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# Tkinter 활용하기

12주차\_03

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# Events와 binding

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- **Events**

- 어플리케이션에 발생하는 어떤 것
- 예를 들어, User가 key를 누르거나 버튼을 클릭 하거나 마우스를 드래그 하는 것

- **Event handler**

- event가 발생했을 때 호출되는 해당 응용 프로그램의 기능

- **Binding**

- 위젯에 event가 발생할 때, 어플리케이션이 event handler를 호출하여 준비하도록 연결 해 주는 것

# Event 생성

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Event patterns	Description
<Button-1>	첫 번째 mouse button을 누른다.
<KeyPress-H>	H key를 누른다.
<Control-Shift-KeyPress-H>	control-shift-H를 누른다.
<B1-Motion>	왼쪽버튼을 누른 채로 마우스를 드래그한다.
<Double-Button-1>	더블클릭
<Enter>	마우스 포인터가 widget안에 있다.
<Leave>	마우스 포인터를 widget 밖으로 둔다.
<Return>	Enter key를 누른다.
<Configure>	크기를 바꾼다.

# Event binding 예제

```
from tkinter import *
import sys

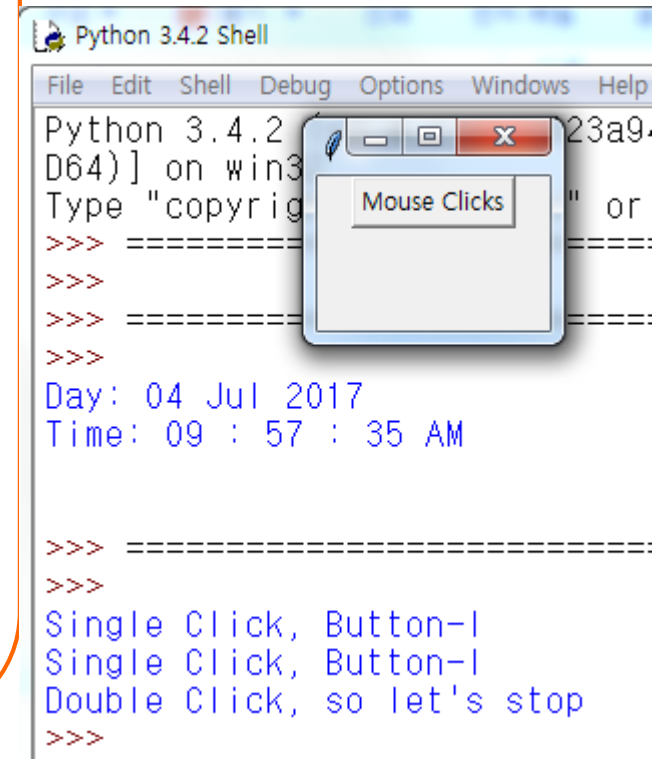
def hello(event) :
    print("Single Click, Button-1")

def quit(event) :
    print("Double Click, so let's stop")
    sys.exit()

widget = Button(None, text='Mouse Clicks')
widget.pack()

widget.bind('<Button-1>', hello)
widget.bind('<Double-1>', quit)

mainloop()
```



```
Python 3.4.2 Shell
File Edit Shell Debug Options Windows Help
Python 3.4.2 Shell [23a9...
D64)] on win32
Type "copyright" or
>>> =====
>>>
>>> =====
>>>
Day: 04 Jul 2017
Time: 09 : 57 : 35 AM

>>> =====
>>>
Single Click, Button-1
Single Click, Button-1
Double Click, so let's stop
>>>
```

