

# Lecture #20. 사운드 및 패키징

2D 게임 프로그래밍

이대현 교수



# 학습 내용

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- Pico2d의 사운드 플레이
- PyInstaller 를 이용한 실행 파일 building
- Installer의 제작

실습



배경 음악 구현

# court.py



```
class Court:  
    def __init__(self):  
        self.image = load_image('futsal_court.png')  
        self.cw = get_canvas_width()  
        self.ch = get_canvas_height()  
        self.w = self.image.w  
        self.h = self.image.h  
        self.bgm = load_music('sound/football.mp3')  
        self.bgm.set_volume(32)  
        self.bgm.repeat_play()
```

# Music 관련 function 들

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- 음악 파일(mp3, ogg)의 로딩

- load\_music(파일이름)

- 음악 연주 기능

- repeat\_play() - 반복재생
  - play(n) - n 번 재생
  - set\_volume(v) - 소리 크기 0~128
  - get\_volume() - 현재 소리 크기
  - stop() - 중단
  - pause() - 일시정지
  - resume() - 재개



실습

이펙트사운드 구현

# ball.py (1)



```
class Ball:  
    image = None  
    boy_eat_sound = None  
  
def __init__(self, x = None, y = None):  
    if Ball.image == None:  
        Ball.image = load_image('ball21x21.png')  
    self.x = x if x else random.randint(100, common.court.w - 100)  
    self.y = y if y else random.randint(100, common.court.h - 100)  
  
    if not Ball.zombie_eat_sound:  
        Ball.boy_eat_sound = load_wav('sound/pickup.wav')  
        Ball.boy_eat_sound.set_volume(32)
```

# ball.py (2)



```
def handle_collision(self, group, other):
    if group == 'boy:ball':
        Ball.boy_eat_sound.play()
        game_world.remove_object(self)
```

# Wav 관련 function 들

---

- **이펙트 파일(wav)의 로딩**

- `load_wav(파일이름)`

- **이펙트 재생 기능**

- `repeat_play()` - 반복재생
  - `play(n)` - n 번 재생
  - `set_volume(v)` - 소리 크기 0~128
  - `get_volume()` - 현재 소리 크기

# mygame.py가 실행되기 위해 필요로 하는 것들... (1)

---

- 여러분이 작성한 000.py
- 리소스: image, font, mp3, wav 파일 등등

# mygame.py가 실행되기 위해 필요로 하는 것들...(2)

## ▪ Pico2d 가 활용하는 SDL 라이브러리 DLL

```
import pico2d  
import os  
print(os.getenv('PYSDL2_DLL_PATH'))
```

libFLAC-8	dll
libfreetype-6	dll
libjpeg-9	dll
libmikmod-2	dll
libmodplug-1	dll
libogg-0	dll
libpng16-16	dll
libtiff-5	dll
libvorbis-0	dll
libvorbisfile-3	dll
libwebp-4	dll
SDL2	dll
SDL2_image	dll
SDL2_mixer	dll
SDL2_ttf	dll
smpeg2	dll
zlib1	dll



mygame.py 를  
Mygame.exe 로 변환

# PyInstaller

▪ <http://www.pyinstaller.org/>

The screenshot shows a web browser window displaying the PyInstaller Manual. The URL in the address bar is [pyinstaller.org/en/stable/](https://pyinstaller.org/en/stable/). The page title is "PyInstaller Manual". On the left, there is a sidebar with a logo of a green snake on a blue floppy disk, the text "6.17.0", and a search bar labeled "Search docs". Below the search bar is a list of navigation links: Requirements, License, How To Contribute, How to Install PyInstaller, What PyInstaller Does and How It Does It, Using PyInstaller, Common Issues and Pitfalls, Run-time Information, and Using Spec Files.

**PyInstaller Manual**

**Version:** PyInstaller 6.17.0  
**Homepage:** <https://pyinstaller.org/>  
**Contact:** [pyinstaller@googlegroups.com](mailto:pyinstaller@googlegroups.com)  
**Authors:** David Cortesi, based on structure by Giovanni Bajo & William Caban, based on Gordon McMillan's manual  
**Copyright:** This document has been placed in the public domain.

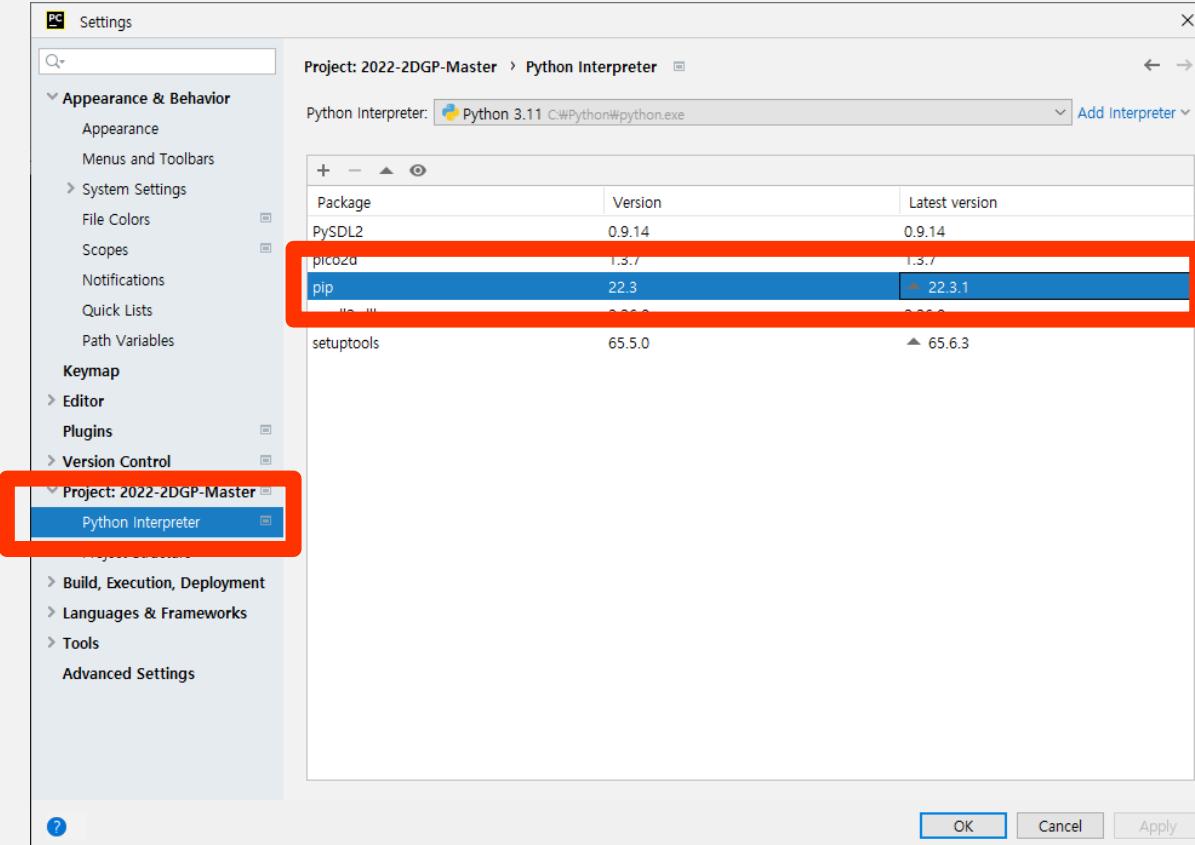
PyInstaller bundles a Python application and all its dependencies into a single package. The user can run the packaged app without installing a Python interpreter or any modules. PyInstaller supports Python 3.8 and newer, and correctly bundles many major Python packages such as numpy, matplotlib, PyQt, wxPython, and others.

