

프로그래밍언어

OCaml 프로그래밍 환경 설치

담당교수: 임현승

TA: 지수환(93suhwan@gmail.com)

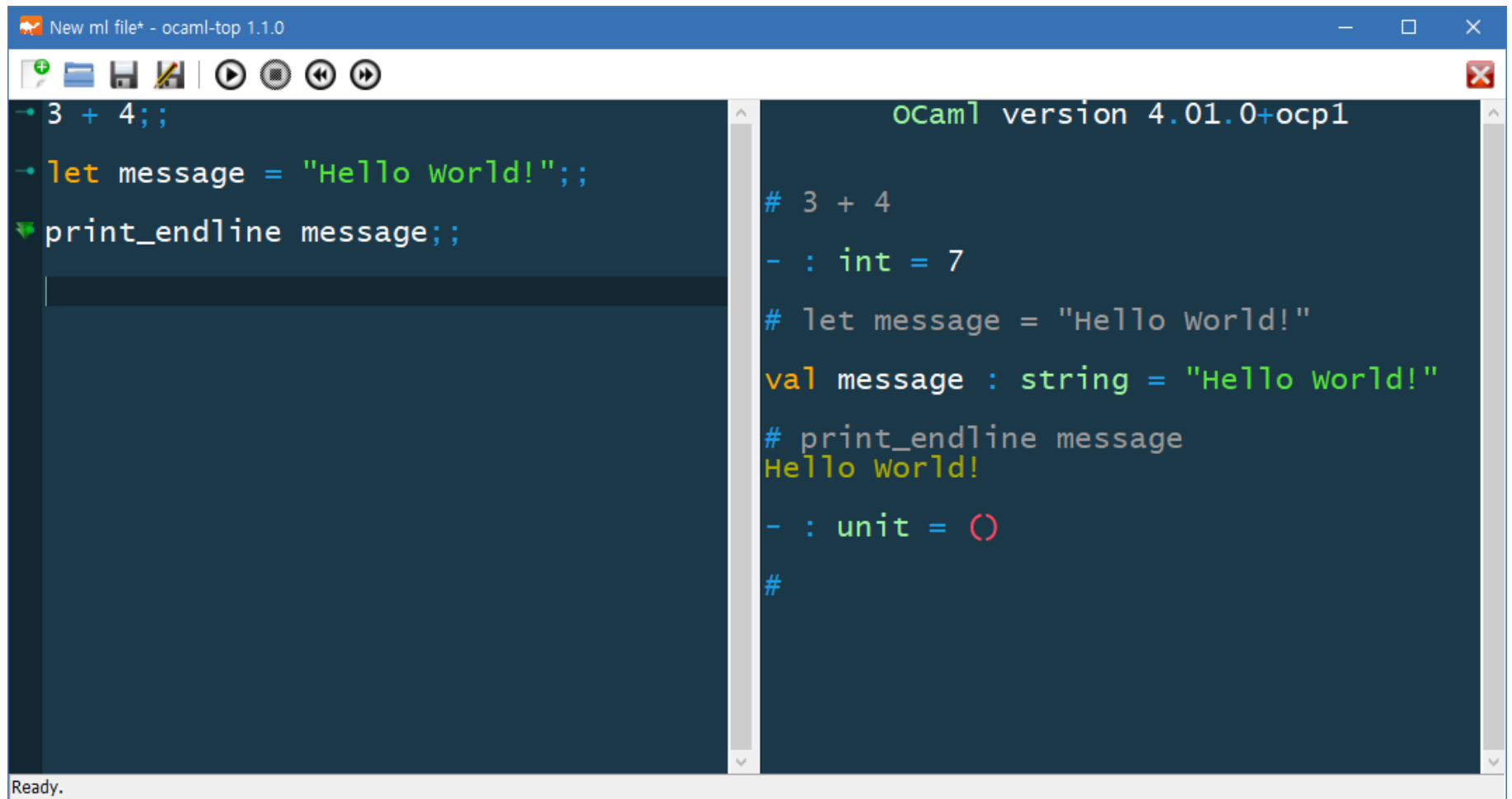
OCaml이란? [\(참고\)](#)

- 대표적인 **함수형** 프로그래밍 언어
- ML의 일종인 Caml 언어에 객체 지향 구조를 추가한 것
- 주요 특징
 - 정적 타입 시스템(static type system), 타입 추론(type inference), 다형성(parametric polymorphism), 패턴검사(pattern matching), 모듈함수(functors), 예외 처리(exception handling), 메모리 수거(garbage collection)
- OCaml 도구 모음에는 대화식의 탑 레벨(top level) 인터프리터, 바이트코드 컴파일러, 최적화 컴파일러 등이 포함
- 파이썬이나 펄과 같은 언어들로 응용프로그램을 작성해야 하는 경우에 OCaml도 충분히 유용하게 사용 가능

OCaml 프로그래밍

- Windows에서 OCaml-Top IDE를 사용해서 프로그래밍 하기
 - [OCaml](#)
 - [OCaml-Top](#)
- Virtual box에 Ubuntu를 설치해서 프로그래밍 하기
 - [Ubuntu Image File Download](#)
 - [Virtual Box](#)

1. Windows의 IDE로 프로그래밍



The screenshot displays the OCaml IDE interface. The left pane shows the source code being edited, and the right pane shows the output of the OCaml interpreter.

Source Code (Left Pane):

```
→ 3 + 4;;  
→ let message = "Hello world!";;  
→ print_endline message;;
```

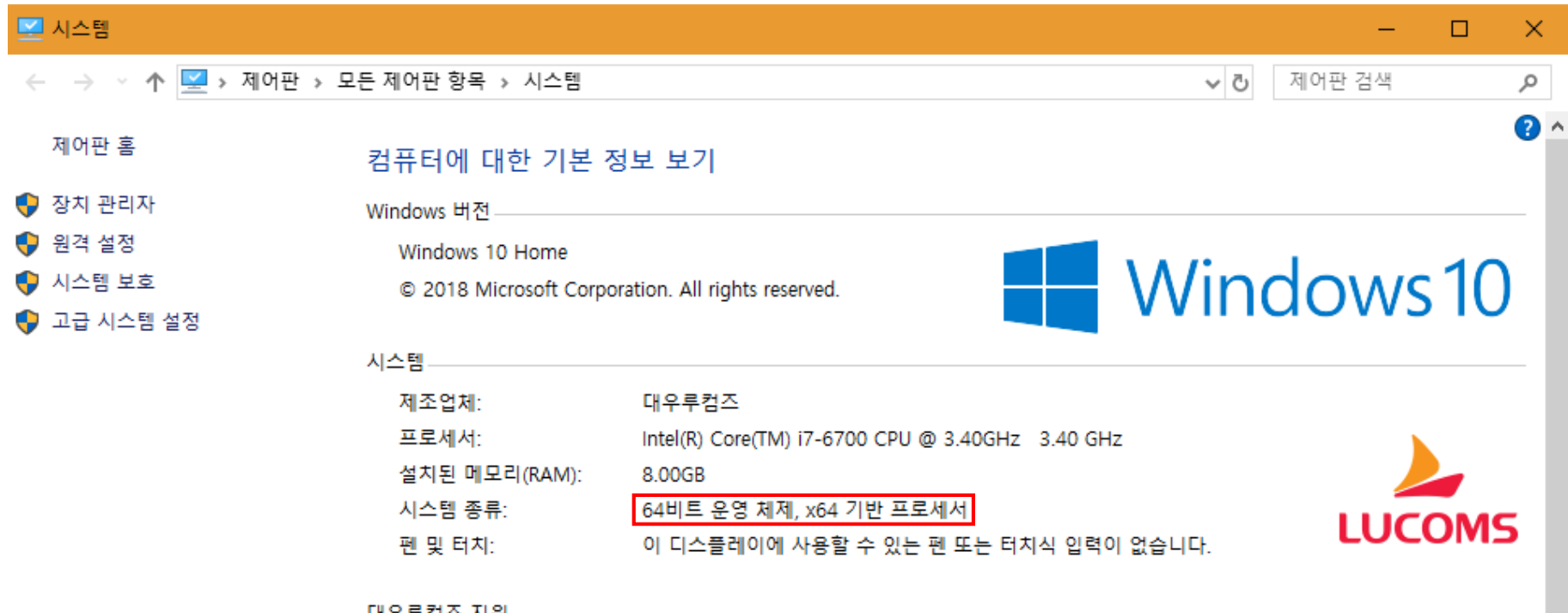
Output (Right Pane):

```
OCaml version 4.01.0+ocp1  
  
# 3 + 4  
- : int = 7  
  
# let message = "Hello world!"  
val message : string = "Hello world!"  
  
# print_endline message  
Hello world!  
  
- : unit = ()  
#
```

Ready.

Install OCaml in Windows

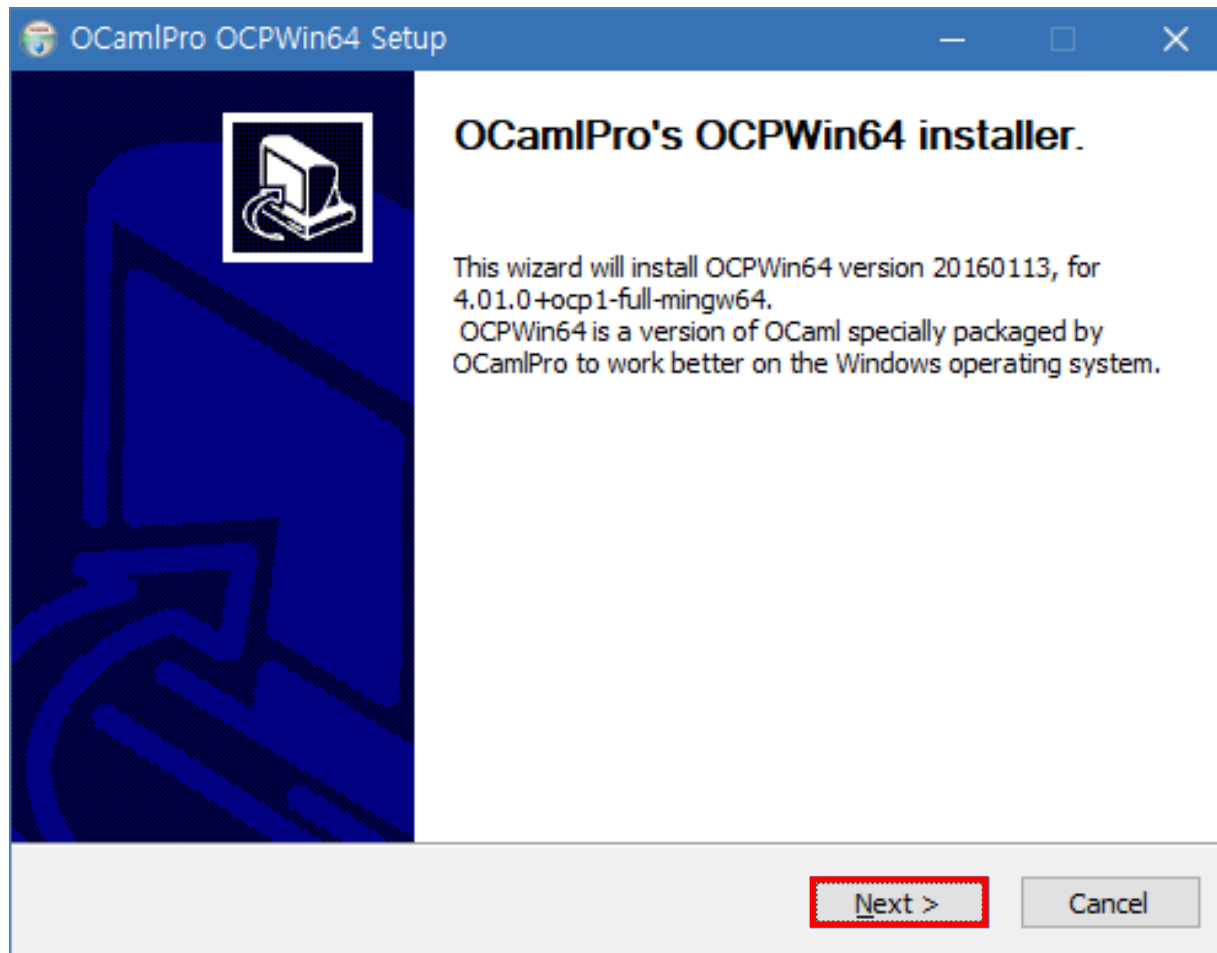
- 내 PC > 속성 > 시스템 종류에서 비트 확인



[32 Bit Download](#)