# 연습문제 1

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- **버튼 2개 만든다**

- 첫번째 버튼을 한번 누르면 강아지 사진을
- 두번째 버튼을 한번 누르면 고양이 사진을
- 나타나게 하는 코드 만들어 보기

# 연습문제 1 코드

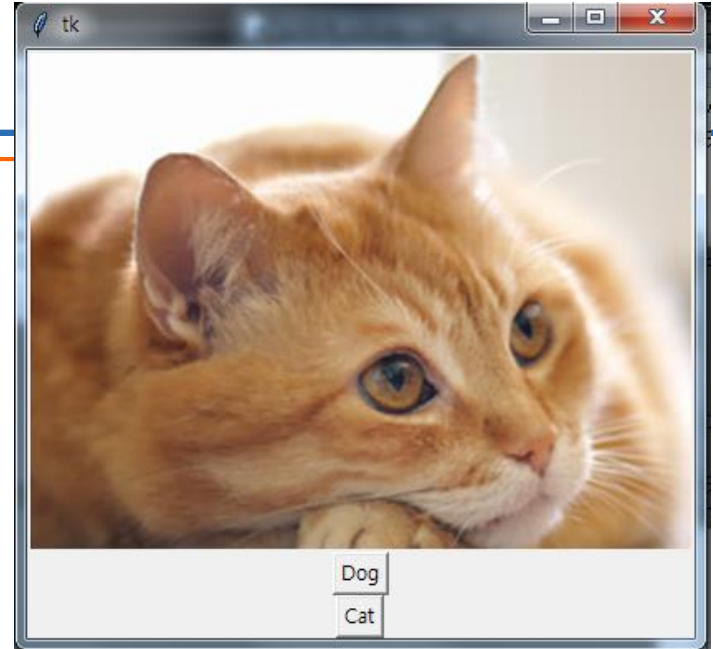
```
from tkinter import *
from tkinter import Tk, Canvas
from PIL import ImageTk, Image

root = Tk()
canvas = Canvas(root, width=400, height=300)
canvas.pack()

def clicked1():
    im = Image.open('dog.gif')
    canvas.image = ImageTk.PhotoImage(im)
    canvas.create_image(0, 0, image=canvas.image, anchor='nw')

def clicked2():
    im = Image.open('cat.gif')
    canvas.image = ImageTk.PhotoImage(im)
    canvas.create_image(0, 0, image=canvas.image, anchor='nw')

but1 = Button(root, text='Dog', command=clicked1)
but1.pack()
but2 = Button(root, text='Cat', command=clicked2)
but2.pack()
root.mainloop()
```



# 연습문제 2

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- **연습문제 1 코드를 조금 수정하여**
  - 버튼을 하나만 만든다
  - 버튼을 한 번 클릭하면 강아지 사진이
  - 버튼을 두 번 클릭하면 고양이 사진이
  - 나타나게 코드를 만들어 보기

# 연습문제 2 코드

```
from tkinter import *
from tkinter import Tk, Canvas
from PIL import ImageTk, Image

root = Tk()
canvas = Canvas(root, width=400, height=300)
canvas.pack()

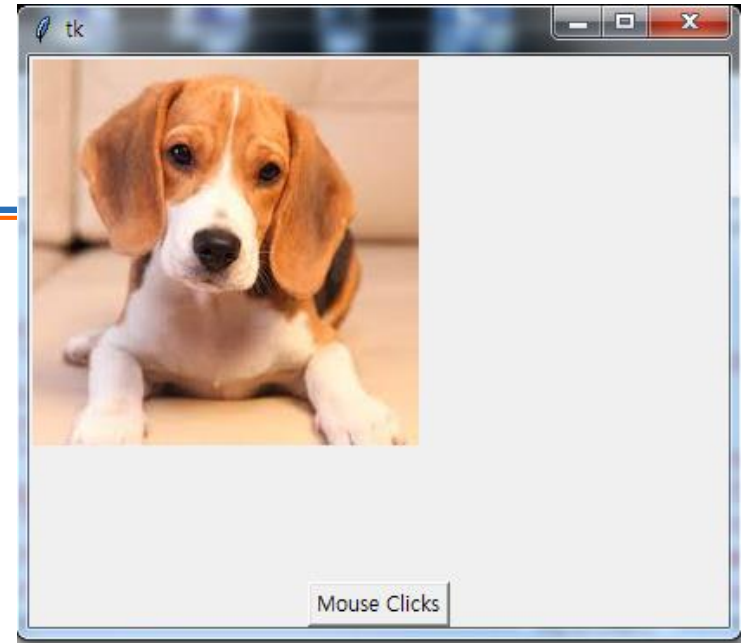
def oneclick(event) :
    im = Image.open('dog.gif')
    canvas.image = ImageTk.PhotoImage(im)
    canvas.create_image(0, 0, image=canvas.image, anchor='nw')

def doubleclick(event) :
    im = Image.open('cat.gif')
    canvas.image = ImageTk.PhotoImage(im)
    canvas.create_image(0, 0, image=canvas.image, anchor='nw')

widget = Button(None, text='Mouse Clicks')
widget.pack()

widget.bind('<Button-1>', oneclick)
widget.bind('<Double-1>', doubleclick)

root.mainloop()
```

