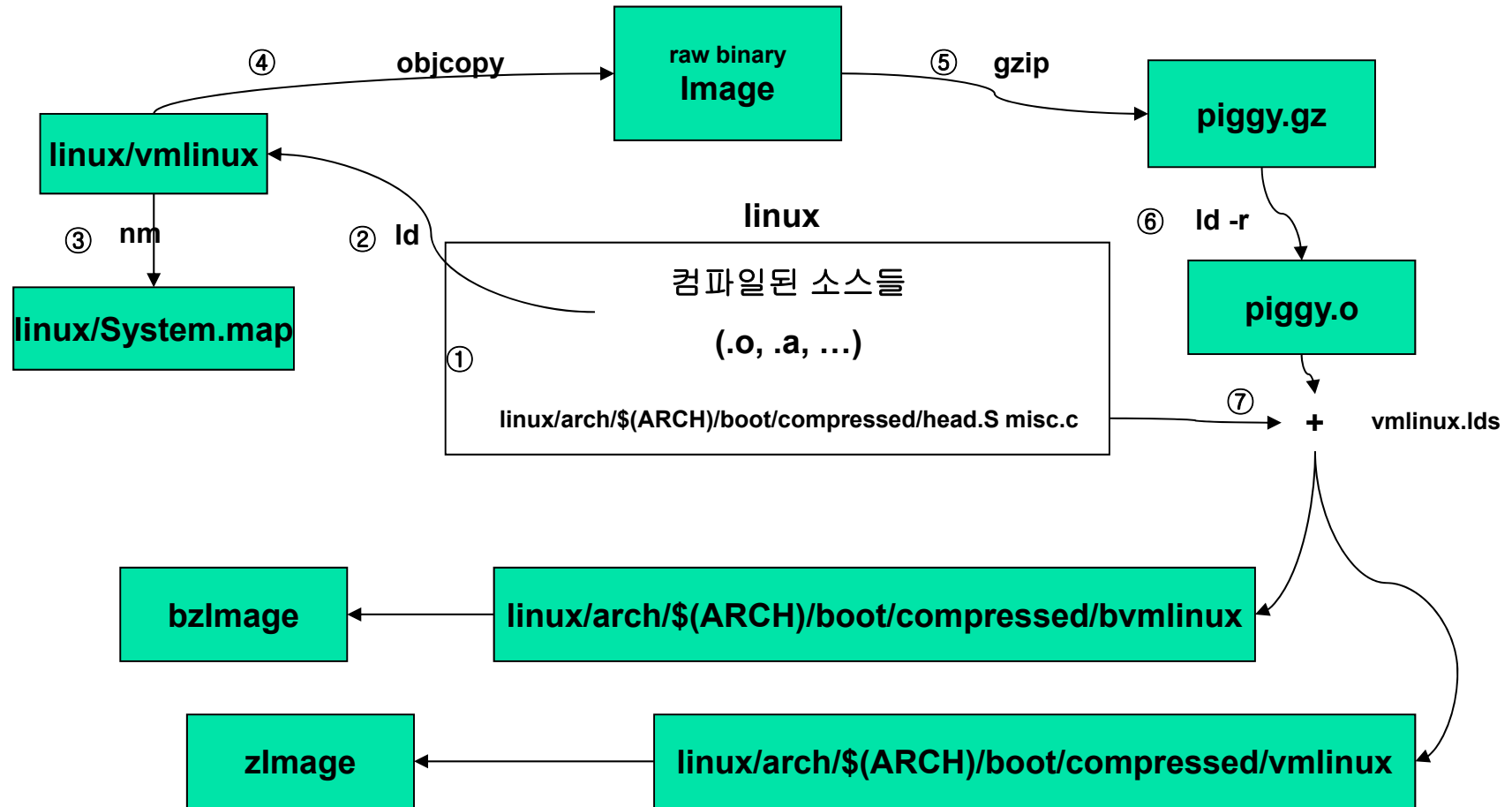


- 배포판? 커널?
- 커널 컴파일?
  
- 커널 컴파일 실습

```
$ cd /usr/src/kernels/  
$ wget ftp://ftp.kernel.org/pub/linux/kernel/v4.x/linux-4.X.XX.tar.gz  
$ tar xzf linux-4.X.XX.tar.gz  
$ cd linux-3.X.XX  
$ cp /boot/config-XXX ./config  
$ make menuconfig // 저장 후 종료  
$ nice --20 make -j8; nice --20 make -j8 modules; make modules_install;  
make install  
  
$ reboot // 새로운 커널을 선택하여 부팅
```