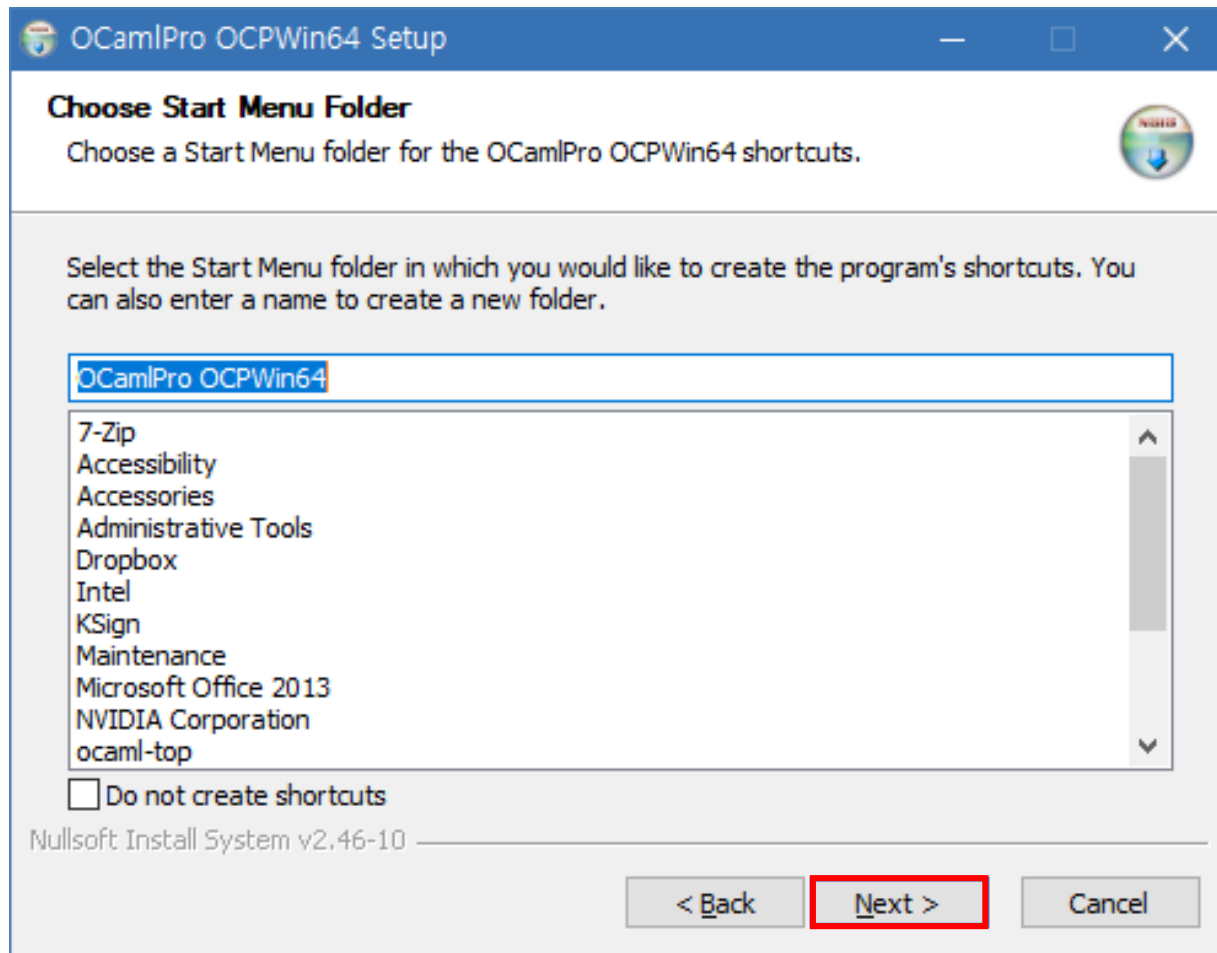
[64 Bit Download](#)