PyInstaller is tested against Windows, macOS, and Linux. However, it is not a cross-compiler; to make a Windows app you run PyInstaller on Windows, and to make a Linux app you run it on Linux, etc. x PyInstaller has been used successfully with AIX, Solaris, FreeBSD and OpenBSD but against them is not part of our continuous integration tests, and the development team of

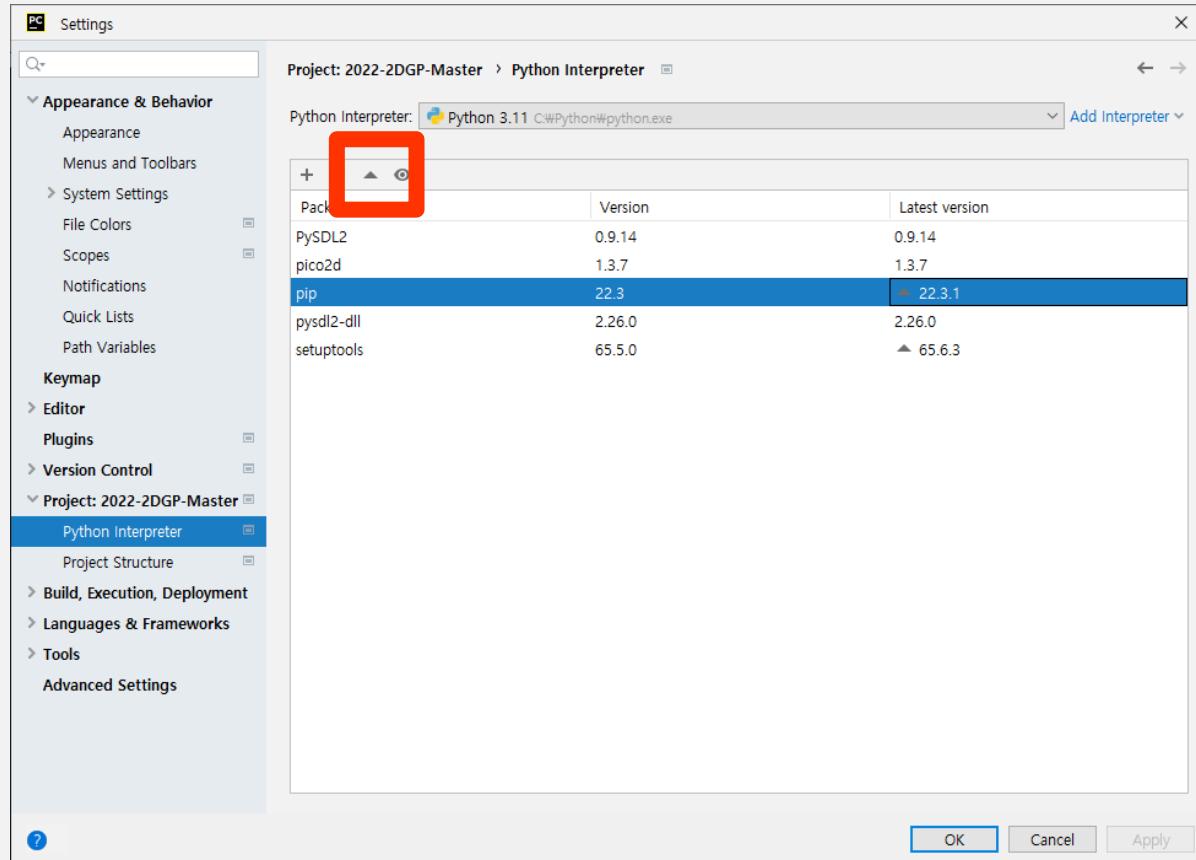
Reach the right audience on a privacy-first ad network only for software devs: [EthicalAds](#)

Ads by EthicalAds [Close Ad](#)