# 커널 내에 생성되는 각 파일들의 관계



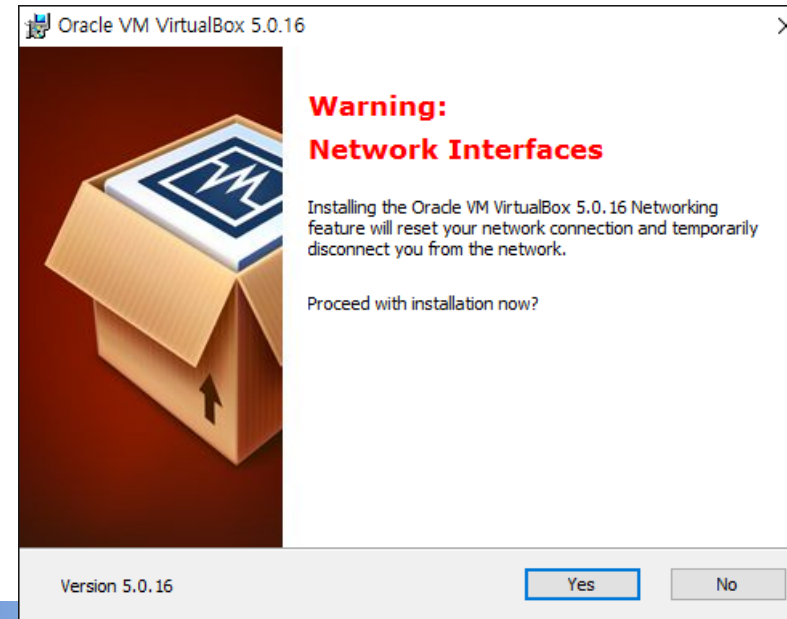
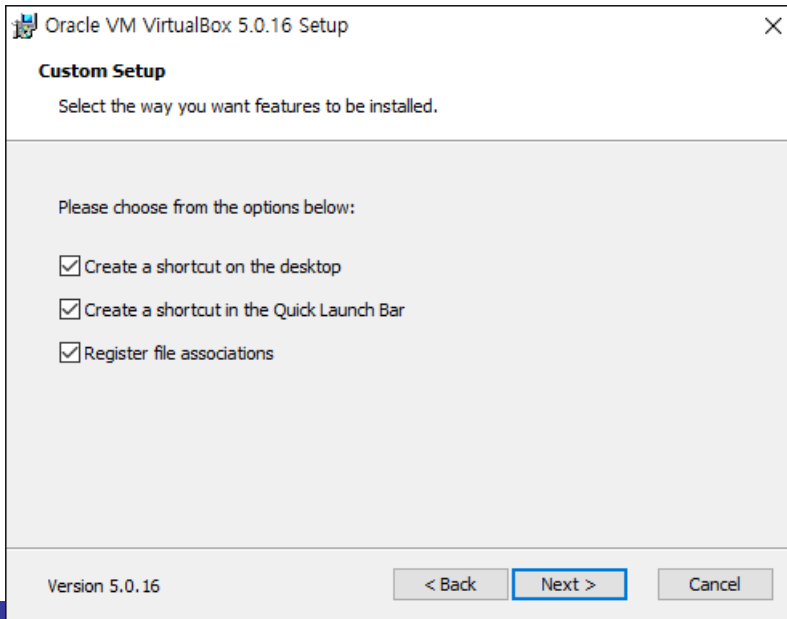
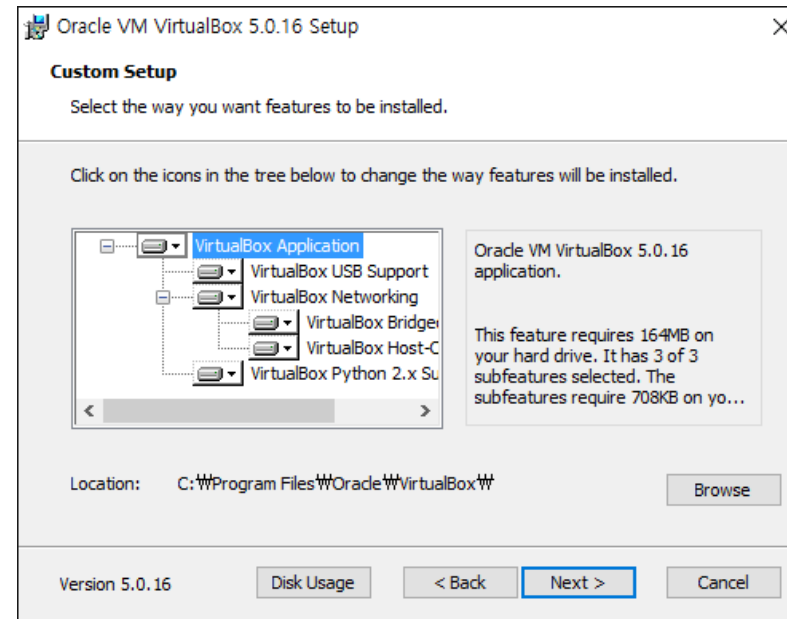
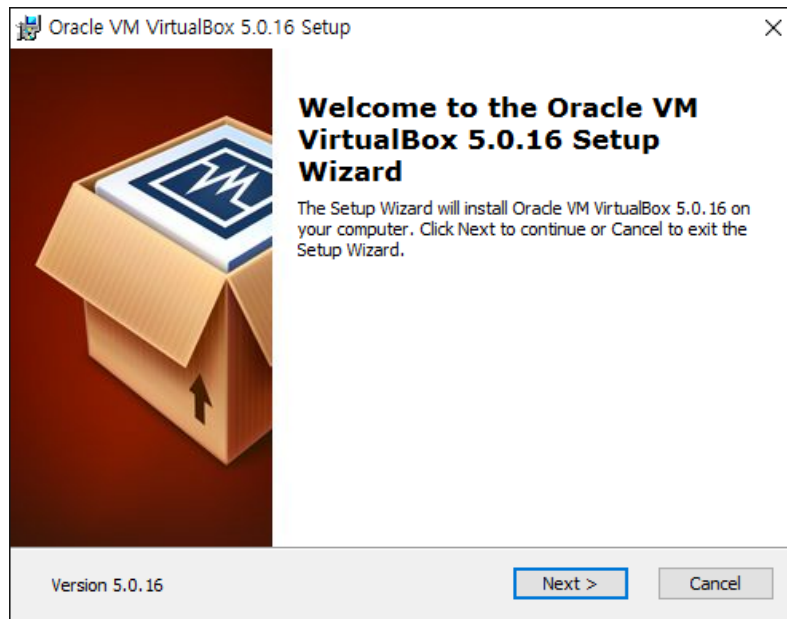
# VirtualBox Installation