Install OCaml



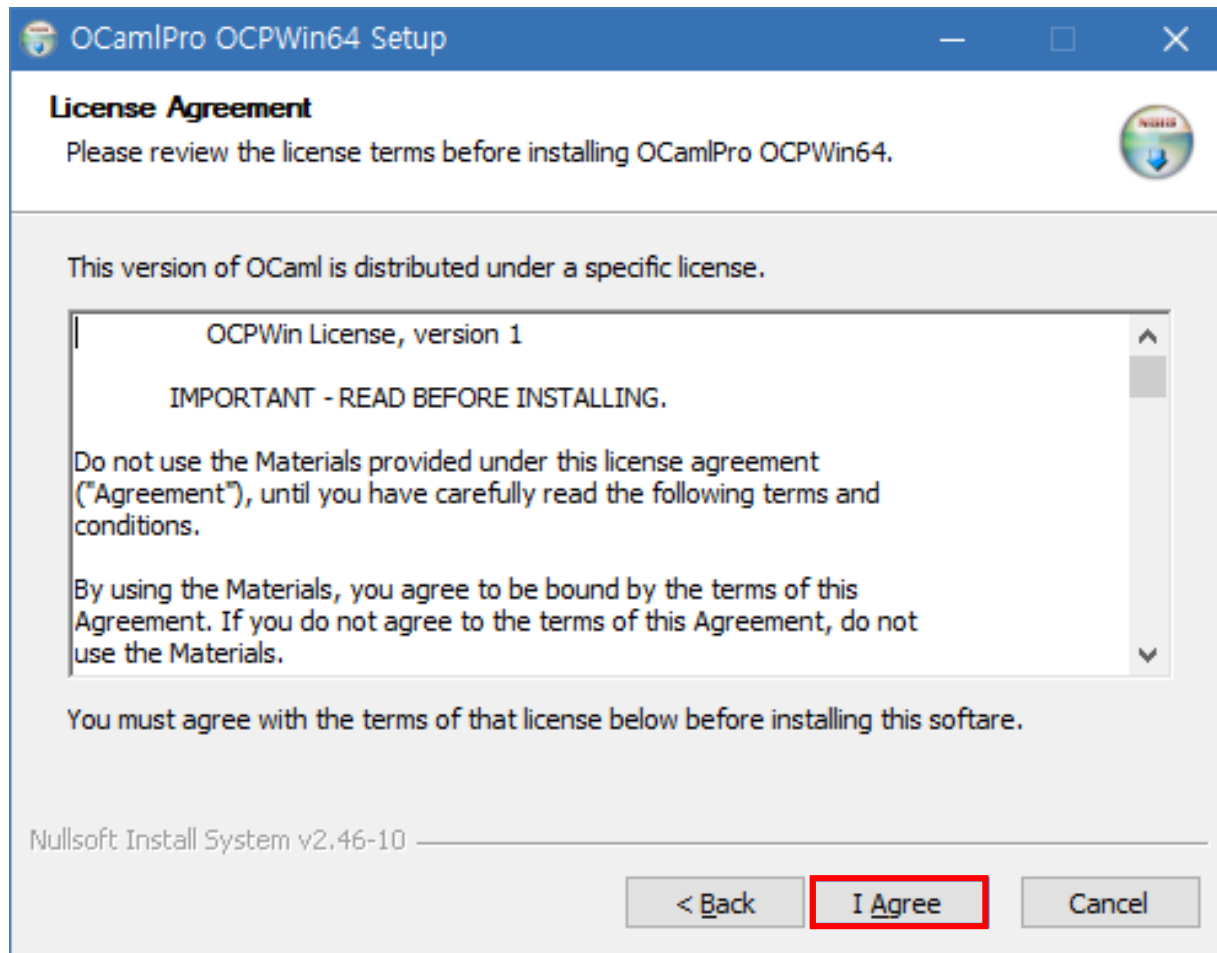
Next 클릭

Install OCaml



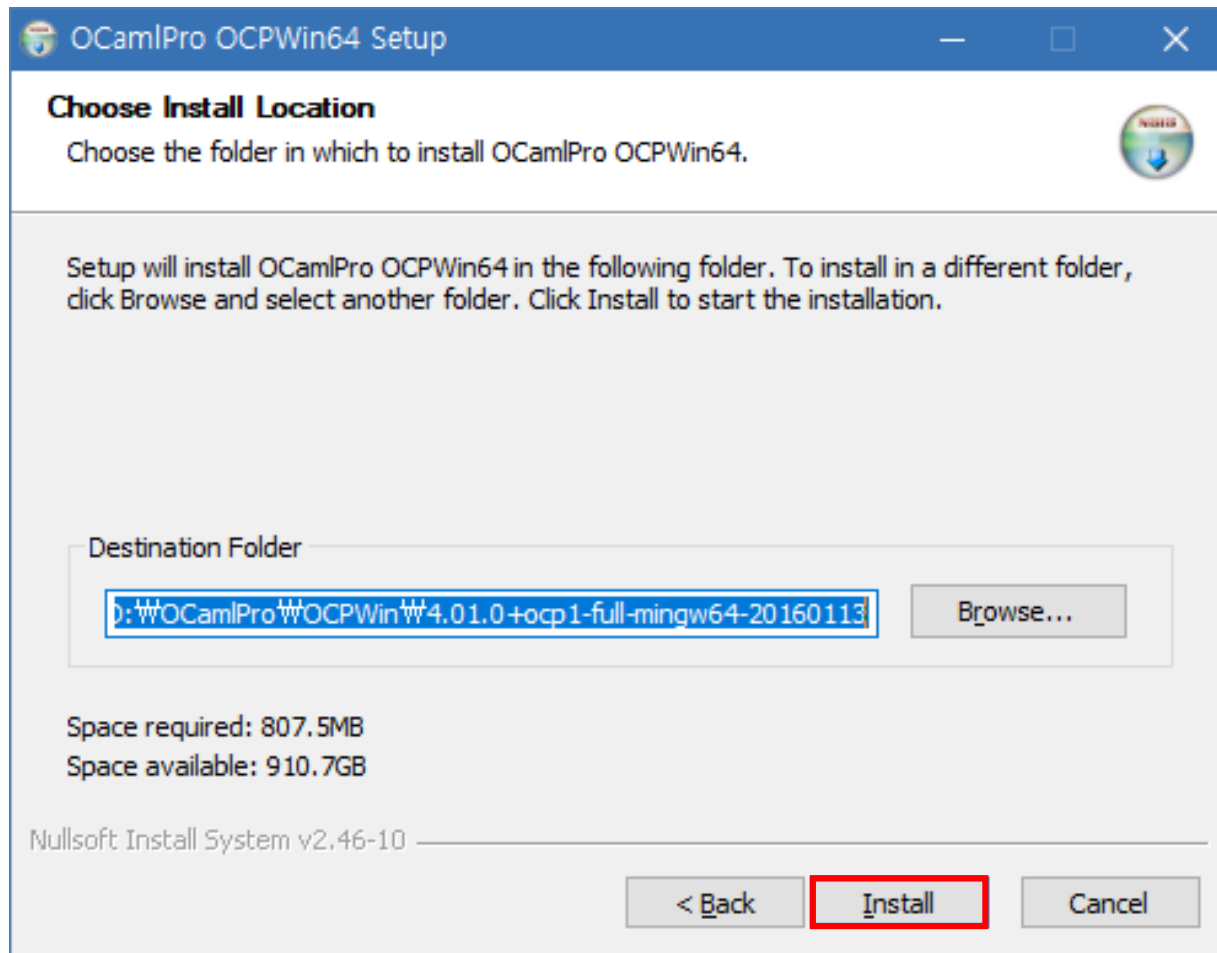
Next 클릭

Install OCaml



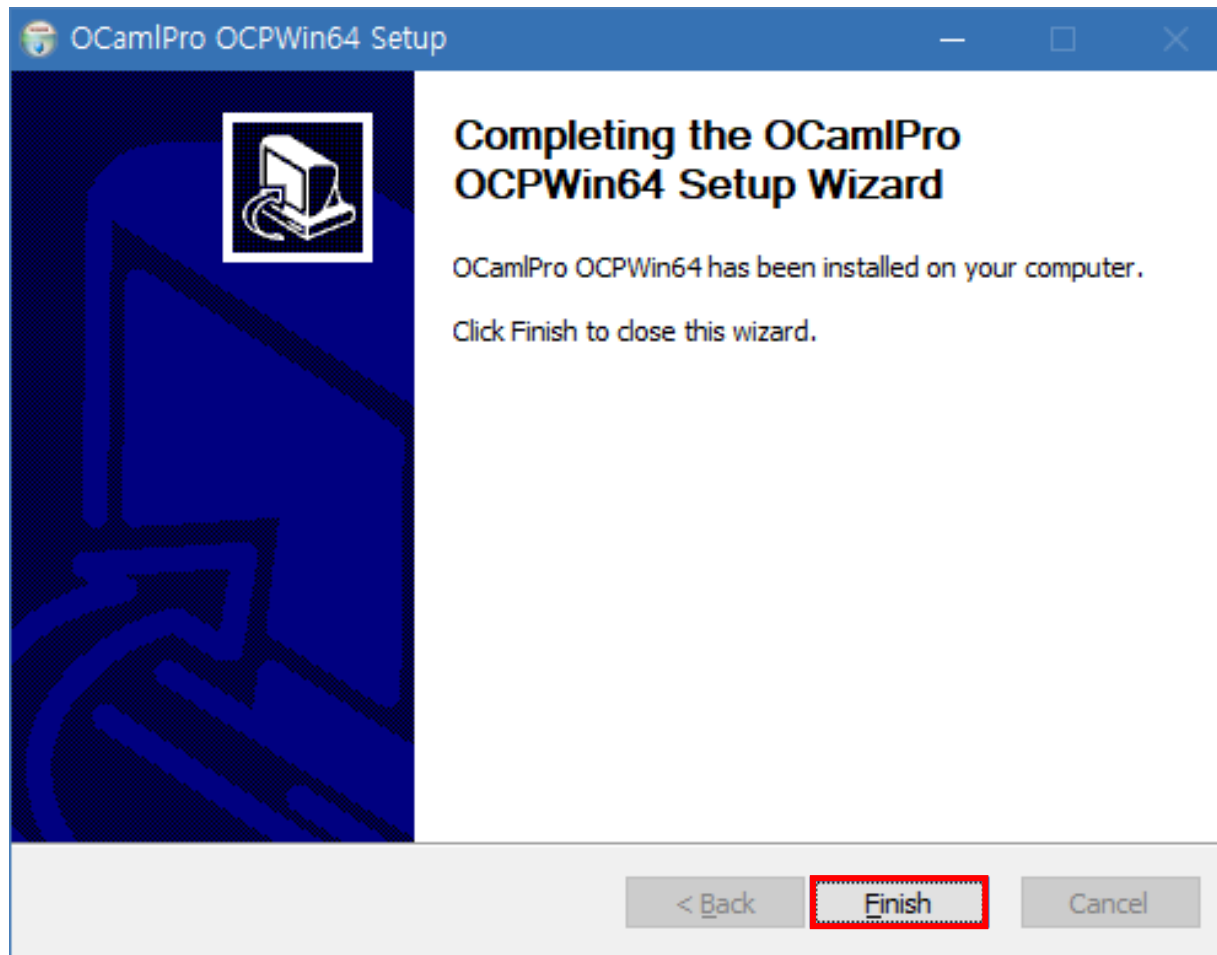
I Agree 클릭

Install OCaml



Install 클릭

Install OCaml



Finish 클릭

Install OCaml-Top

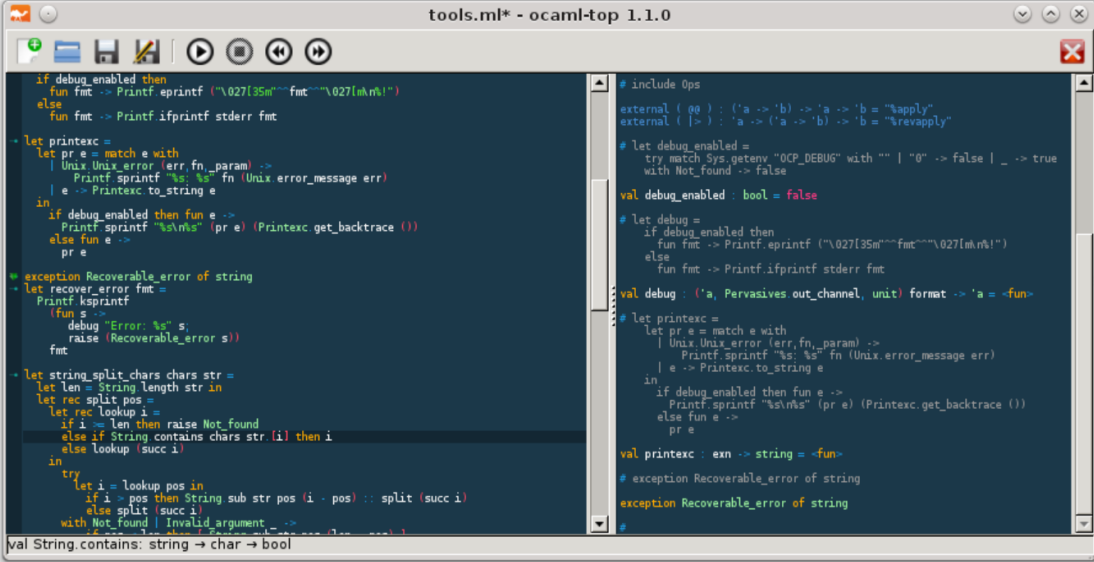
← → ↻ 🔍 보안 연결 | https://www.typerex.org/ocaml-top.html

TypeRex Home Memprof OCPWin ocp-indent ocp-index **ocaml-top** Support

OCaml-Top

The OCaml interactive editor for education

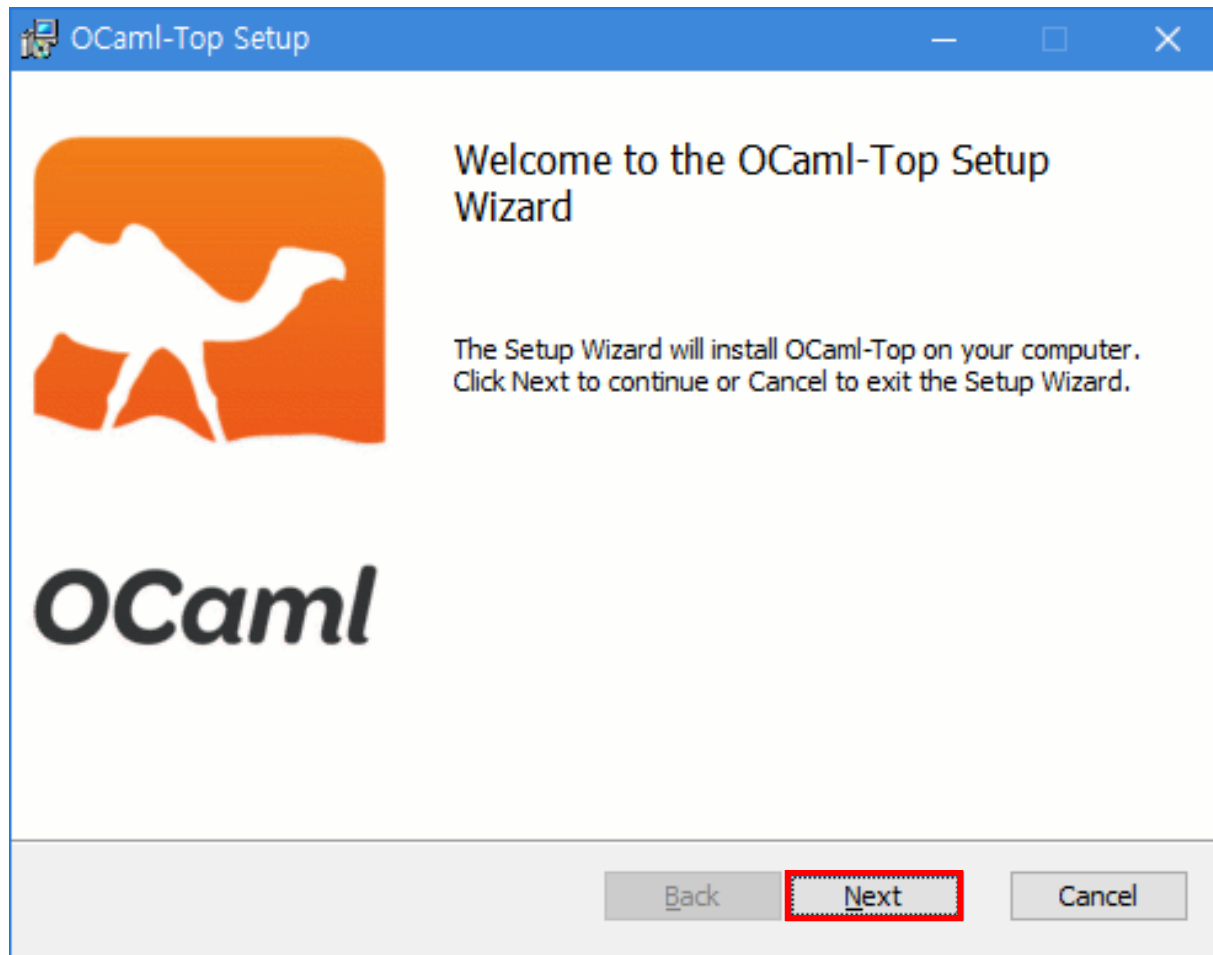
↓ Download 1.1.2



The screenshot shows a web browser window displaying the OCaml-Top 1.1.0 interface. The browser's address bar shows the URL <https://www.typerex.org/ocaml-top.html>. The page has a dark navigation bar with links: TypeRex, Home, Memprof, OCPWin, ocp-indent, ocp-index, **ocaml-top**, and Support. Below the navigation bar, the title "OCaml-Top" is displayed, followed by the subtitle "The OCaml interactive editor for education". A green button labeled "Download 1.1.2" is positioned to the right. The main content area features a screenshot of the OCaml-Top 1.1.0 application window. This window has a title bar "tools.ml* - ocaml-top 1.1.0" and a toolbar with icons for file operations and execution. The code editor is split into two panes. The left pane shows OCaml code for a function `String.contains` with debug and error handling. The right pane shows OCaml code for a function `String.split` with similar debug and error handling. The code is syntax-highlighted and includes comments.