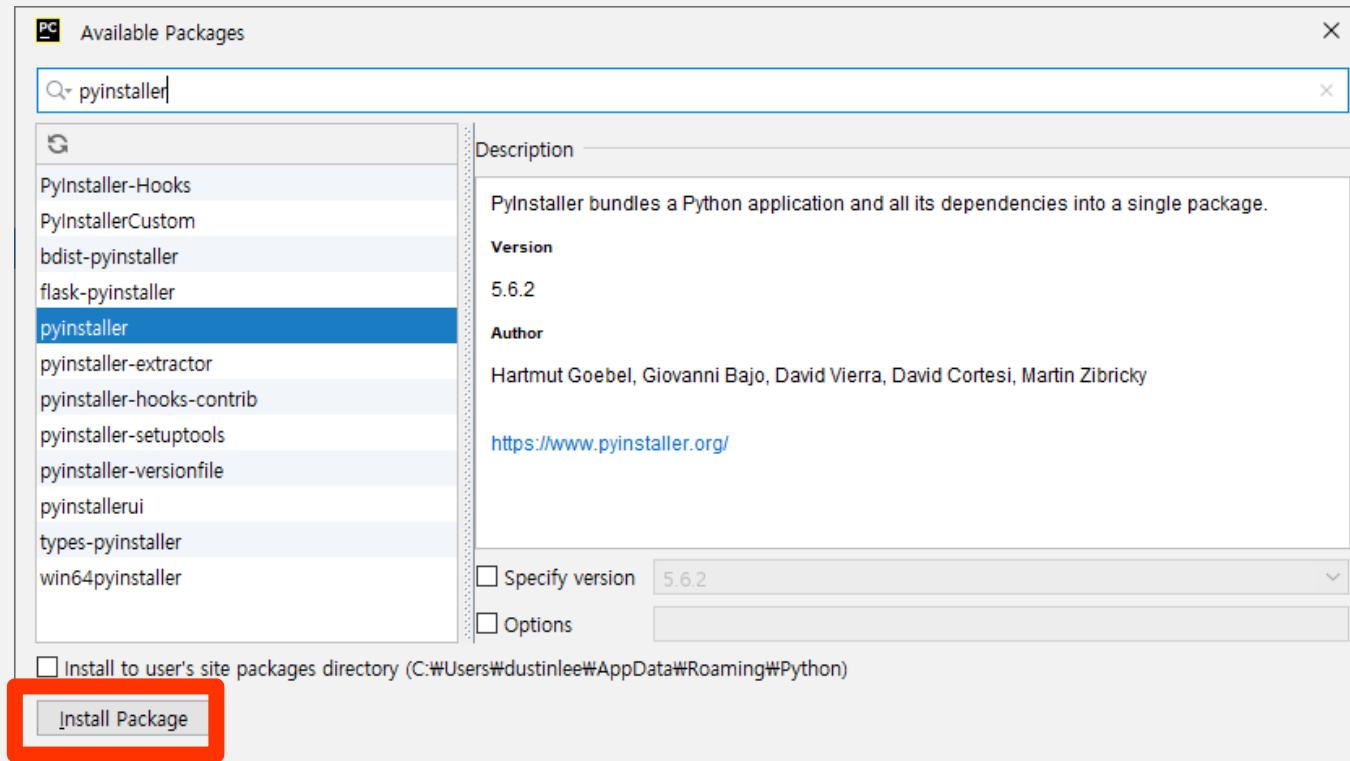
# PyCharm: pip 설치 확인



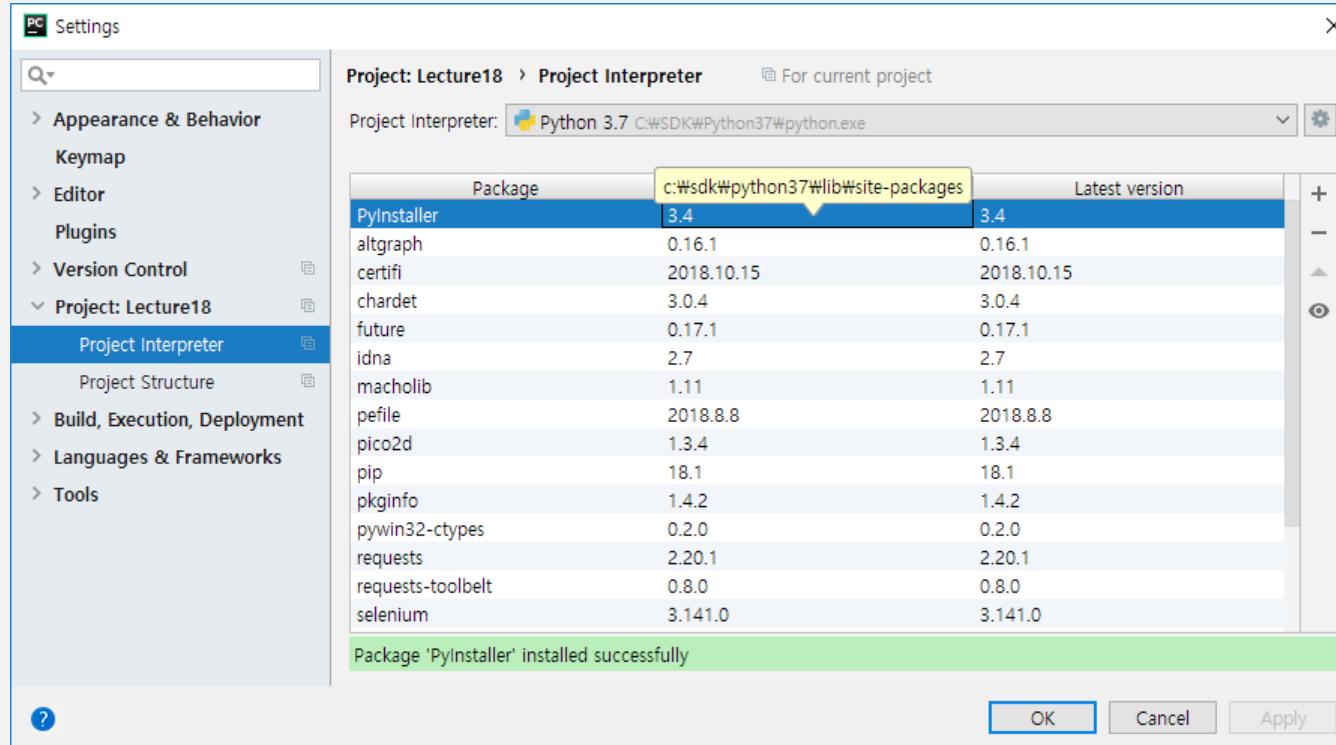
# PyCharm: pip 설치 및 version upgrade



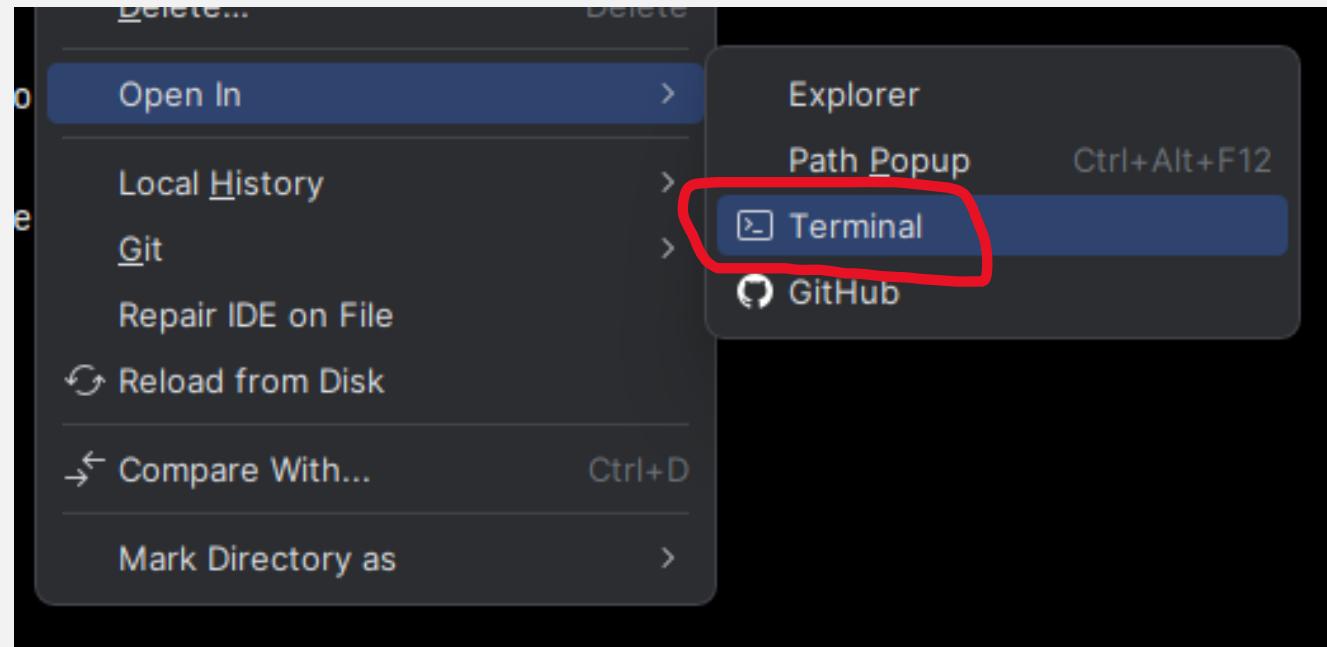
# PyCharm: PyInstaller 설치



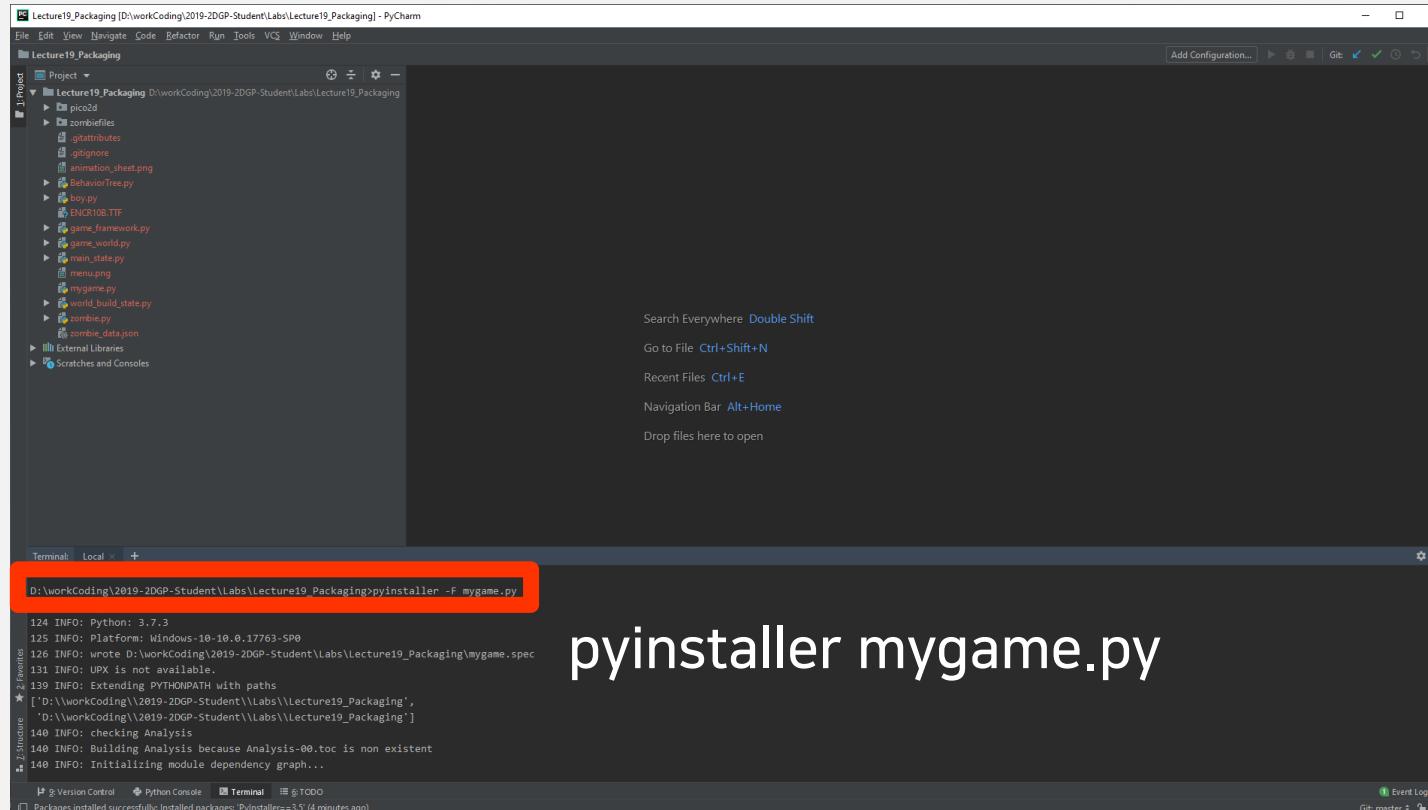
# PyCharm: PyInstaller 설치 확인



# 현재 폴더 터미널 열기



# Pyinstaller 실행



## pyinstaller mygame.py

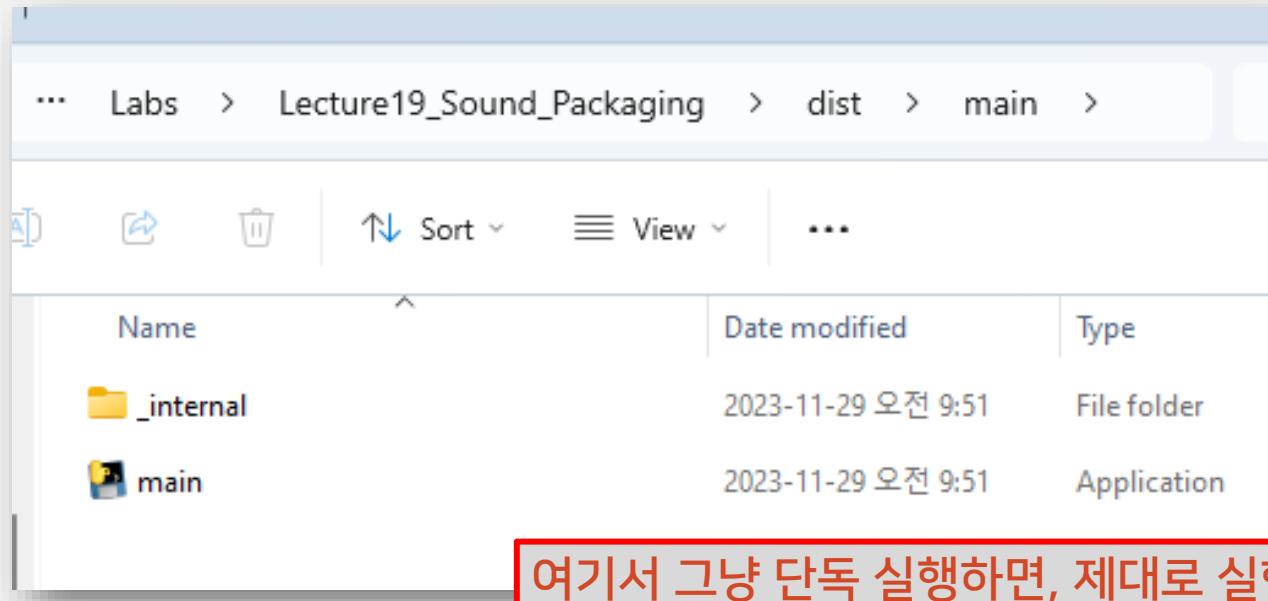
# 성공 확인

Terminal: Local × +

```
7842 INFO: Building PYZ (ZlibArchive) D:\workCoding\2019-2DGP-Student\Labs\Lecture19_Packaging\build\mygame\PYZ-00.pyz completed successfully.
7855 INFO: checking PKG
7856 INFO: Building PKG because PKG-00.toc is non existent
7856 INFO: Building PKG (CArchive) PKG-00.pkg
10303 INFO: Building PKG (CArchive) PKG-00.pkg completed successfully.
10309 INFO: Bootloader c:\python37\lib\site-packages\PyInstaller\bootloader\Windows-64bit\run.exe
10310 INFO: checking EXE
10310 INFO: Building EXE because EXE-00.toc is non existent
10311 INFO: Building EXE from EXE-00.toc
10312 INFO: Appending archive to EXE D:\workCoding\2019-2DGP-Student\Labs\Lecture19_Packaging\dist\mygame.exe
10399 INFO: Building EXE from EXE-00.toc completed successfully.
```