## ■ VirtualBox

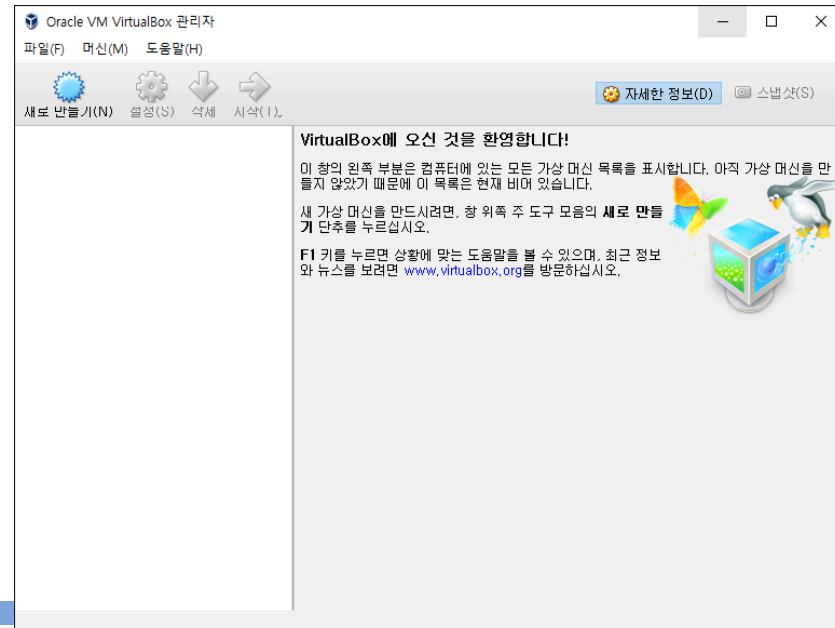
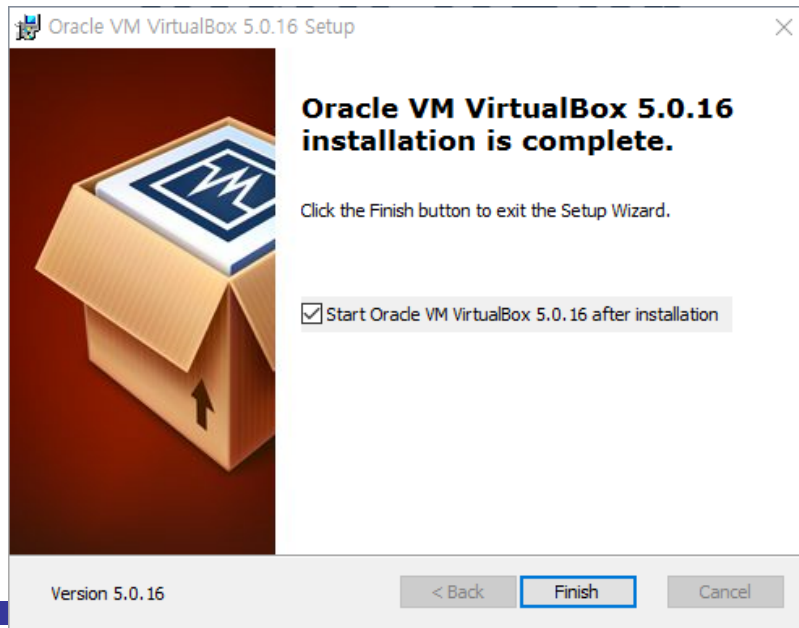
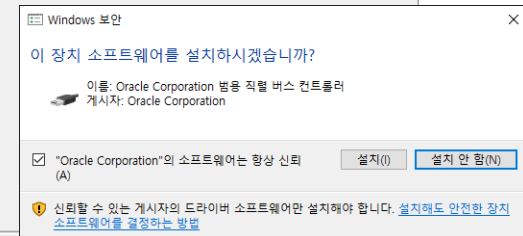
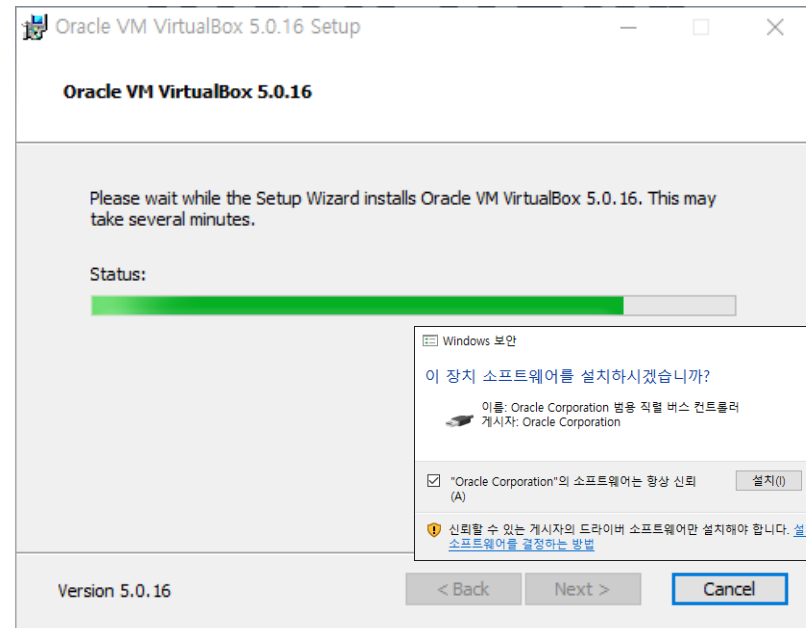
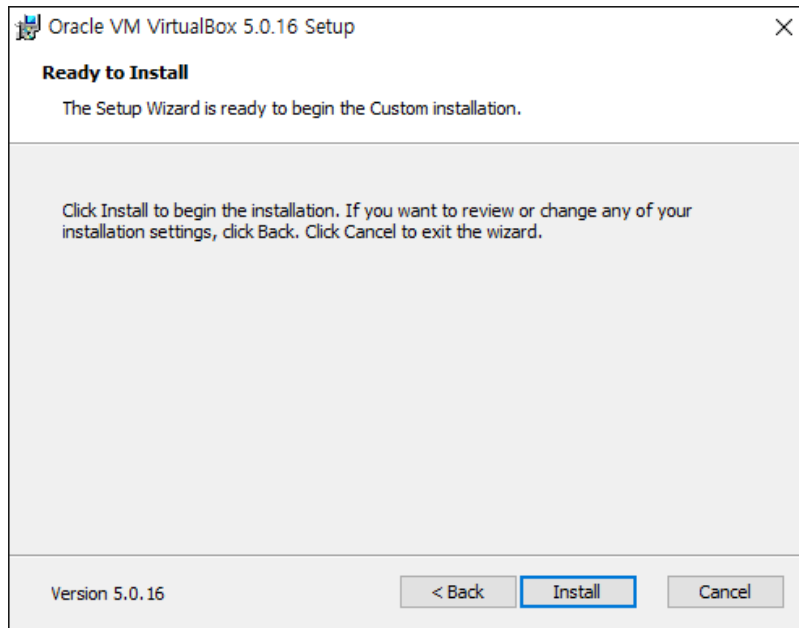
- ✓ A hypervisor for x86 computers from Oracle
- ✓ Initially developed by Innotek GmbH, acquired by Sun Microsystems in 2008, and acquired by Oracle in 2010