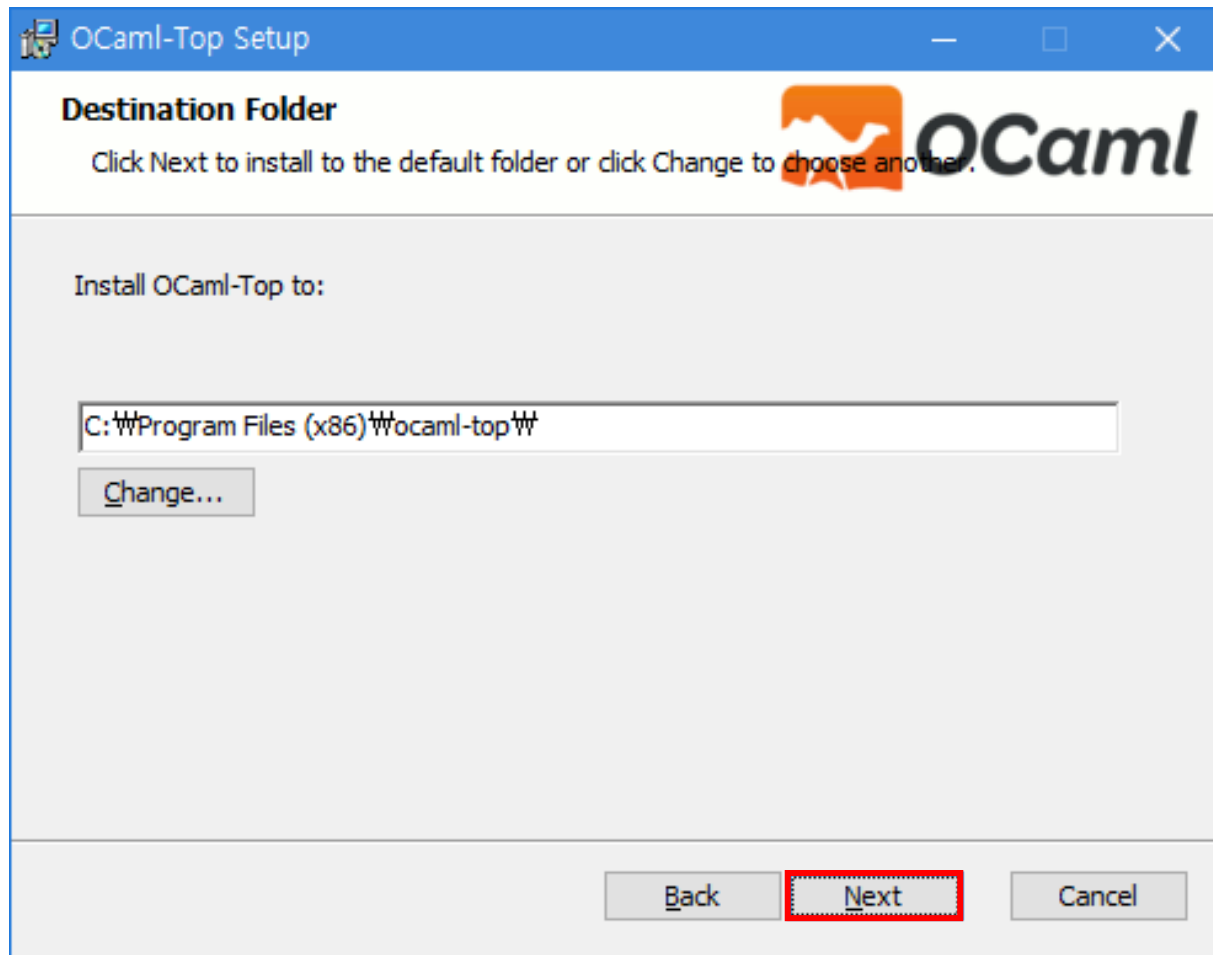
[Ocaml-Top Download](#)

