



개발환경 구축2

로봇 SW 교육원 4기

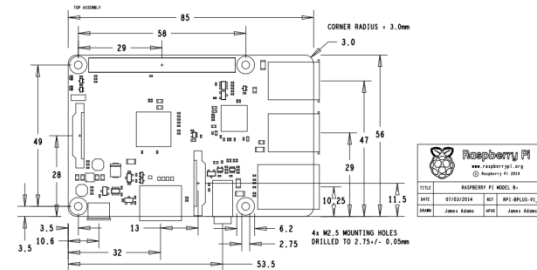
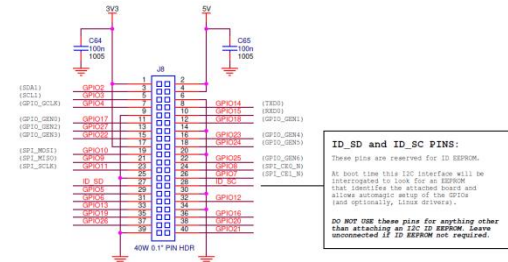
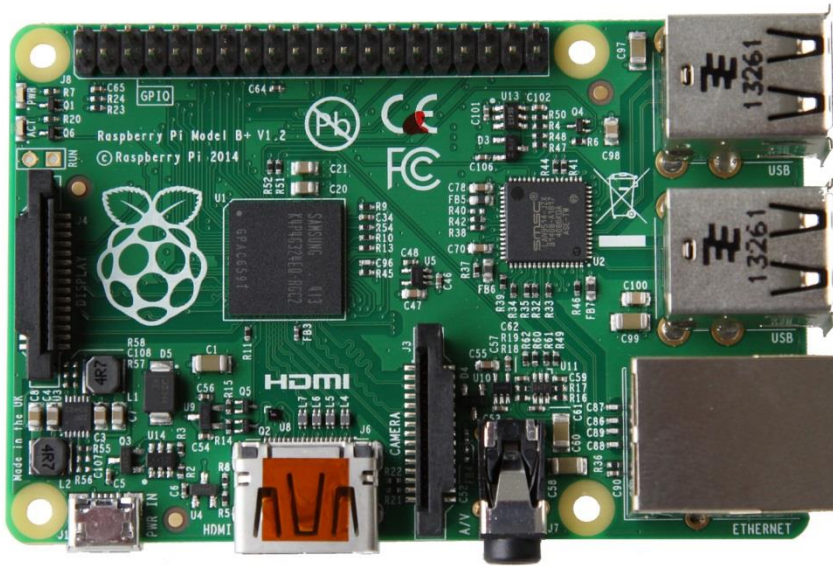
- 리눅스를 설치할 수 있다.
- 임베디드 리눅스 개발환경을 이해한다.

- 1991년 11월에 리누스 토발즈(Linus Torvalds)가 공개한 유닉스 기반 개인 컴퓨터용 공개 운영체제
- 유닉스(Unix) 환경을 제공하면서 무료라는 장점 때문에 프로그램 개발자 및 학교 등을 중심으로 급속히 사용이 확대됨
- 사이트
 - www.kernel.org
- 배포판
 - 
 - 
 - 
 - 
- 안드로이드

개발보드 Raspberry Pi

4

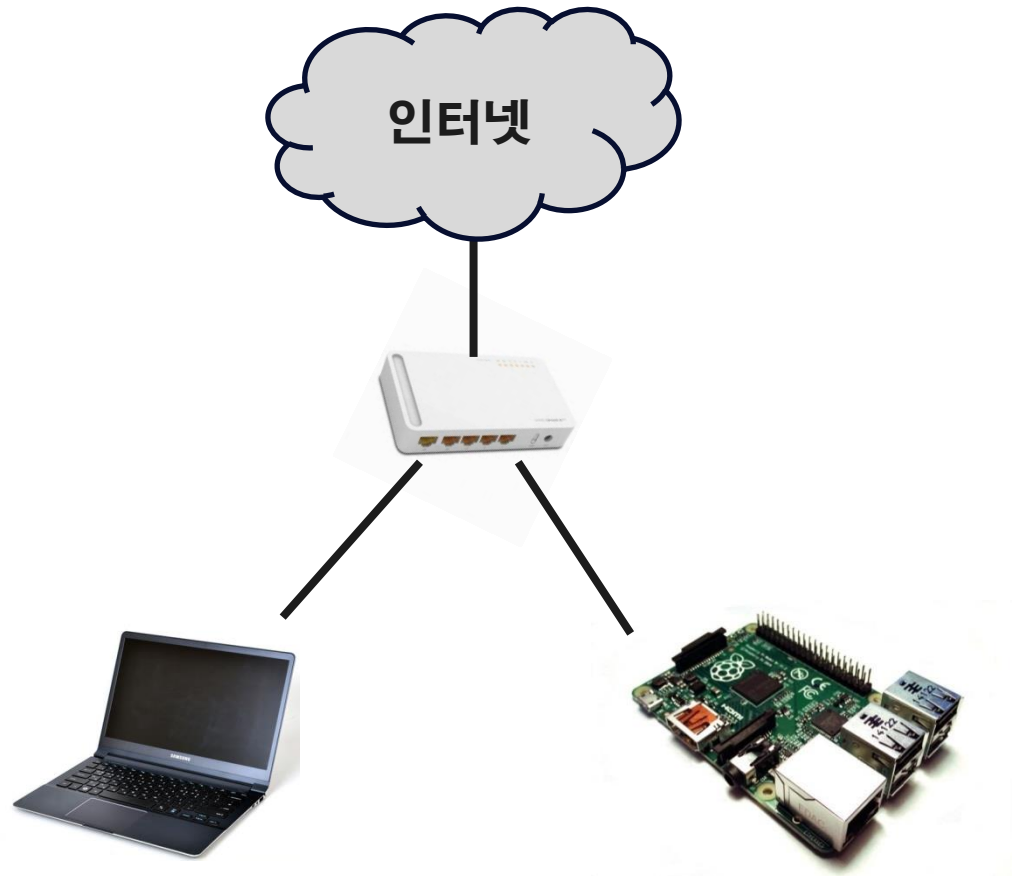
- Raspberry Pi B+



- BCM2835
 - <http://www.broadcom.com/products/BCM2835>
 - ARM1176JZ-F
 - <http://www.arm.com/products/processors/classic/arm11/arm1176.php>



- TARGET BOARD
 - Raspberry Pi B+
- HOST PC
 - Ubuntu (Virtual Box)
- 라우터



실습 1: VirtualBox 설치

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- VirtualBox 다운로드
 - <https://www.virtualbox.org/>



실습 1: VirtualBox 설치

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- VirtualBox 다운로드
 - 파일명 : VirtualBox-4.3.12-93733-Win.exe



실습 1: VirtualBox 설치

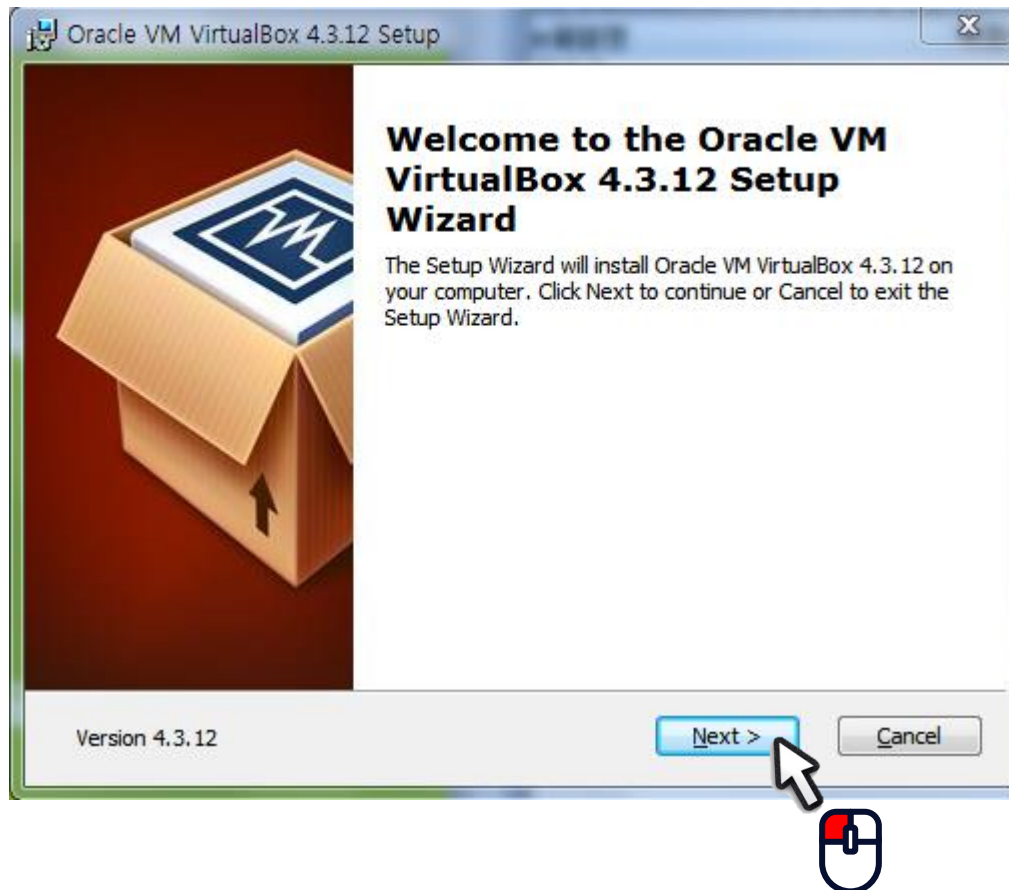
8

- VirtualBox 확장 팩 다운로드 (USB장치 인식하기 위해 필요함)
 - 파일명 : Oracle_VM_VirtualBox_Extension_Pack-4.3.12-93733.vbox-extpack



실습 1: VirtualBox 설치

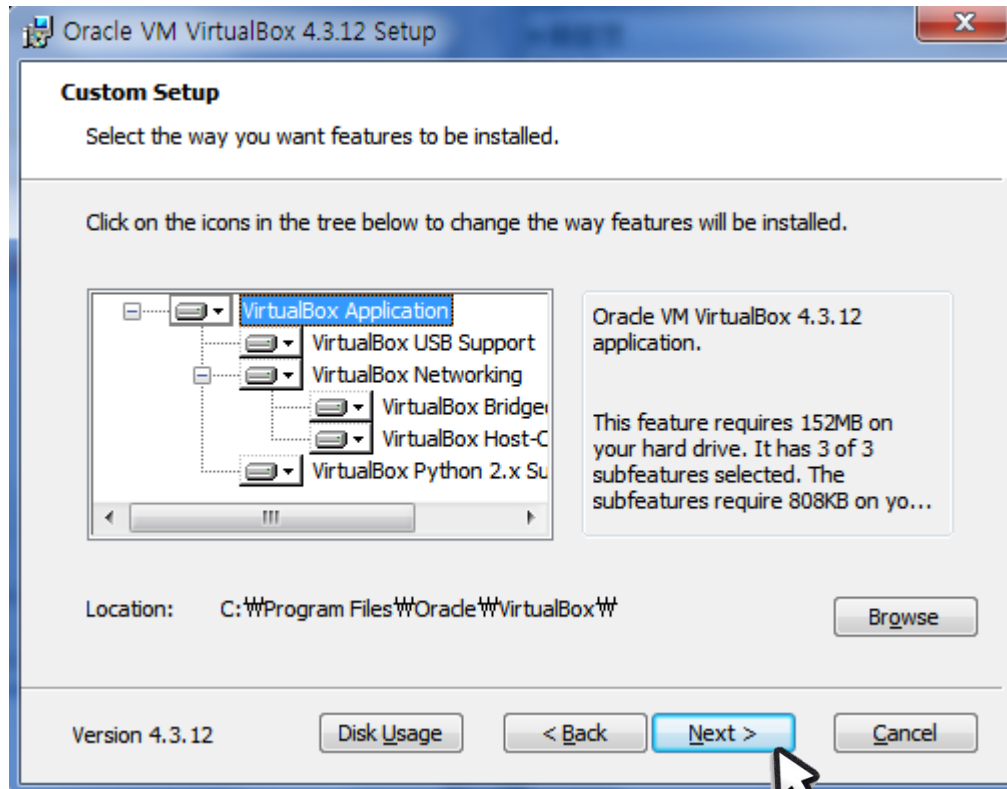
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

10

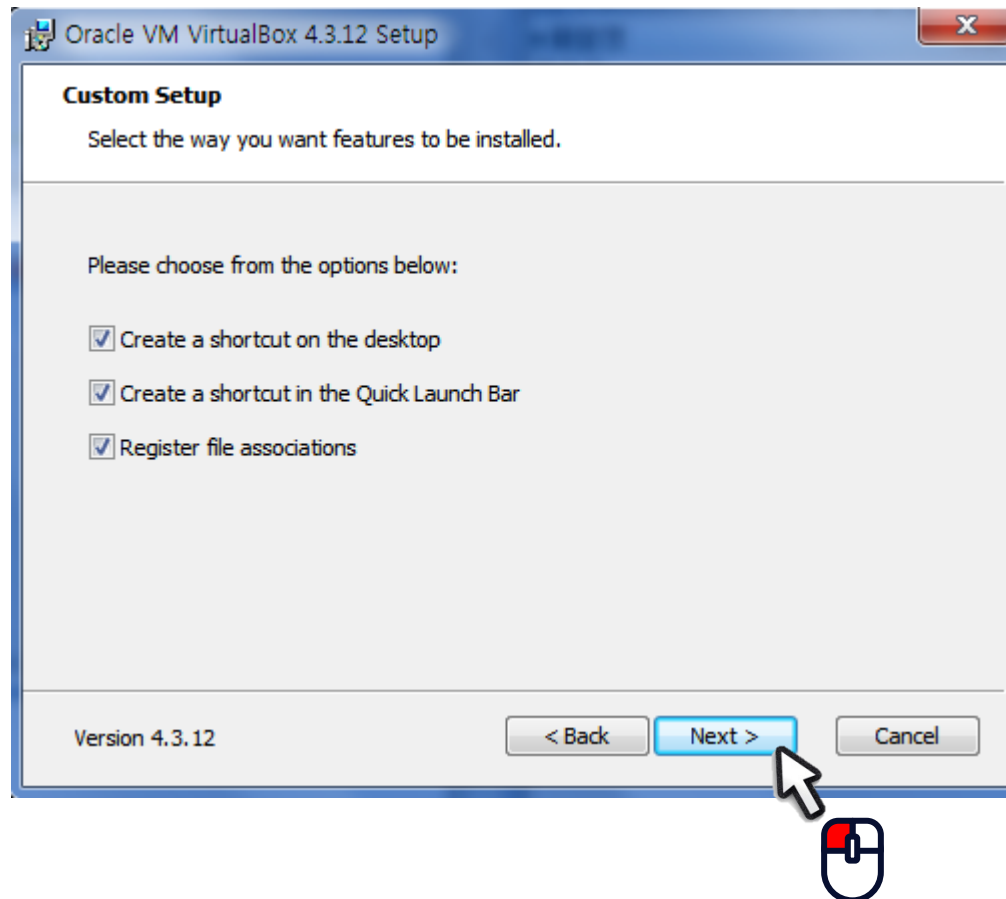
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

11

- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

12

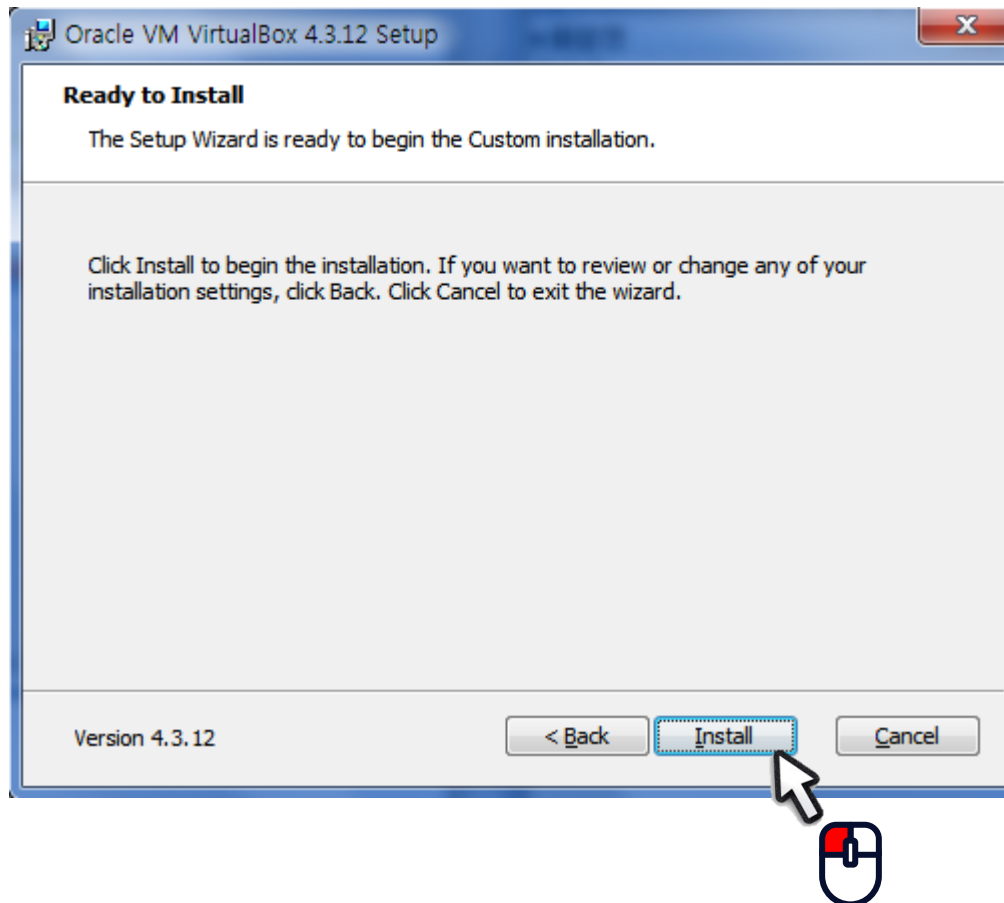
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

13

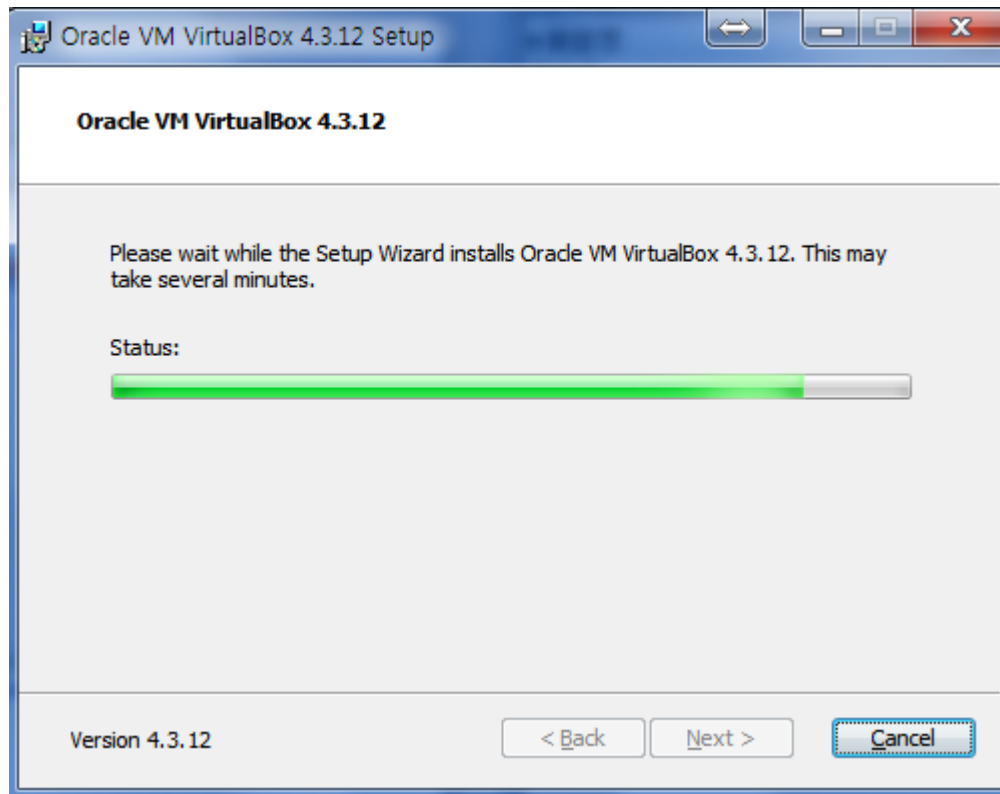
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

14

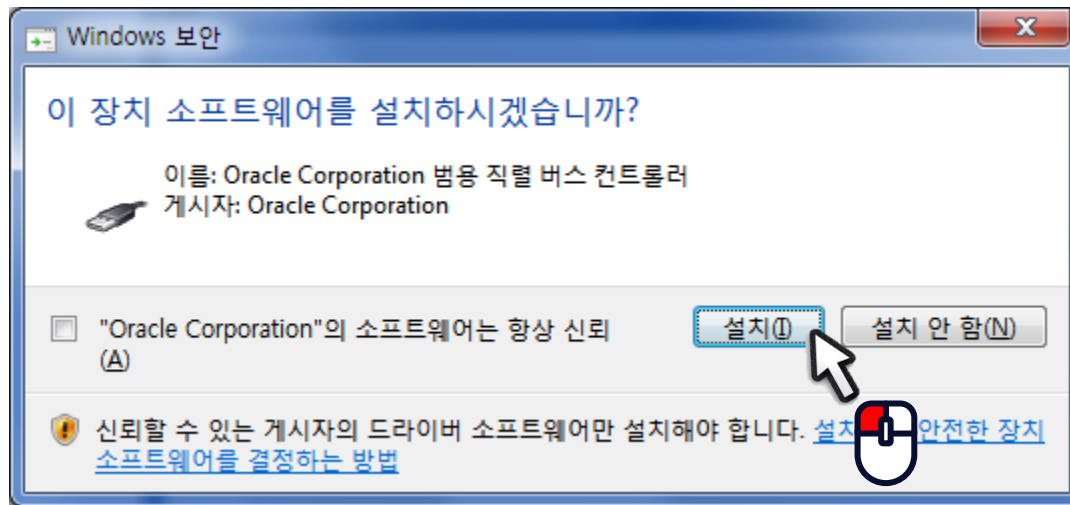
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

15

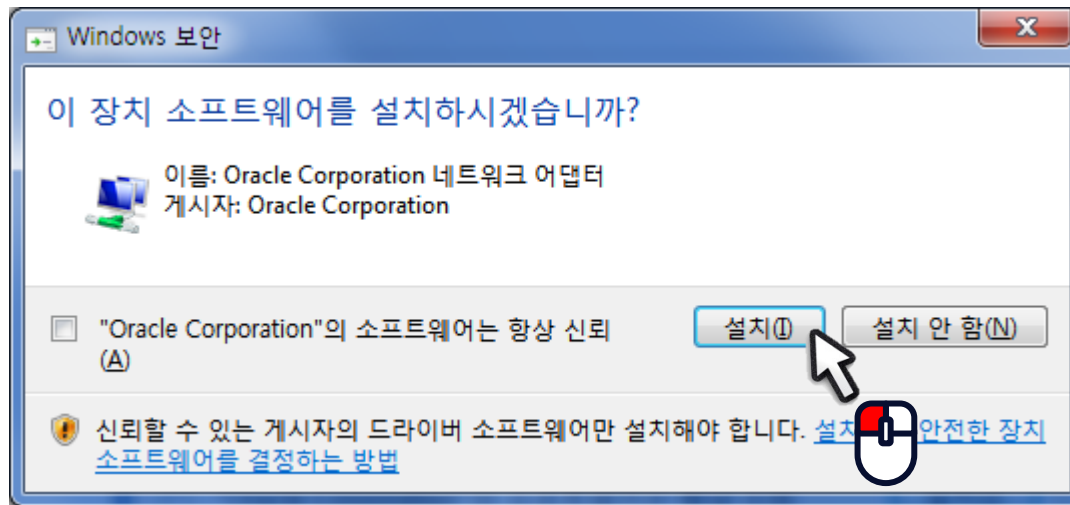
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

16

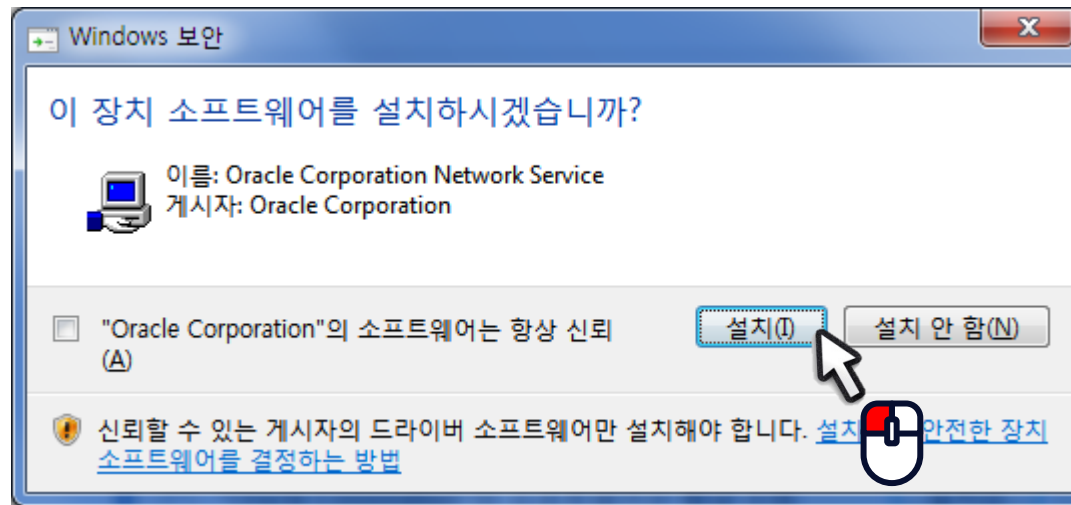
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