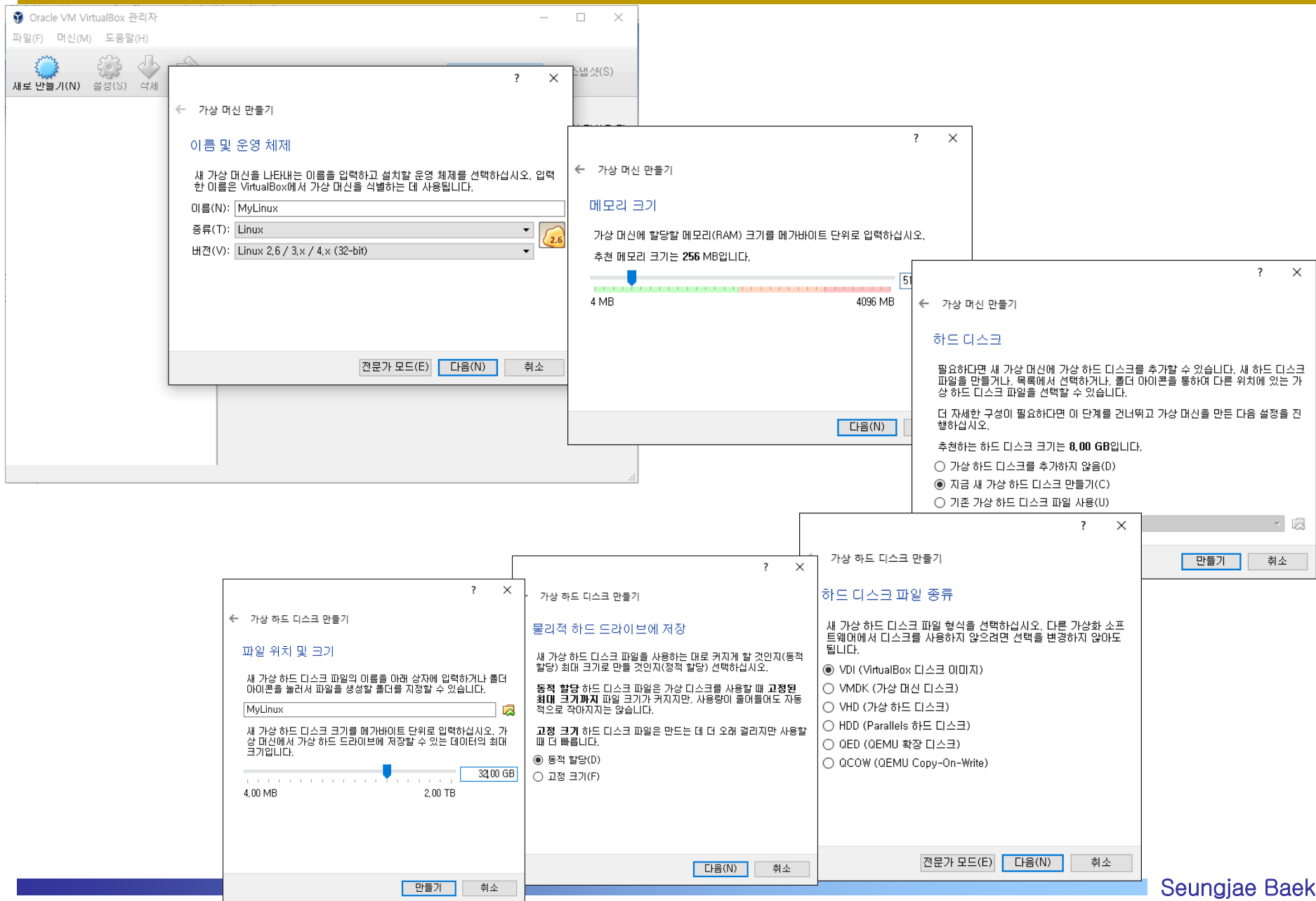
# VirtualBox Installation



# VirtualBox Installation

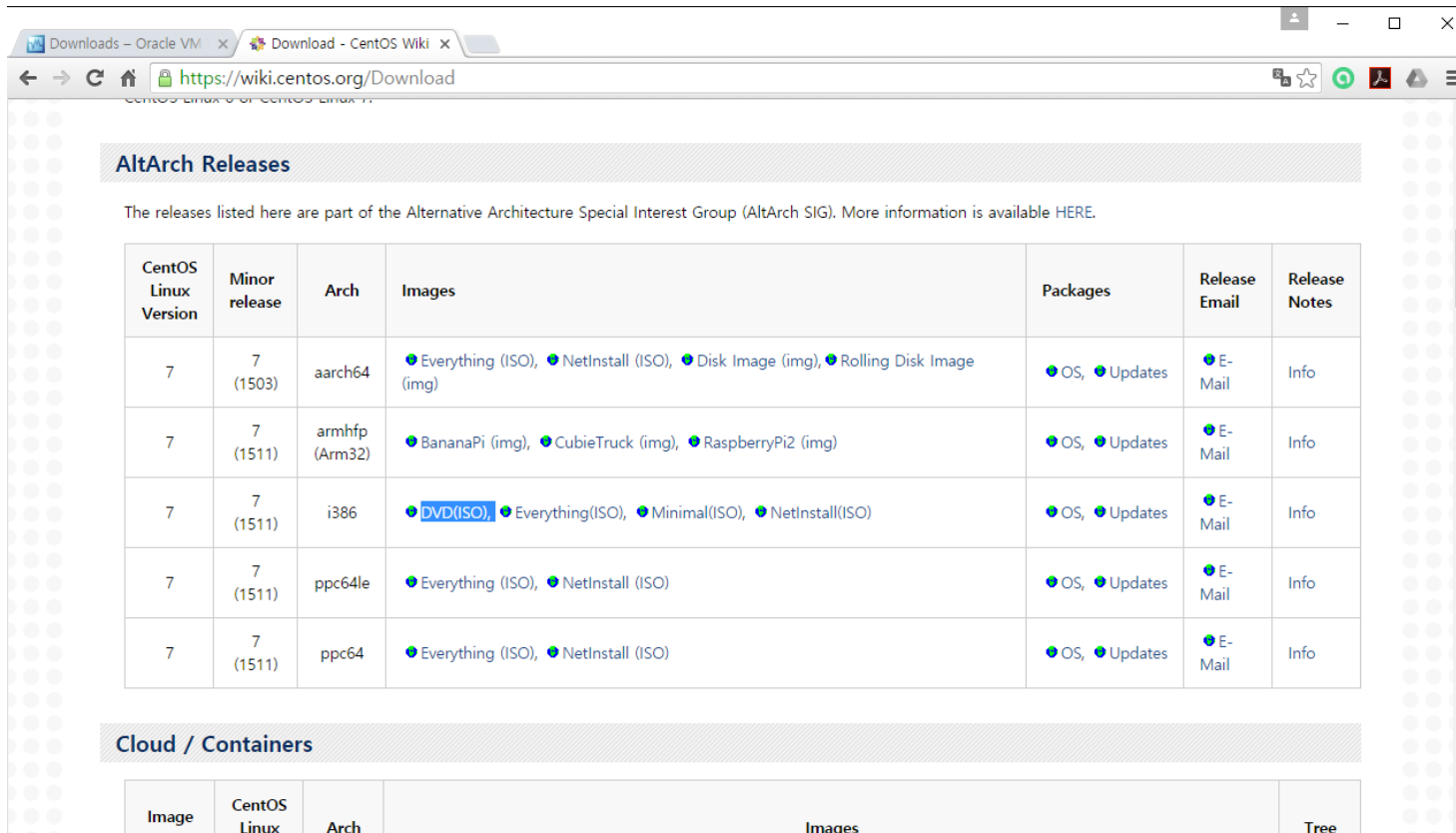


# VirtualBox Installation



## ■ CentOS

- ✓ A Linux distribution that attempts to provide a free, enterprise-class, community-supported computing platform which aims to be functionally compatible with its upstream source, Red Hat Enterprise Linux (RHEL)