Install OCaml-Top



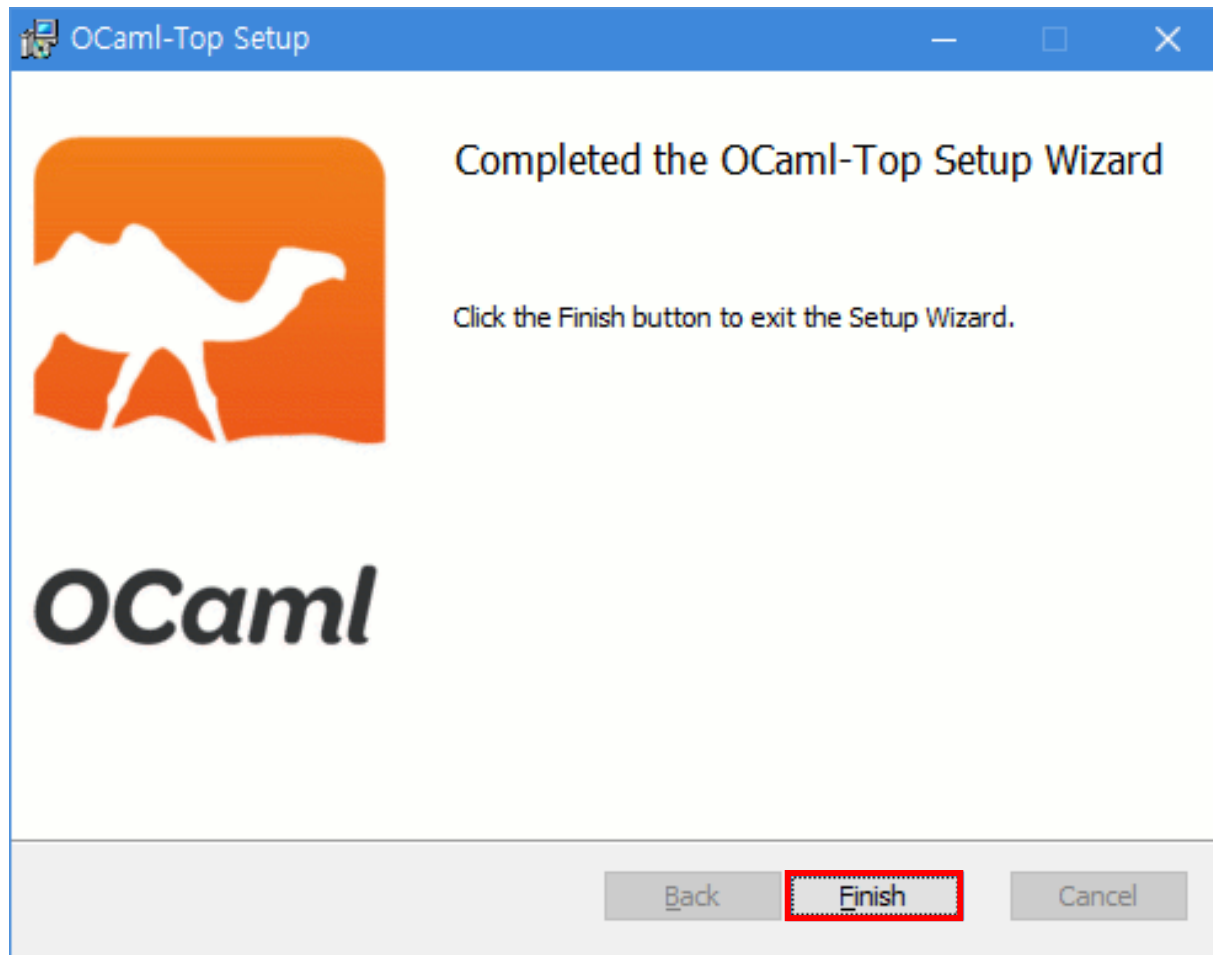
Next 클릭

Install OCaml-Top



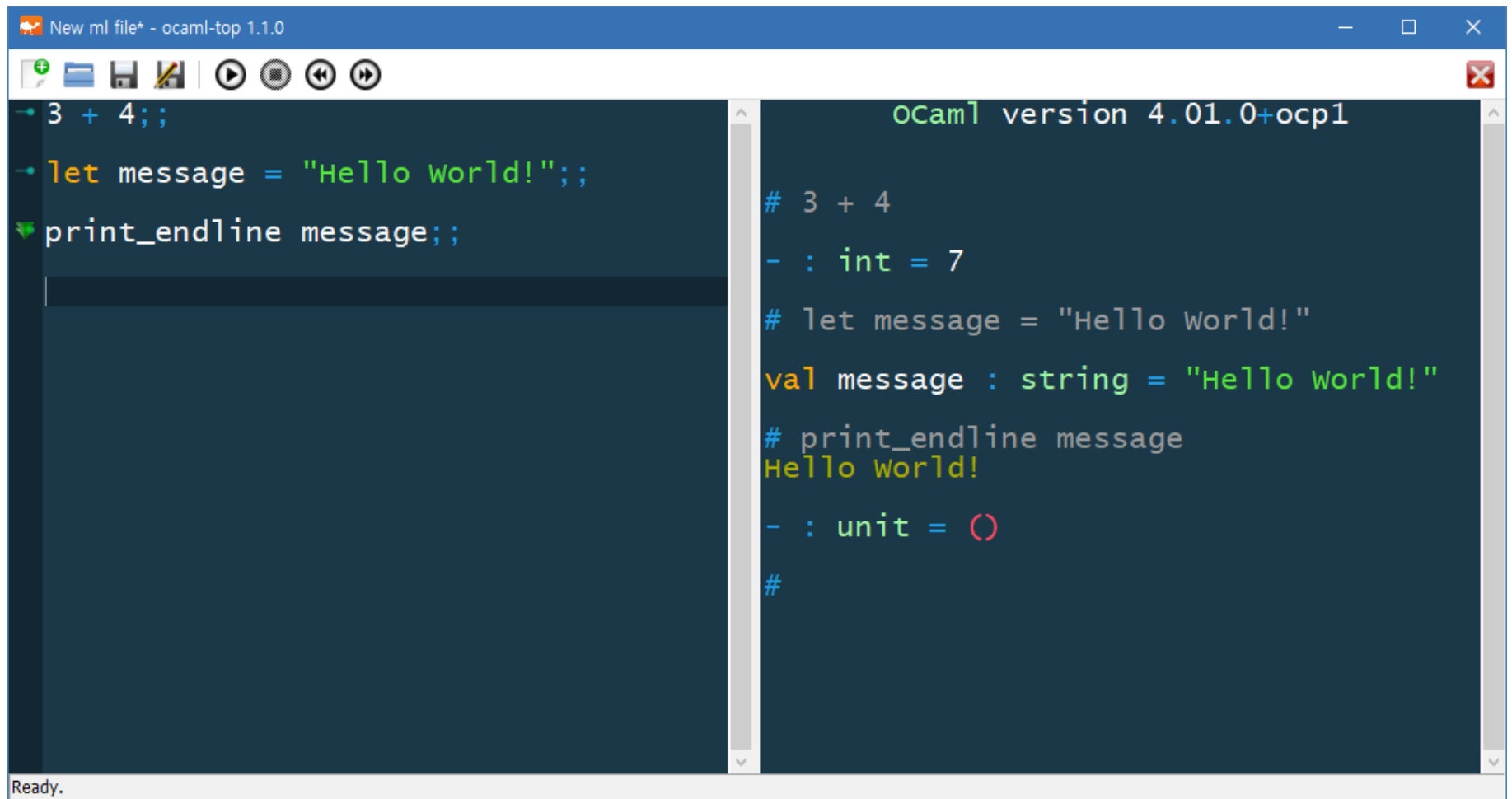
Next 클릭

Install OCaml-Top



Finish 클릭

Run OCaml-Top



The screenshot displays the OCaml-Top 1.1.0 application window. The title bar reads "New ml file* - ocaml-top 1.1.0". The interface is split into two panes. The left pane contains the source code: `3 + 4;;`, `let message = "Hello world!";;`, and `print_endline message;;`. The right pane shows the execution output, starting with "OCaml version 4.01.0+ocp1". It then shows the results of the code execution: `# 3 + 4` resulting in `- : int = 7`, `# let message = "Hello world!"` resulting in `val message : string = "Hello world!"`, and `# print_endline message` resulting in `Hello world!`. The final prompt is `- : unit = ()` followed by a new line `#`. The status bar at the bottom left of the window says "Ready."

```
New ml file* - ocaml-top 1.1.0
```

```
→ 3 + 4;;  
→ let message = "Hello world!";;  
→ print_endline message;;
```

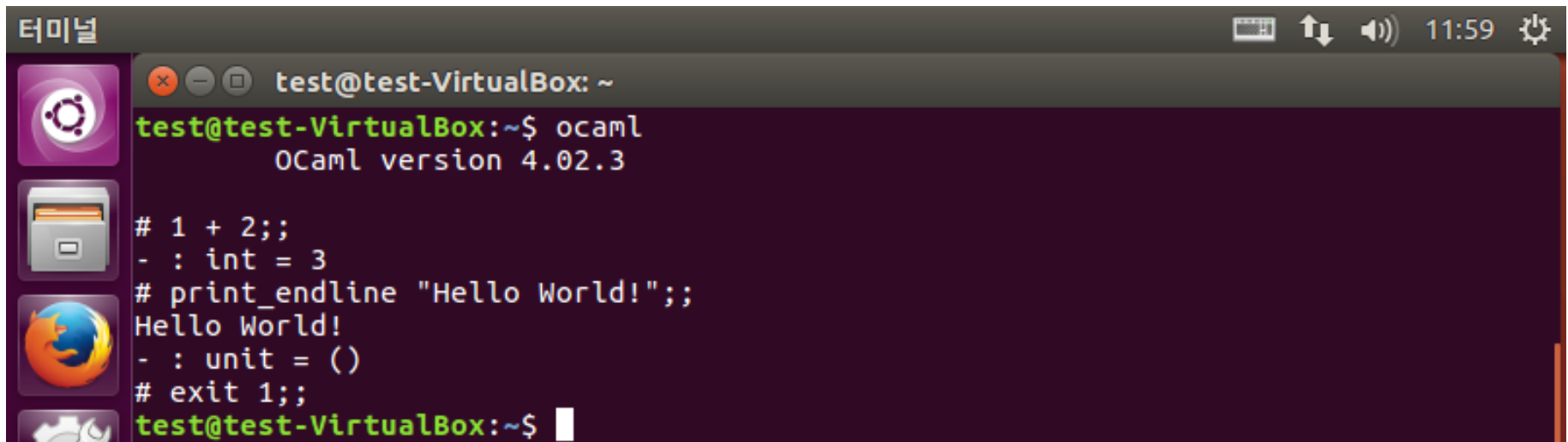
```
OCaml version 4.01.0+ocp1  
  
# 3 + 4  
- : int = 7  
  
# let message = "Hello world!"  
val message : string = "Hello world!"  
  
# print_endline message  
Hello world!  
  
- : unit = ()  
#
```

Ready.

소스코드

결과

2. Virtual Box의 Ubuntu에서 프로그래밍 하기




```
터미널 test@test-VirtualBox: ~
test@test-VirtualBox:~$ ocaml
OCaml version 4.02.3

# 1 + 2;;
- : int = 3
# print_endline "Hello World!";;
Hello World!
- : unit = ()
# exit 1;;
test@test-VirtualBox:~$
```

[Virtual Box Download](#)

[Ubuntu Image File Download](#)

Virtual Box



VirtualBox

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Welcome to VirtualBox.org!

VirtualBox is a powerful x86 and AMD64/Intel64 [virtualization](#) product for enterprise as well as home use. Not only is VirtualBox an extremely feature rich, high performance product for enterprise customers, it is also the only professional solution that is freely available as Open Source Software under the terms of the GNU General Public License (GPL) version 2. See "[About VirtualBox](#)" for an introduction.

Presently, VirtualBox runs on Windows, Linux, Macintosh, and Solaris hosts and supports a large number of [guest operating systems](#) including but not limited to Windows (NT 4.0, 2000, XP, Server 2003, Vista, Windows 7, Windows 8, Windows 10), DOS/Windows 3.x, Linux (2.4, 2.6, 3.x and 4.x), Solaris and OpenSolaris, OS/2, and OpenBSD.

VirtualBox is being actively developed with frequent releases and has an ever growing list of features, supported guest operating systems and platforms it runs on. VirtualBox is a community effort backed by a dedicated company: everyone is encouraged to contribute while Oracle ensures the product always meets professional quality criteria.

Download VirtualBox 6.0

Hot picks:

- Pre-built virtual machines for developers at [Oracle Tech Network](#)
- **Hyperbox** Open-source Virtual Infrastructure Manager [project site](#)
- **phpVirtualBox** AJAX web interface [project site](#)

News Flash

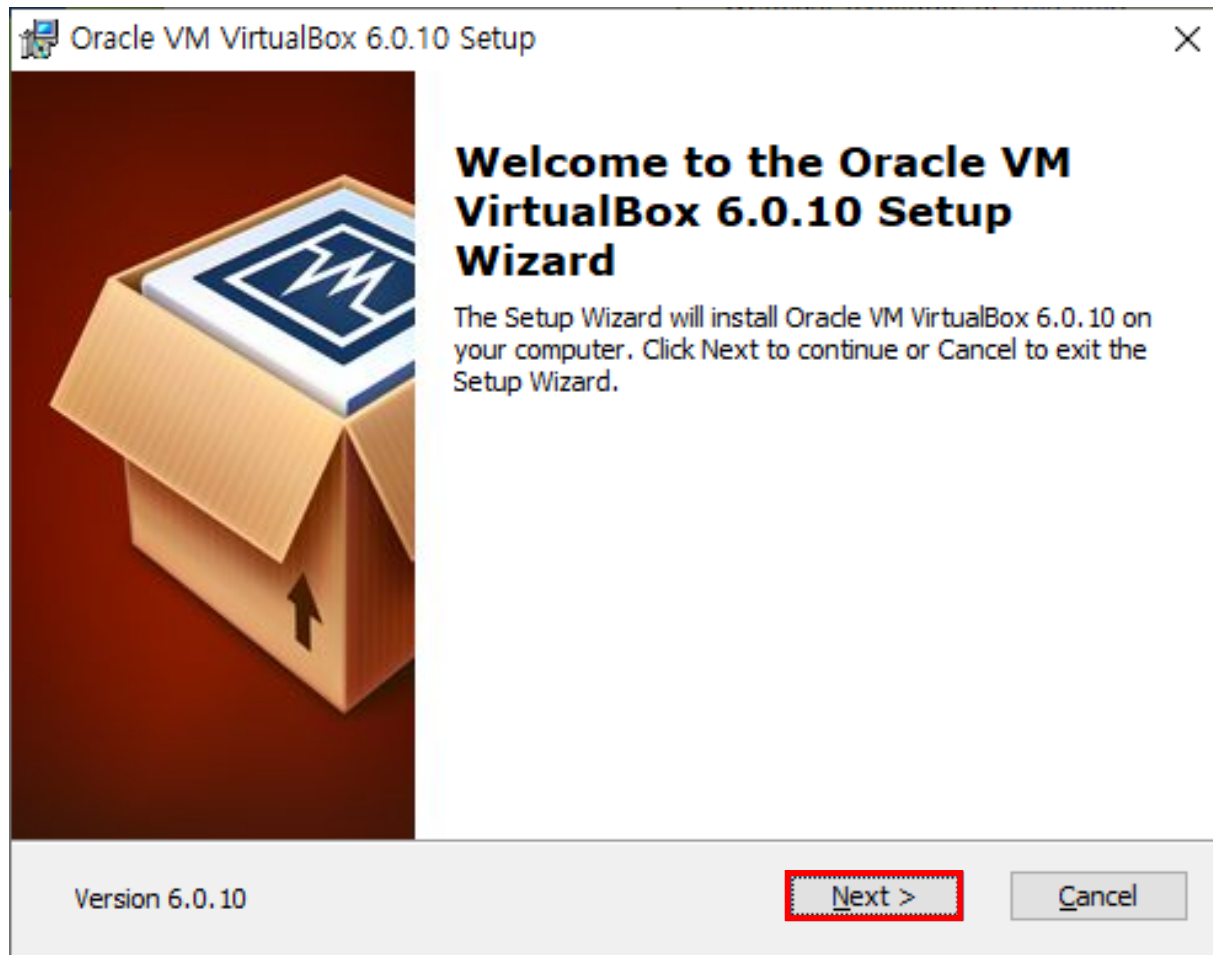
- **New July 16th, 2019 VirtualBox 6.0.10 released!**
Oracle today released a 6.0 maintenance release which improves stability and fixes regressions. See the [Changelog](#) for details.
- **New July 16th, 2019 VirtualBox 5.2.32 released!**
Oracle today released a 5.2 maintenance release which improves stability and fixes regressions. See the [Changelog](#) for details.
- **New April 25th, 2019 Webcast: Building Reliable Oracle Database 18c DevOps**
Webcast available at [this link](#).
- **New April 25th, 2019 Whitepaper: Oracle VM VirtualBox Overview**
Introducing Oracle VM VirtualBox 6.0, Whitepaper available at [this link](#).
- **New December 18th, 2018 VirtualBox 6.0 released!**
Oracle today shipped a new major release, VirtualBox 6.0. See the [Changelog](#) for details.