17

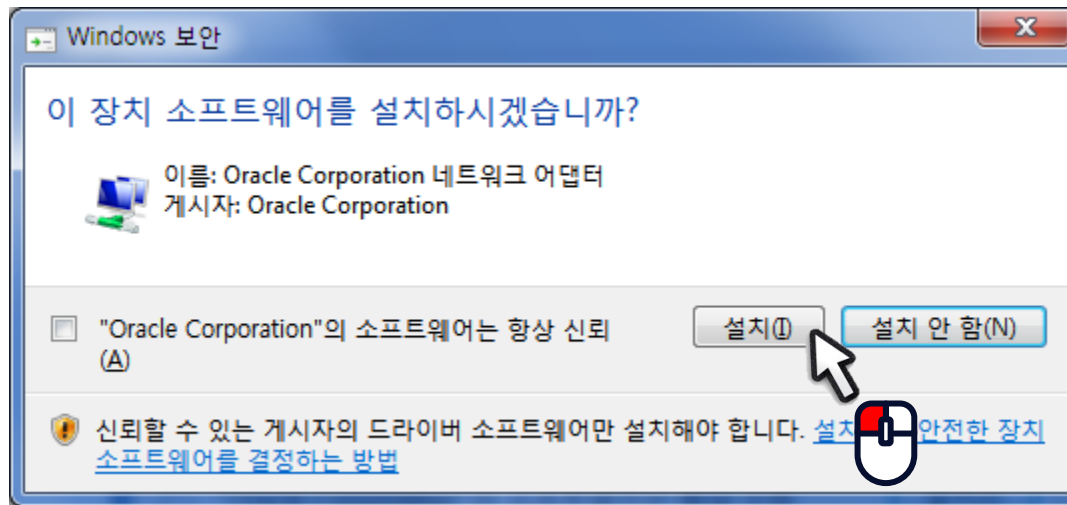
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

18

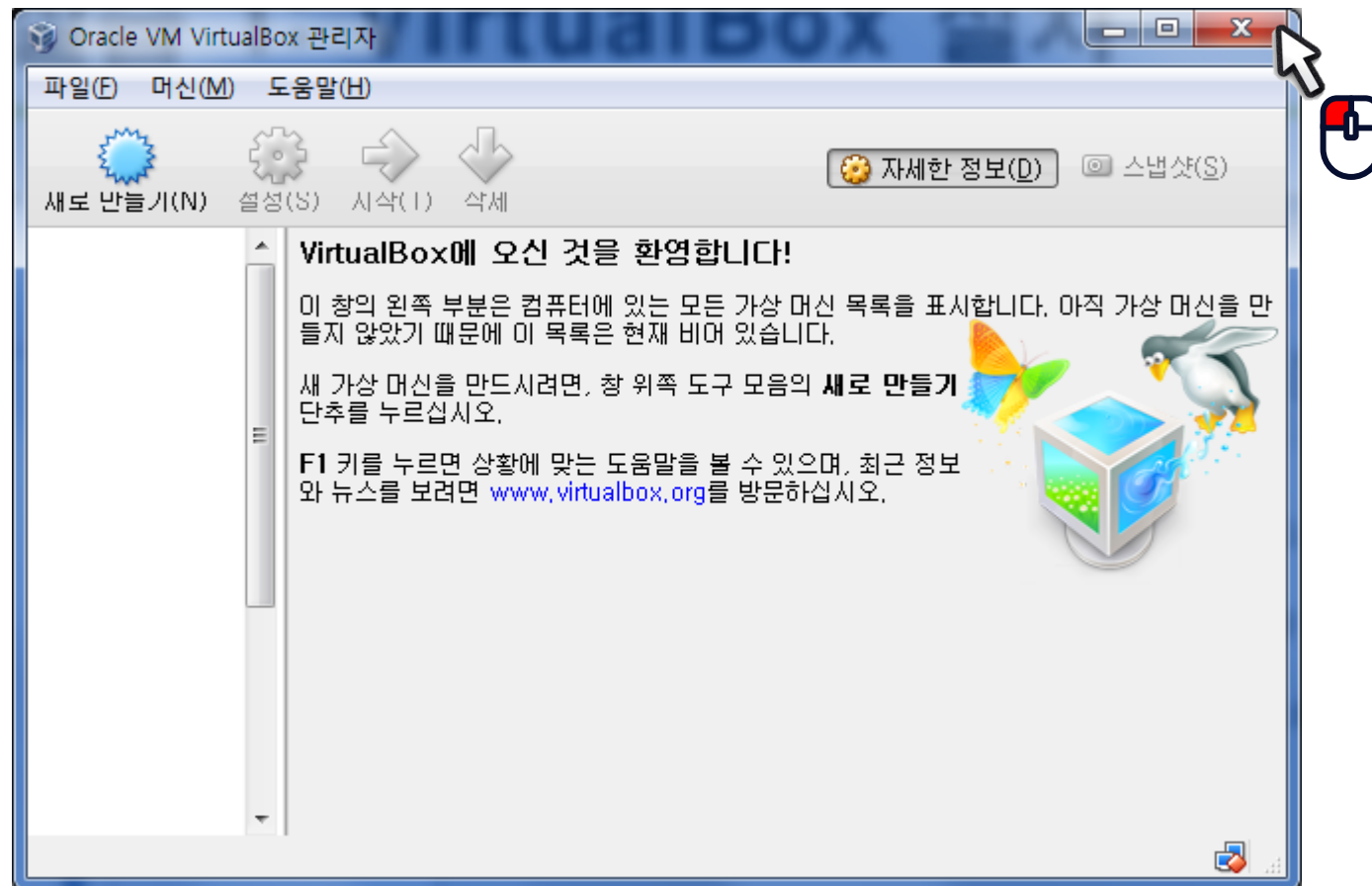
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

19

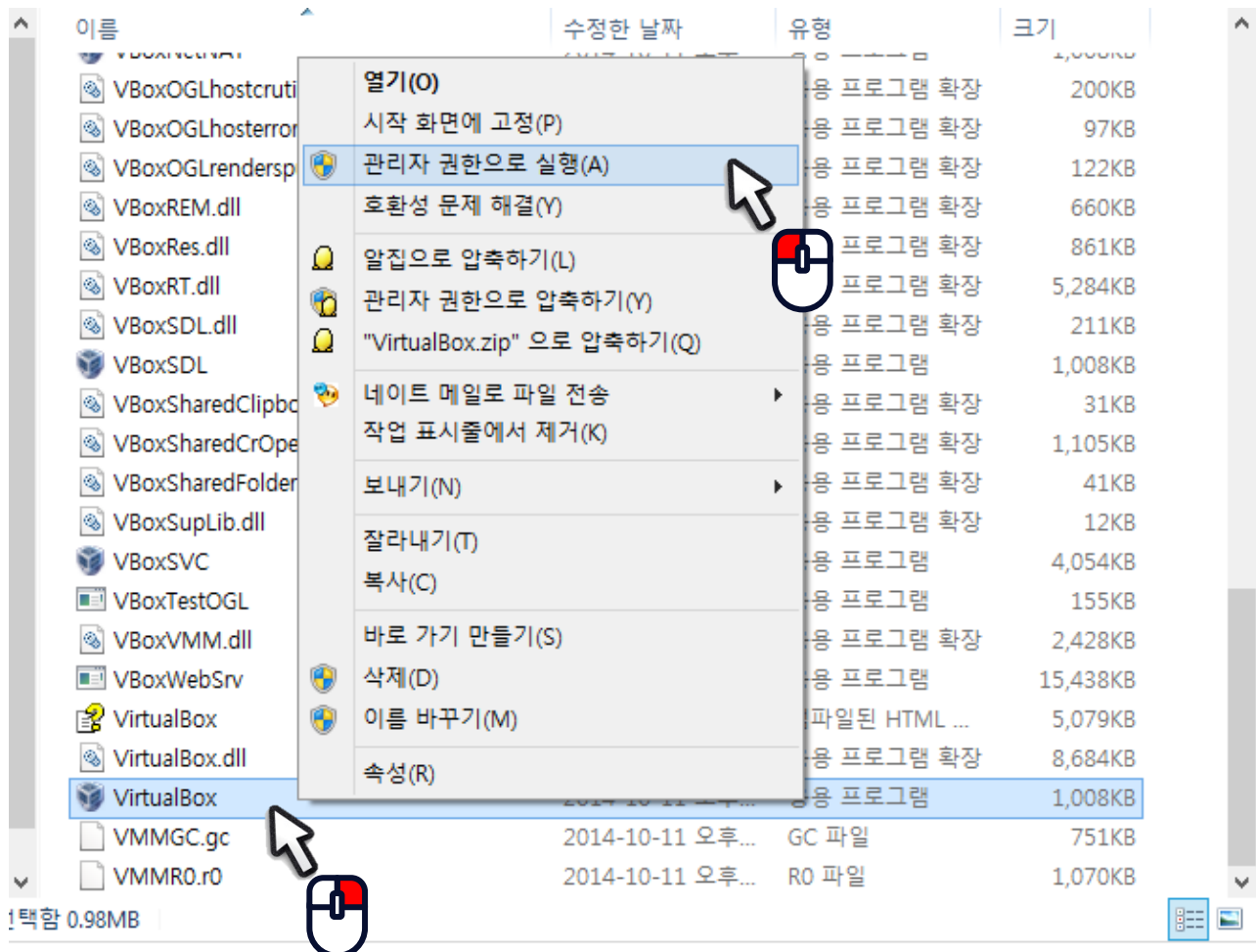
- VirtualBox 설치(4.3.12 for windows hosts)



실습 1: VirtualBox 설치

20

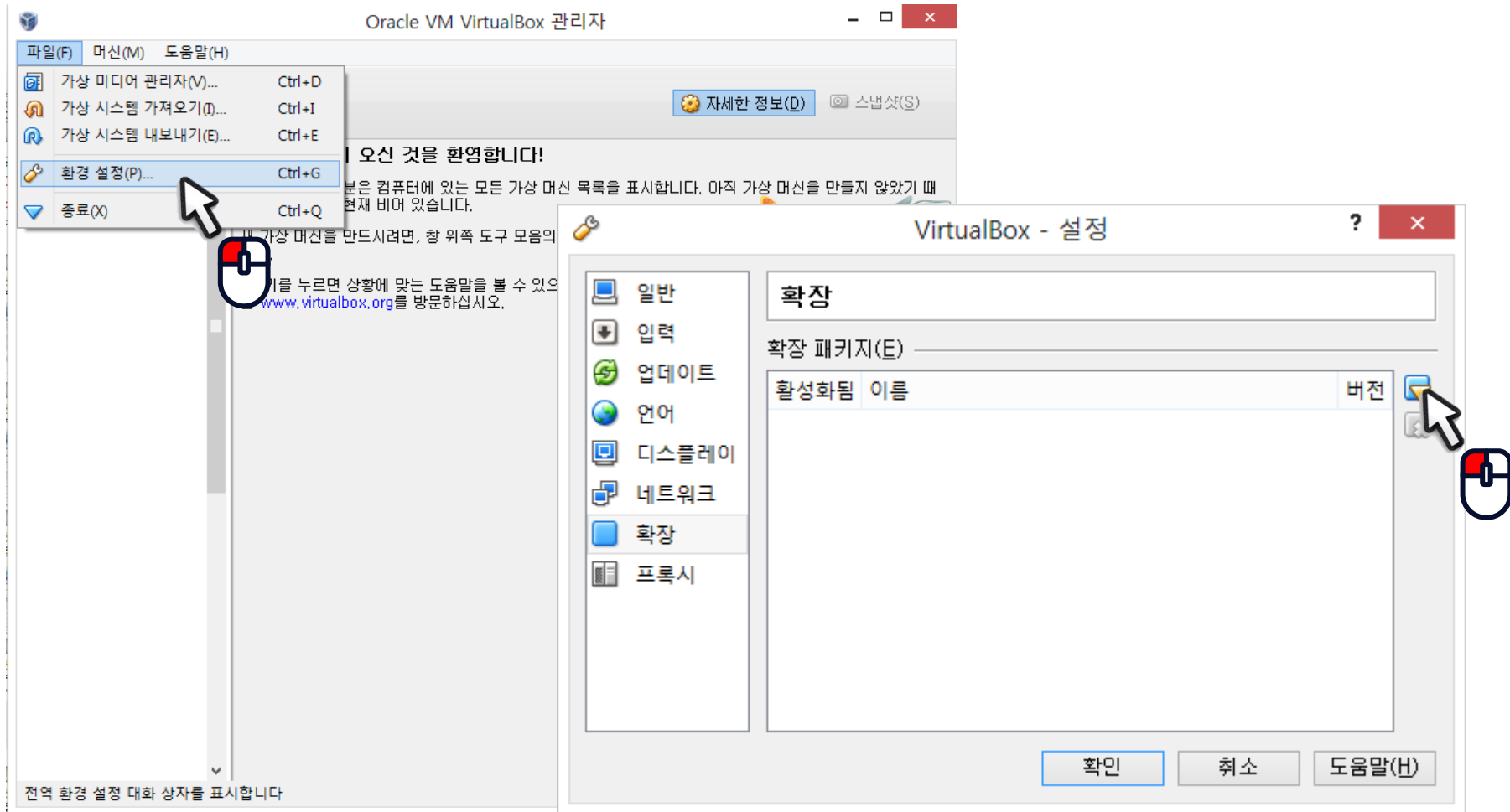
- VirtualBox 확장팩 설치
 - 관리자 권한으로 VirtualBox 실행
 - 파일명 : C:\Program Files\Oracle\VirtualBox\VirtualBox.exe



실습 1: VirtualBox 설치

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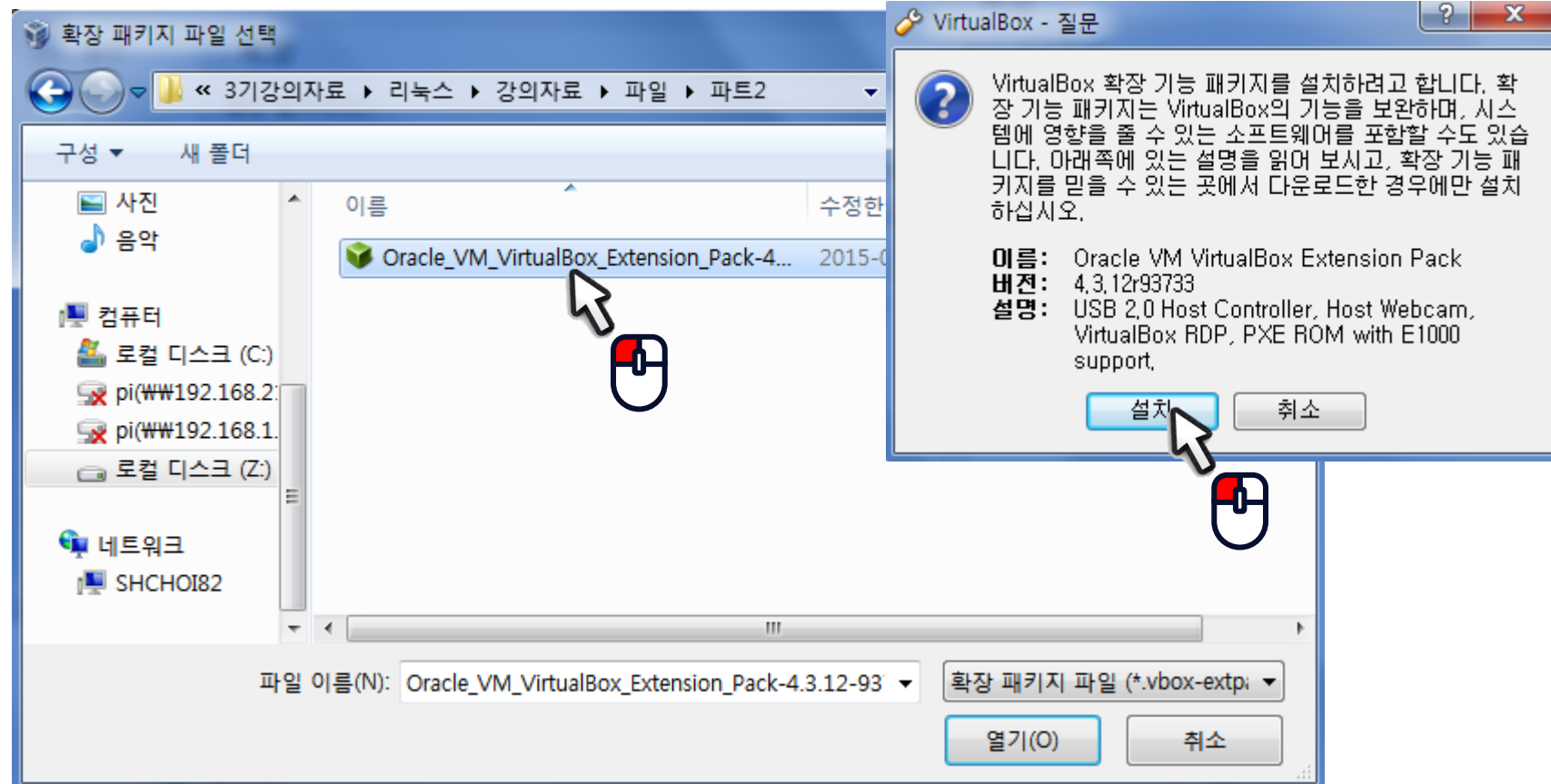
- VirtualBox 확장팩 설치
 - [파일] -> [환경 설정] -> 확장



실습 1: VirtualBox 설치

22

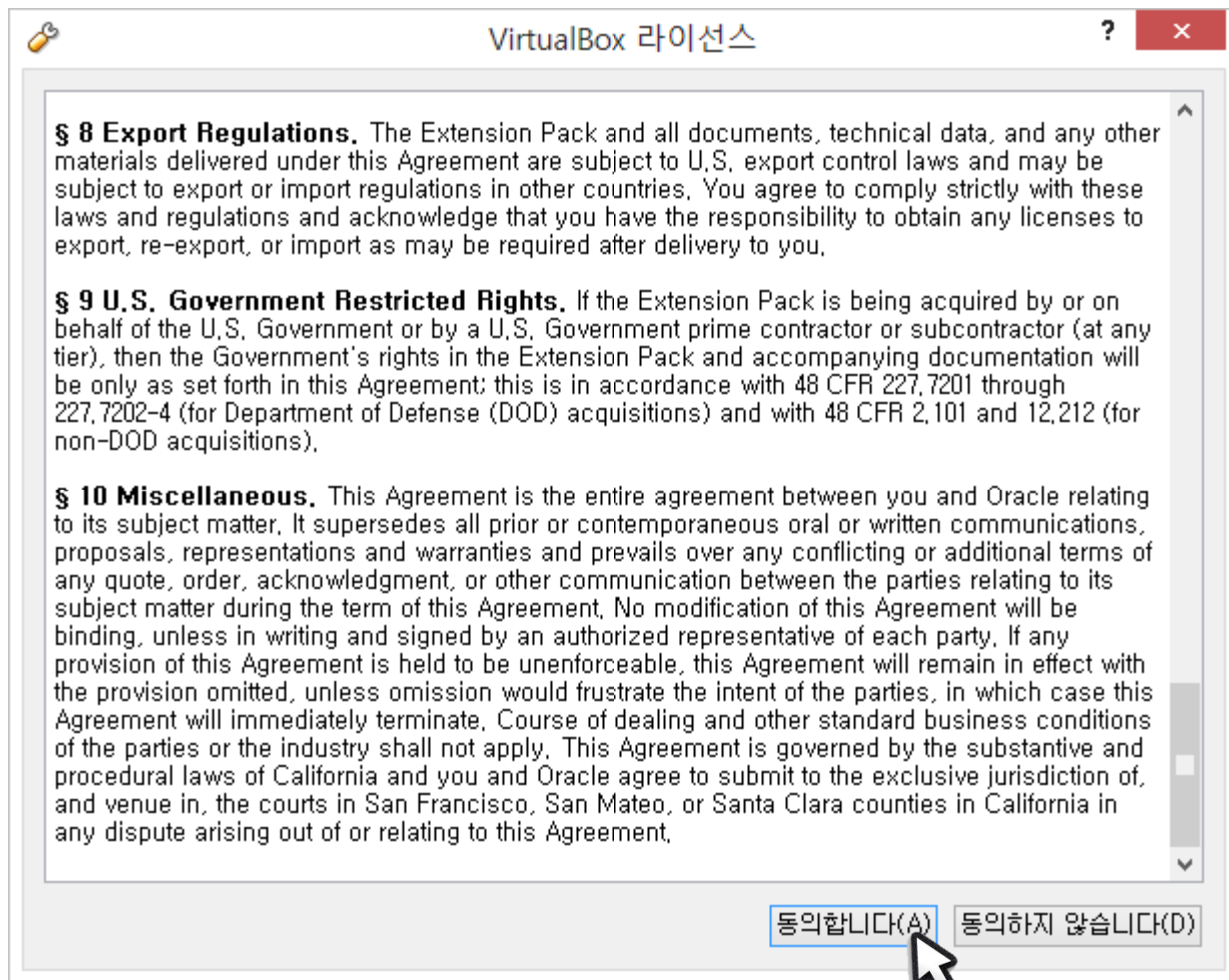
- VirtualBox 확장팩 설치
 - 확장팩 파일 선택



실습 1: VirtualBox 설치

23

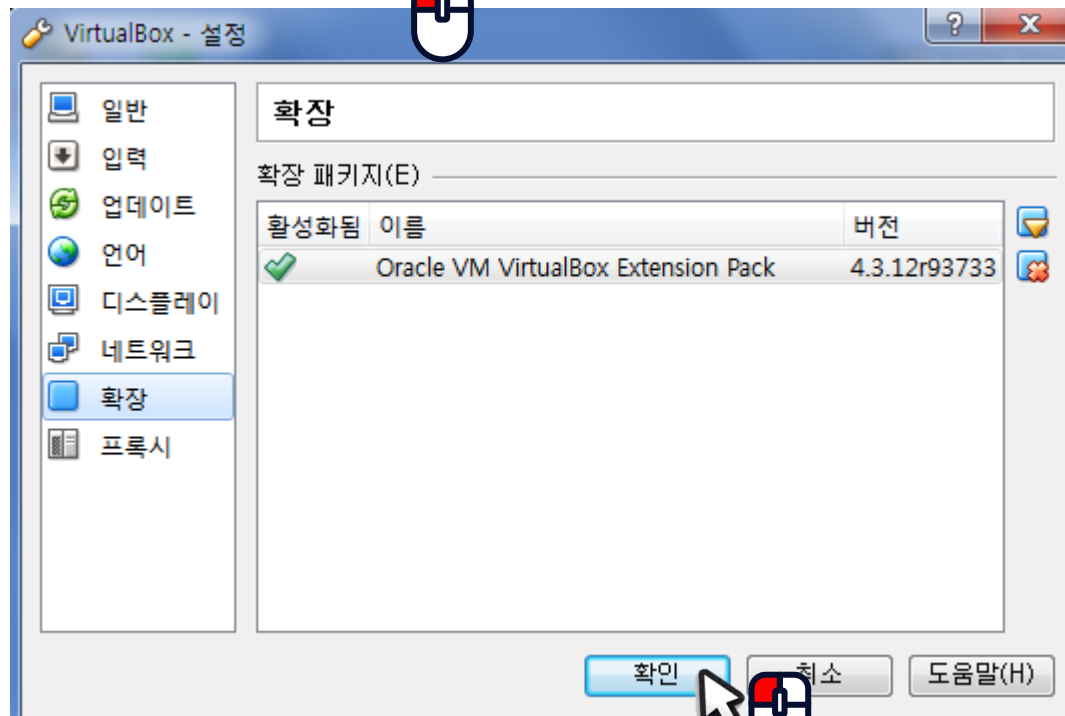
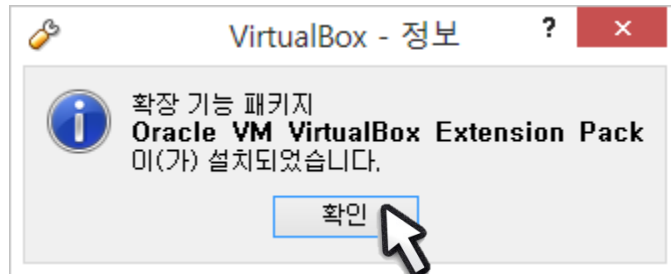
- VirtualBox 확장팩 설치
 - 라이선스 확인