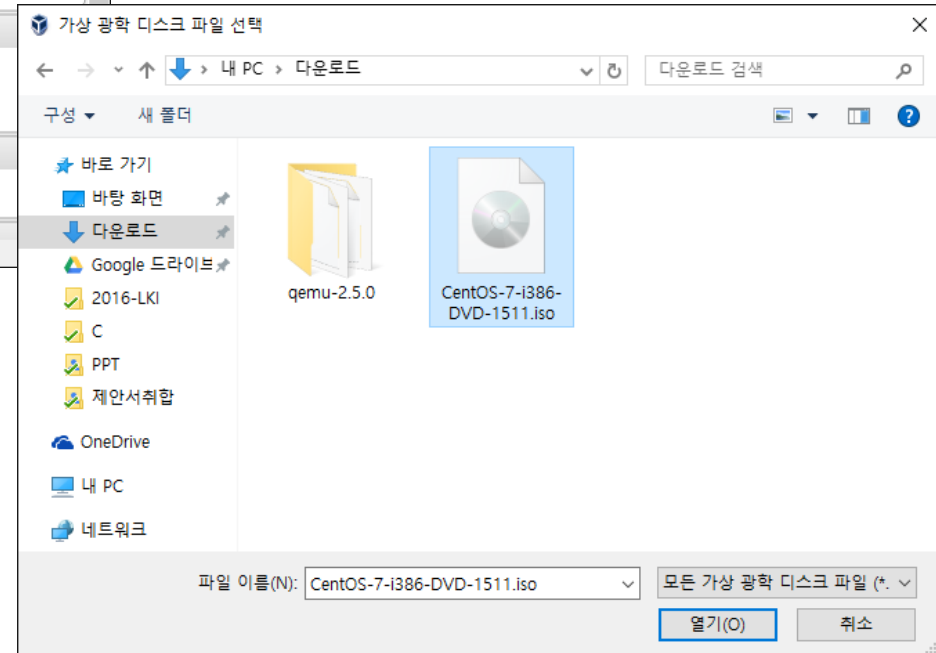
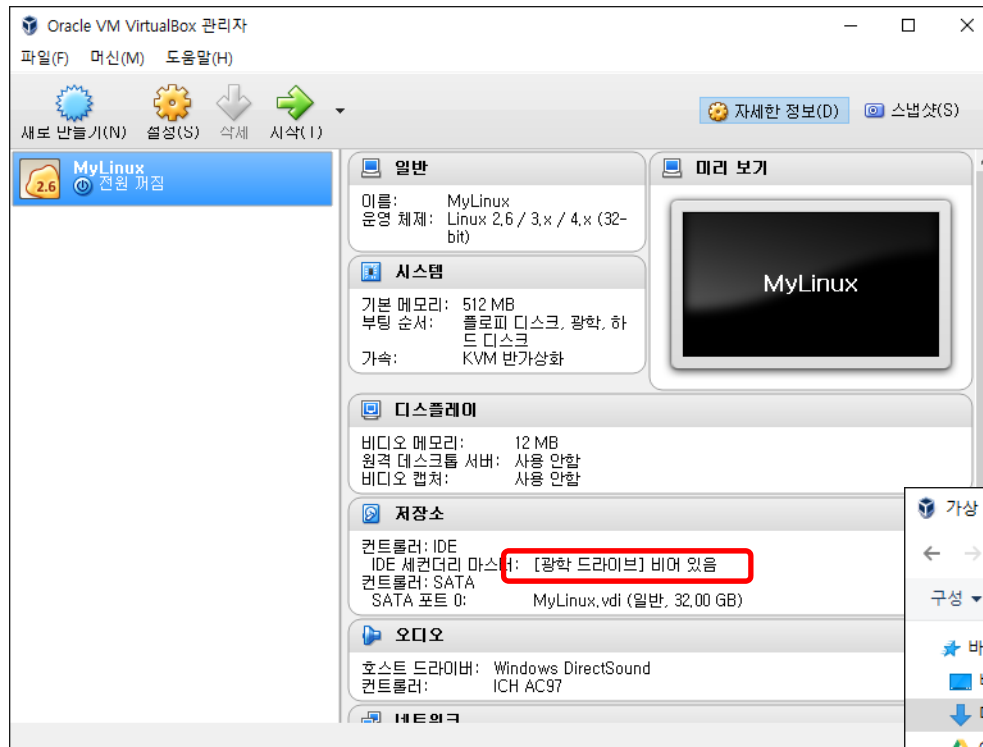


The screenshot shows a web browser window displaying the CentOS Wiki Download page. The page title is "AltArch Releases" and it includes a table of releases for the Alternative Architecture Special Interest Group (AltArch SIG). The table has columns for CentOS Linux Version, Minor release, Arch, Images, Packages, Release Email, and Release Notes. The table lists five rows of releases for CentOS 7, covering architectures aarch64, armhfp (Arm32), i386, ppc64le, and ppc64. The "DVD(ISO)" link in the i386 row is highlighted in blue.