[More information...](#)

ORACLE

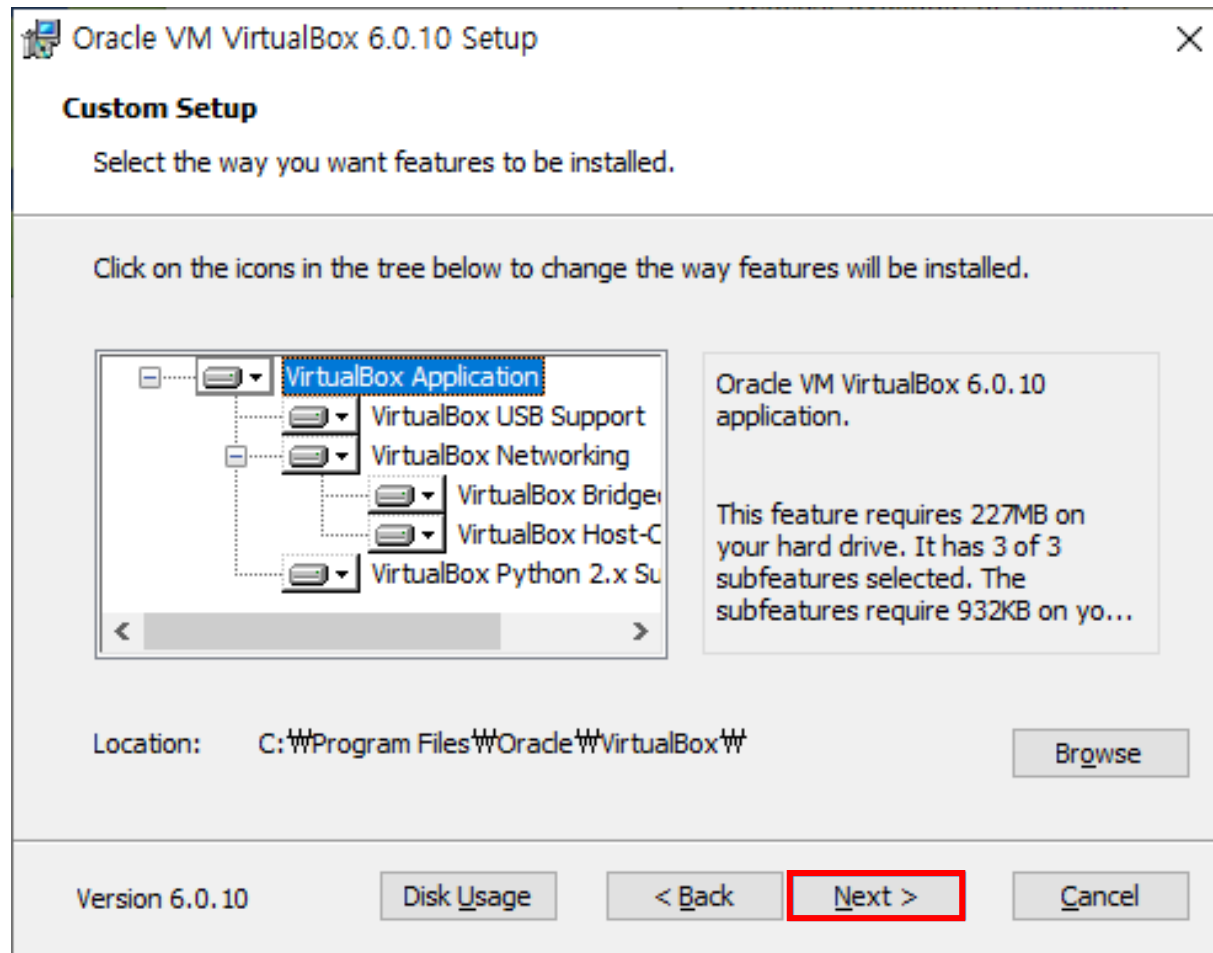
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Install VirtualBox