D:\workCoding\2019-2DGP-Student\Labs\Lecture19\_Packaging>

# dist/main 폴더에 만들어진, main.exe



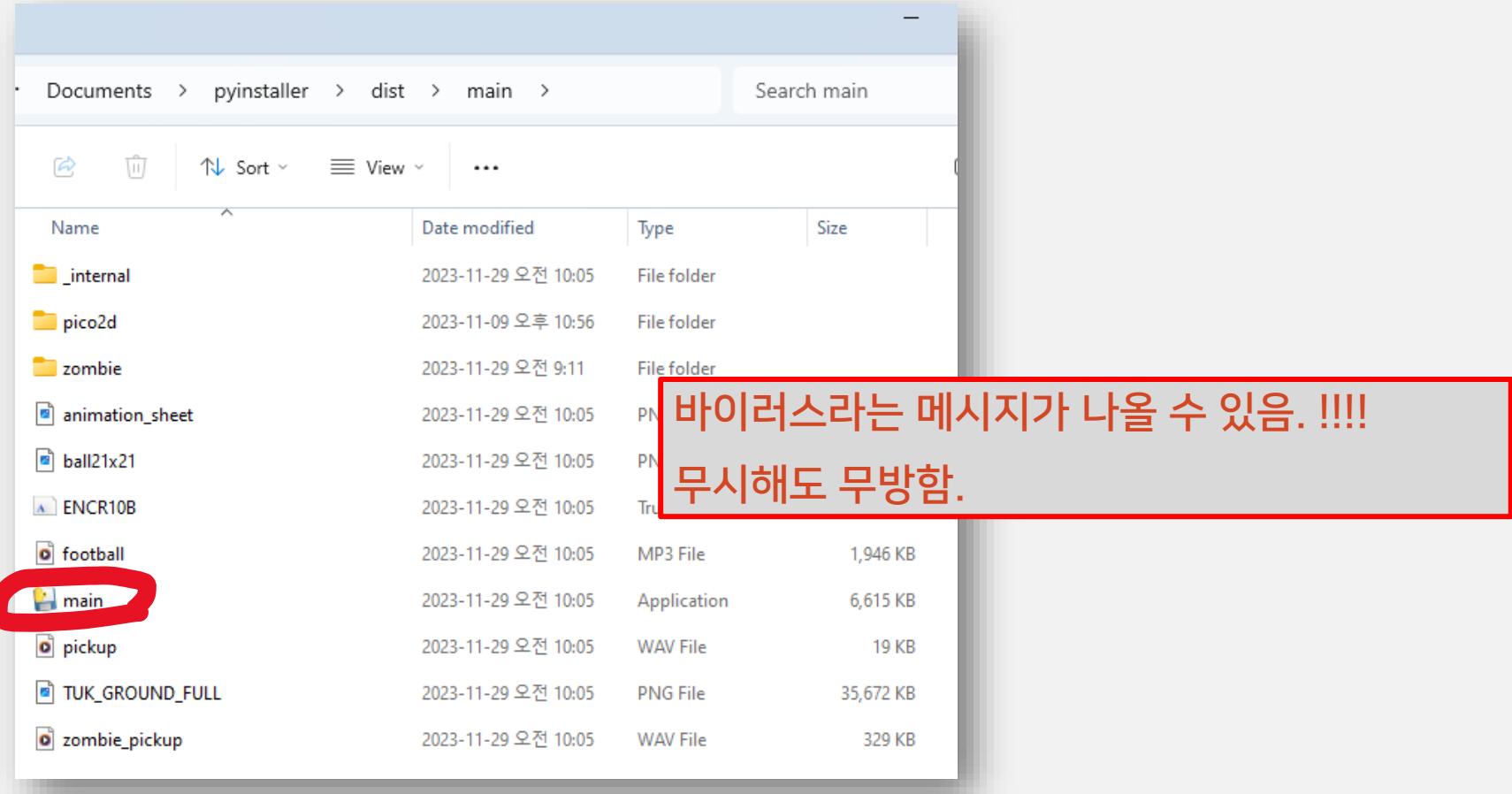
여기서 그냥 단독 실행하면, 제대로 실행이 되지 않음.  
main.exe가 필요로 하는 외부 파일을 찾을 수 없기 때문.

# 리소스 및 필요 DLL 을 dist 폴더로 복사해야 함.

---

- Pico2d SDL 라이브러리 파일
- 게임에 따라 필요한 리소스 파일
  - 현재 실습 파일의 경우,
    - 폰트 – ENCR10B.TTF
    - 코드 이미지 – futsal\_court.png
    - 애니메이션 스프라이트 이미지 – animation\_sheet.png
    - 사운드 파일 – sound 폴더 안의 football.mp3, pickup.wav

# dist 폴더: 여기서 main.exe 을 클릭하면 실행!



# spec 파일의 이용

```
# -*- mode: python ; coding: utf-8 -*-
import os
import pico2d

sdl2dll_path = os.getenv('PYSDL2_DLL_PATH')

a = Analysis(
    ['mygame.py'], # ===== 1. 메인 소스 파일을 지정해야 합니다.
    pathex=[],
    binaries=[(os.path.join(sdl2dll_path, '*.dll'), '.')],
    datas=[],
    hiddenimports=[],
    hookspath=[],
    hooksconfig={},
    runtime_hooks=[],
    excludes=[],
    noarchive=False,
    optimize=0,
)
pyz = PYZ(a.pure)
```

```
exe = EXE(
    pyz,
    a.scripts,
    a.binaries,
    a.datas,
    [],
    name='mygame', # ===== 2. 생성될 실행 파일 이름을 지정해야 합니다.
    debug=False,
    bootloader_ignore_signals=False,
    strip=False,
    upx=True,
    upx_exclude=[],
    runtime_tmpdir=None,
    console=False, # ===== 3. 문제가 발생했을 때 True로 해서 확인.
    disable_windowed_traceback=False,
    argv_emulation=False,
    target_arch=None,
    codesign_identity=None,
    entitlements_file=None,
)
```



# 실습 Installer를 이용한 설치 파일 제작

# Inno Setup 의 설치

Inno Setup Downloads

jrsoftware.org/isdl.php

date e-class system ETRI Everytime 씹일절 ... 쿠팡! G마켓 - 쇼핑을 바꾸... ChatGPT Control Rig All Bookmarks

- 6.3: Many Compiler IDE improvements, including multiple selection support.

Updating is always recommended, even if you don't plan to use these enhancements right away. We continually add extra checks to make your installers safer and more reliable. At the same time, we ensure backward compatibility for your existing installers.

[What's new in this version?](#)

**Using Inno Setup commercially?** Please [purchase a license](#). All commercial licenses are perpetual and require a single payment. They include two years of updates, major and minor. After this period, your current version will remain licensed and functional as-is.

Filename	Download Sites	Downloads	Date	Description
innosetup-6.6.1.exe	US Netherlands	68,528	2025-11-20	Unicode Inno Setup <b>self-installing package</b> . Inno Setup Signature Tool <a href="#">signature</a> and <a href="#">public key</a> .

To install Inno Setup interactively using winget use the following command: `winget install --id JRSoft.InnoSetup.InnoSetup`

Releases are also available as [immutable GitHub releases](#).

Remember to check the [Inno Setup FAQ](#) for solutions to common problems.