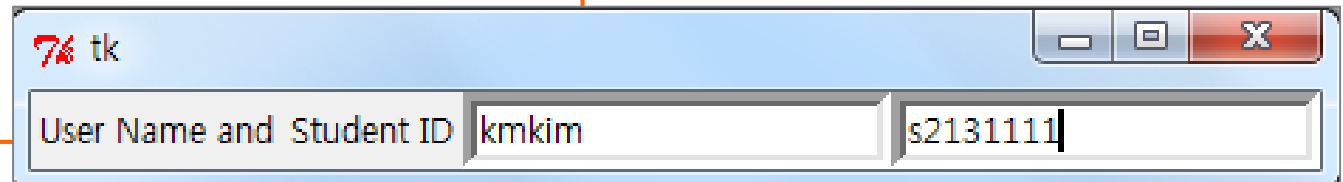




# Entry widget, 입력 받기

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```
from tkinter import *  
  
top = Tk()  
L1 = Label(top, text="User Name")  
L1.pack(side = LEFT)  
  
E1 = Entry(top, bd =5)  
E1.pack(side = RIGHT)  
  
L2 = Label(top, text="Student ID")  
L2.pack(side = LEFT)  
  
E2 = Entry(top, bd =5)  
E2.pack(side = RIGHT)  
  
top.mainloop()
```



# Canvas widget

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- **The Canvas widget uses two coordinate systems**
  - the window coordinate system with  $(0, 0)$  in the upper left corner



# Dialogs: file dialog

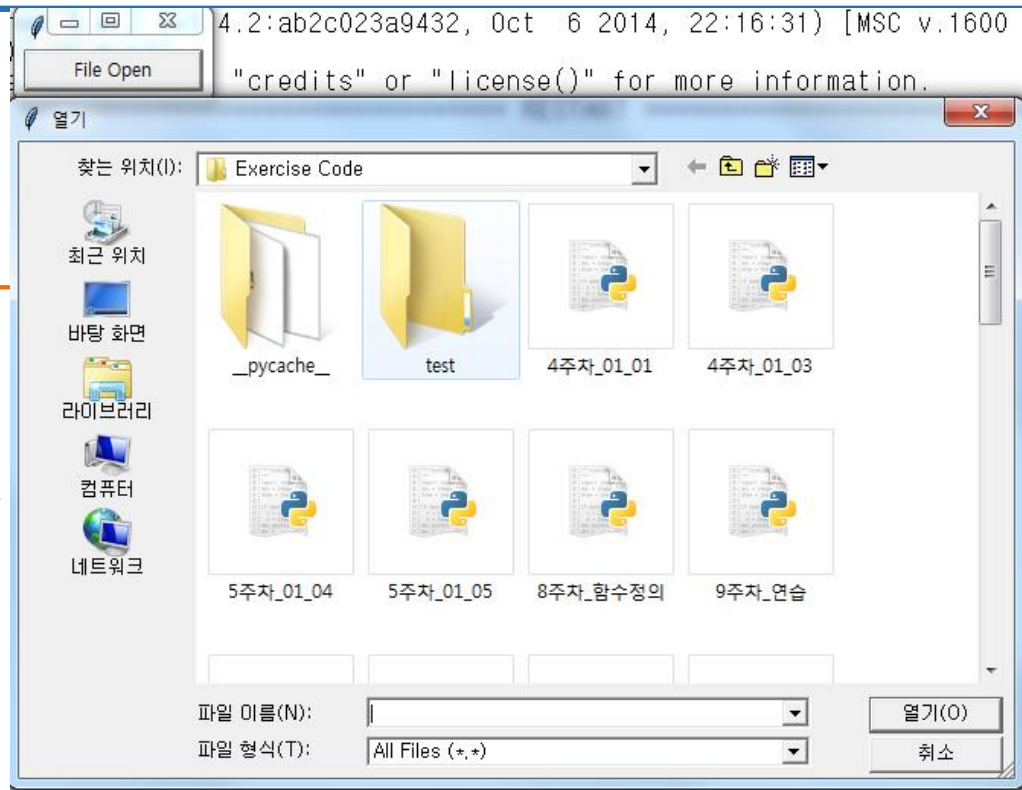
#file dialog

```
from tkinter import *  
from tkinter.filedialog import *
```

```
def callback() :  
    name= askopenfilename()  
    print(name)
```

```
errmsg = 'Error!'  
Button(text='File Open',  
command=callback).pack(fill=X)
```