실습 1: VirtualBox 설치

24

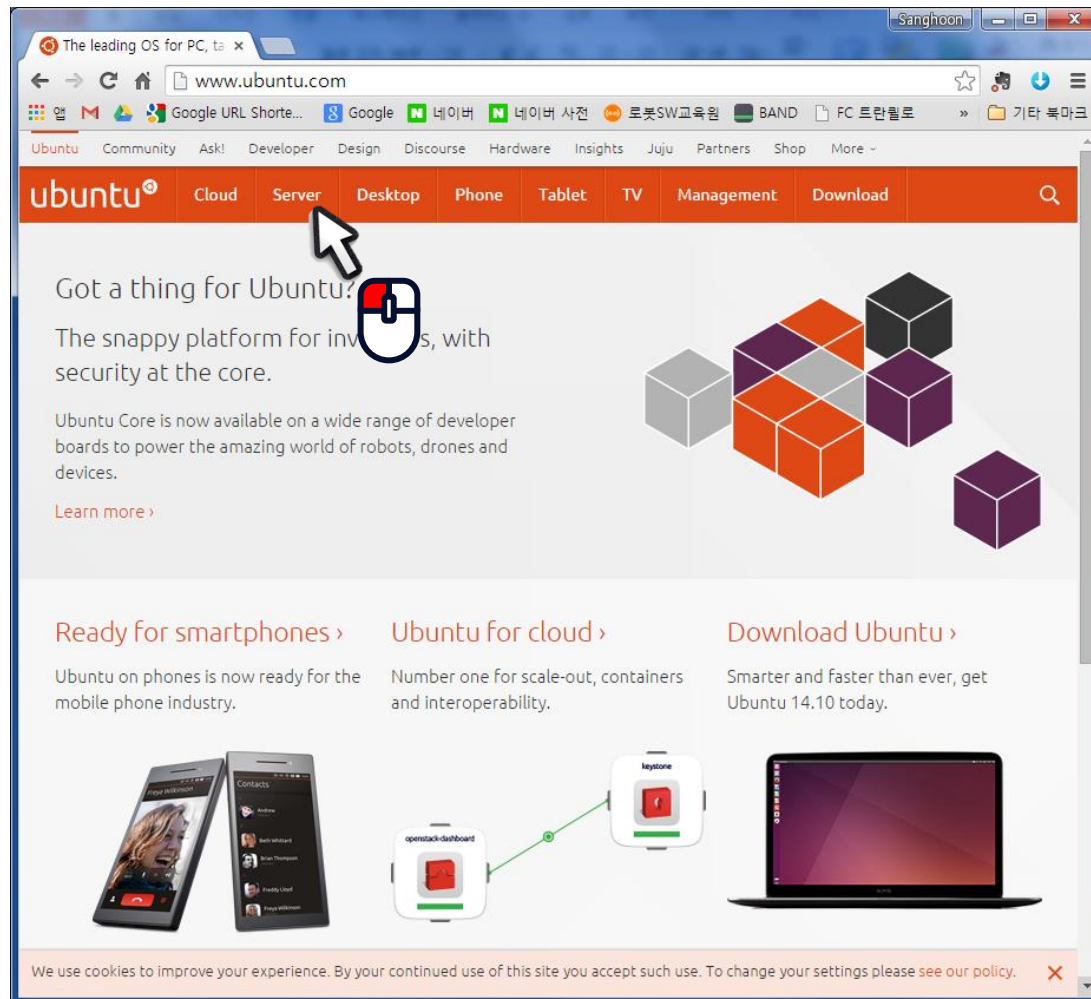
- VirtualBox 확장팩 설치
 - 설치확인



실습 2: 리눅스 설치

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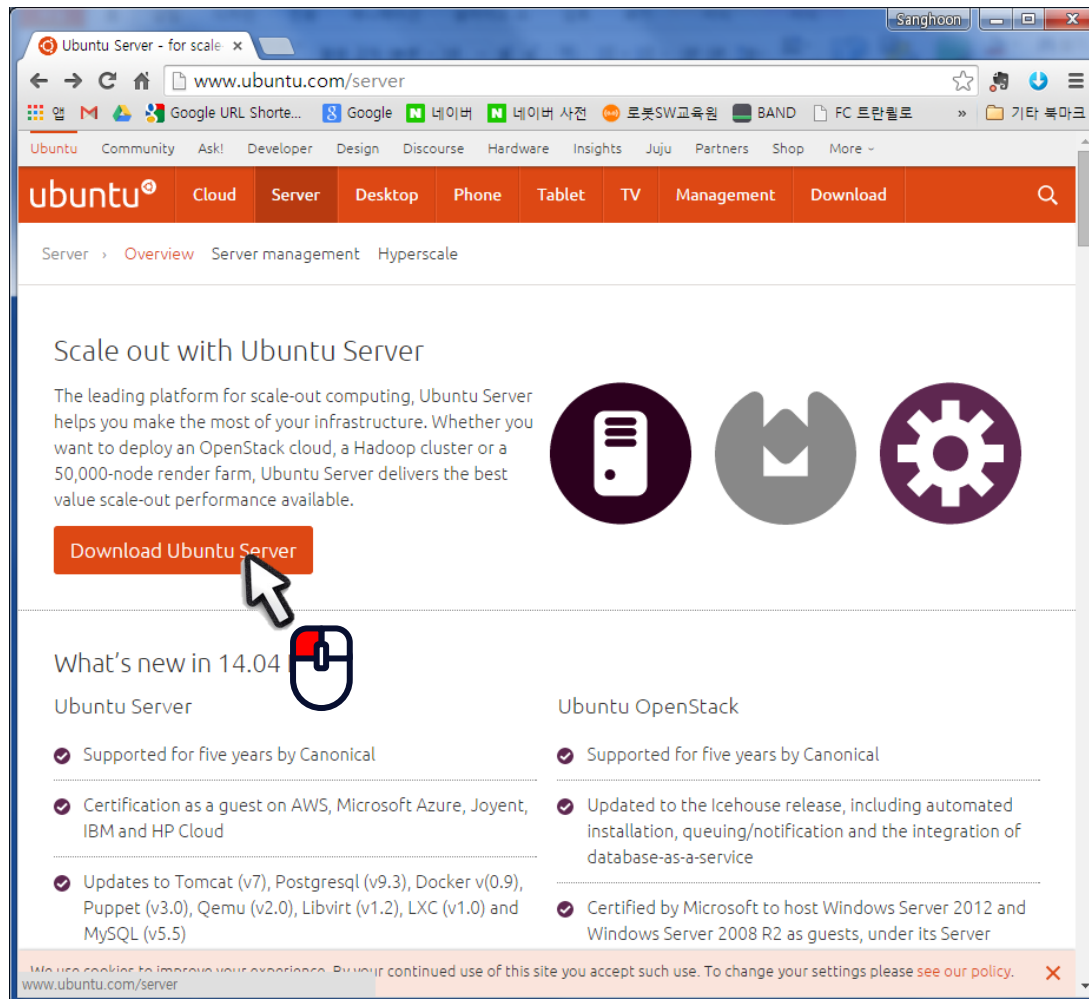
- ubuntu 14.04.3 다운로드
 - <http://www.ubuntu.com>



실습 2: 리눅스 설치

26

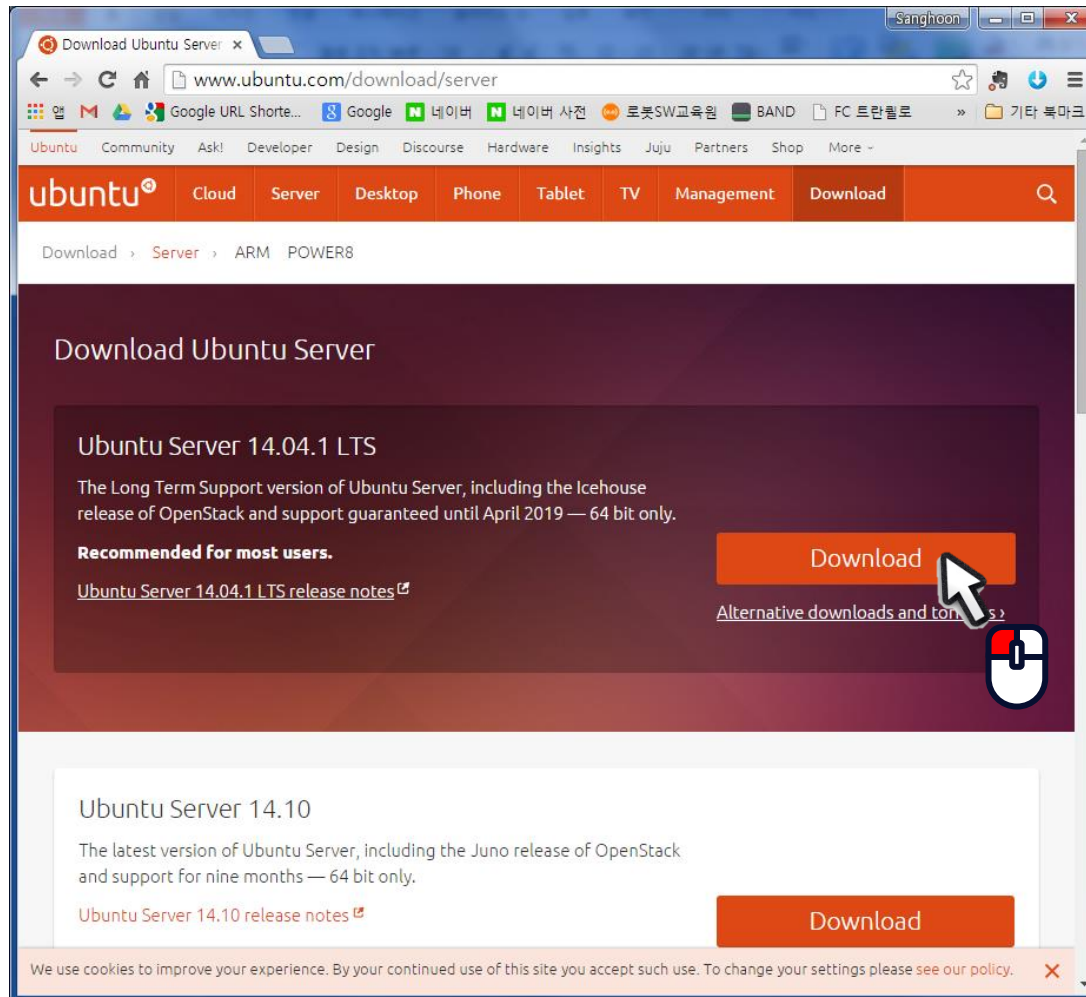
- ubuntu 14.04.3 다운로드
 - <http://www.ubuntu.com>



실습 2: 리눅스 설치

27

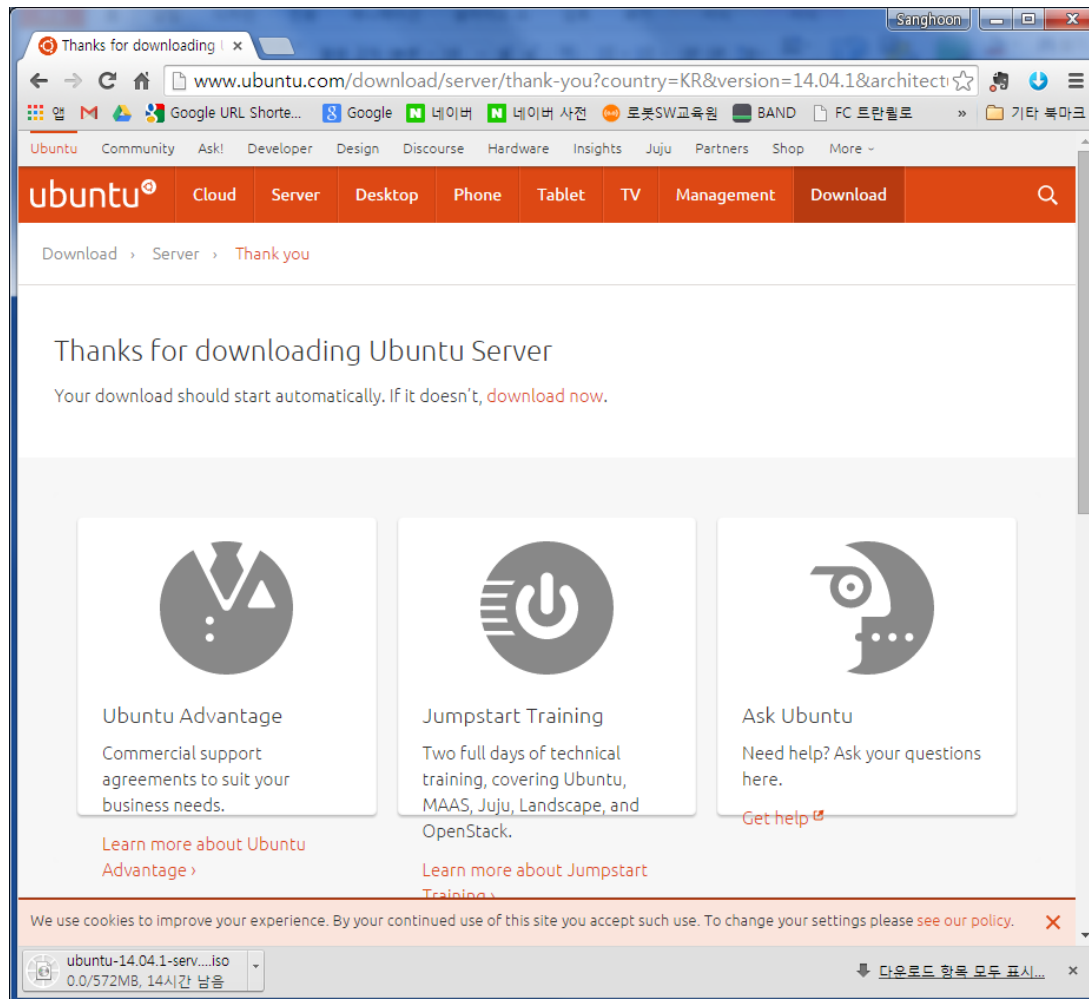
- ubuntu 14.04.3 다운로드
 - <http://www.ubuntu.com>



실습 2: 리눅스 설치

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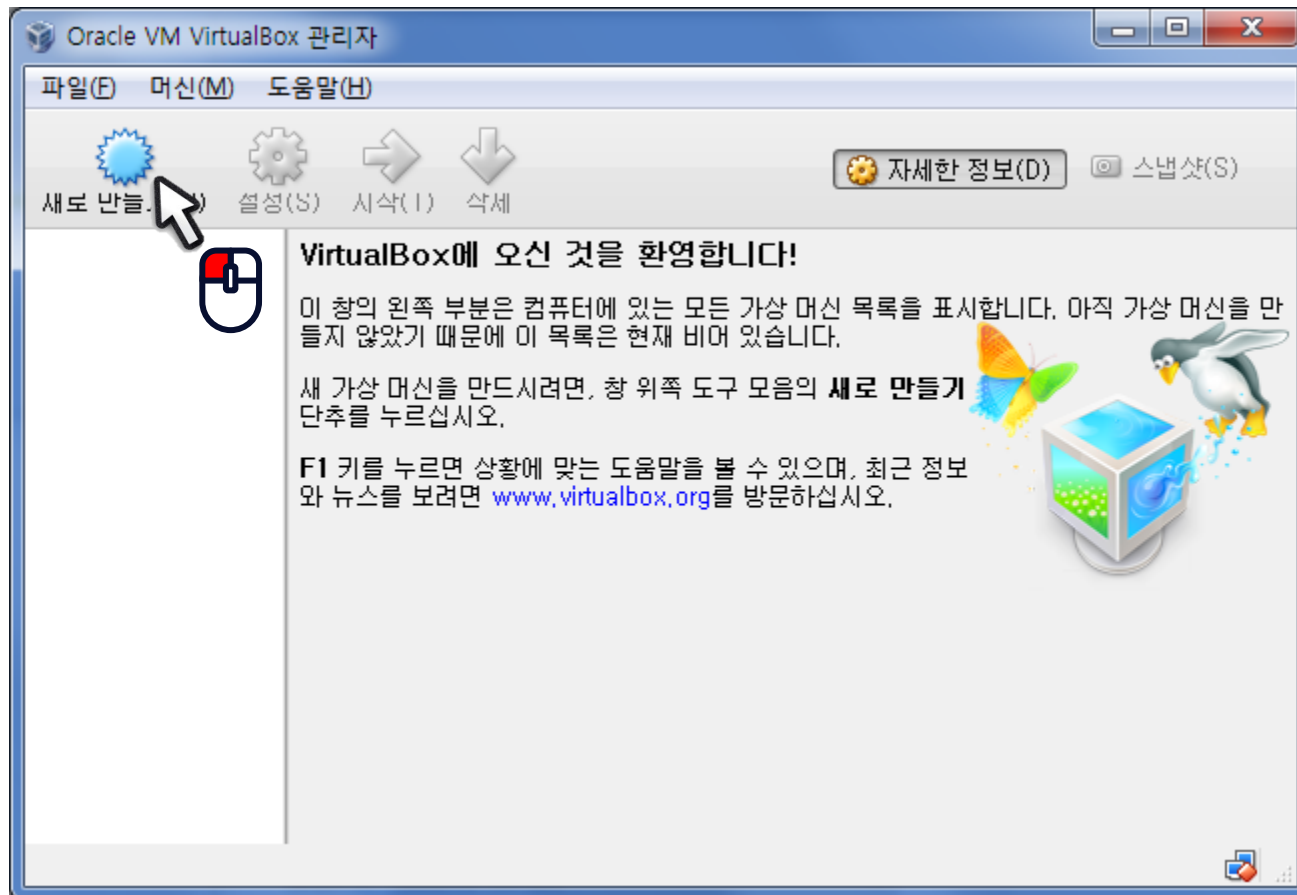
- ubuntu 14.04.1 다운로드
 - 파일명 : ubuntu-14.04.1-server-amd64.iso



실습 2: 리눅스 설치

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- 가상머신 생성



실습 2: 리눅스 설치

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- 가상머신 생성

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← 가상 머신 만들기

이름 및 운영 체제

새 가상 머신을 나타내는 이름을 입력하고 설치할 운영 체제를 선택하십시오. 입력한 이름은 VirtualBox에서 가상 머신을 식별하는 데 사용됩니다.

이름(N):

종류(T): 

버전(V):

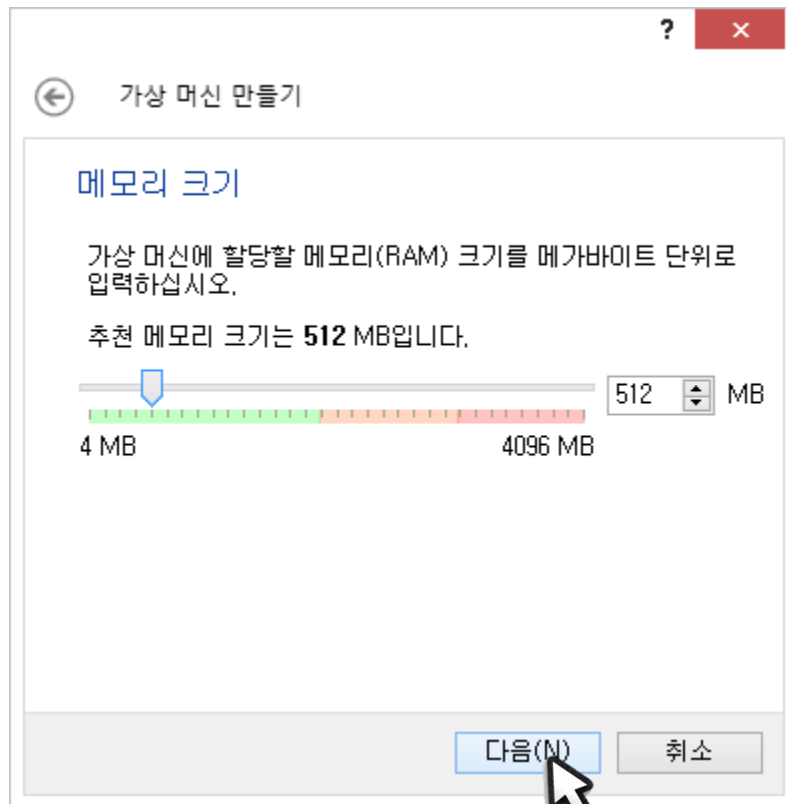
설명 숨기기

다음(N)