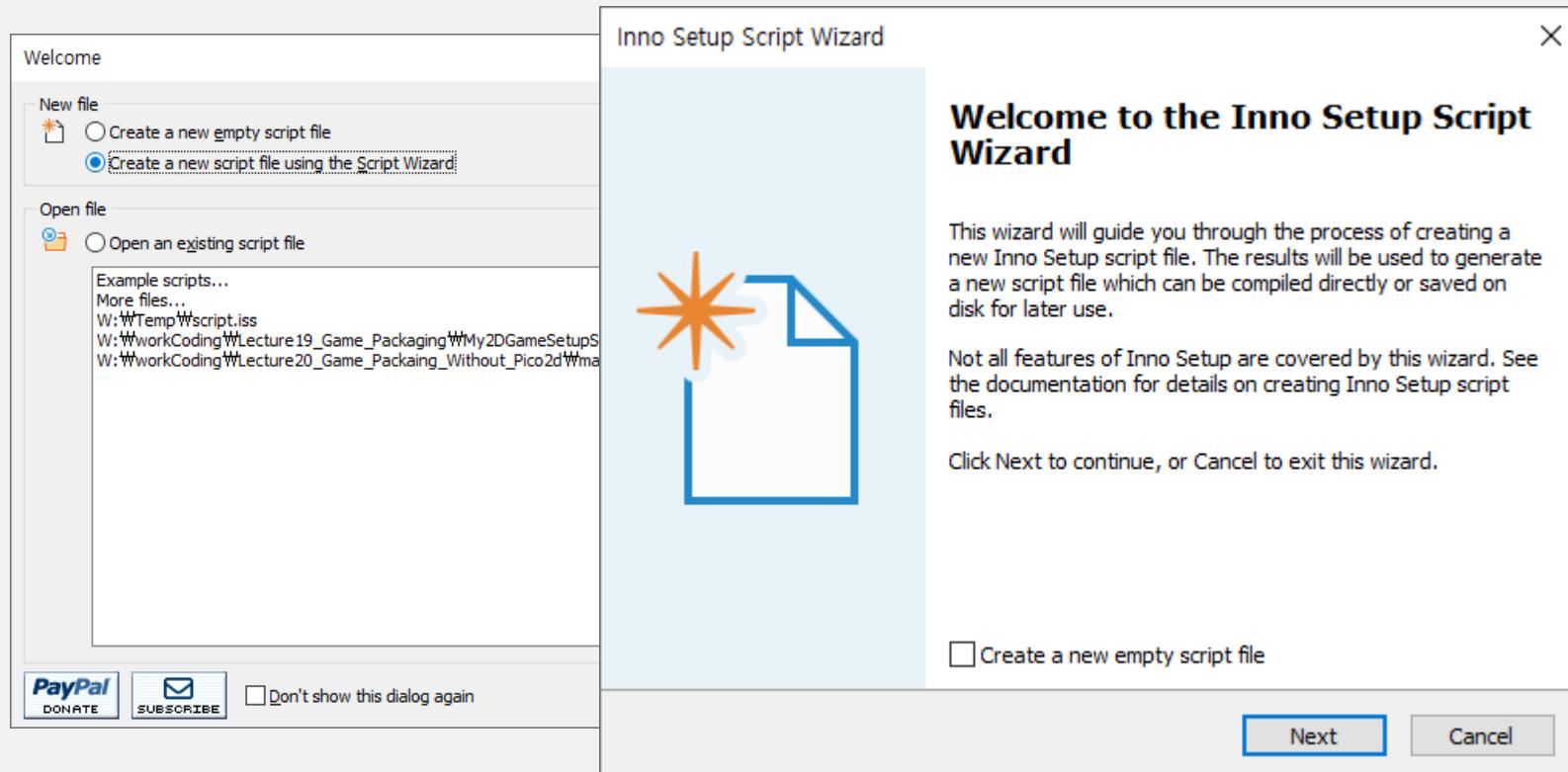
For more Inno Setup-related downloads, see [Third-Party Files](#).

## Next Release

For the next release, we are working hard on various enhancements, including:

- Allowing the use of background images and custom background colors.  
[Example screenshot of Setup using a background image in dark mode, at 150% DPI](#).  
[Example screenshot of Setup using a background image in light mode, at 150% DPI](#).  
[Example screenshot of a task dialog using a background color, at 125% DPI](#).
- Adding autocompletion support to [Setup] section directives, such as WizardStyle.
- Enabling Windows RedirectionGuard in Setup and Uninstall.
- Adding a 64-bit version of the "Setup Loader" program.

# 실행: File->New



## Inno Setup Script Wizard

### Application Information

Please specify some basic information about your application.

**Application name:**

MyGame

**Application version:**

1.5

Application publisher:

My Company, Inc.

Application website:

<https://www.example.com/>

**bold** = required

## Inno Setup Script Wizard

### Application Folder

Please specify folder information about your application.

**Application destination base folder:**

Program Files folder

**Application folder name:**

MyGame

Allow user to change the application folder

Other:

The application doesn't need a folder

프로그램이 설치될 폴더.

프로젝트 발표를 위해서, 학번으로 구별하는 것이 좋음.