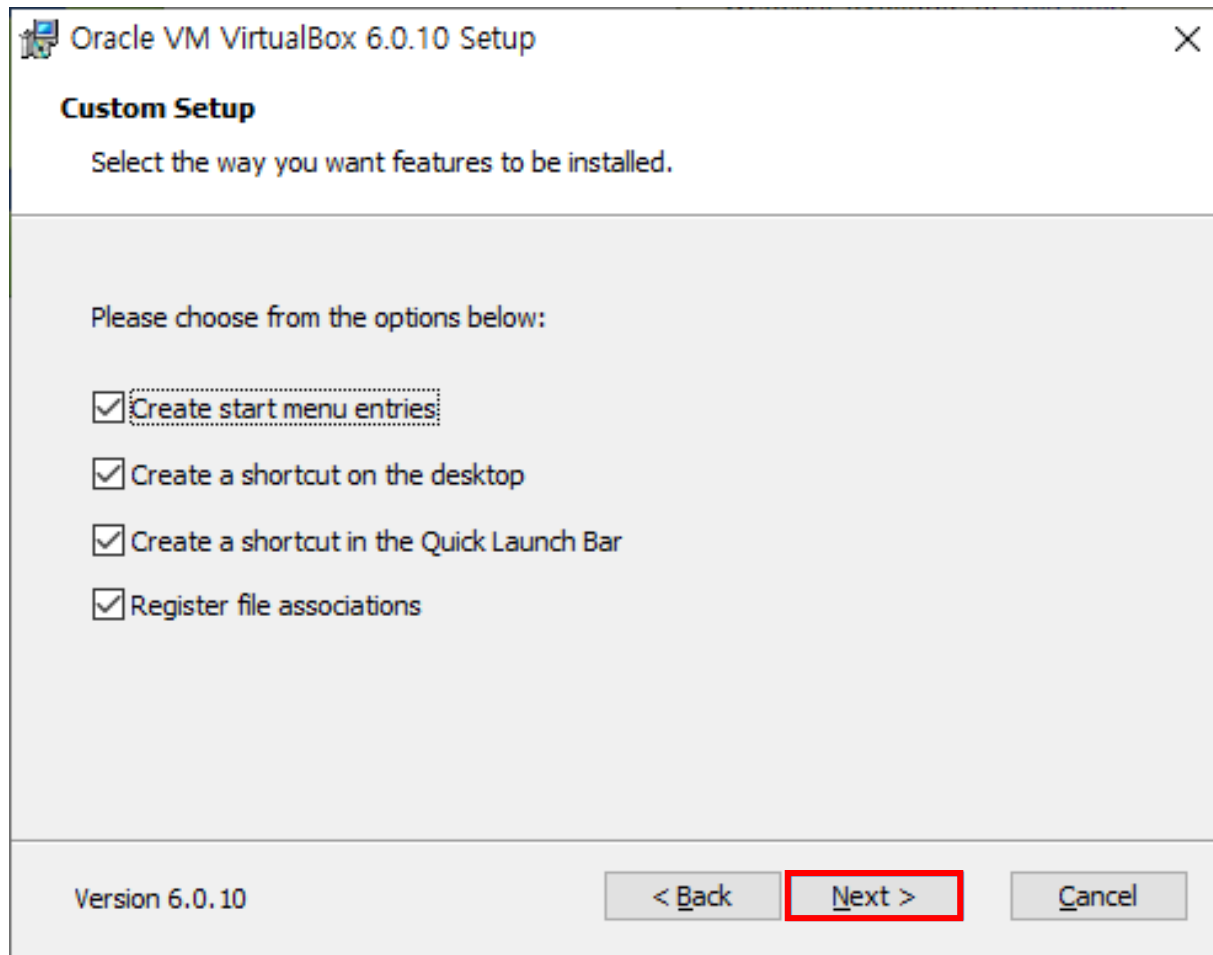
Next 클릭

Install VirtualBox



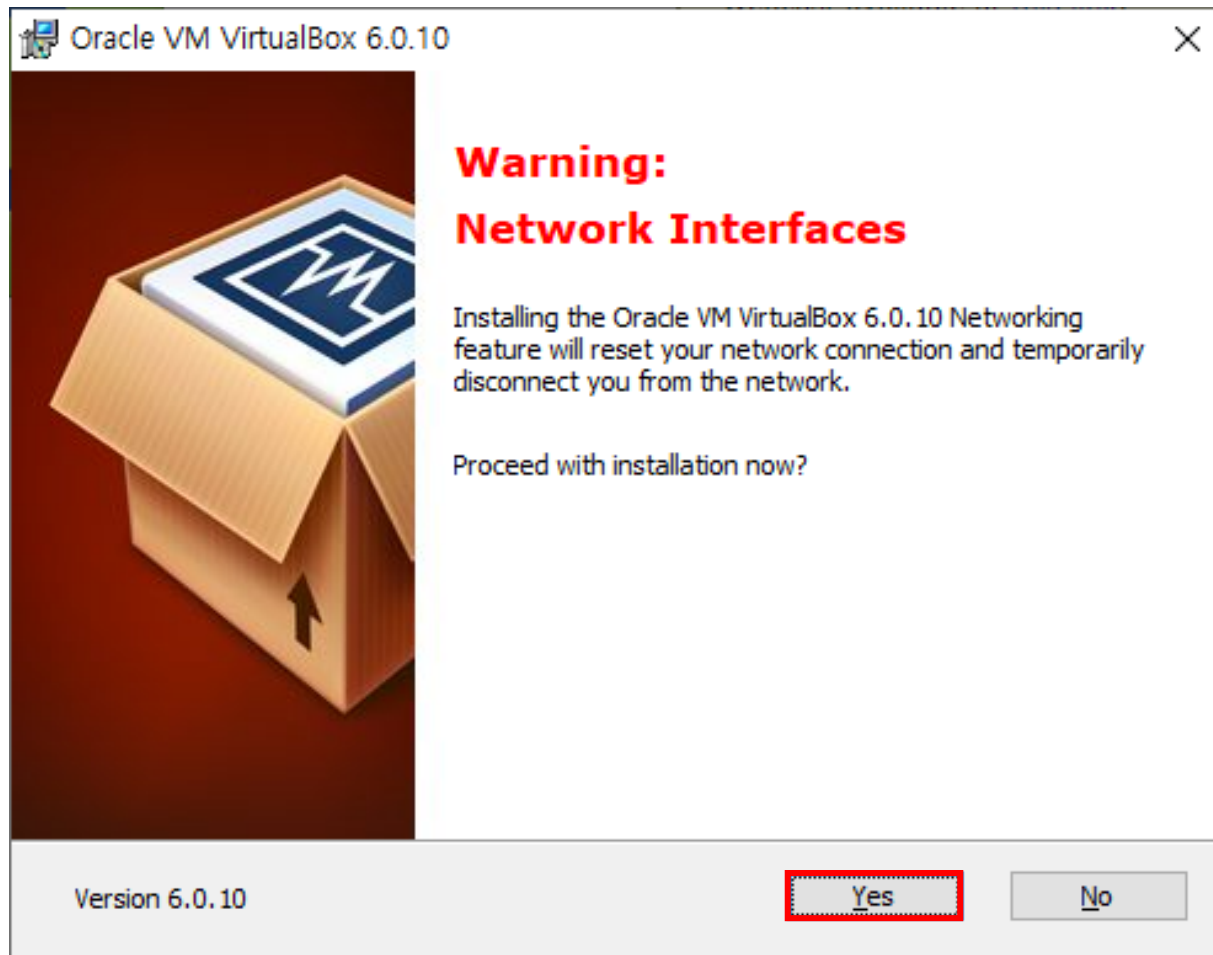
Next 클릭

Install VirtualBox



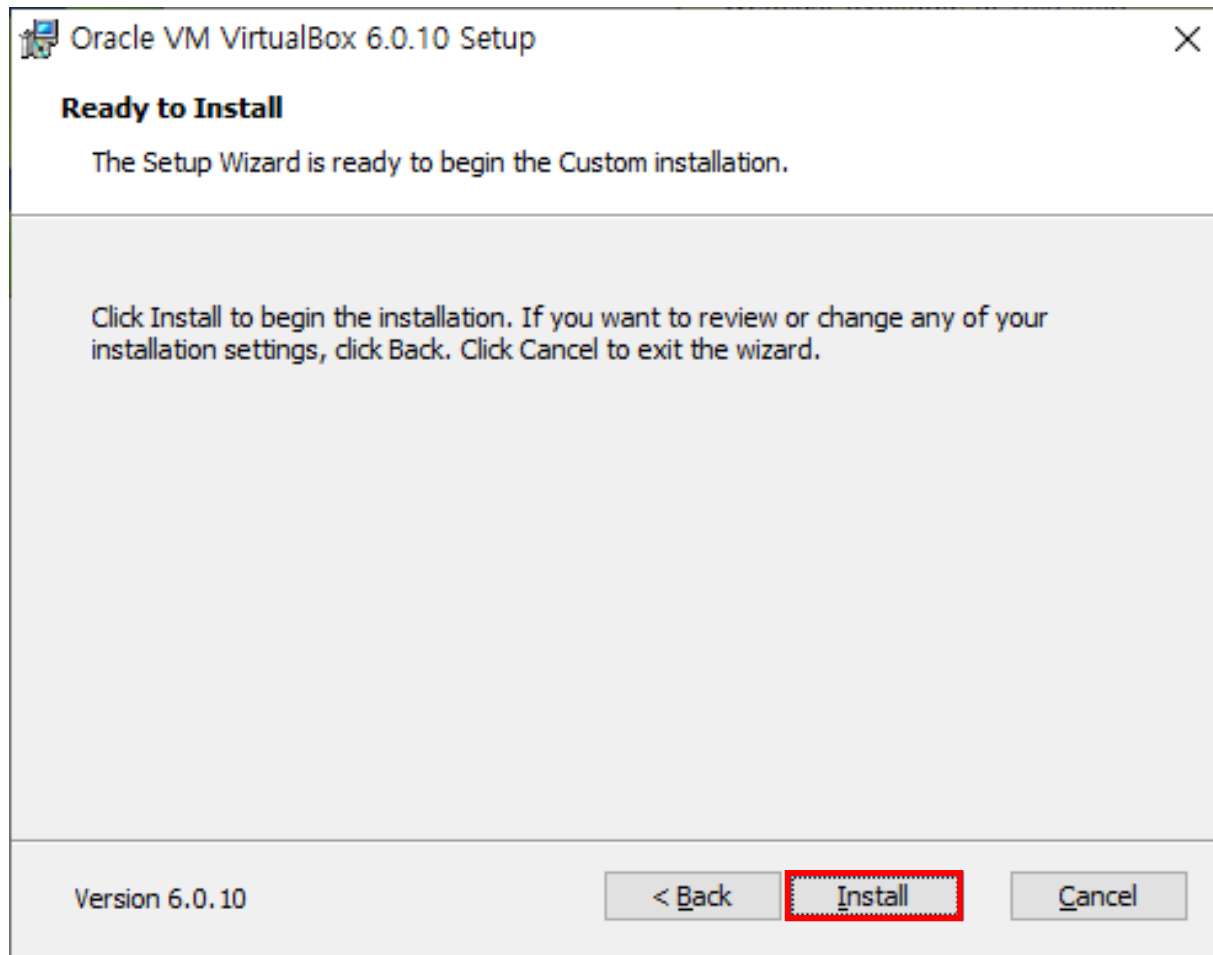
Next 클릭

Install VirtualBox



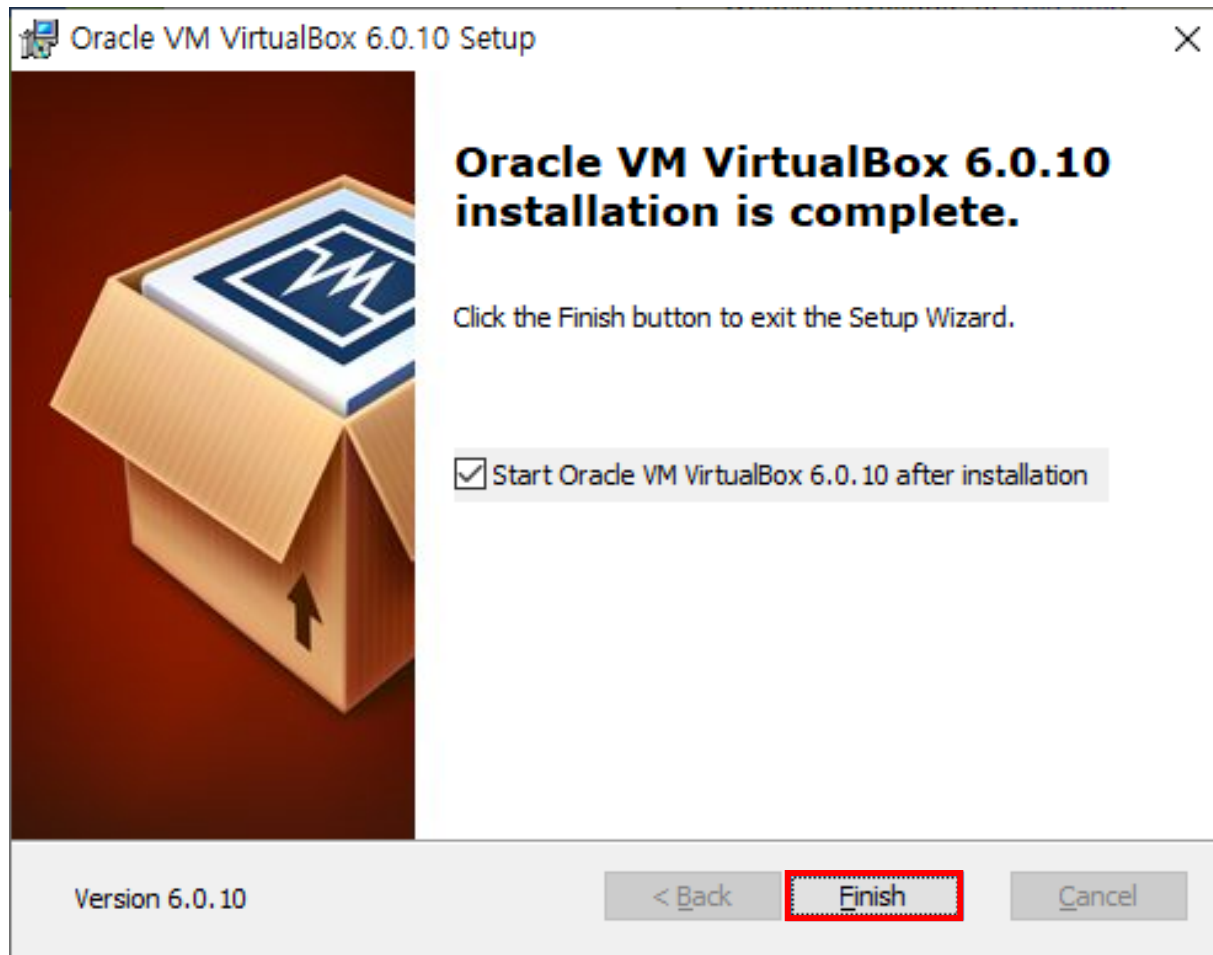
Yes 클릭

Install VirtualBox



Install 클릭

Install VirtualBox



Finish 클릭

Install VirtualBox



새로 만들기 클릭

Install VirtualBox

? X

← 가상 머신 만들기

이름 및 운영 체제

새 가상 머신을 나타내는 이름과 저장할 대상 폴더를 입력하고
설치할 운영 체제를 선택하십시오. 입력한 이름은 VirtualBox에
서 가상 머신을 식별하는 데 사용됩니다.

이름: pl_ubuntu

머신 폴더: D:\VirtualBox\folder

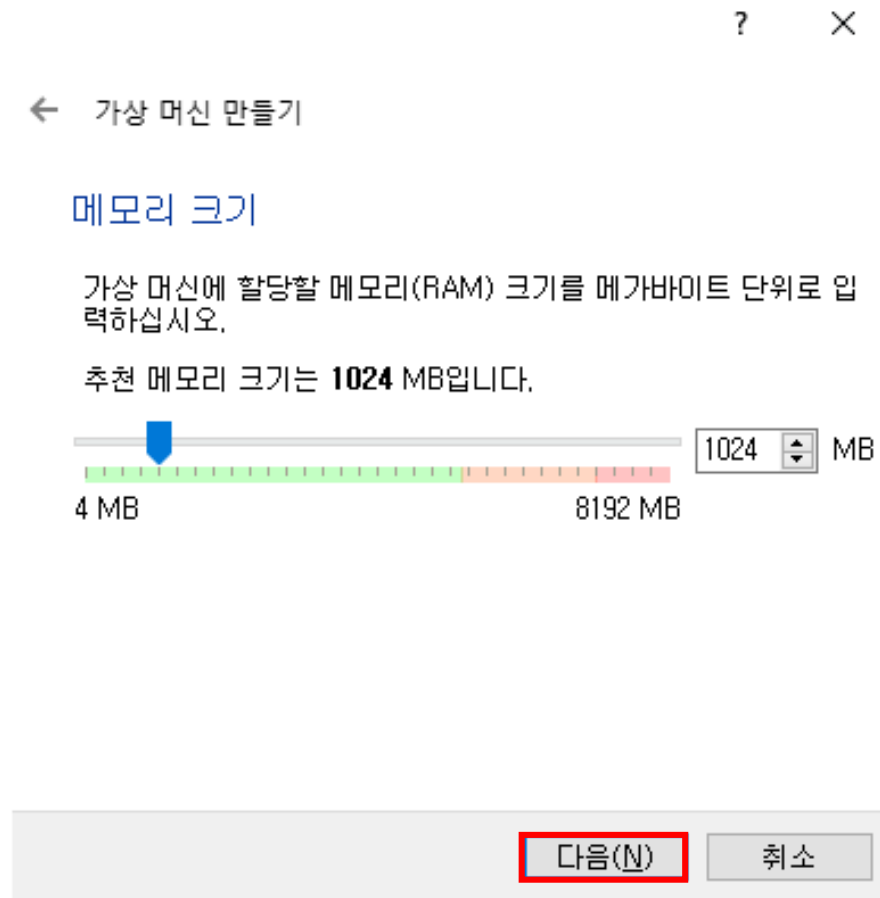
종류(T): Linux

버전(V): Ubuntu (64-bit)