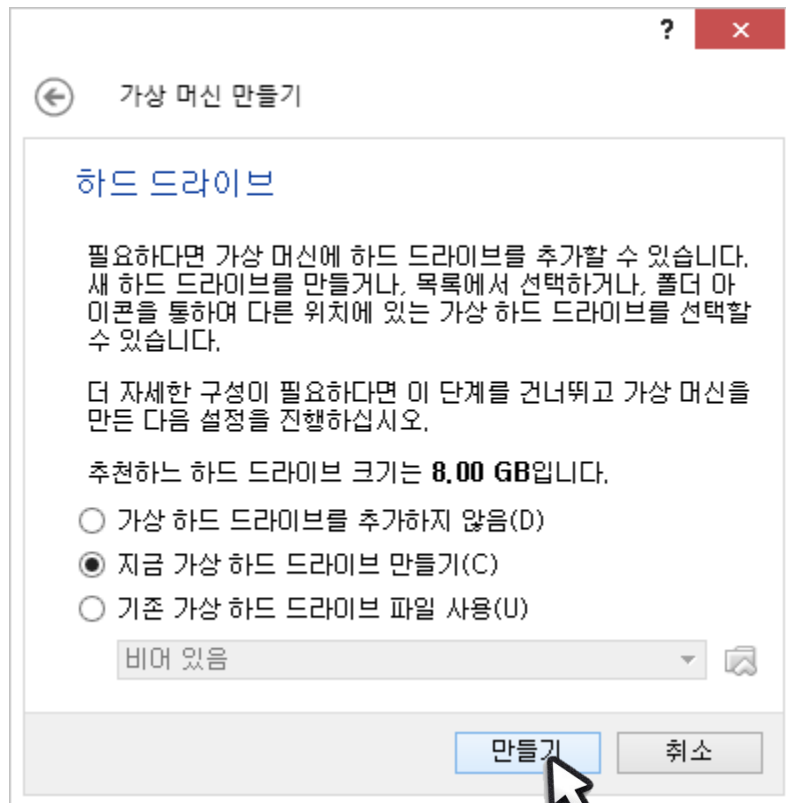
취소



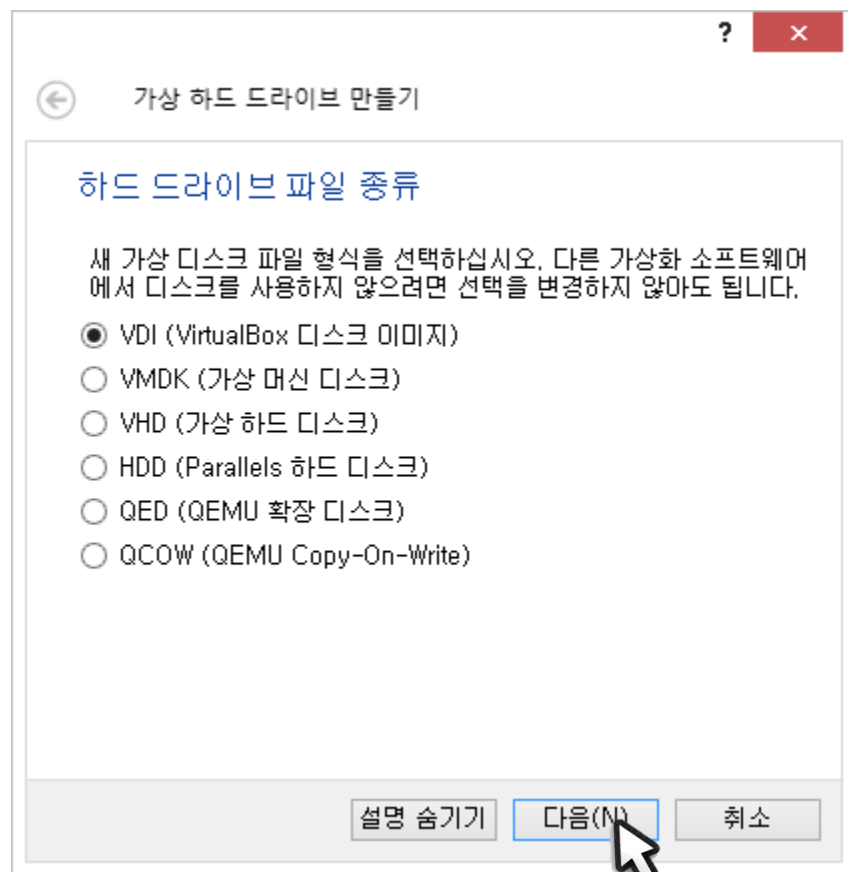
- 가상머신 생성



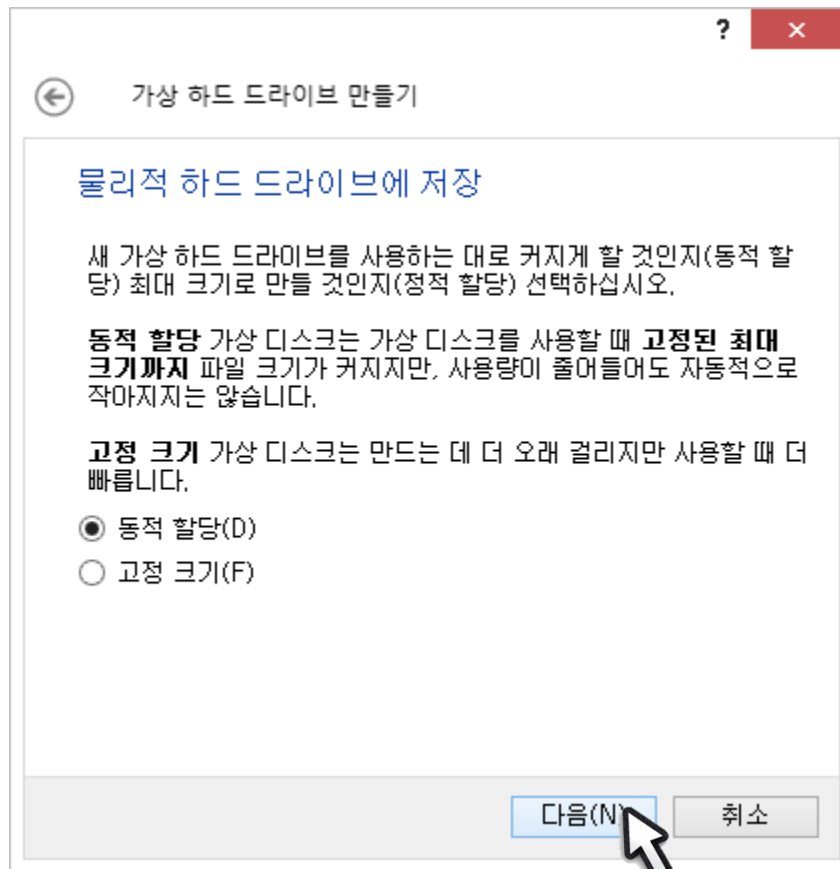
- 가상머신 생성



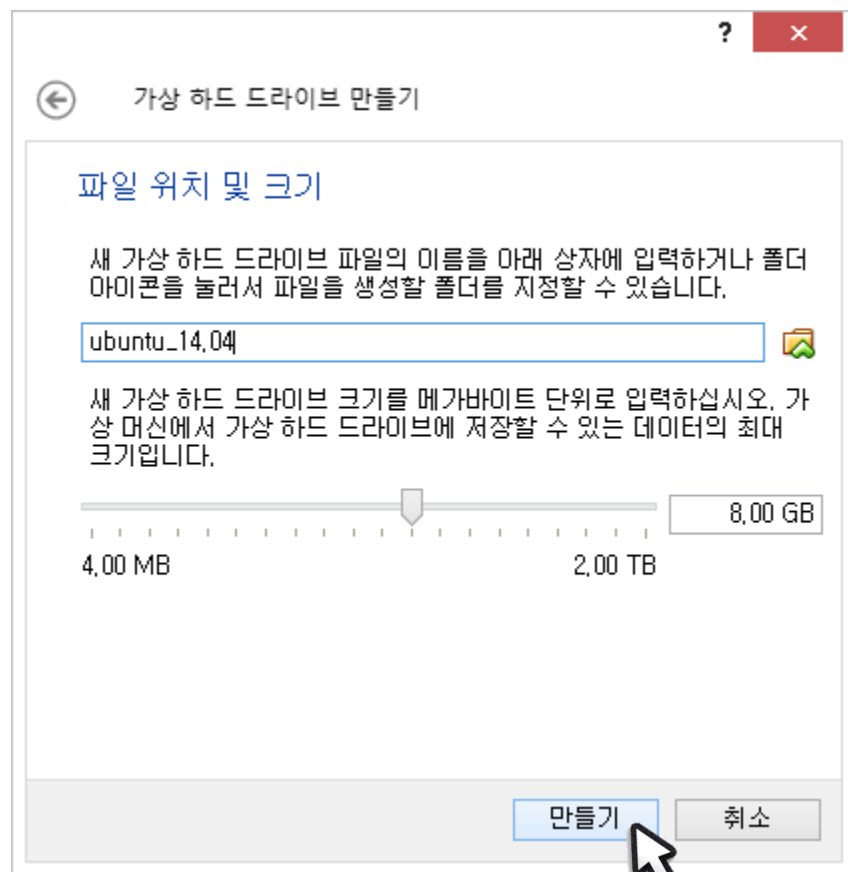
- 가상머신 생성



- 가상머신 생성



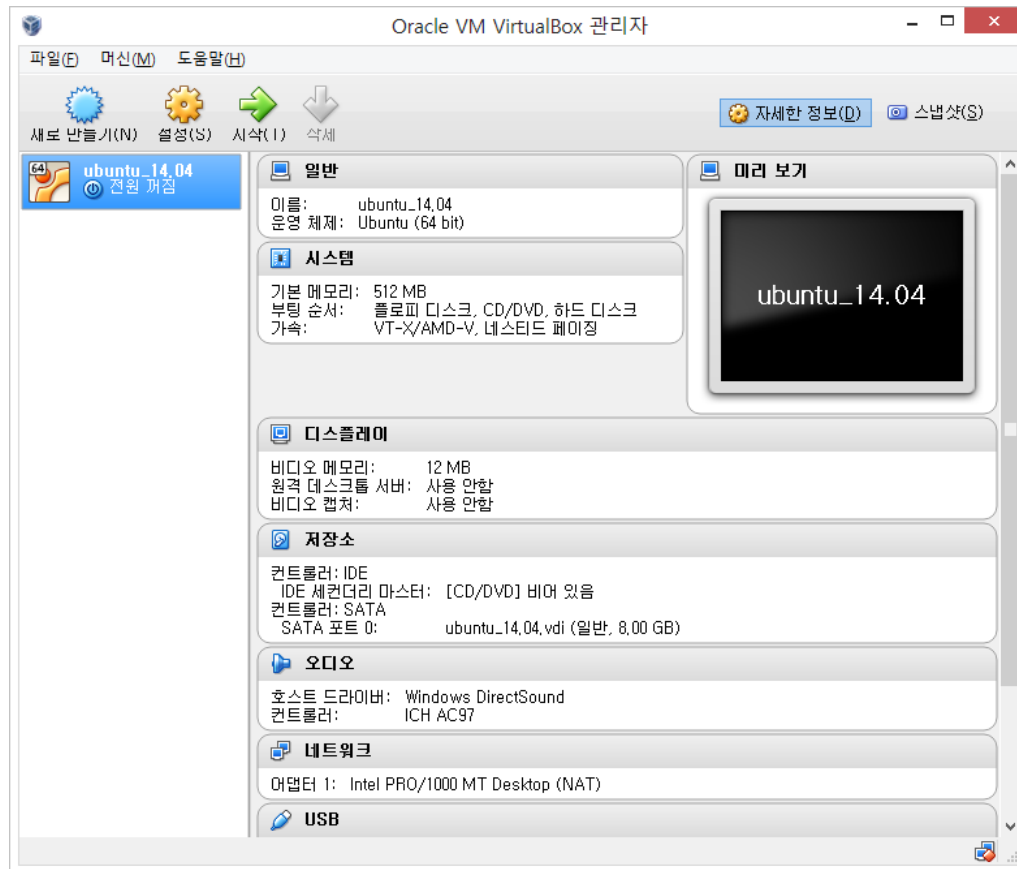
- 가상머신 생성



실습 2: 리눅스 설치

36

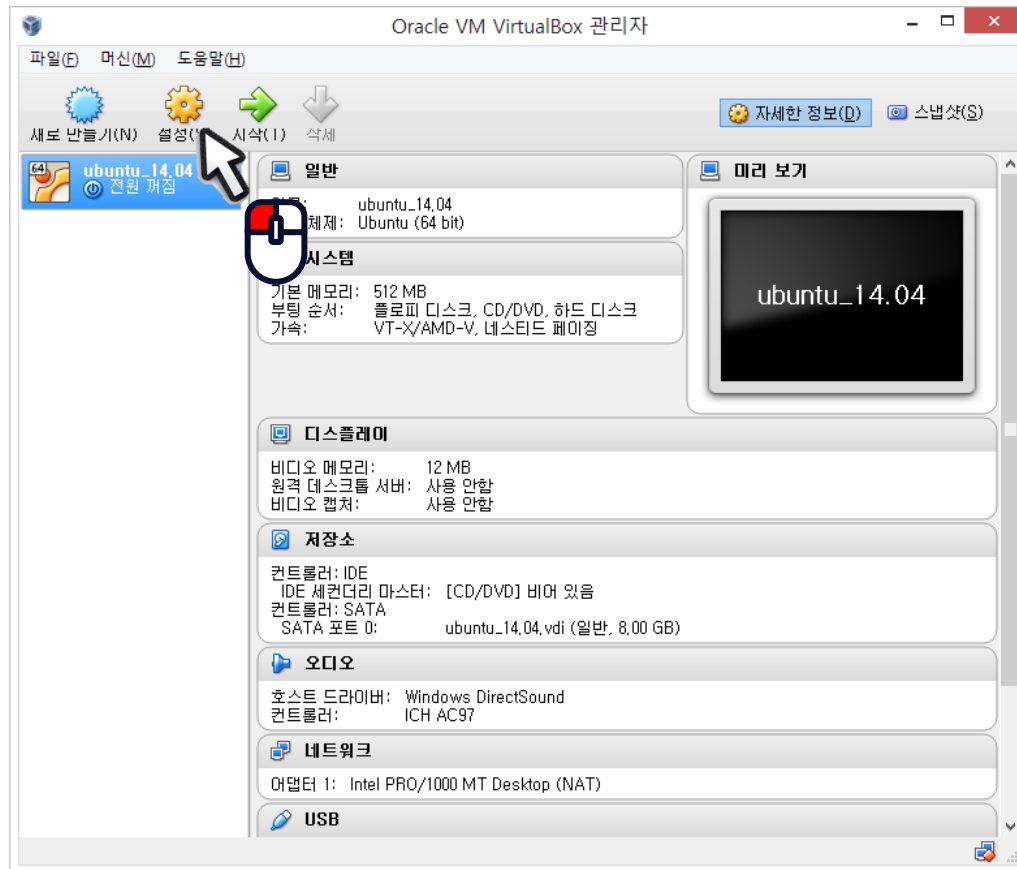
- 가상머신 생성



실습 2: 리눅스 설치

37

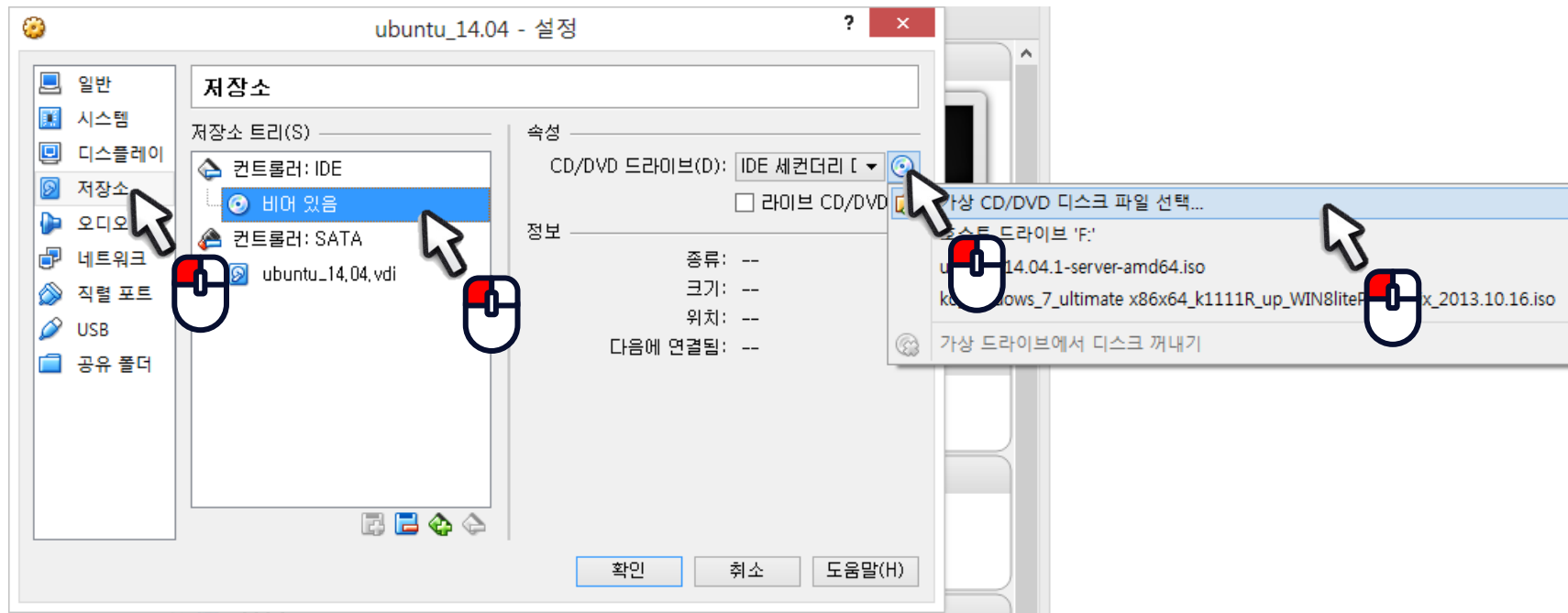
- 가상머신 생성



실습 2: 리눅스 설치

38

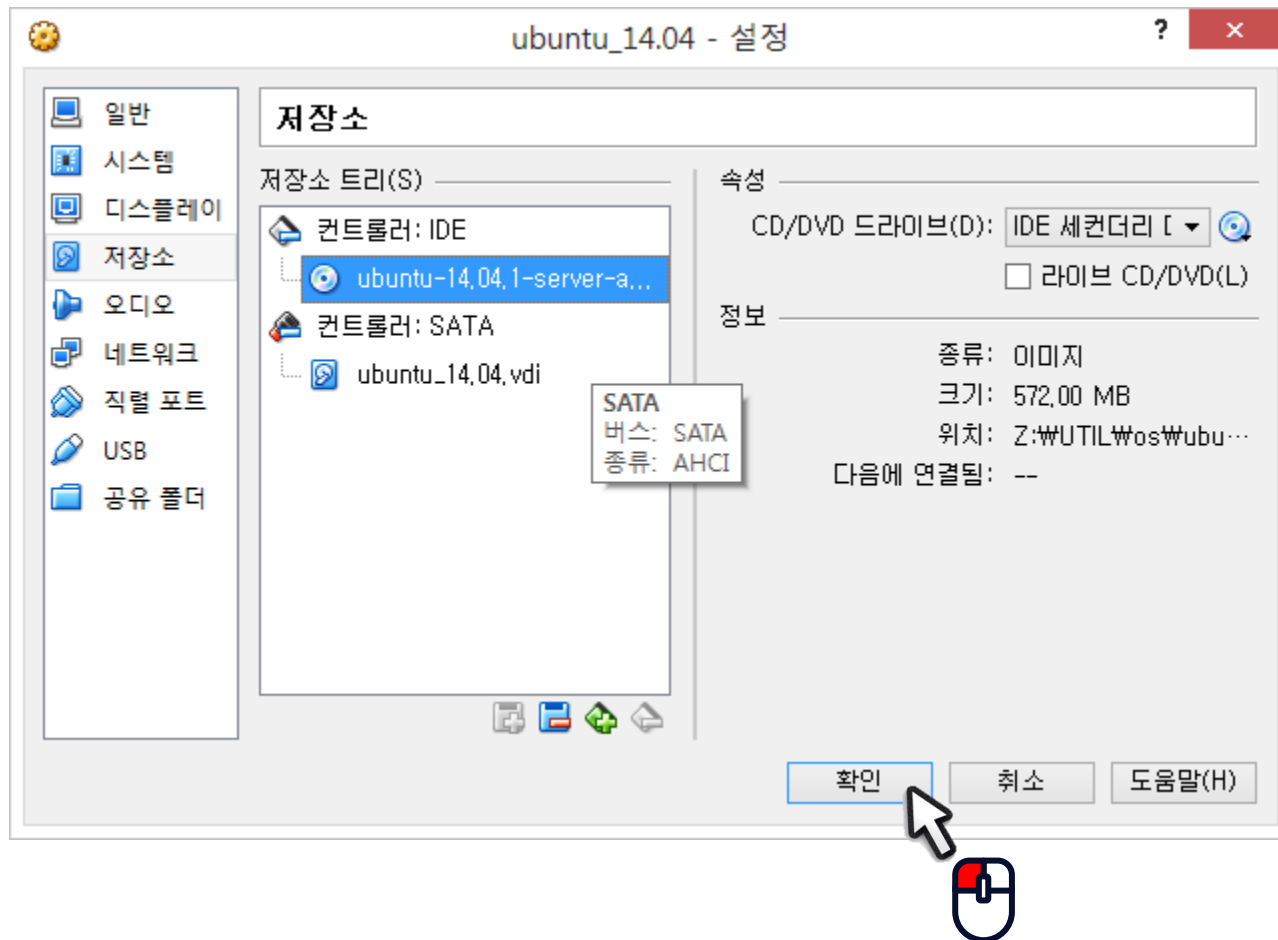
- ubuntu 이미지 삽입



실습 2: 리눅스 설치

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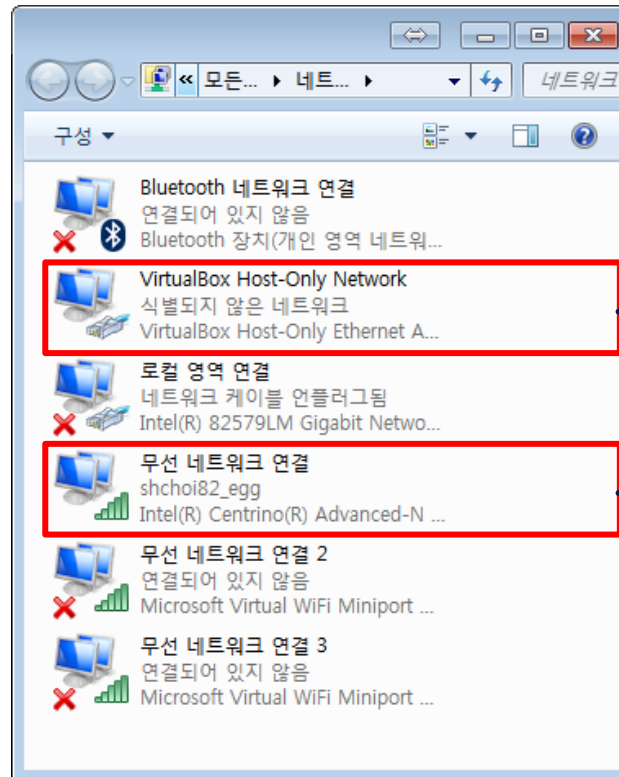
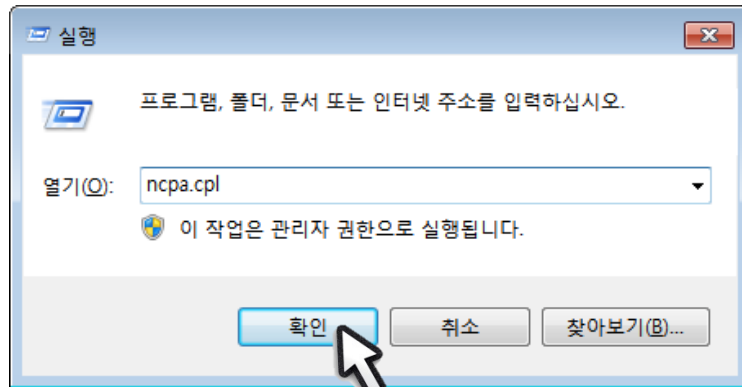
- ubuntu 이미지 삽입



실습 2: 리눅스 설치

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- 네트워크 확인
 - 실행 -> ncpa.cpl



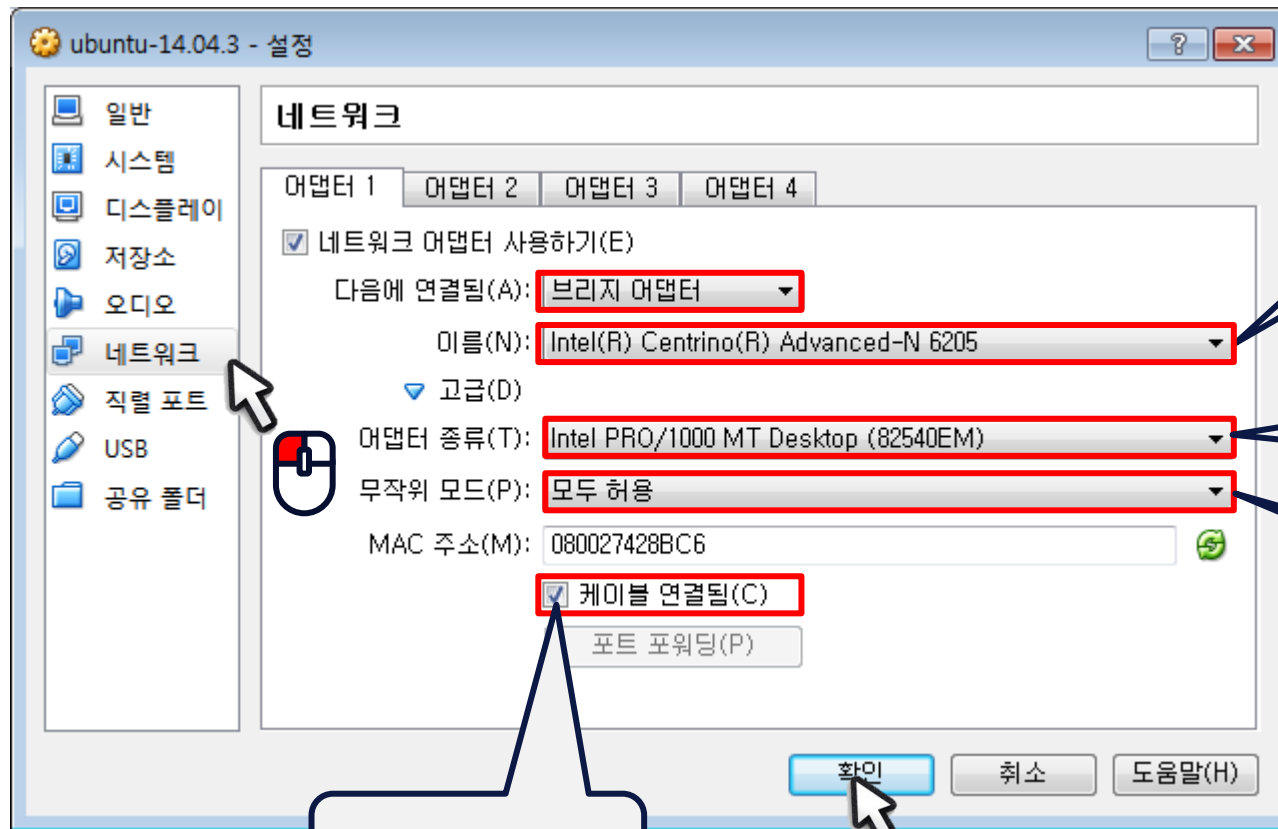
VirtualBox
가상 네트워크

실제 인터넷이
연결된 네트워크

실습 2: 리눅스 설치

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• 네트워크 설정



실제 인터넷이
연결된 네트워크

기본 설정 그대로

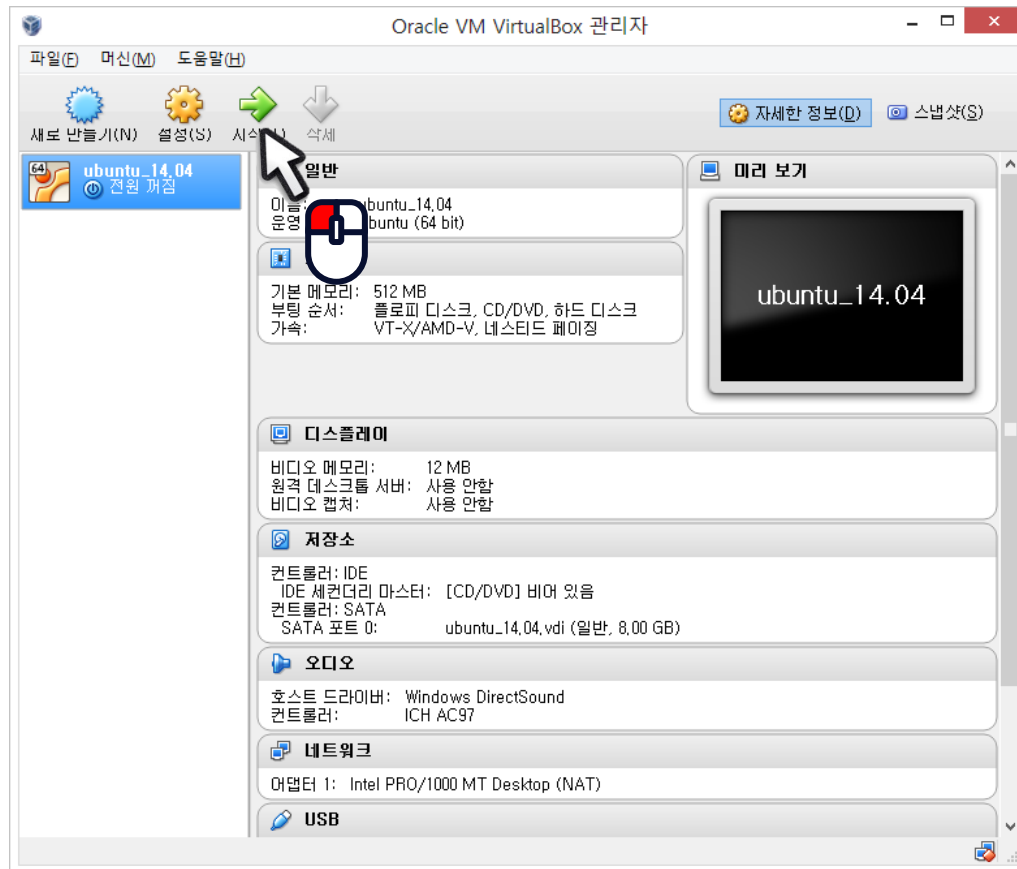
모두 허용

케이블 연결됨 체크

실습 2: 리눅스 설치

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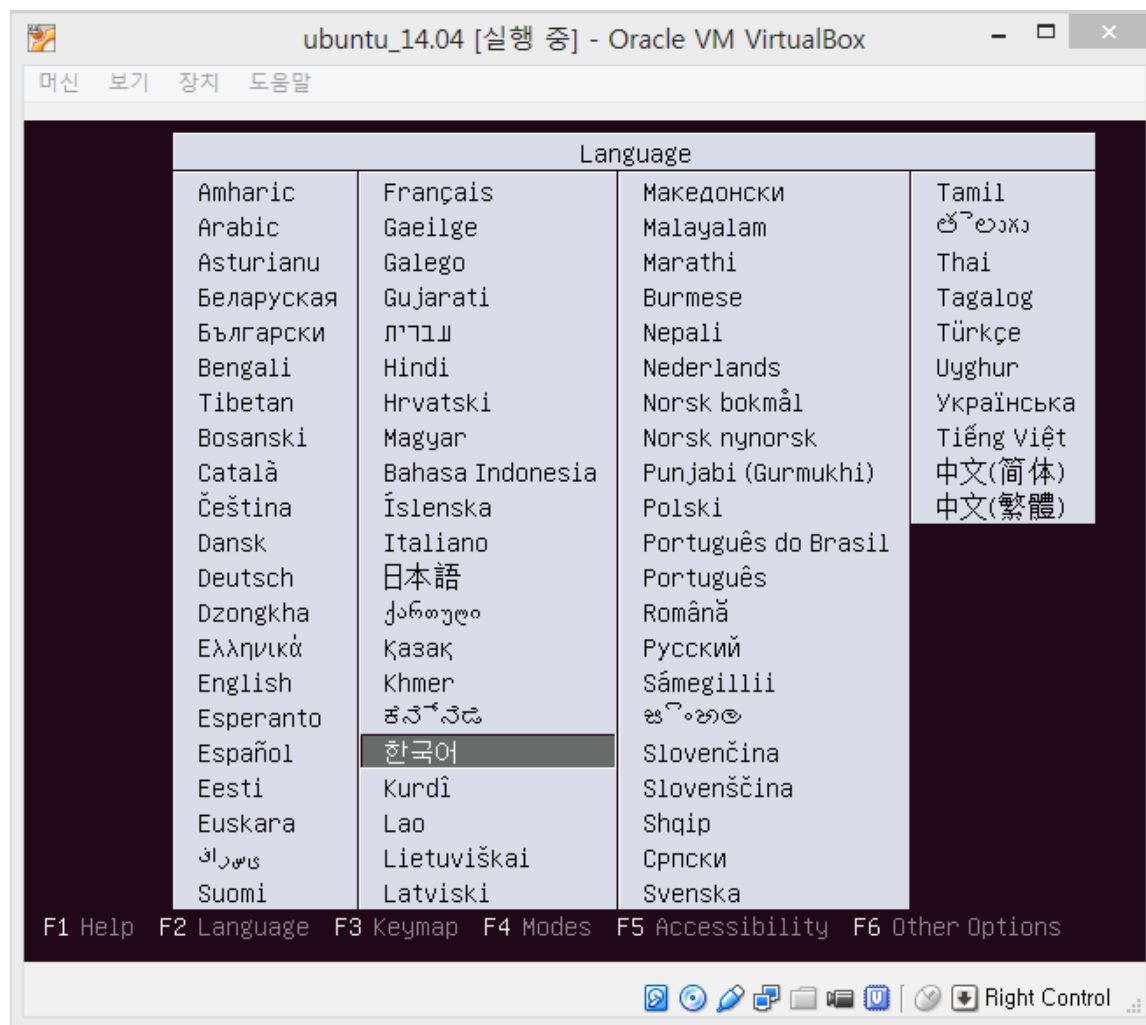
- 가상머신 생성