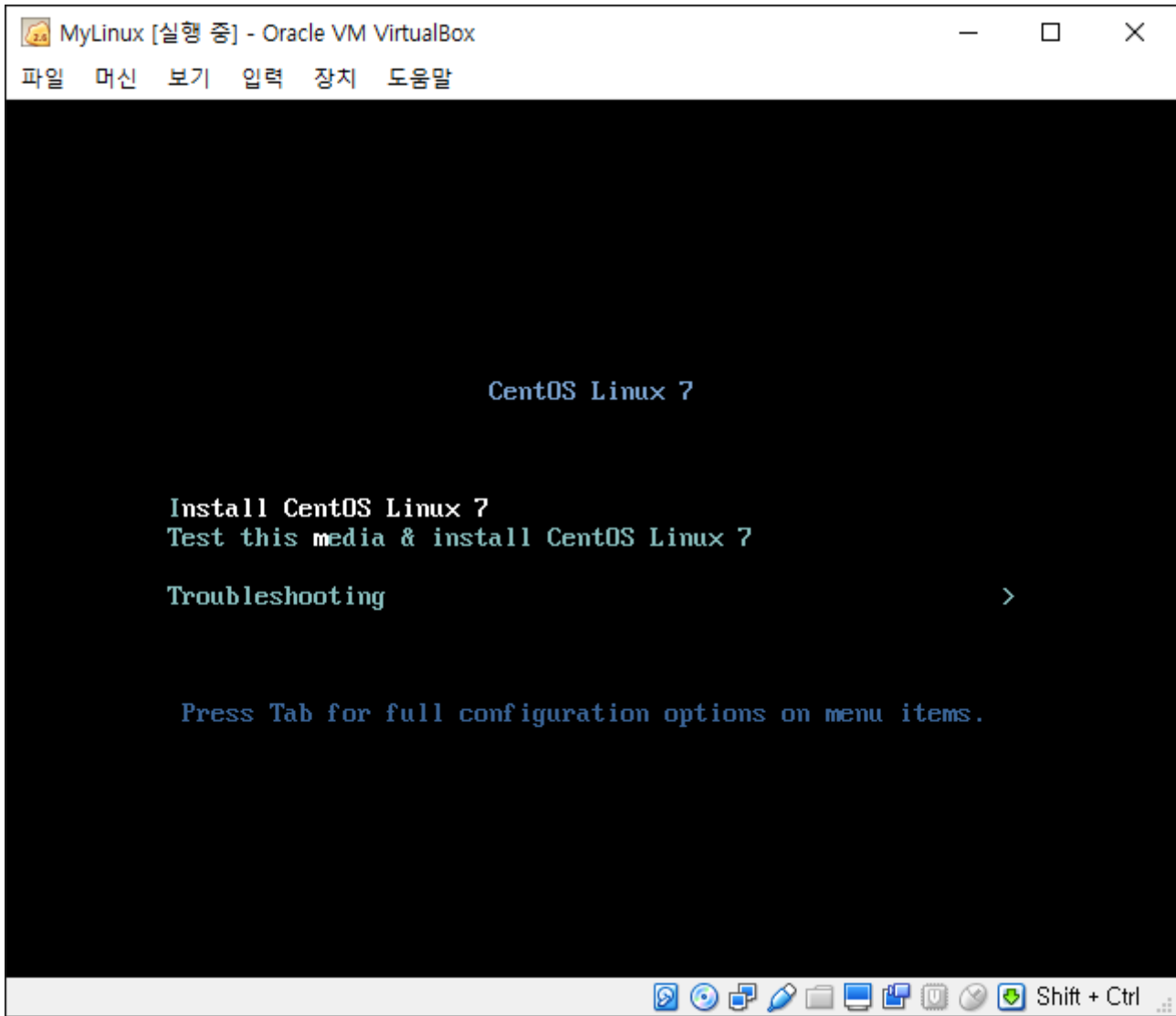
CentOS Linux Version	Minor release	Arch	Images	Packages	Release Email	Release Notes
7	7 (1503)	aarch64	<a href="#">Everything (ISO)</a> , <a href="#">NetInstall (ISO)</a> , <a href="#">Disk Image (img)</a> , <a href="#">Rolling Disk Image (img)</a>	<a href="#">OS</a> , <a href="#">Updates</a>	<a href="#">E-Mail</a>	<a href="#">Info</a>
7	7 (1511)	armhfp (Arm32)	<a href="#">BananaPi (img)</a> , <a href="#">CubieTruck (img)</a> , <a href="#">RaspberryPi2 (img)</a>	<a href="#">OS</a> , <a href="#">Updates</a>	<a href="#">E-Mail</a>	<a href="#">Info</a>
7	7 (1511)	i386	<a href="#">DVD(ISO)</a> , <a href="#">Everything(ISO)</a> , <a href="#">Minimal(ISO)</a> , <a href="#">NetInstall(ISO)</a>	<a href="#">OS</a> , <a href="#">Updates</a>	<a href="#">E-Mail</a>	<a href="#">Info</a>
7	7 (1511)	ppc64le	<a href="#">Everything (ISO)</a> , <a href="#">NetInstall (ISO)</a>	<a href="#">OS</a> , <a href="#">Updates</a>	<a href="#">E-Mail</a>	<a href="#">Info</a>
7	7 (1511)	ppc64	<a href="#">Everything (ISO)</a> , <a href="#">NetInstall (ISO)</a>	<a href="#">OS</a> , <a href="#">Updates</a>	<a href="#">E-Mail</a>	<a href="#">Info</a>

Below the table, there is a section titled "Cloud / Containers" with a table that has columns for Image, CentOS Linux, Arch, Images, and Tree.

# Linux Installation

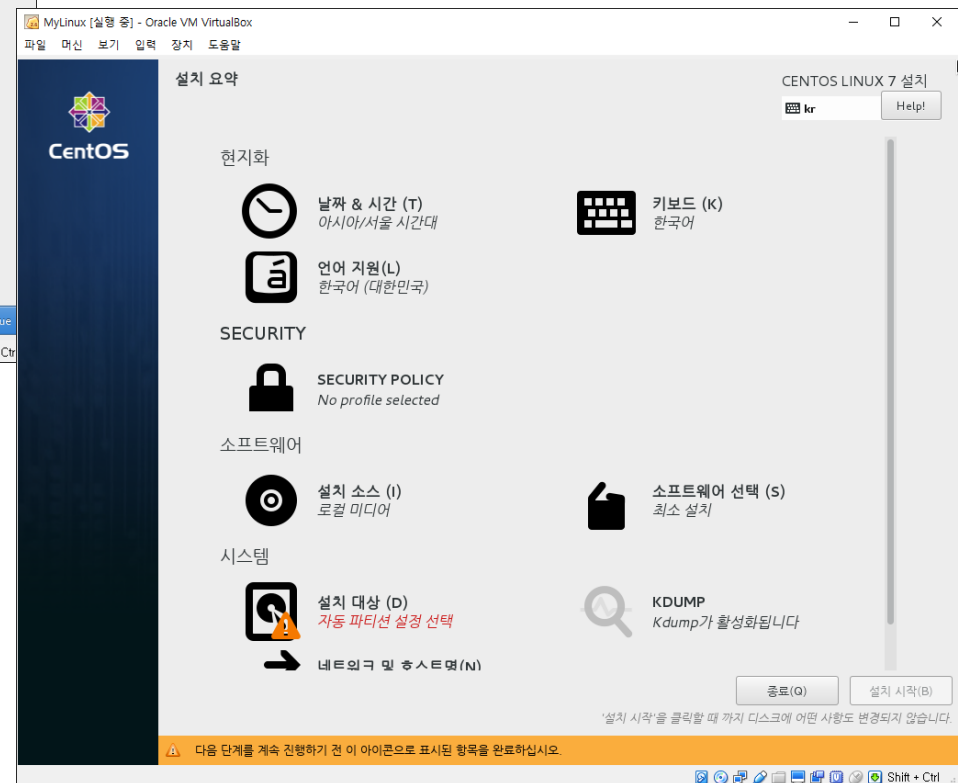
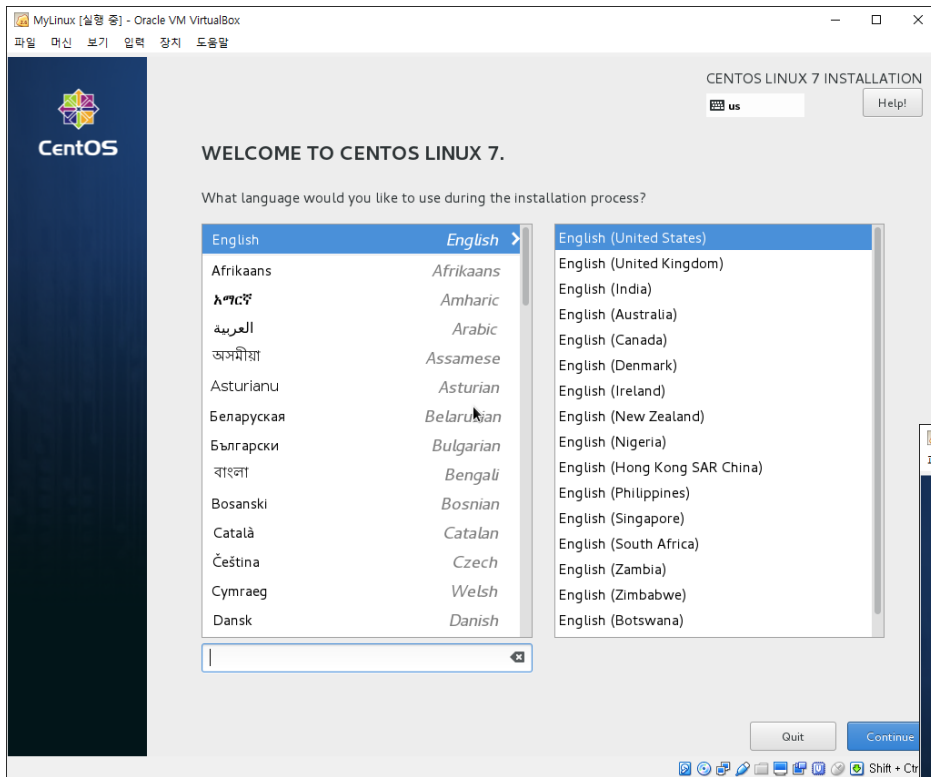