전문가 모드(E) 다음(N) 취소

Linux – Ubuntu 설정

Install VirtualBox



다음 클릭

Install VirtualBox

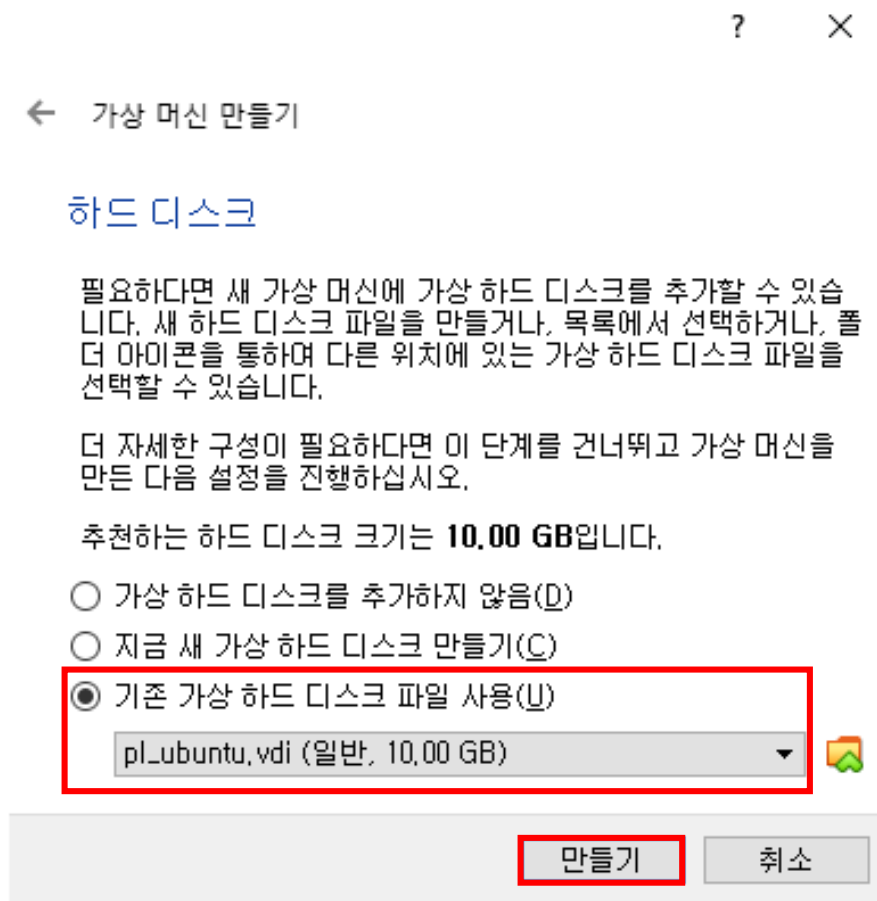


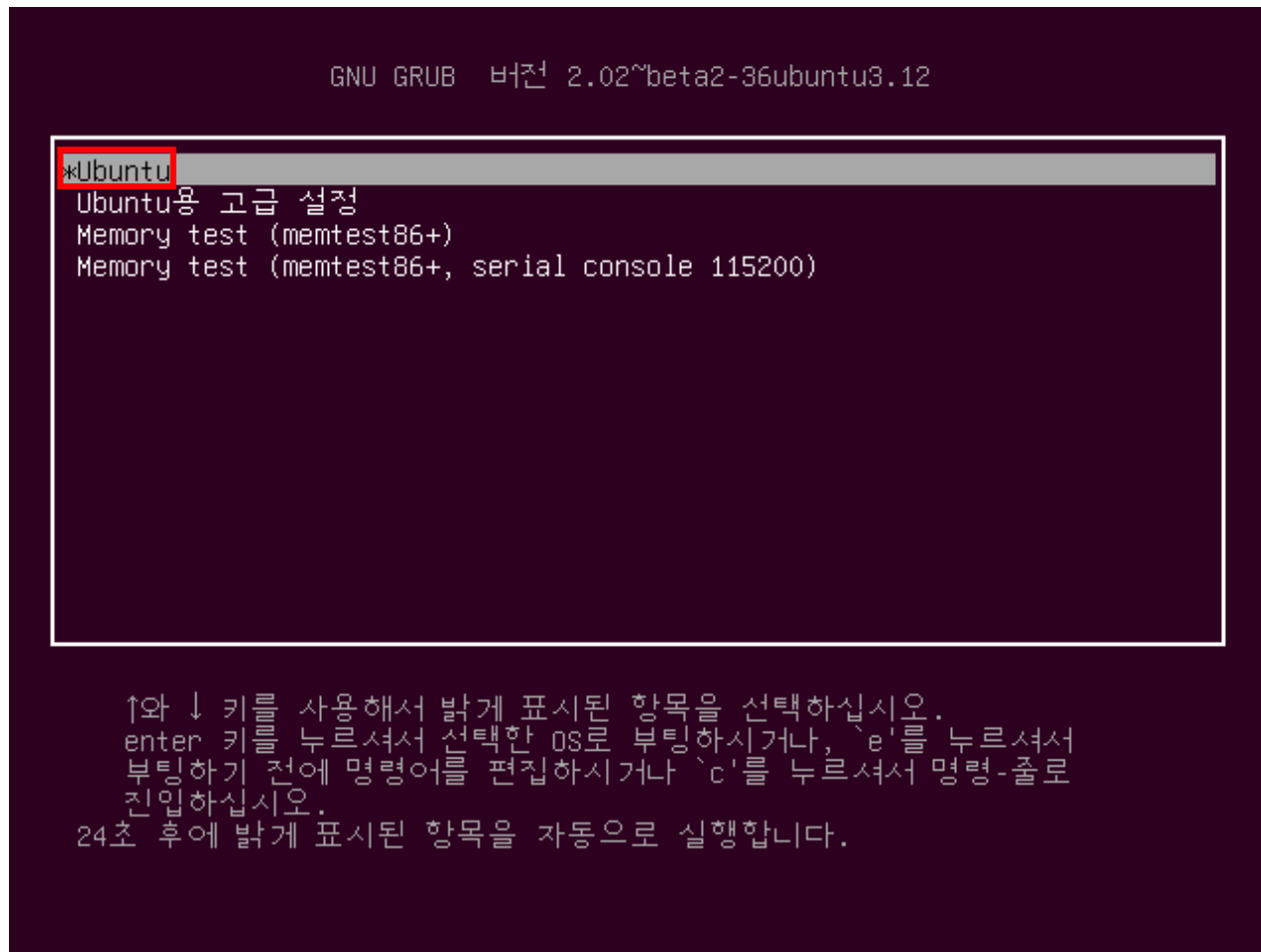
Image file 추가

Run Ubuntu on VirtualBox



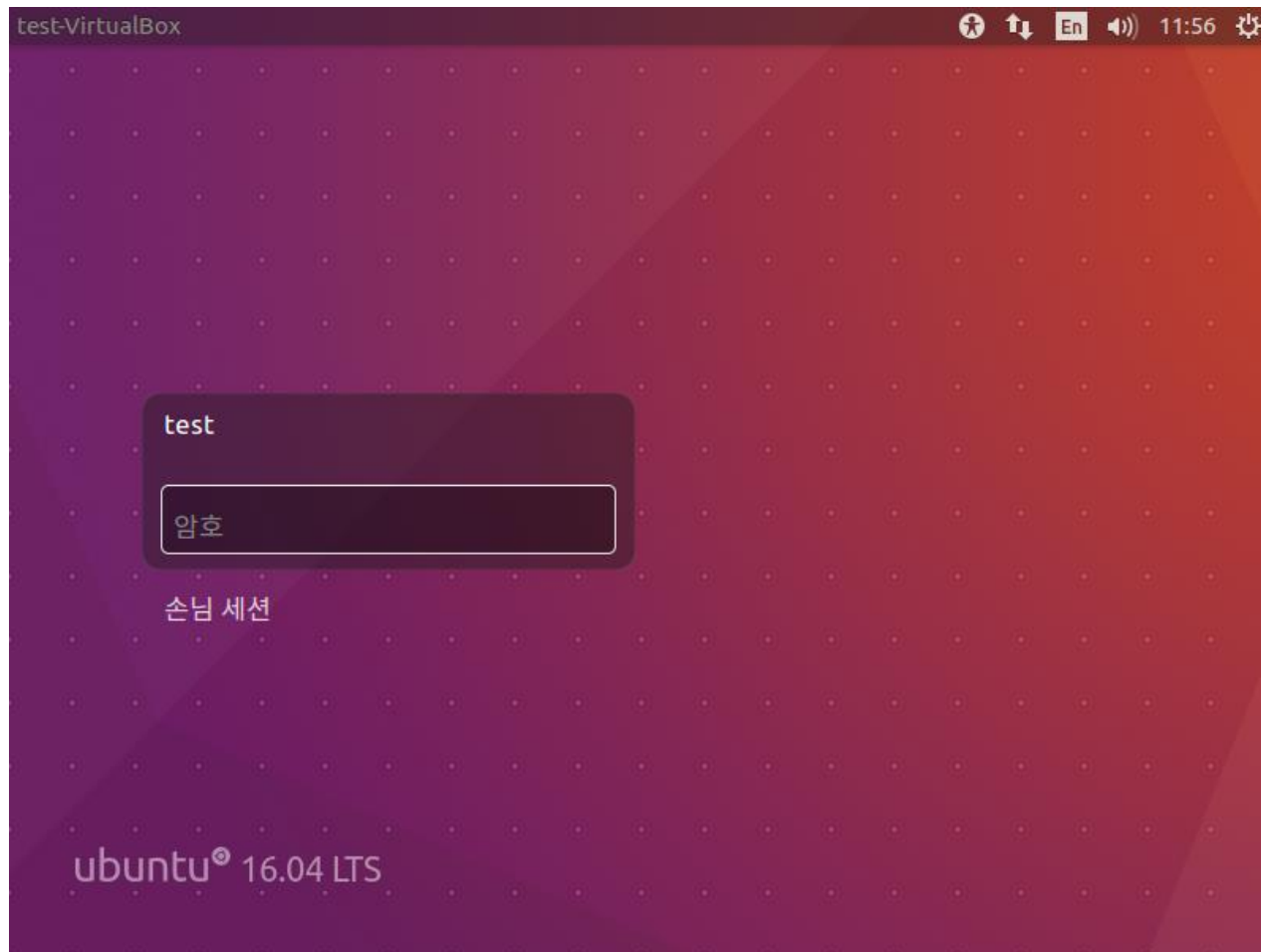
시작 클릭

Run Ubuntu on VirtualBox



Ubuntu 선택

Run Ubuntu on VirtualBox



Password : 1234

One More Tip

- [MobaXterm](#)
 - XShell, putty과 같은 Secure Shell(원격 프로그램)
 - Multi-terminal 지원
 - Drag & Drop으로 Windows와 파일 이동 가능

Any Questions?