실습 2: 리눅스 설치

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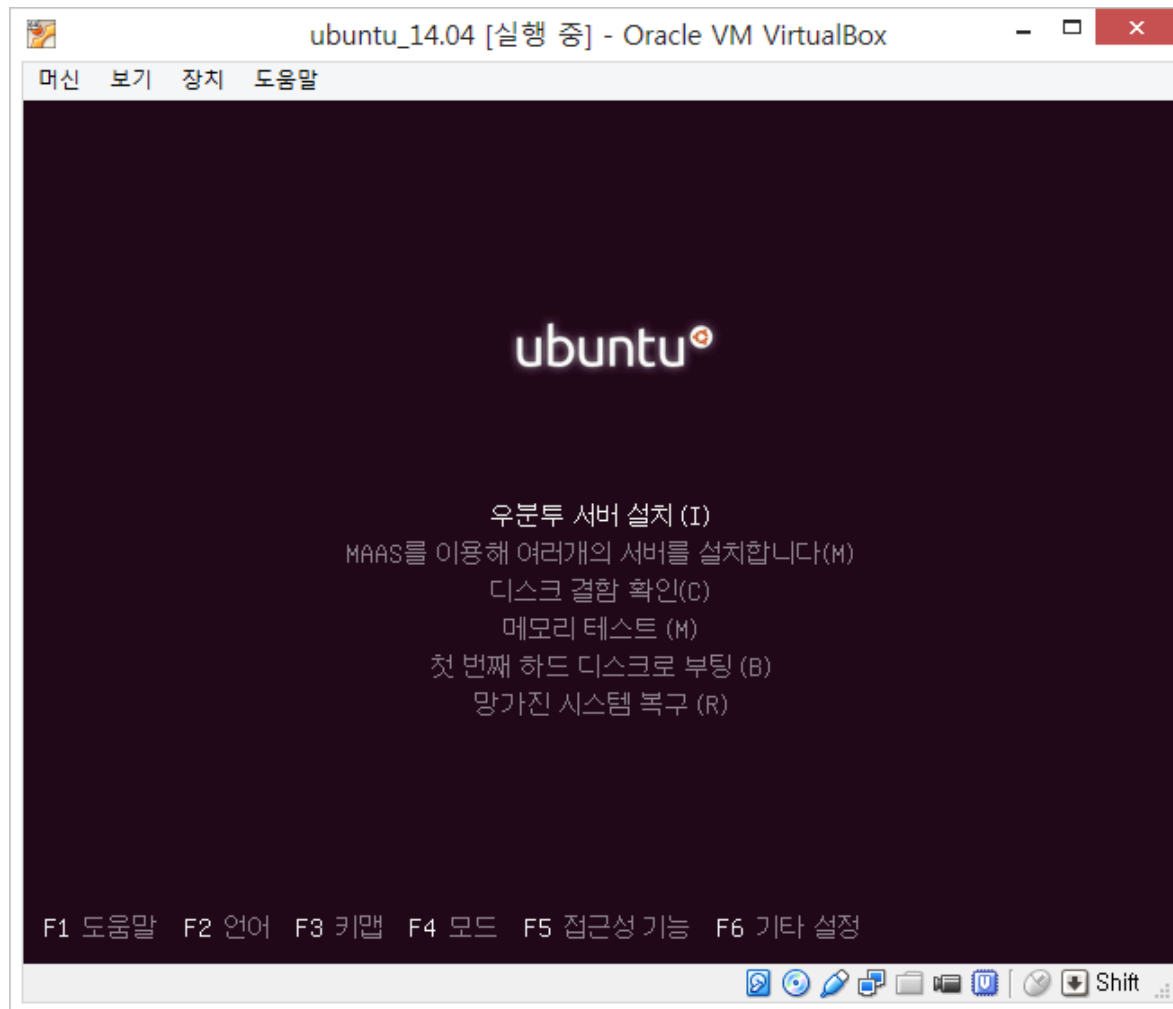
- 가상머신 시작