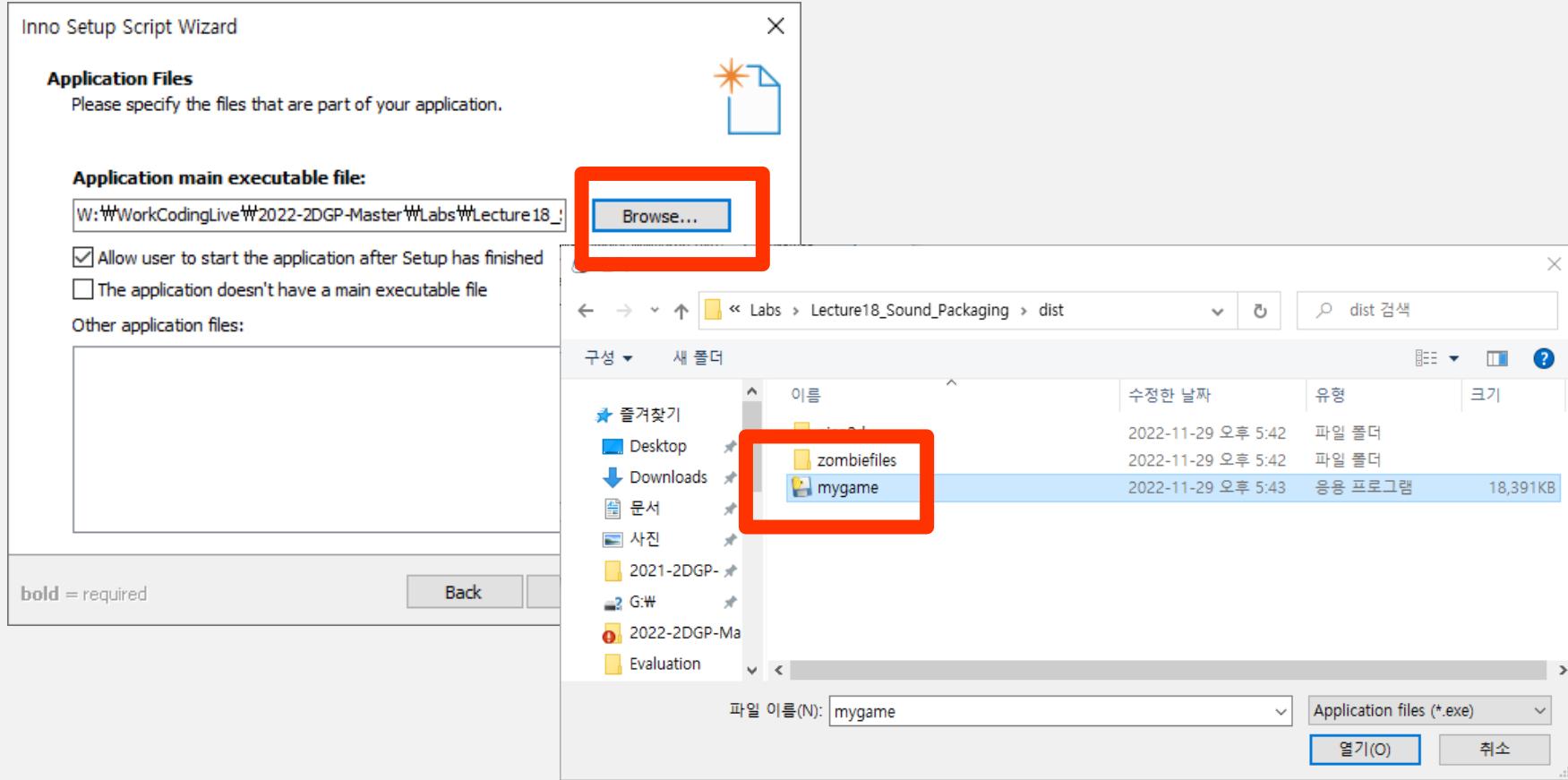
**bold** = required

Back

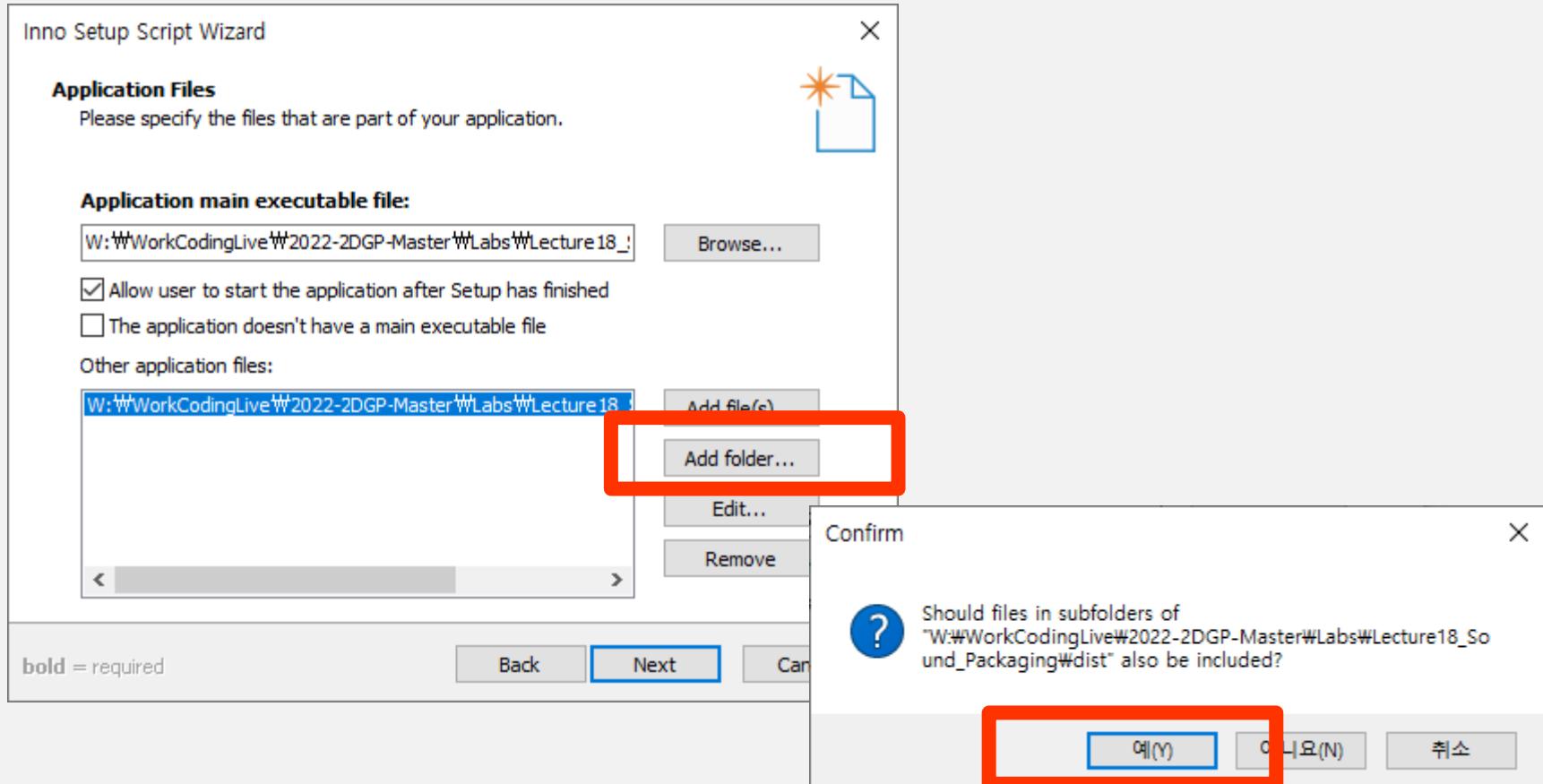
Next

Cancel

# 실행 파일 추가



# 파일 폴더 추가



## Inno Setup Script Wizard

### Application File Association

Please specify which file association should be created for your application.

Associate a file type

Application file type name:

MyGame File

Application file type ext:

.mfp

**bold = required**

### Inno Setup Script Wizard

#### Application Shortcuts

Please specify which shortcuts should be created

Create a shortcut to the main executable in the Start Menu

Application Start Menu folder name:

MyGame

Allow user to change the Start Menu folder name

Allow user to disable Start Menu folder creation

Create an Internet shortcut in the Start Menu

Create an Uninstall shortcut in the Start Menu

Other shortcuts to the main executable:

Allow user to create a desktop shortcut

**bold = required**

## Inno Setup Script Wizard

### Application Documentation

Please specify which documentation files should be shown by Setup during installation.



License file:

**Browse...**

Information file shown before installation:

**Browse...**

Information file shown after installation:

**Browse...**

**Back**

**Next**

**Cancel**

## Inno Setup Script Wizard

### Setup Install Mode

Please specify in which install mode Setup should run.

#### Install mode:

- Administrative install mode (install for all users)
- Non administrative install mode (install for current user only)
- Allow user to override the install mode via the command line
- Ask the user to choose the install mode at startup

bold = required

Back

Next



## Inno Setup Script Wizard

### Setup Languages

Please specify which Setup languages should be included.

#### Languages:

- English
- Armenian
- Brazilian Portuguese
- Bulgarian
- Catalan
- Corsican
- Czech
- Danish
- Dutch
- Finnish
- French
- German
- Hebrew

Select all

Deselect all

bold = required

Back

Next

Cancel



## Inno Setup Script Wizard

### Compiler Settings

Please specify some basic compiler settings.

Custom compiler output folder:

W:\Temp

Compiler output base file name:

MyGame\_890418022\_Setup

Custom Setup icon file:



Setup password:



## Inno Setup Script Wizard

### Wizard Style

Please specify which wizard style should be used.

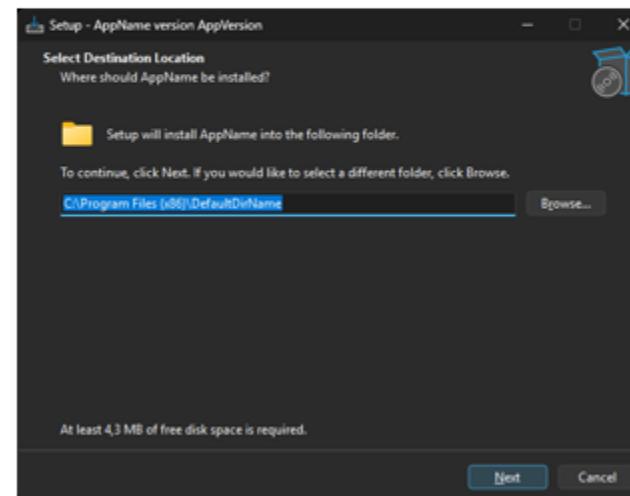


Wizard style:

modern

dark

default



Back

Next

Cancel

## Inno Setup Script Wizard



### Inno Setup Preprocessor

Please specify whether Inno Setup Preprocessor should be used.



The Inno Setup Script Wizard can use #define compiler directives to simplify your script.  
Although this is not necessary, it will make it easier to manually change the script later.

Do you want the Inno Setup Script Wizard to use #define compiler directives?

Yes, use #define compiler directives

Back

Next

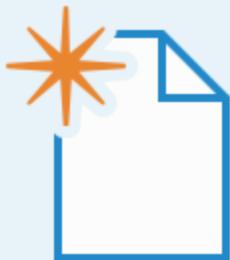
Cancel

## Inno Setup Script Wizard



You have successfully completed the Inno Setup Script Wizard.