# Linux Installation

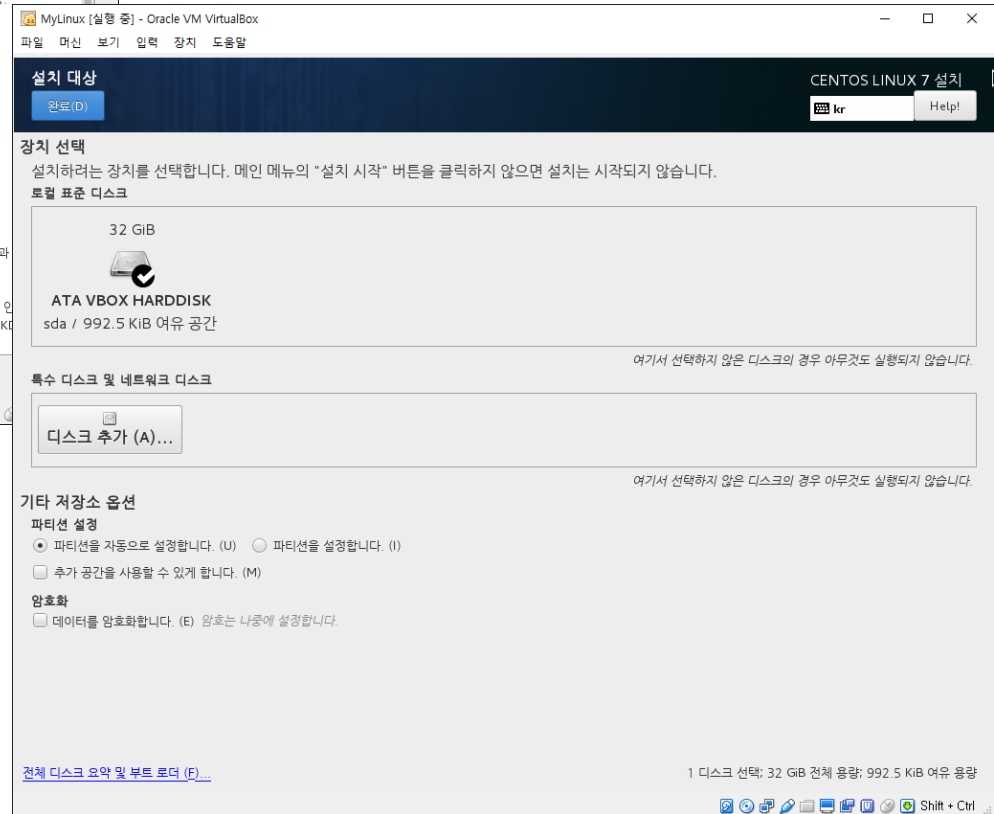
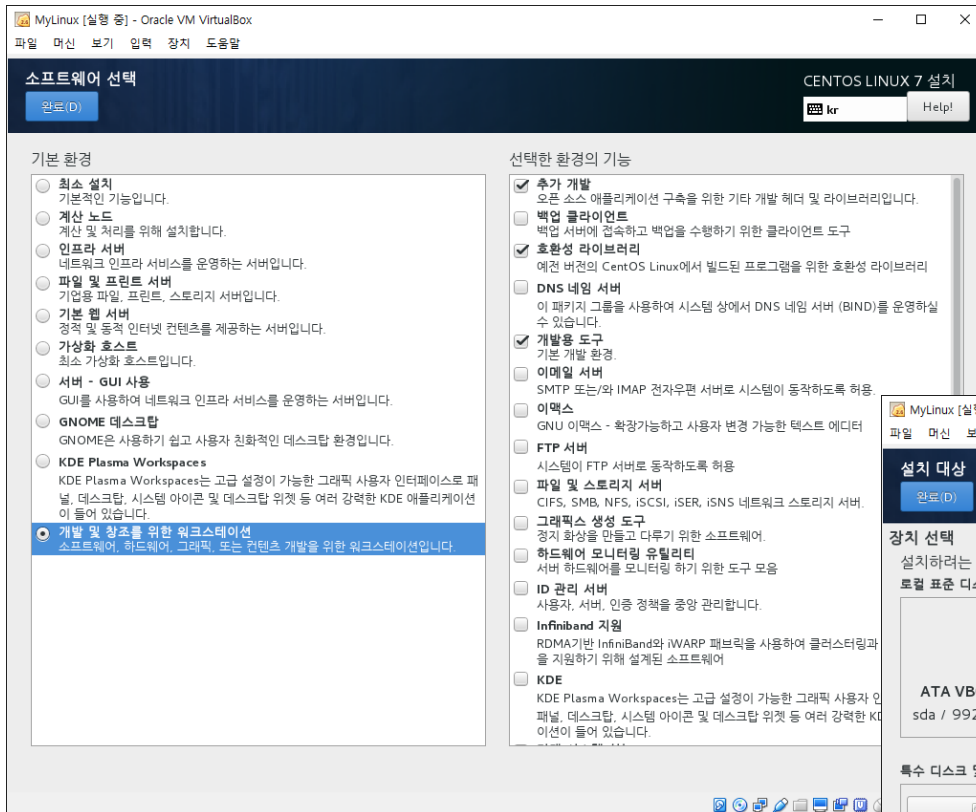