실습 2: 리눅스 설치

44

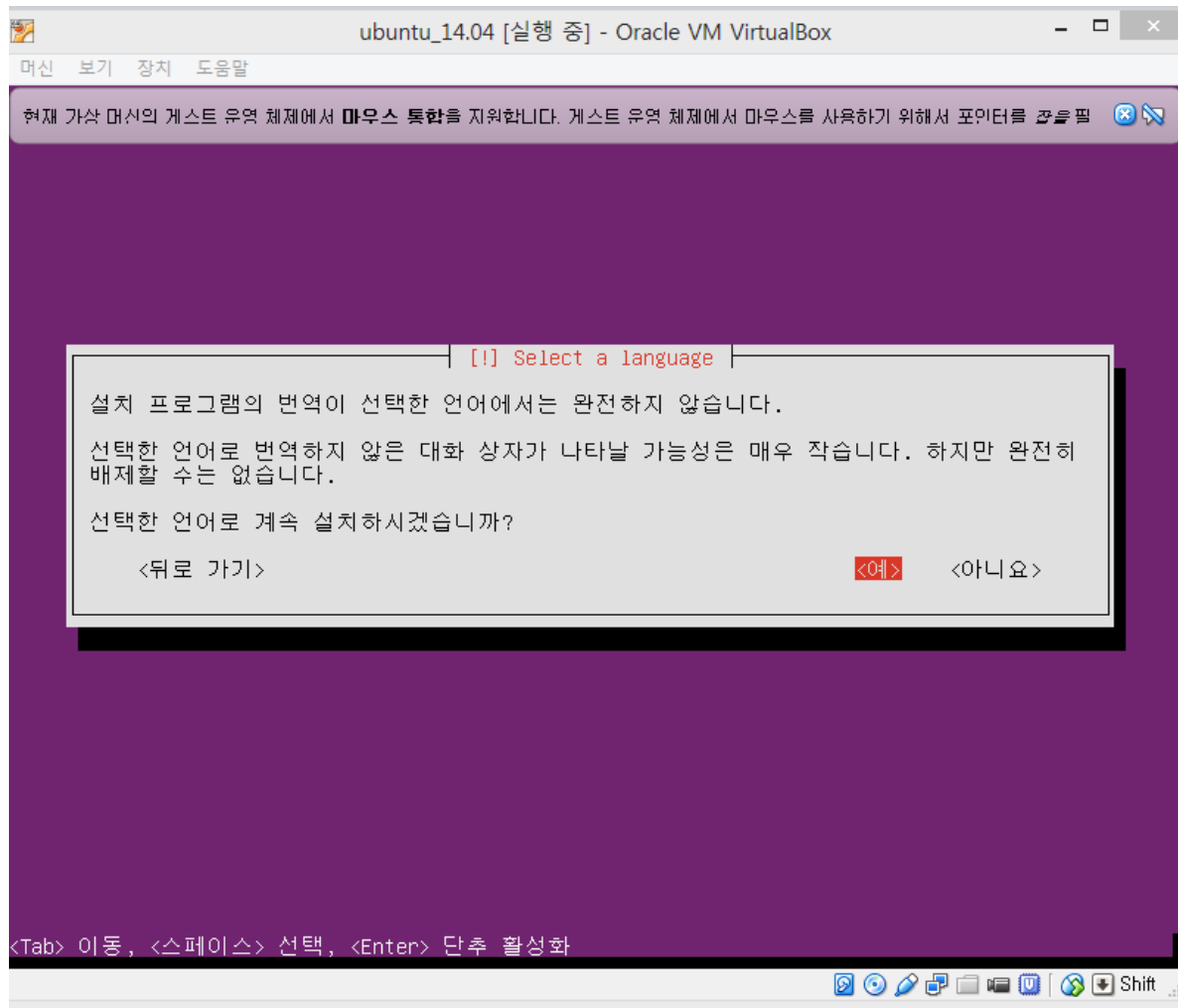
- 리눅스 설치



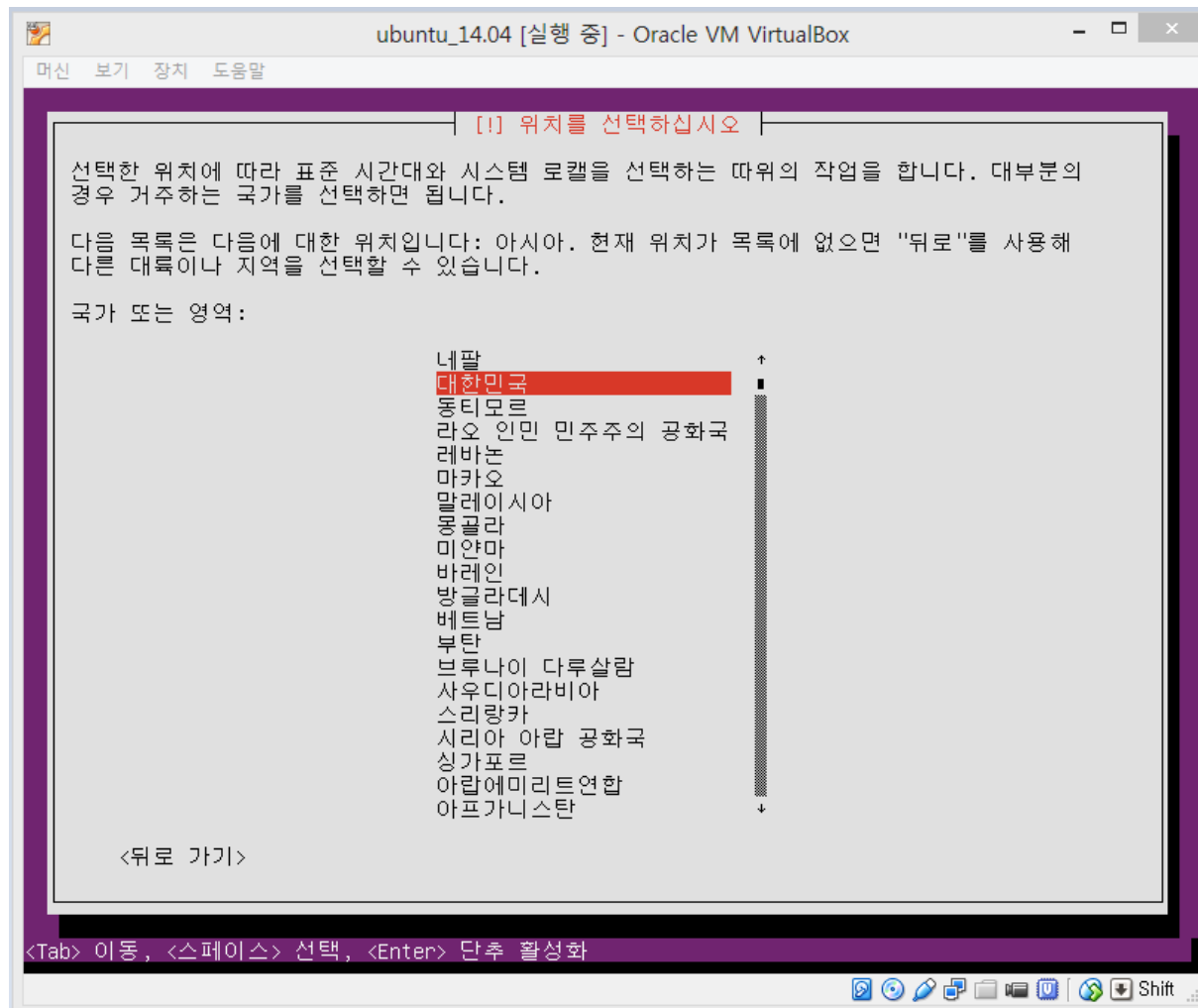
실습 2: 리눅스 설치

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- 리눅스 설치



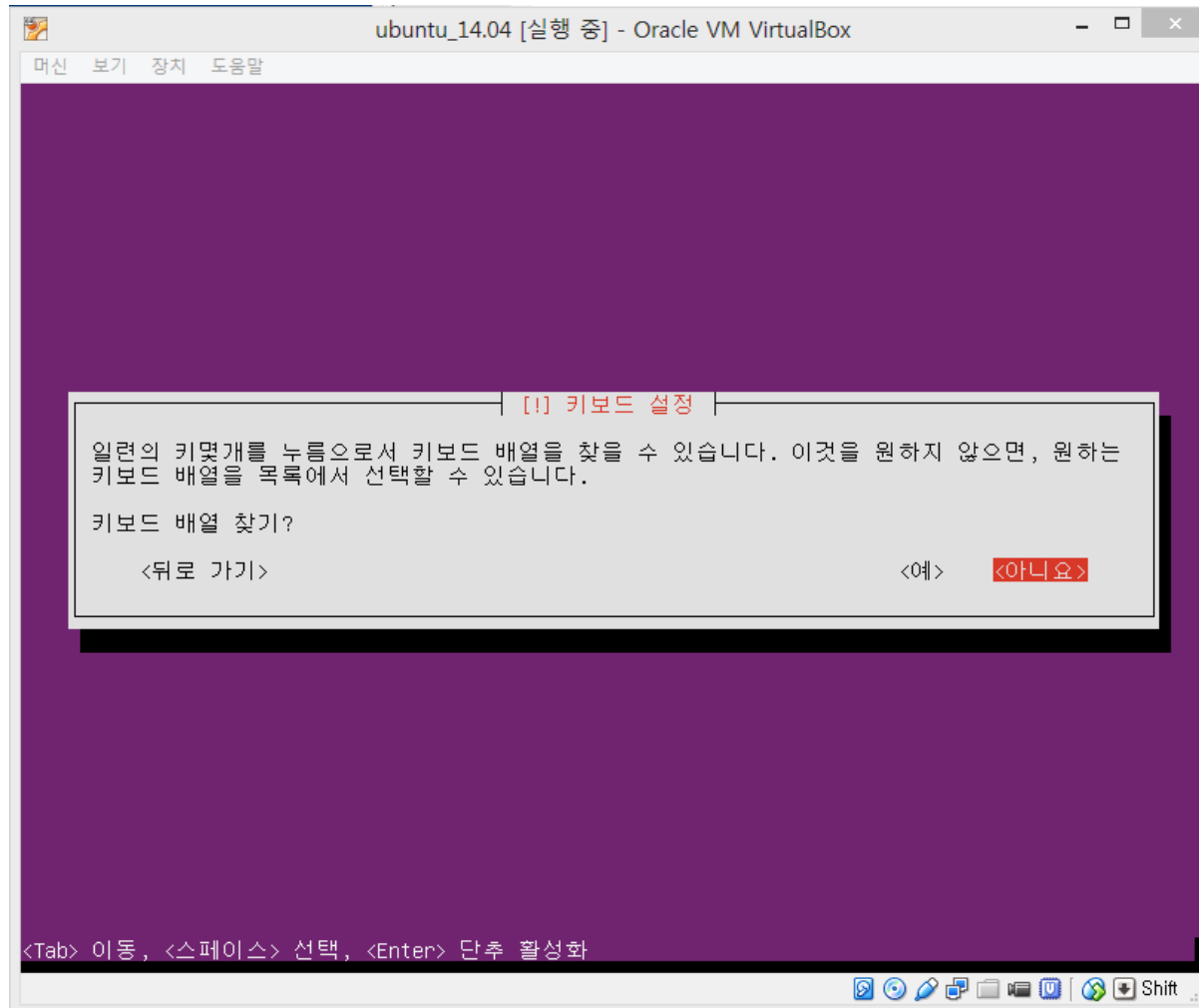
- 리눅스 설치



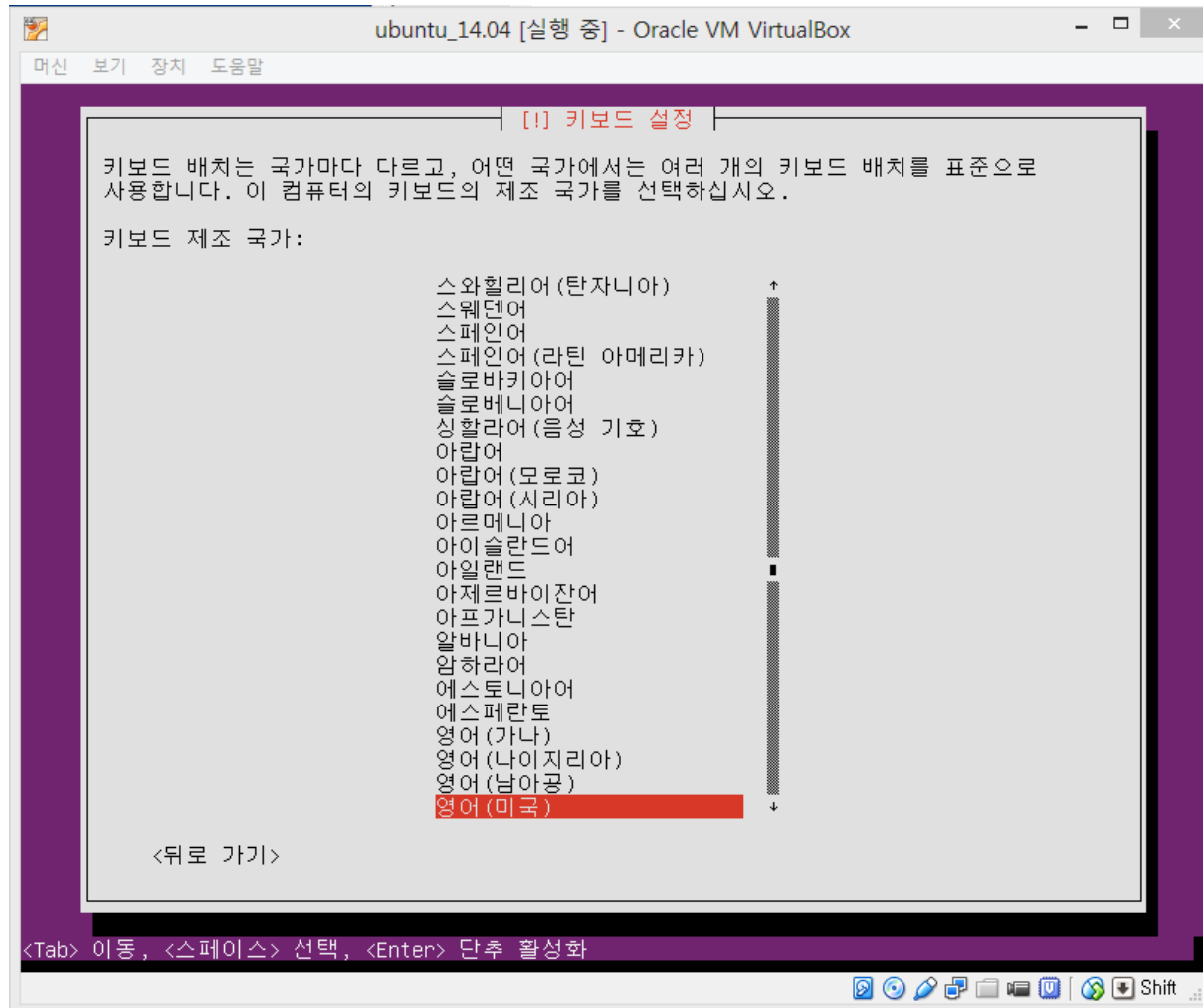
실습 2: 리눅스 설치

47

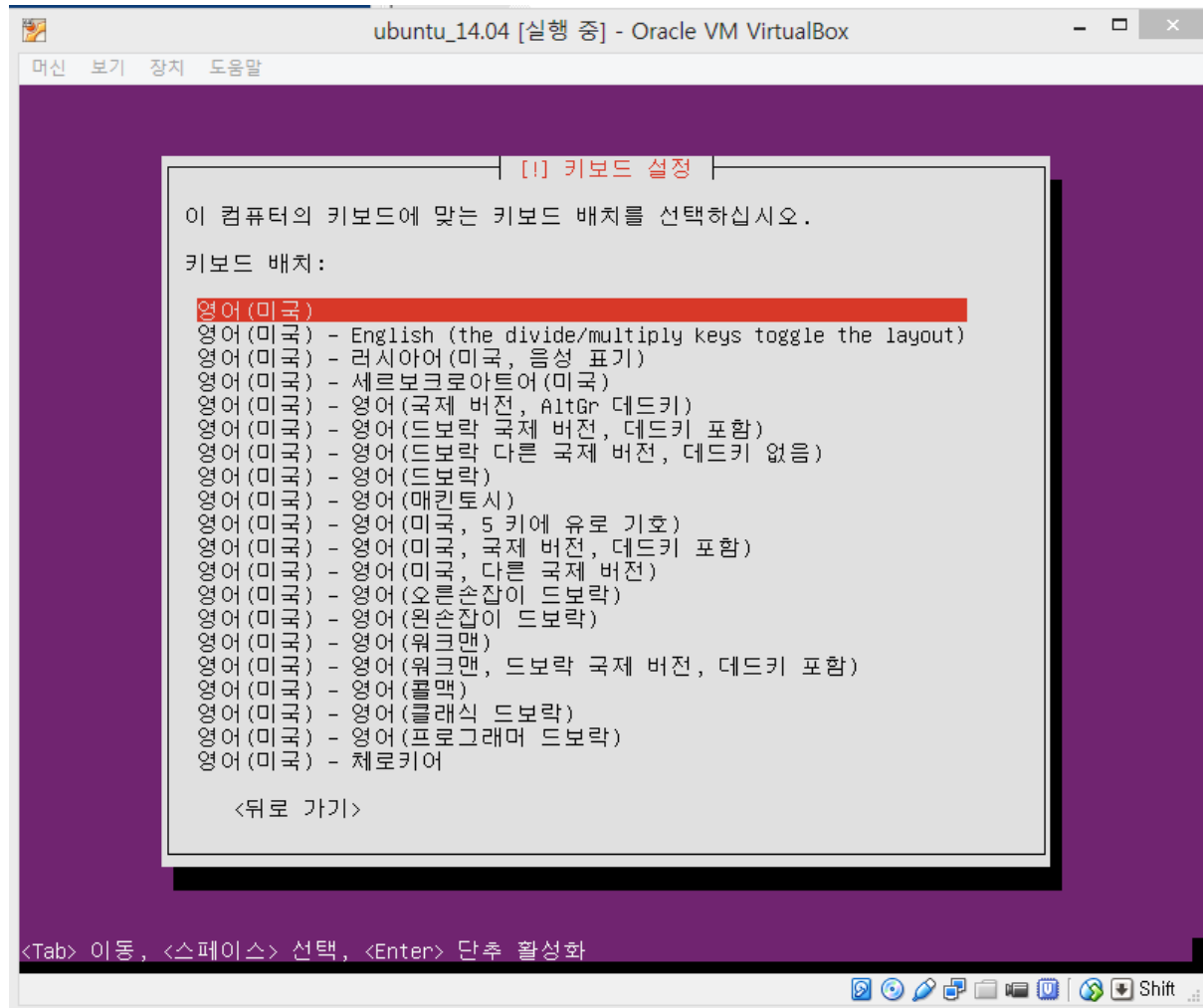
- 리눅스 설치



- 리눅스 설치



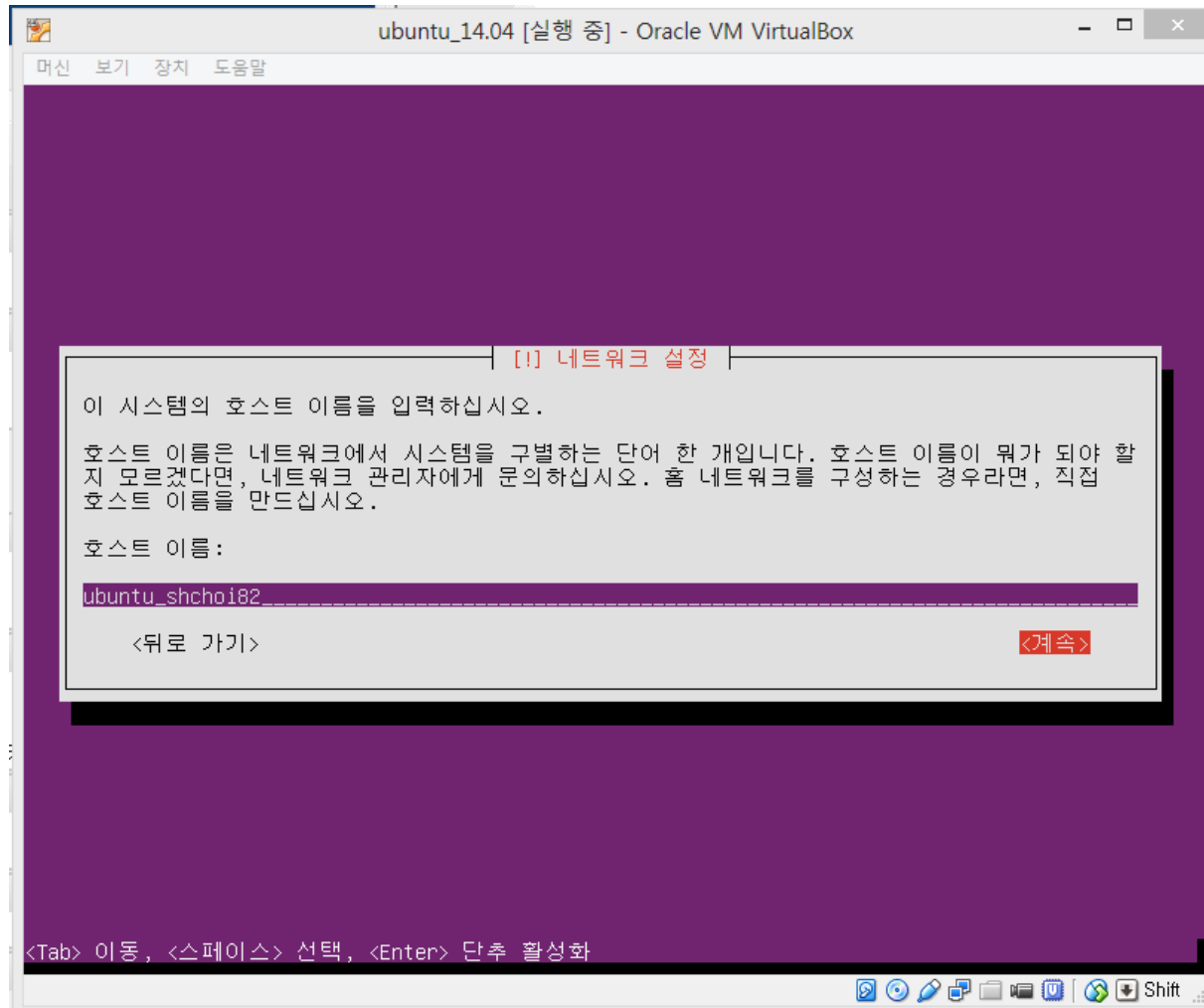
• 리눅스 설치



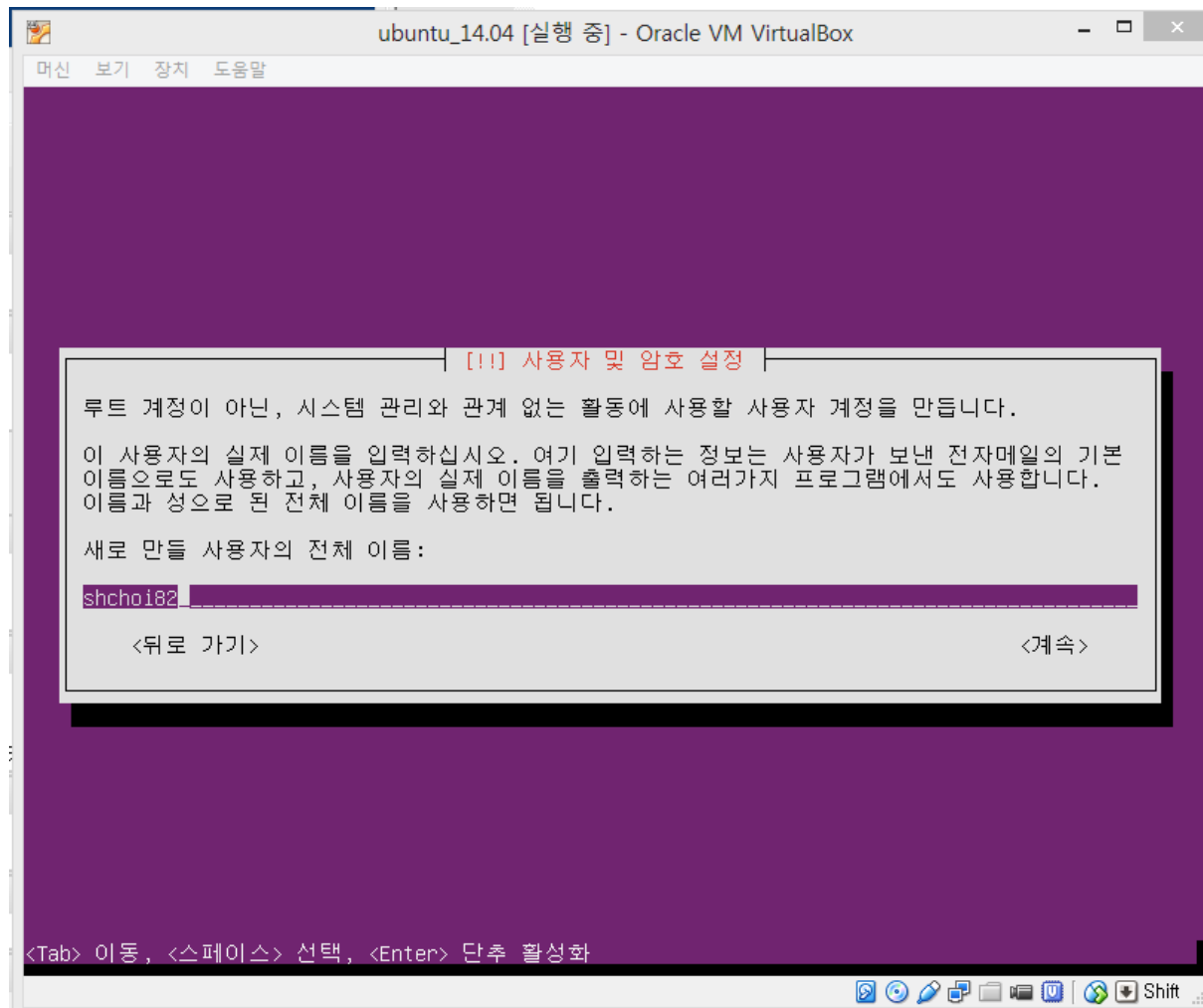
실습 2: 리눅스 설치

50

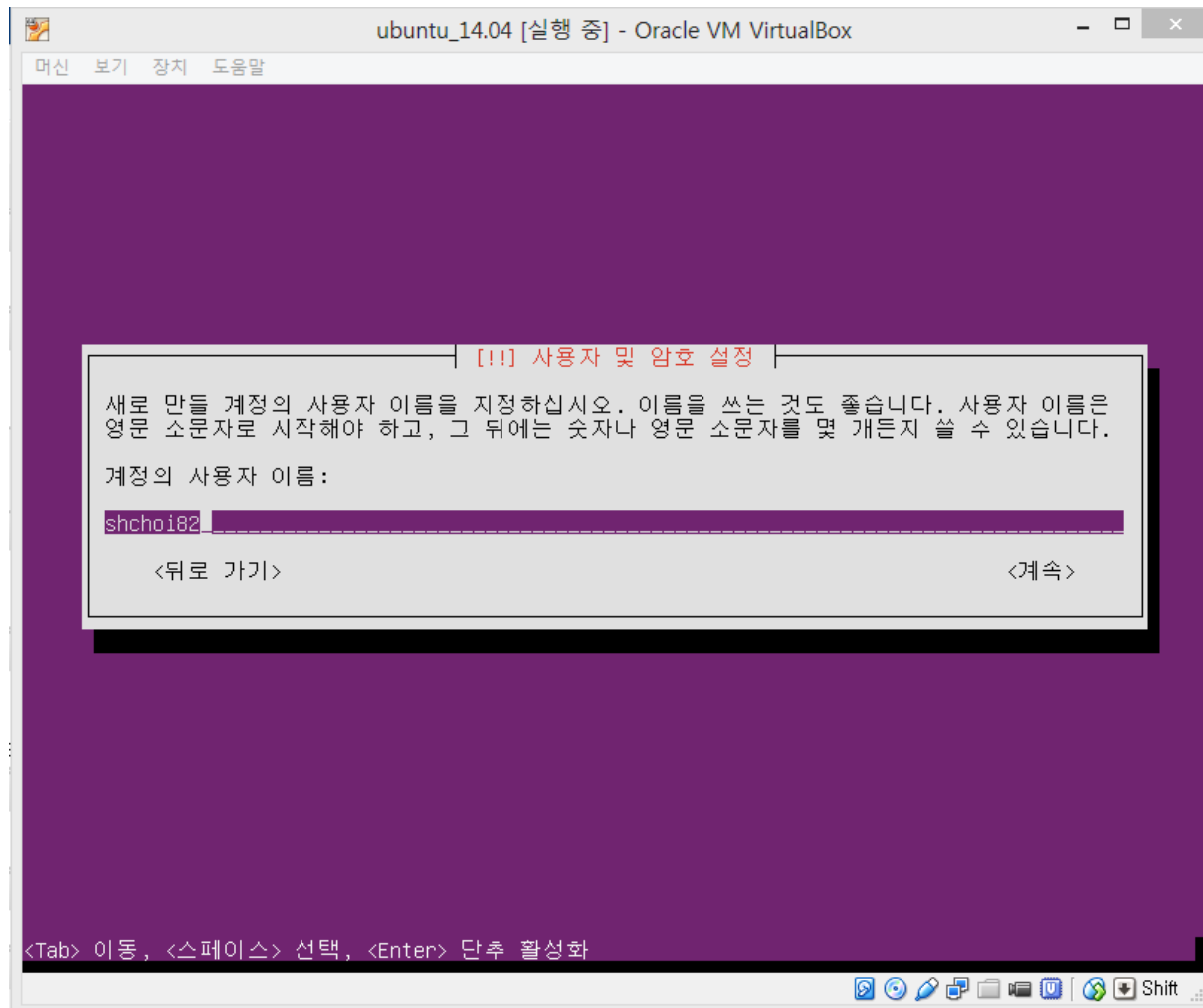
- 리눅스 설치



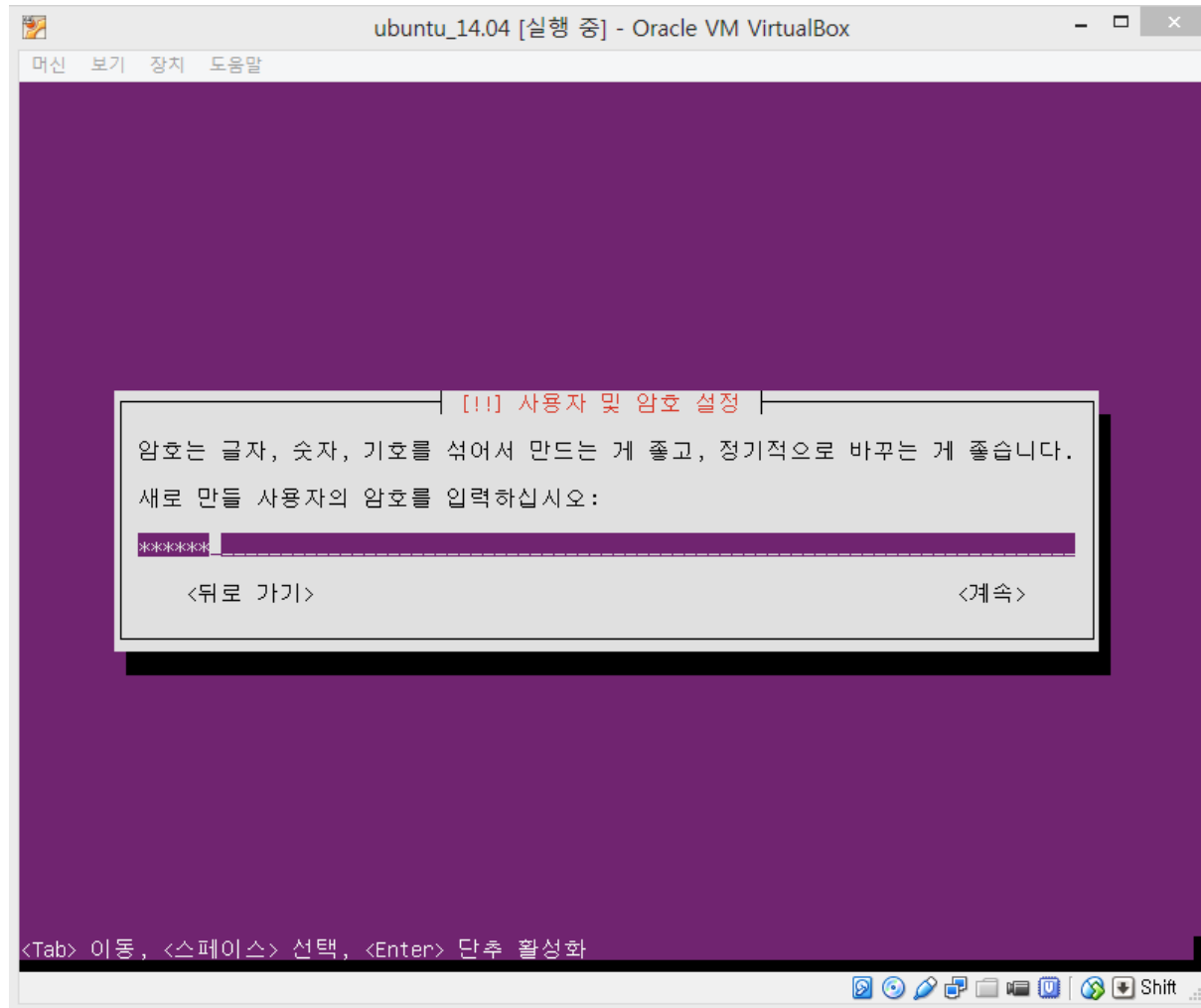
- 리눅스 설치



- 리눅스 설치



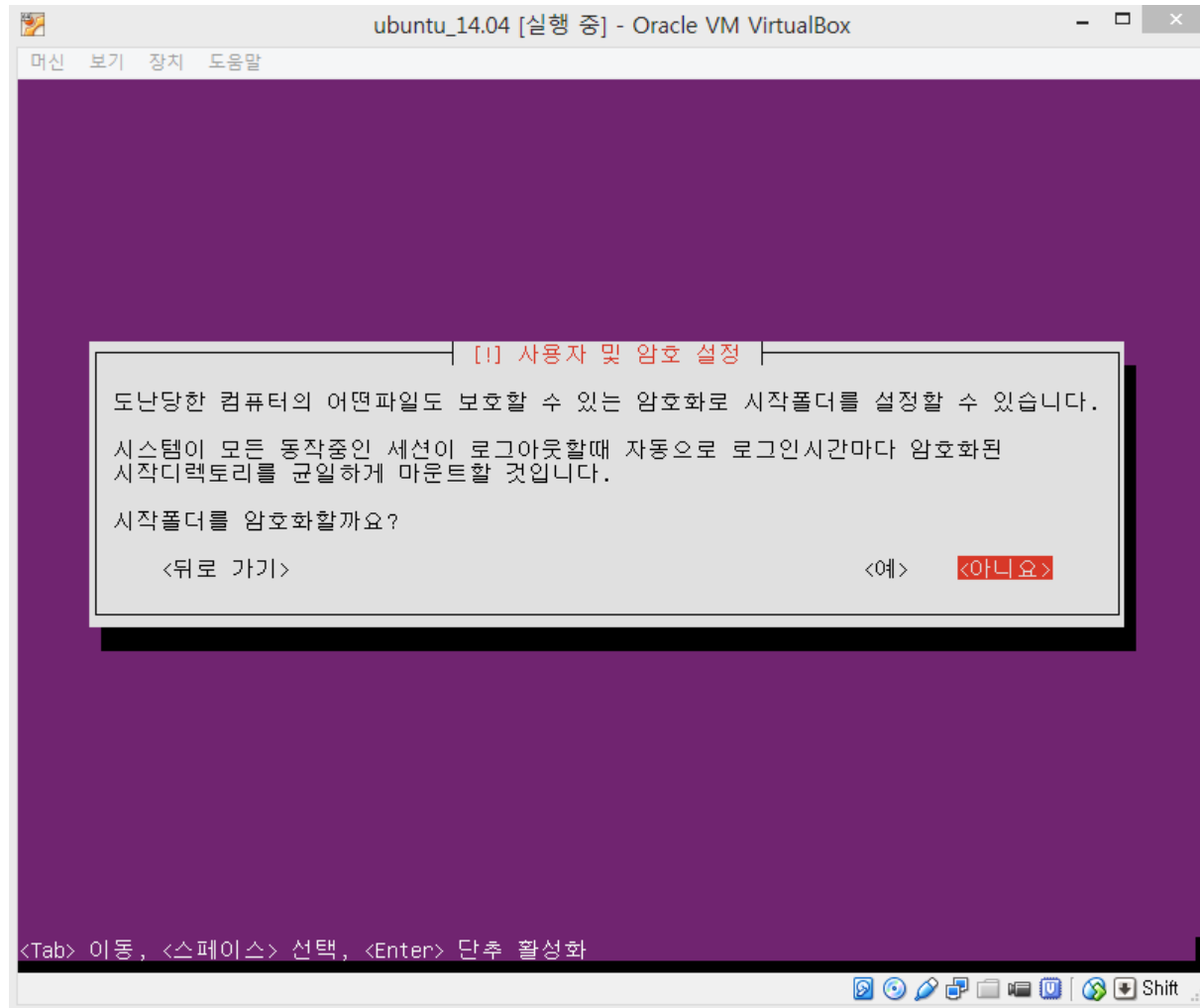
- 리눅스 설치



실습 2: 리눅스 설치

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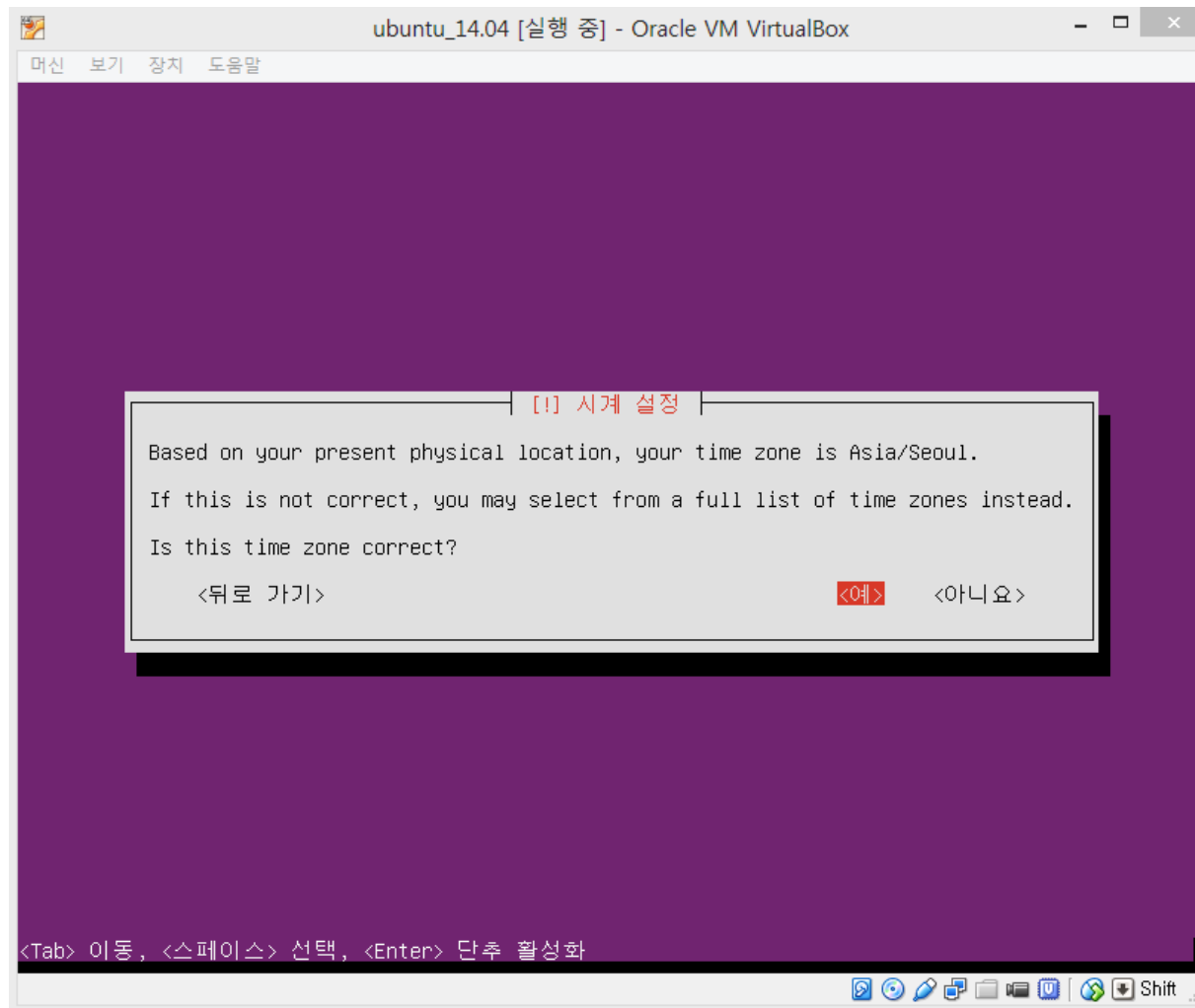
- 리눅스 설치