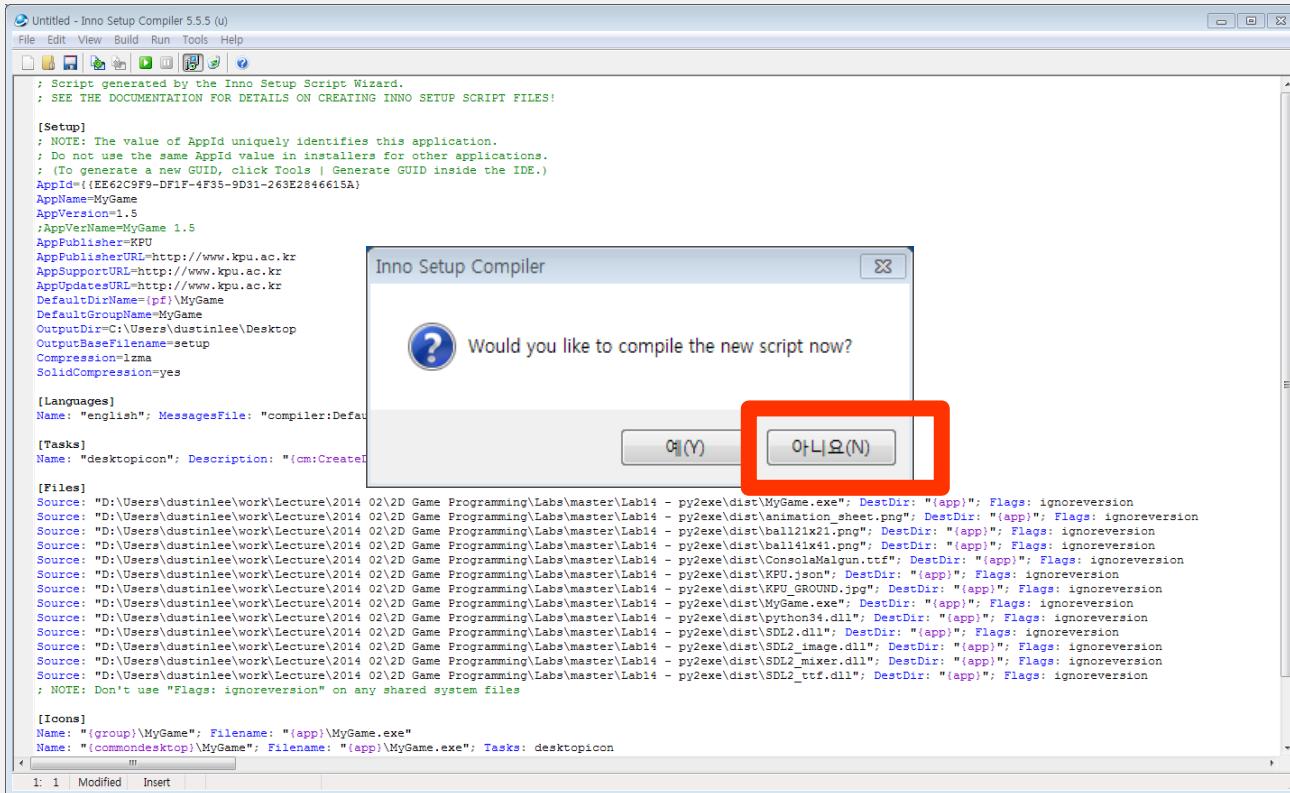
To close this wizard and generate the new script file, click Finish.



Back

Finish

Cancel



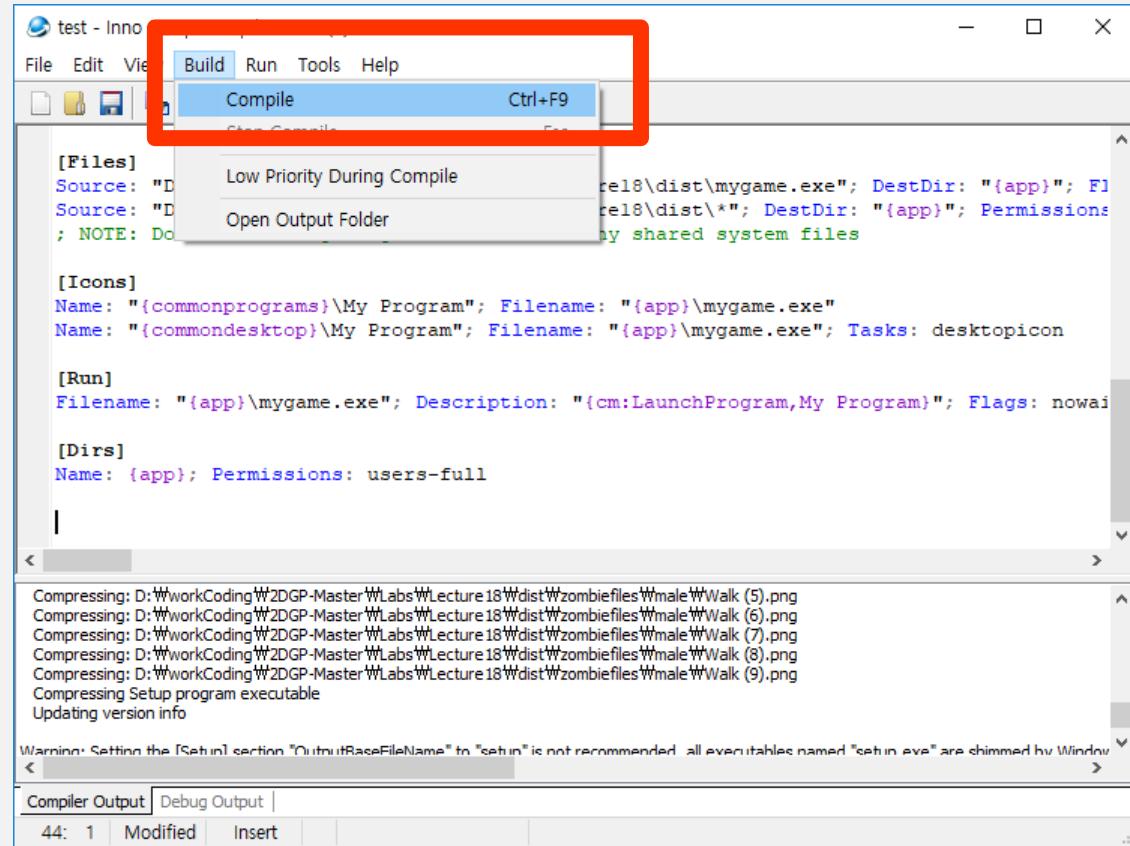
```
[Files]
Source: "D:\workCoding\2DGP-Master\Labs\Lecture18\dist\mygame.exe"; DestDir: "{app}"; Flags: ignoreversion
Source: "D:\workCoding\2DGP-Master\Labs\Lecture18\dist\*"; DestDir: "{app}"; Permissions: users-full; Flags: ignoreversion
; NOTE: Don't use "Flags: ignoreversion" on any shared system files

[Icons]
Name: "{commonprograms}\My Program"; Filename: "mygame.exe"
Name: "{commondesktop}\My Program"; Filename: "mygame.exe"

[Run]
Filename: "{app}\mygame.exe"; Description: "Launch my game"

[Dirs]
Name: {app}; Permissions: users-full
```

mygame 폴더에 데이터 파일을 써야 하는 경우가 있을 수 있음.  
하지만, 폴더가 Program Files로 써 시스템 폴더이기 때문에,  
일반적으로 애플리케이션에서 저장이 불가능.  
따라서, 해당 폴더의 permission 을 강제로 풀어야 함.  
추천할 만한 방법은 아니며, 사용자 데이터는 사용자의 개별 폴더에  
저장할 수 있게 하는 것이 바람직함.



# 생성된 셋업 파일

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