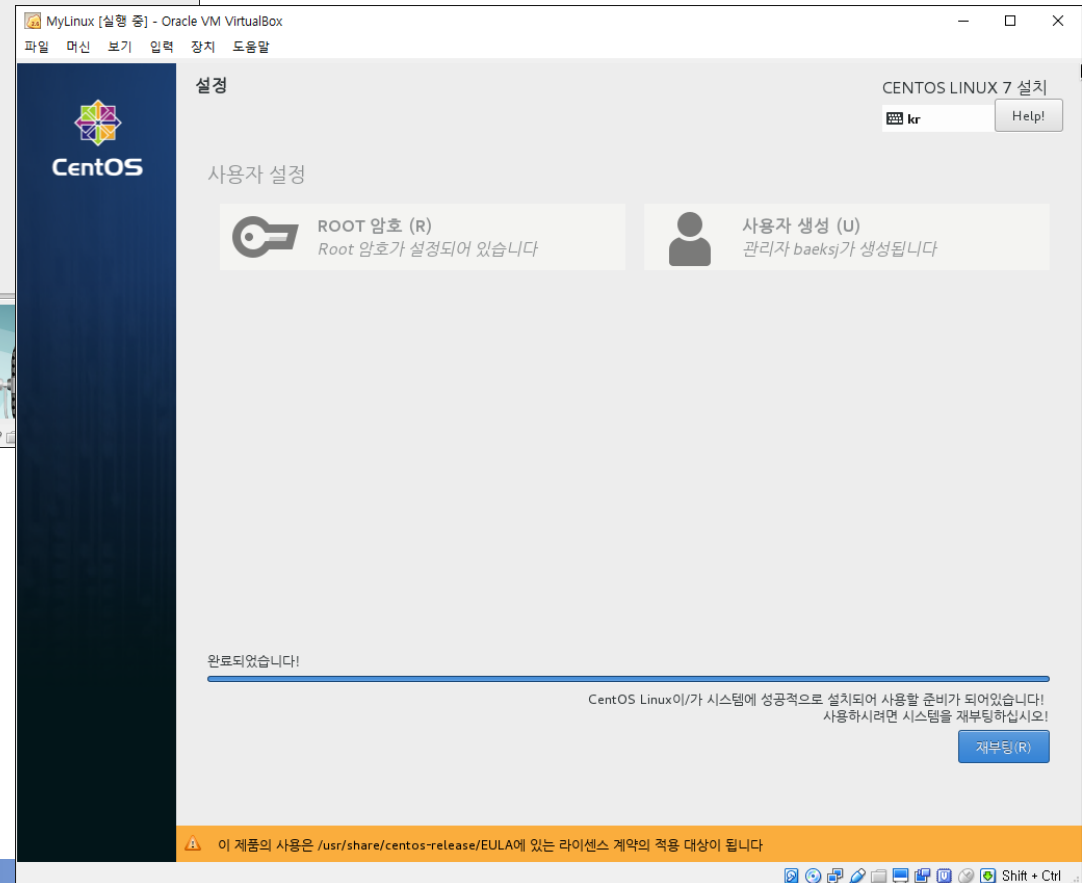
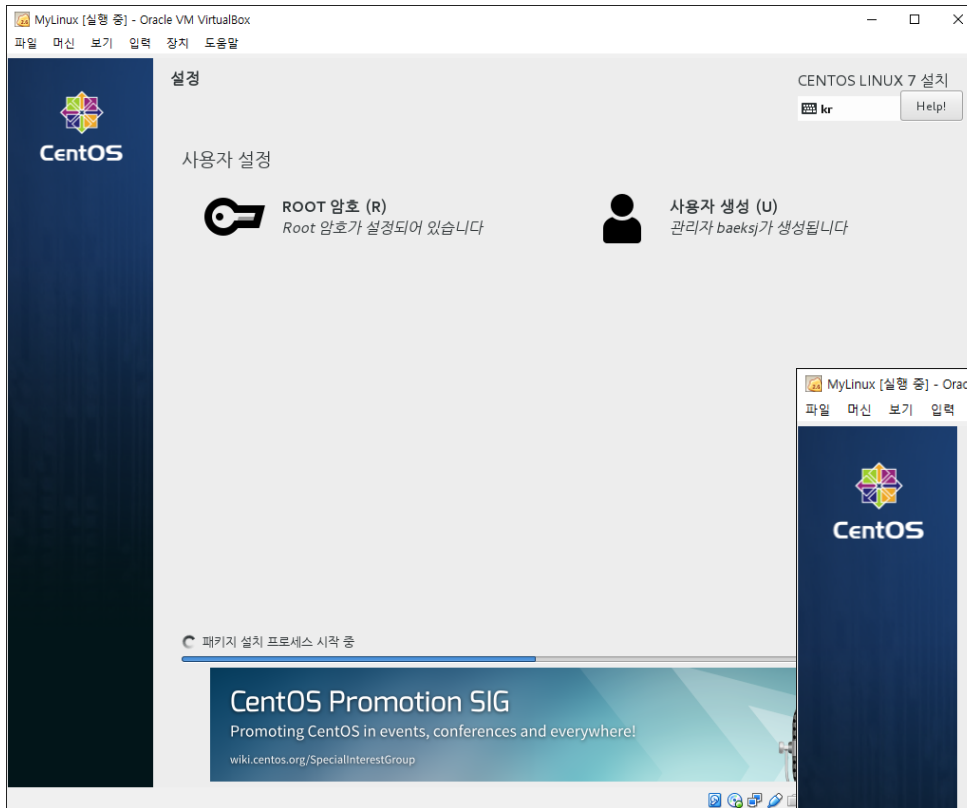
# Linux Installation



# Linux Installation



# Linux Installation



# Linux Installation