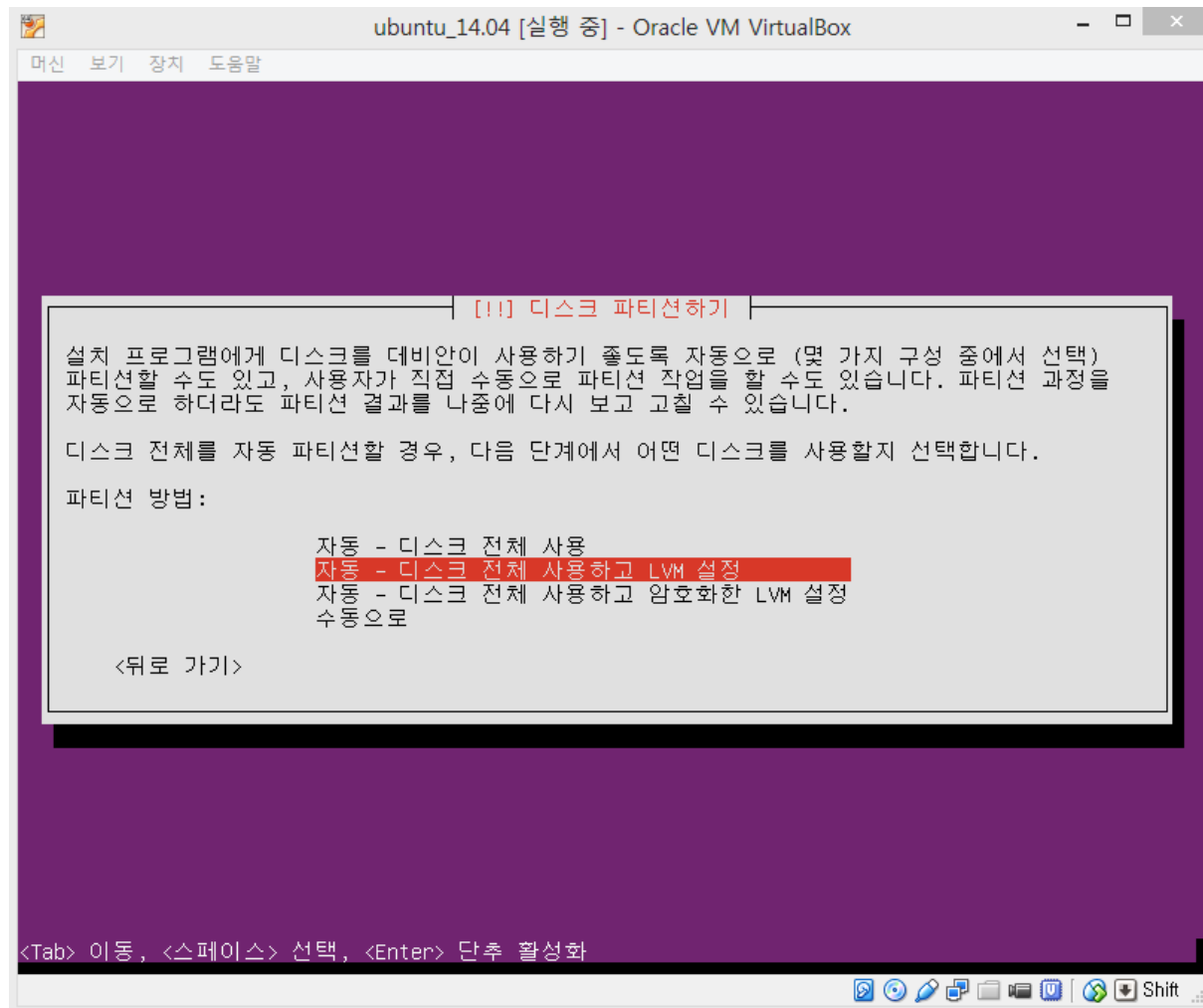
실습 2: 리눅스 설치

55

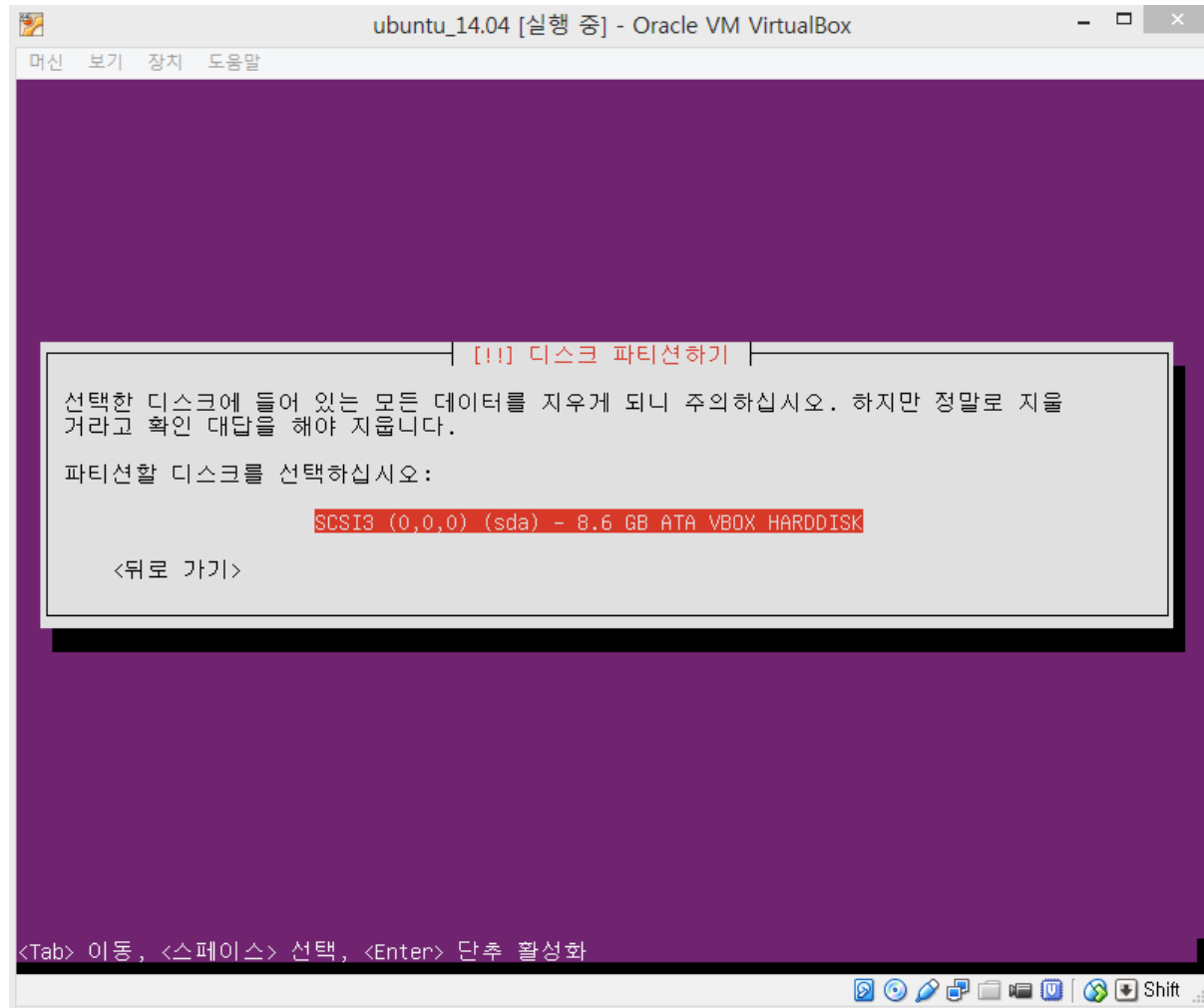
- 리눅스 설치



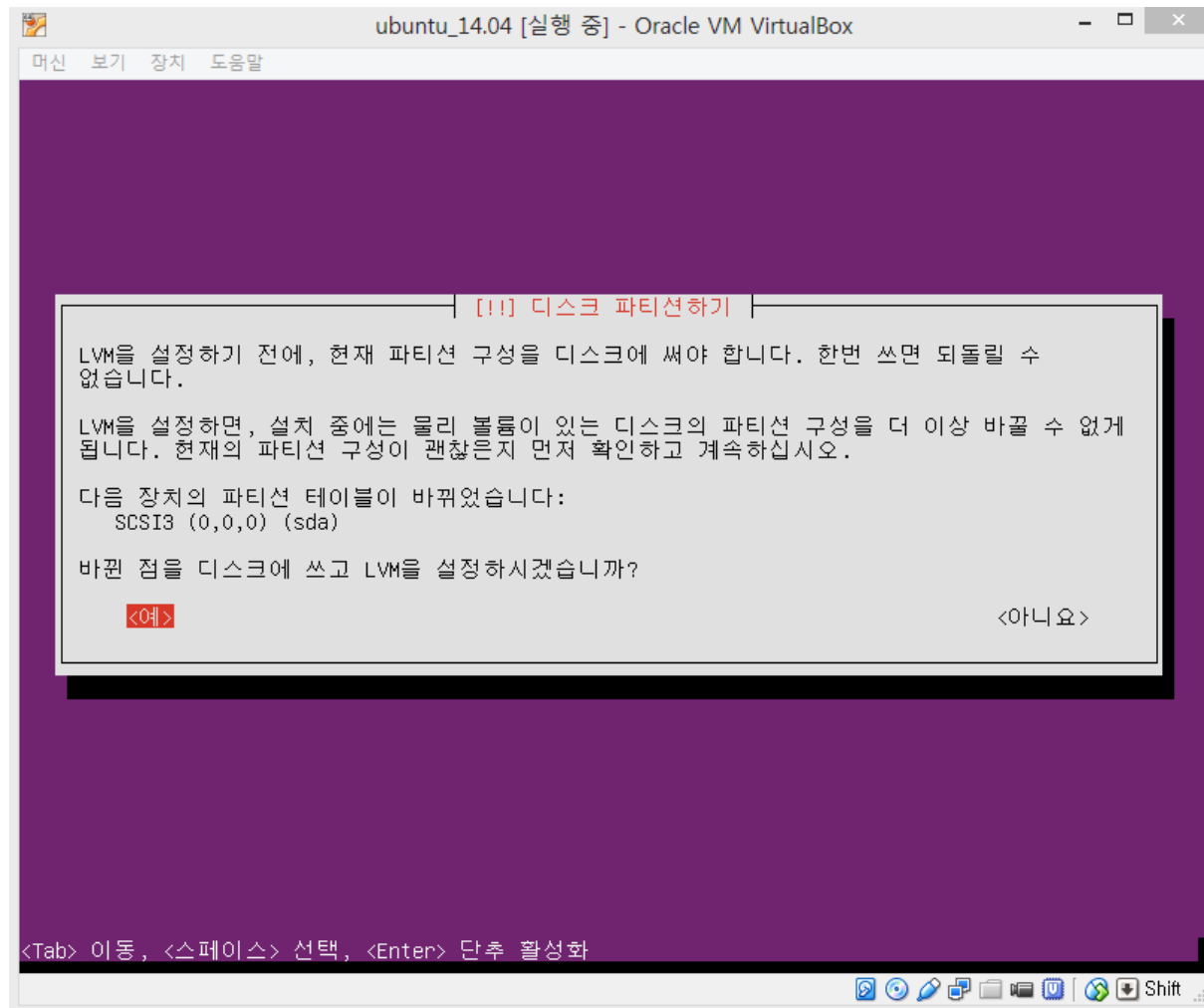
- 리눅스 설치



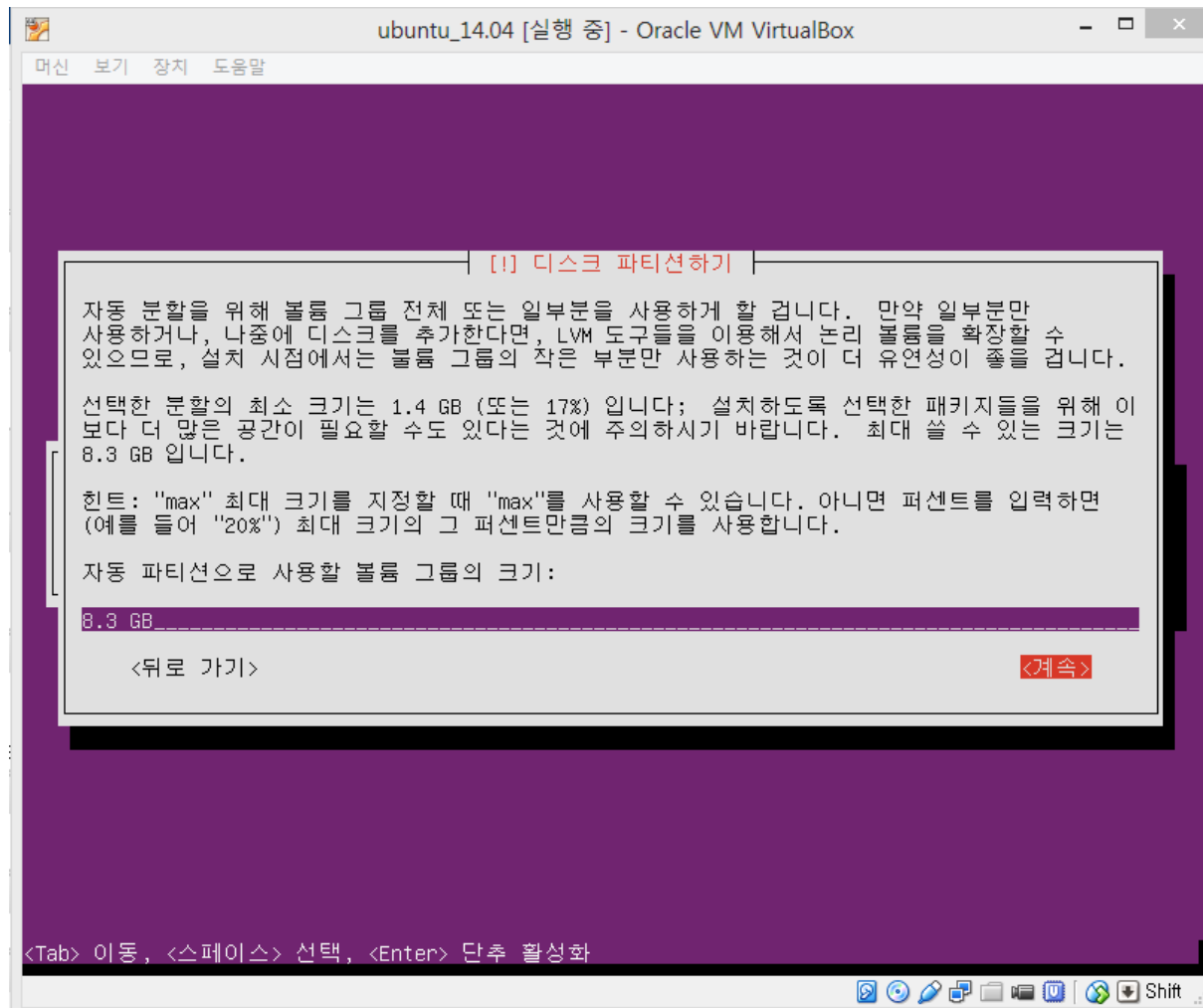
- 리눅스 설치



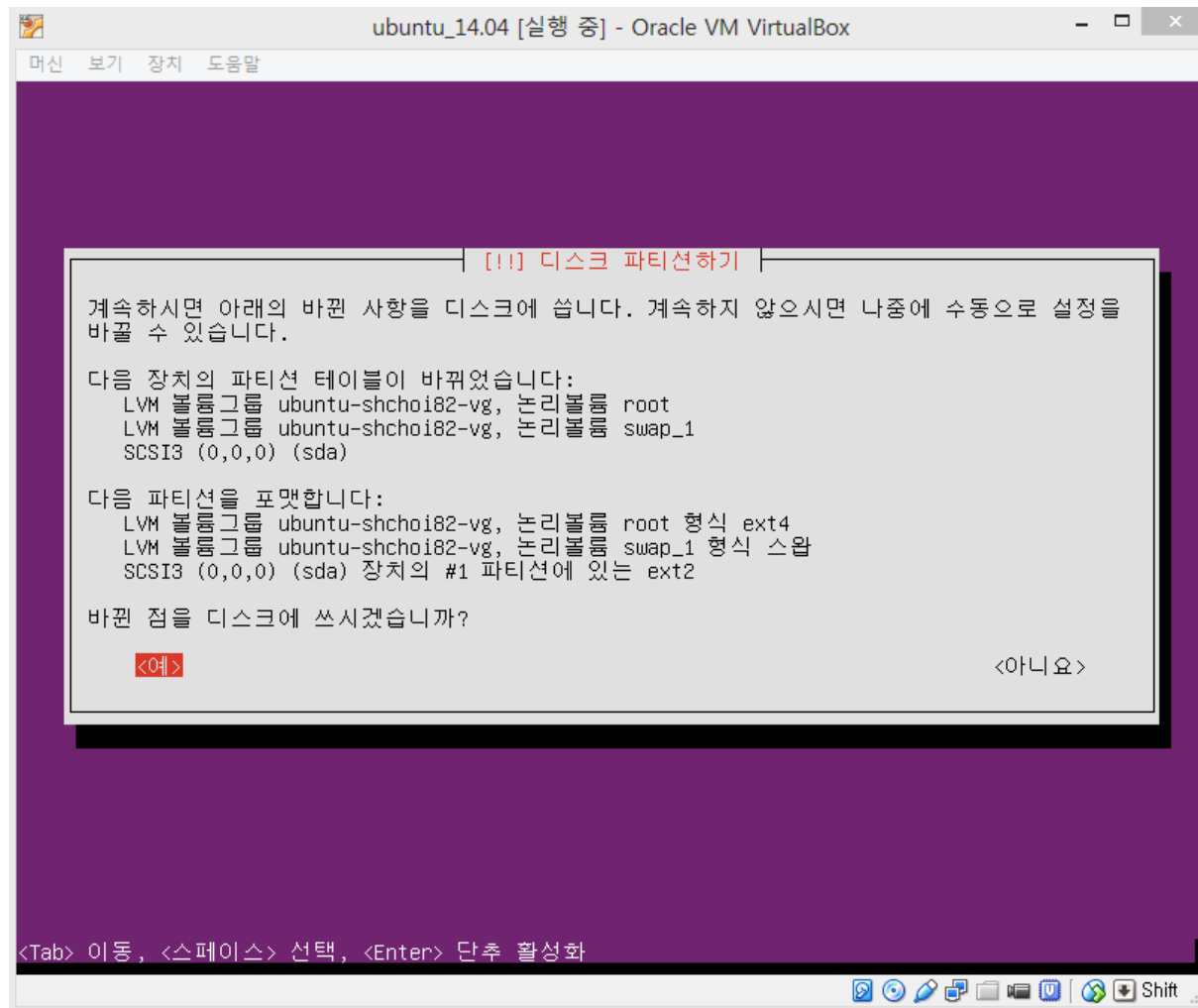
- 리눅스 설치



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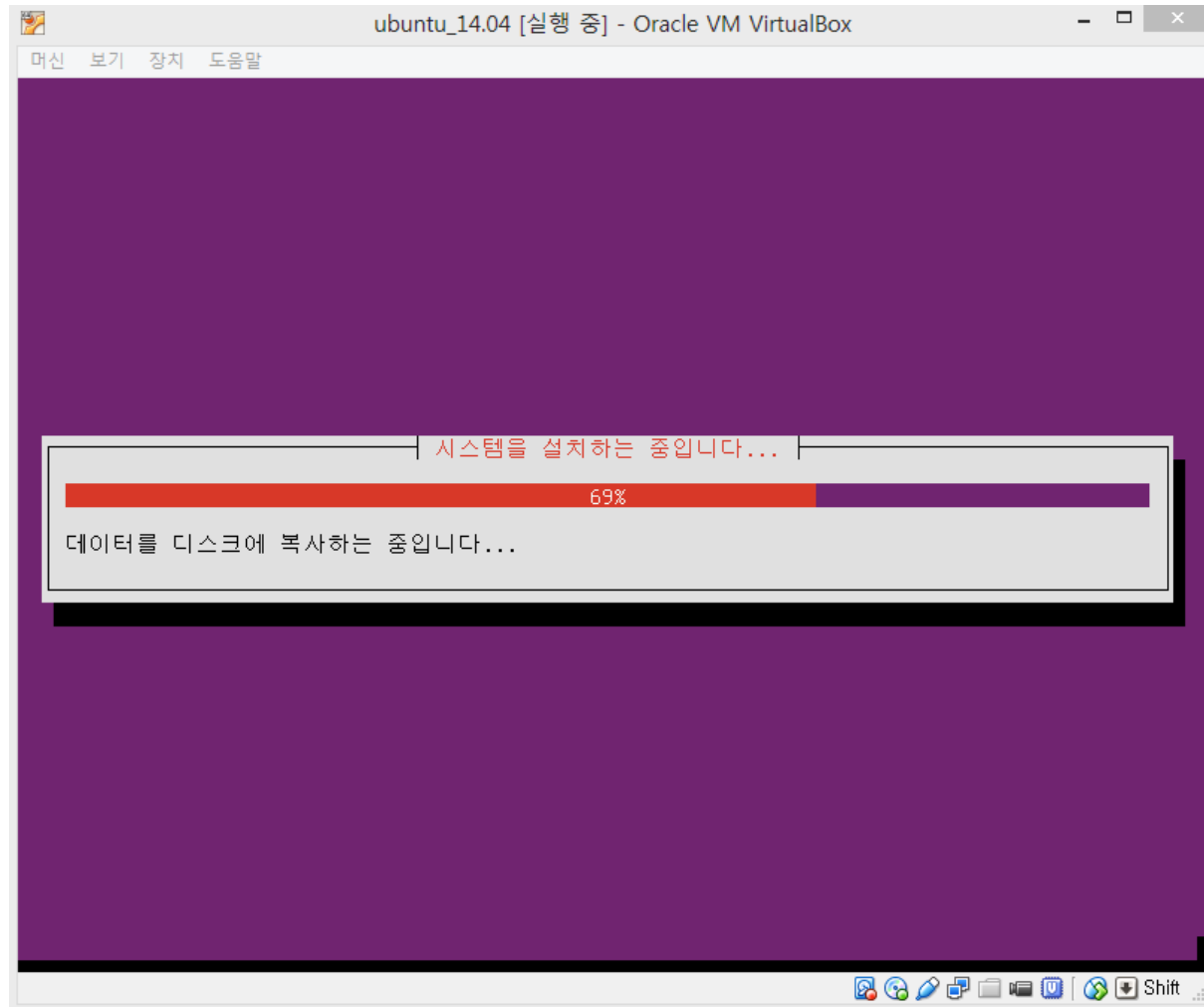
- 리눅스 설치



실습 2: 리눅스 설치

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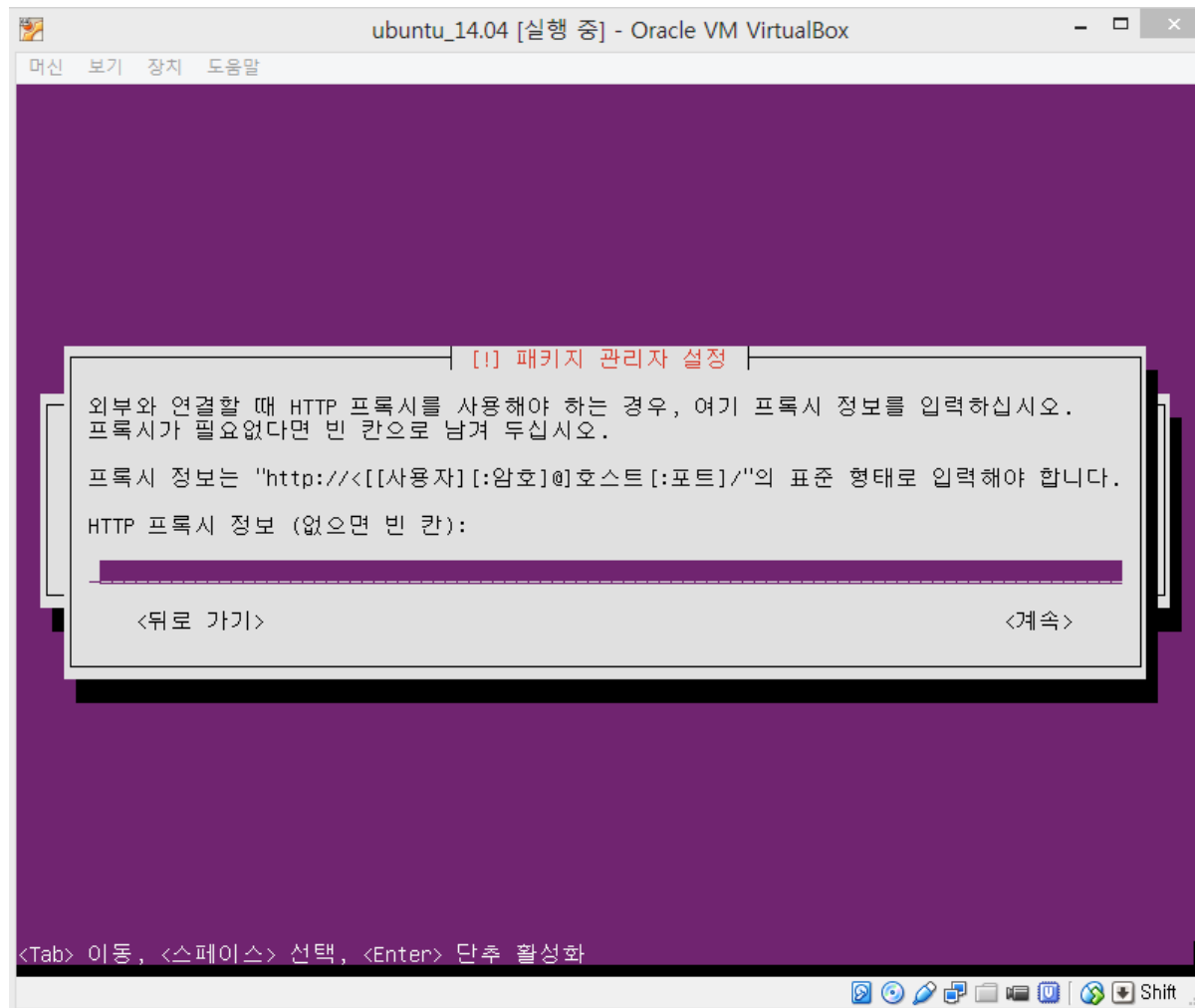
- 리눅스 설치



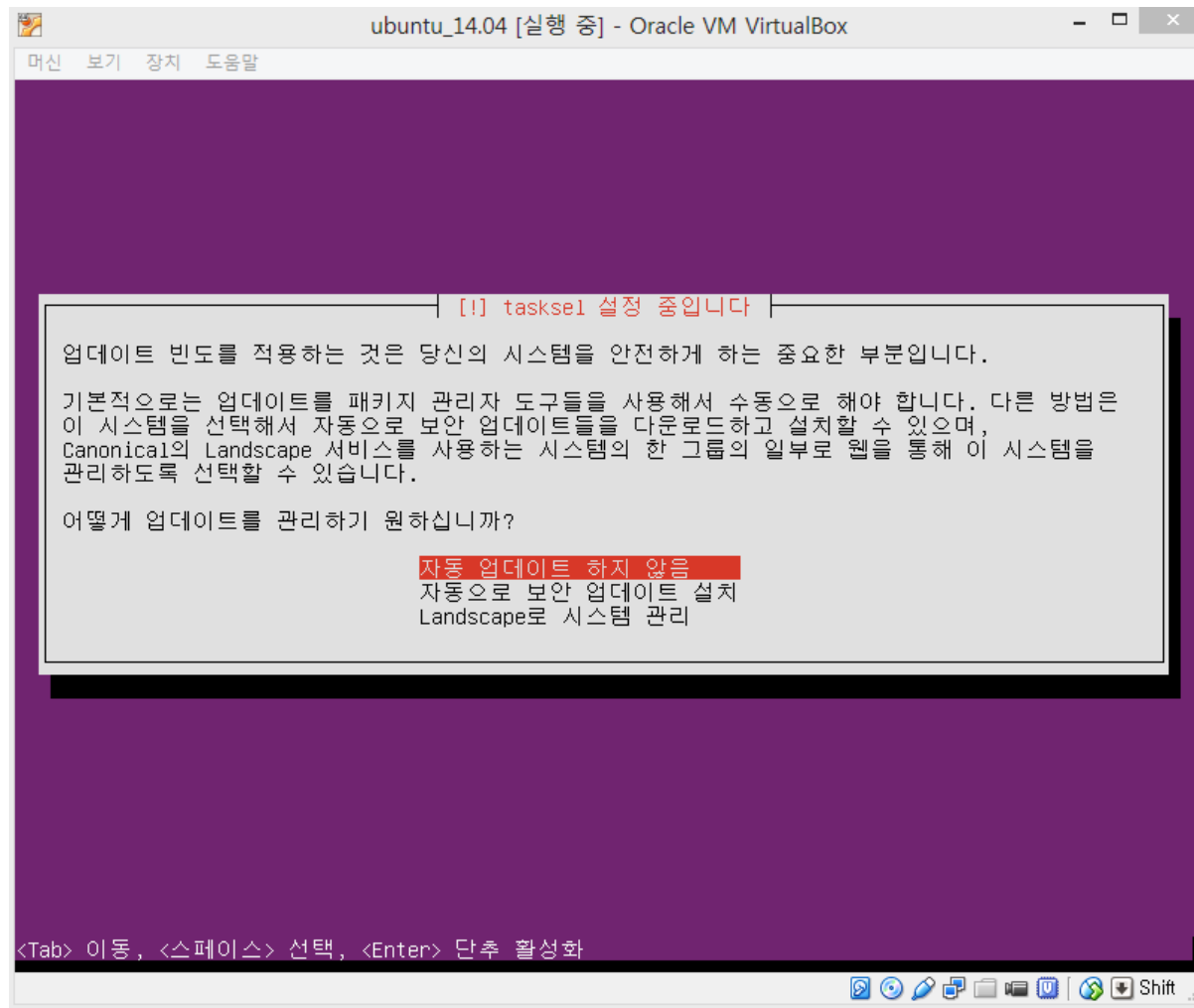
실습 2: 리눅스 설치

62

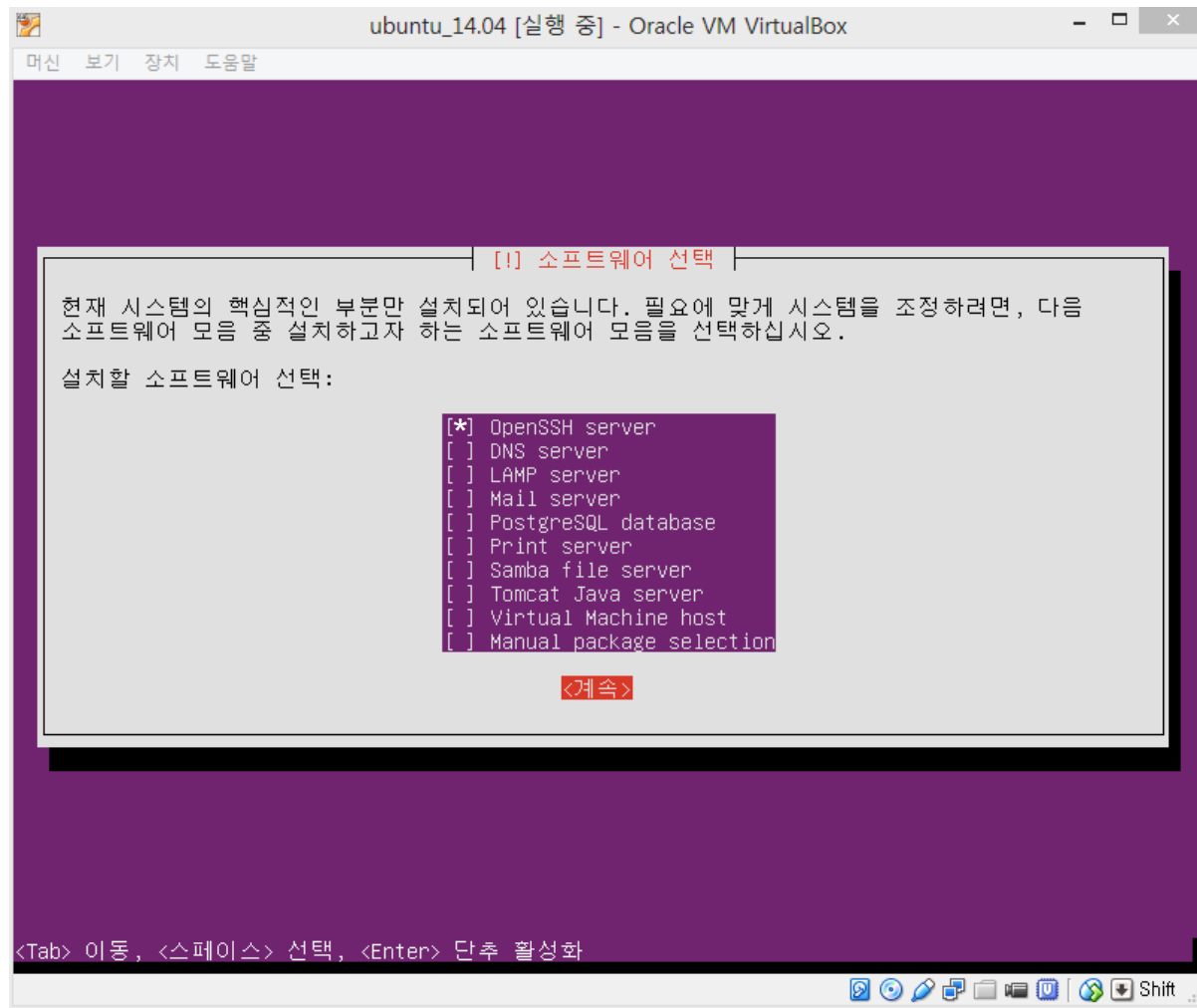
- 리눅스 설치



- 리눅스 설치



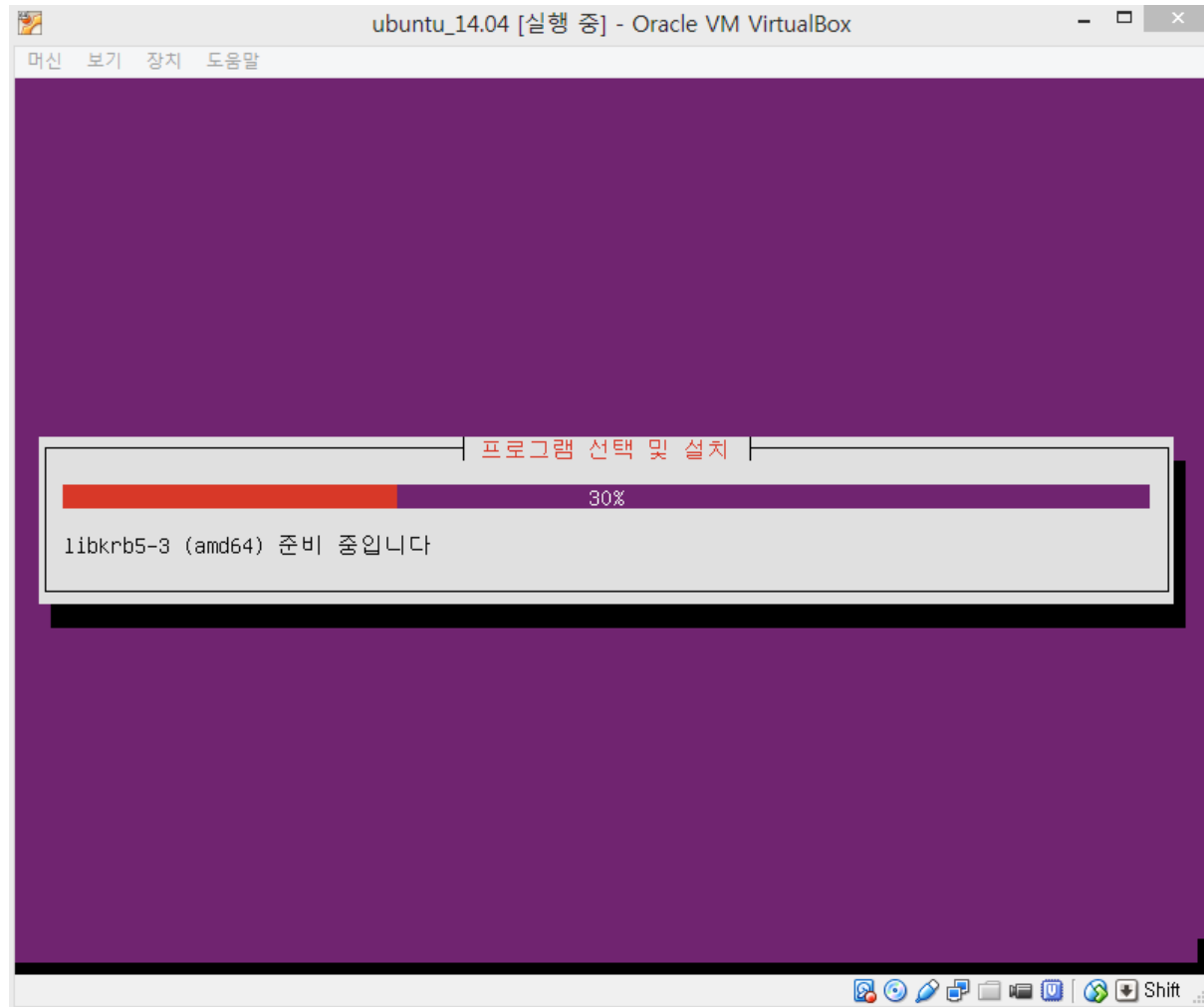
- 리눅스 설치



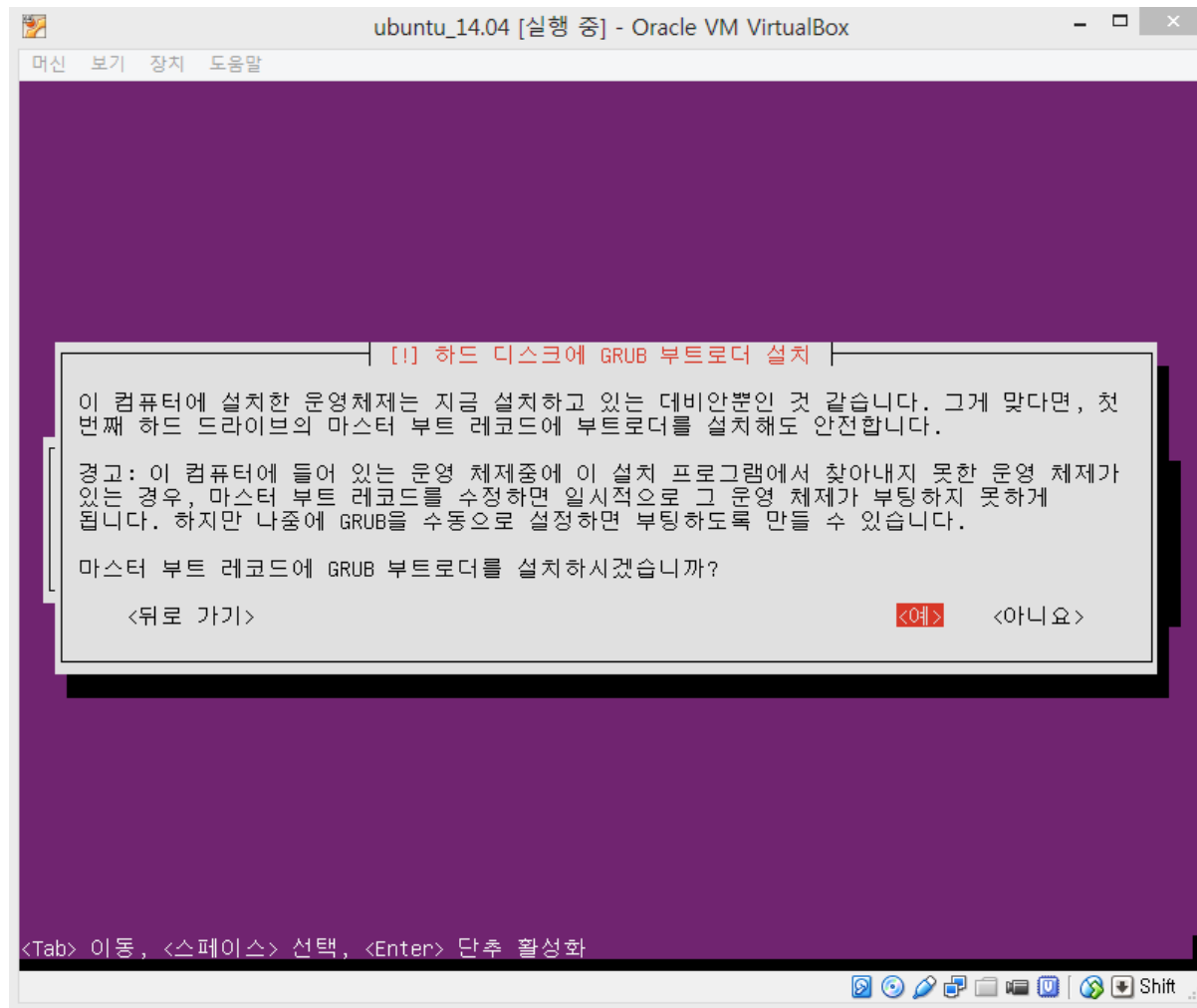
실습 2: 리눅스 설치

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- 리눅스 설치



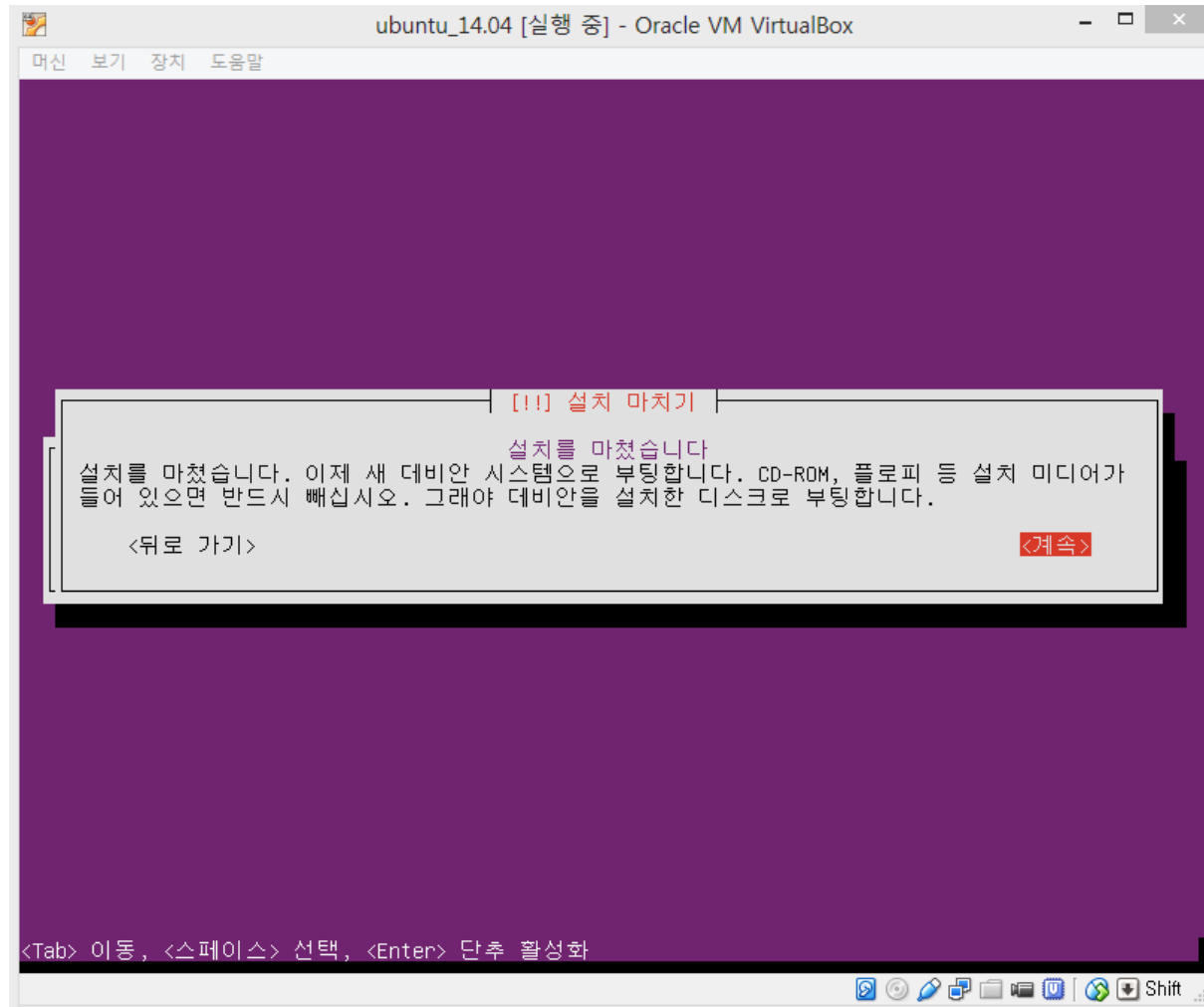
- 리눅스 설치



실습 2: 리눅스 설치

67

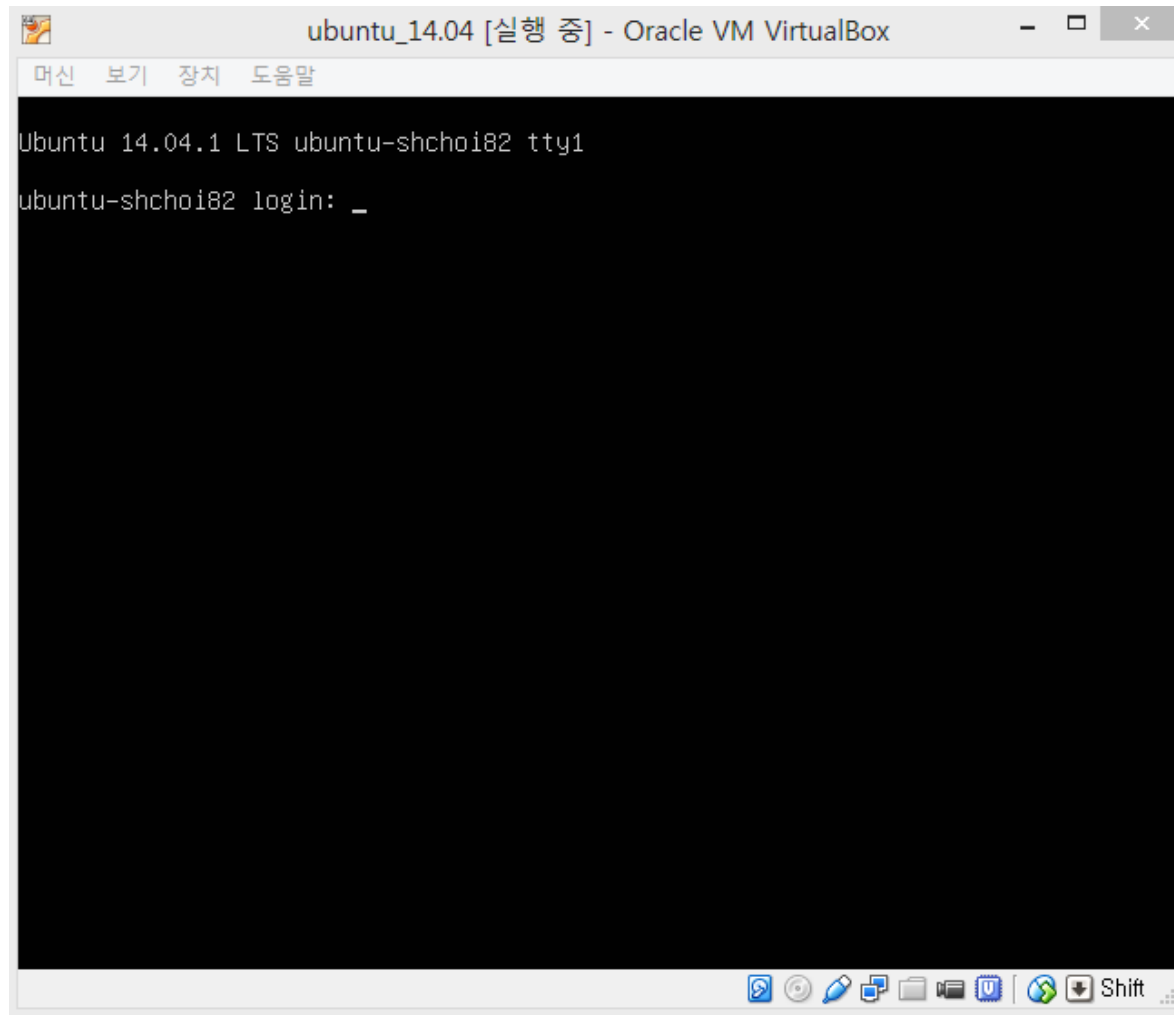
- 리눅스 설치



실습 2: 리눅스 설치

68

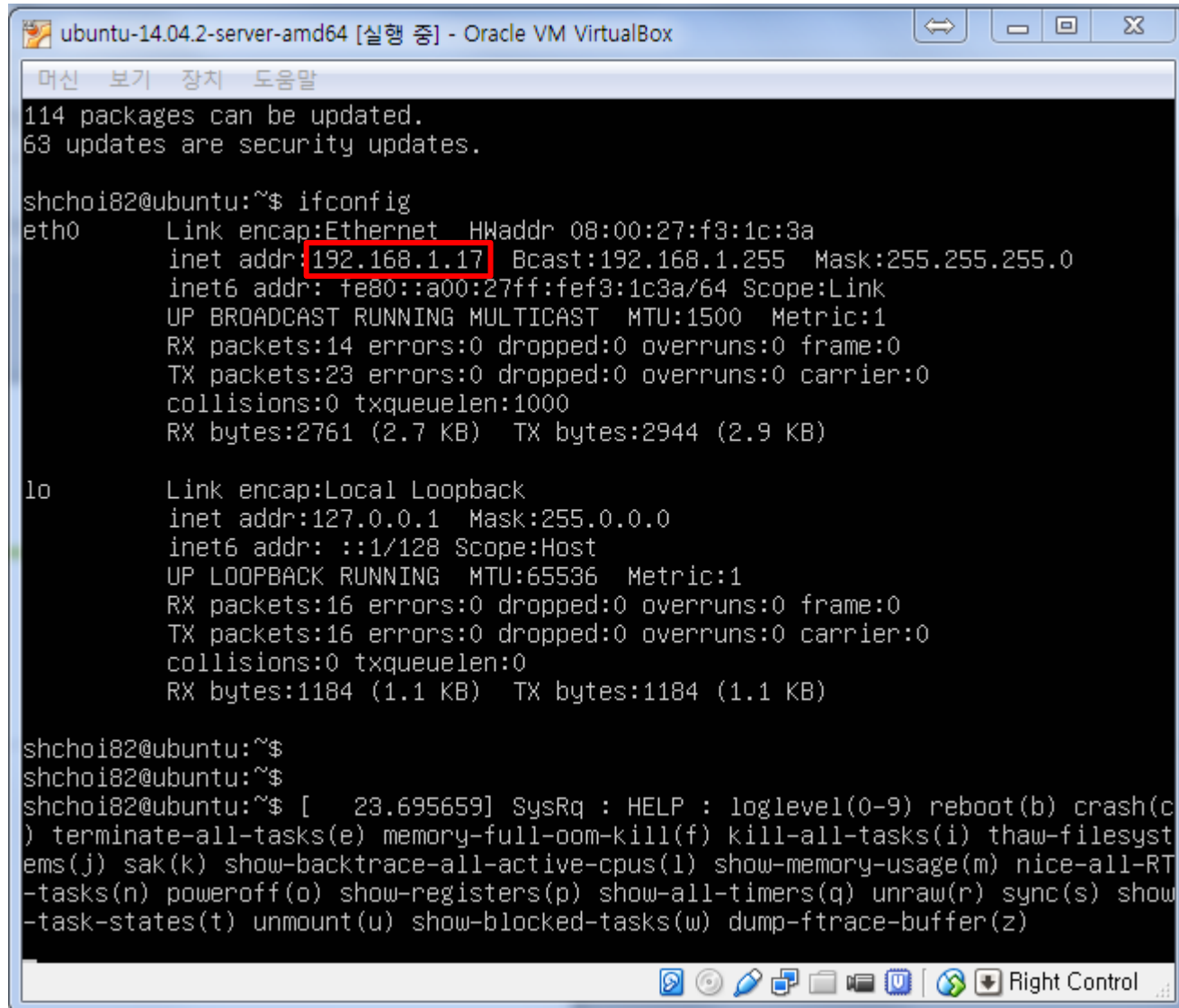
- 리눅스 설치



실습 3: SSH접속

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- 가상머신 IP 확인



```
ubuntu-14.04.2-server-amd64 [실행 중] - Oracle VM VirtualBox
머신 보기 장치 도움말
114 packages can be updated.
63 updates are security updates.

shchoi82@ubuntu:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:f3:1c:3a
          inet addr:192.168.1.17  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fef3:1c3a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:14 errors:0 dropped:0 overruns:0 frame:0
          TX packets:23 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2761 (2.7 KB)  TX bytes:2944 (2.9 KB)

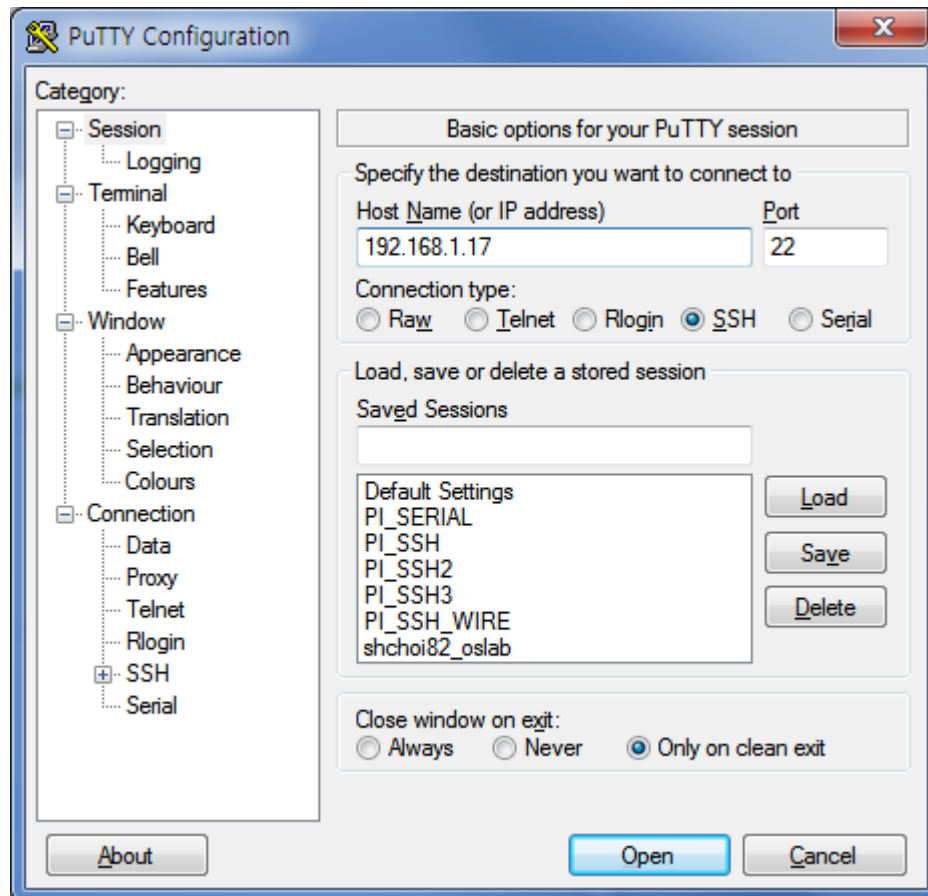
lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:16 errors:0 dropped:0 overruns:0 frame:0
          TX packets:16 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1184 (1.1 KB)  TX bytes:1184 (1.1 KB)

shchoi82@ubuntu:~$
shchoi82@ubuntu:~$
shchoi82@ubuntu:~$ [ 23.695659] SysRq : HELP : loglevel(0-9) reboot(b) crash(c
) terminate-all-tasks(e) memory-full-oom-kill(f) kill-all-tasks(i) thaw-filesyst
ems(j) sak(k) show-backtrace-all-active-cpus(l) show-memory-usage(m) nice-all-RT
-tasks(n) poweroff(o) show-registers(p) show-all-timers(q) unraw(r) sync(s) show
-task-states(t) unmount(u) show-blocked-tasks(w) dump-ftrace-buffer(z)
```

실습 3: SSH접속

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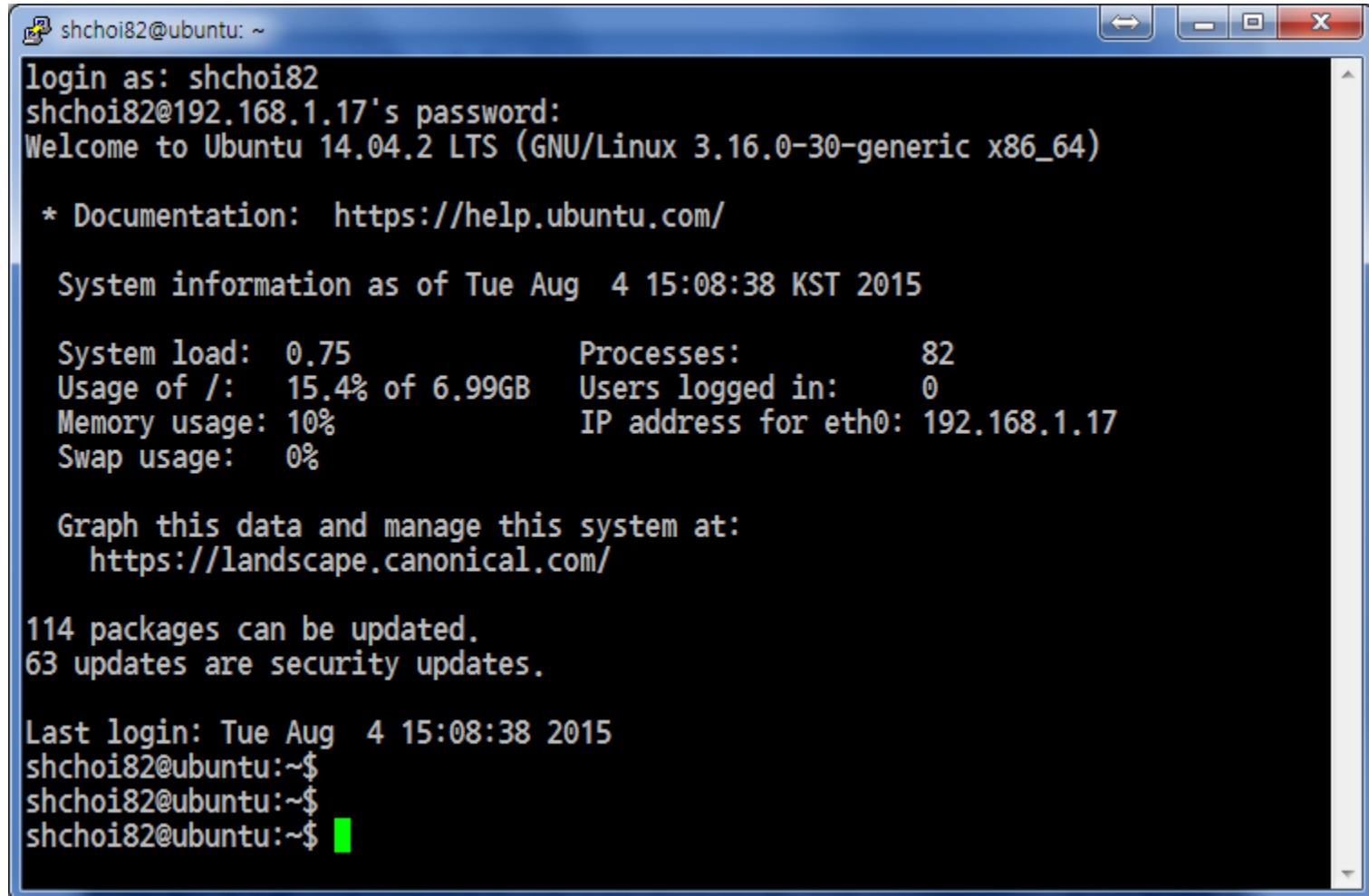
- ssh 접속



실습 3: SSH접속

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- ssh 접속

A terminal window titled 'shchoi82@ubuntu: ~' with standard window controls. The terminal output shows a successful SSH login for user 'shchoi82' at IP '192.168.1.17'. It displays the Ubuntu 14.04.2 LTS welcome message, documentation link, system information (date, time, load, processes, memory, swap, users, IP), update status (114 packages, 63 security updates), and login history. The prompt 'shchoi82@ubuntu:~\$' is shown three times, with a green cursor at the end of the last line.

```
shchoi82@ubuntu: ~
login as: shchoi82
shchoi82@192.168.1.17's password:
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.16.0-30-generic x86_64)

* Documentation:  https://help.ubuntu.com/

System information as of Tue Aug  4 15:08:38 KST 2015

System load:  0.75              Processes:            82
Usage of /:   15.4% of 6.99GB   Users logged in:     0
Memory usage: 10%              IP address for eth0: 192.168.1.17
Swap usage:   0%

Graph this data and manage this system at:
  https://landscape.canonical.com/

114 packages can be updated.
63 updates are security updates.

Last login: Tue Aug  4 15:08:38 2015
shchoi82@ubuntu:~$
shchoi82@ubuntu:~$
shchoi82@ubuntu:~$ █
```