```
mainloop()
```



# Dialogs: color chooser

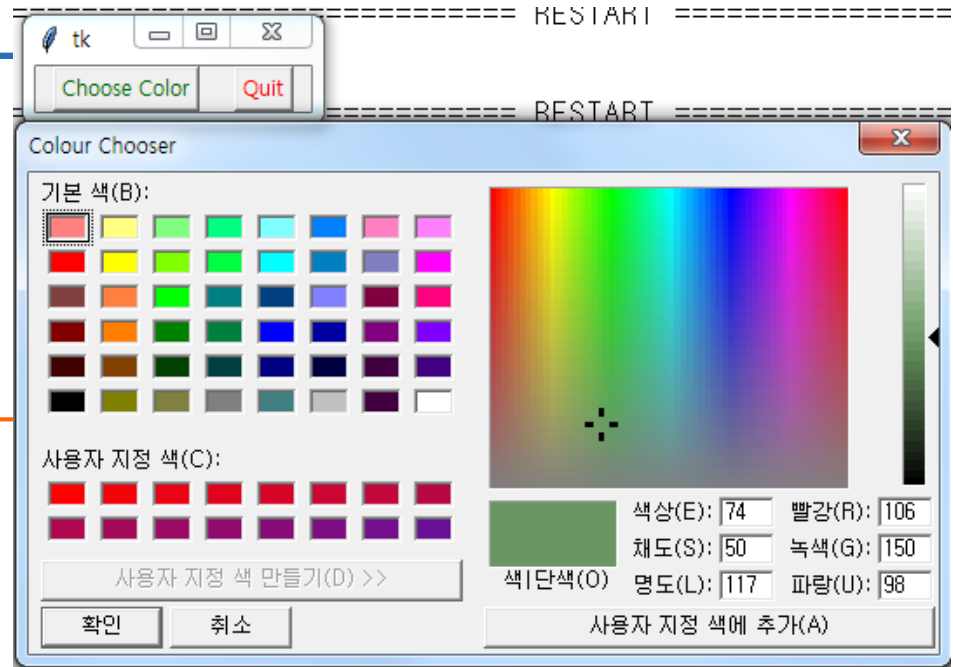
```
from tkinter import *  
from tkinter.colorchooser import *
```

```
def callback() :  
    result = askcolor(color="#6A9662", title = "Colour Chooser")  
    print(result)
```

```
root = Tk()
```

```
Button(root, text='Choose Color', fg="darkgreen", command=callback).pack(side=LEFT, padx=10)  
Button(text='Quit', command=root.quit, fg="red").pack(side=LEFT, padx=10)
```

```
root.mainloop()
```



# Creating menus

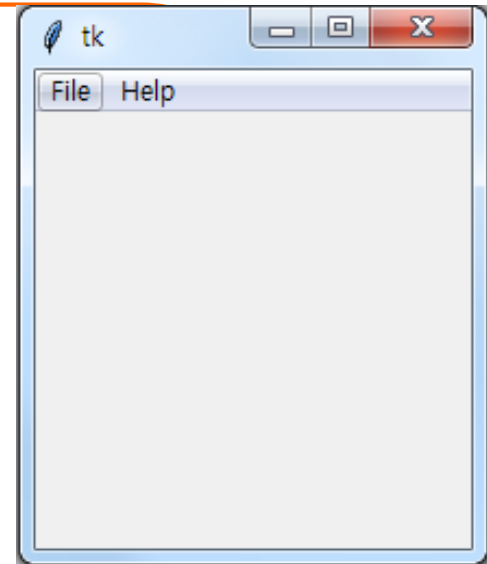
```
from tkinter import *

def NewFile() :
    print("New File!")
def OpenFile() :
    print("Open File!")
def About() :
    print("This is a simple example of a menu")

root = Tk()
menu = Menu(root)
root.config(menu=menu)
filemenu = Menu(menu)
menu.add_cascade(label="File", menu=filemenu)
filemenu.add_command(label="New", command=NewFile)
filemenu.add_command(label="Open", command=OpenFile)
filemenu.add_separator()
filemenu.add_command(label="Exit", command=root.quit)

helpmenu = Menu(menu)
menu.add_cascade(label="Help", menu=helpmenu)
helpmenu.add_command(label="About...", command=About)

mainloop()
```



## 연습문제 3

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- **그림판 만들기**
- **색상 선택 하여 그리는 그림판을 만들면서**
- **파일 열기, 저장 메뉴도 같이 만든다**

# 연습문제 3 코드 (1)

---

```
from tkinter import *
from tkinter.colorchooser import *

def NewFile() :
    print("New File!")
def OpenFile() :
    print("Open File!")
def About() :
    print("This is a simple example of a menu")

root = Tk()
menu = Menu(root)
root.config(menu=menu)

filemenu = Menu(menu)
menu.add_cascade(label="File", menu=filemenu)
filemenu.add_command(label="New", command=NewFile)
filemenu.add_command(label="Open...", command=OpenFile)
filemenu.add_separator()
filemenu.add_command(label="Exit", command=root.quit)
```

## 연습문제 3 코드 (2)

---

```
helpmenu = Menu(menu)
menu.add_cascade(label="Help", menu=helpmenu)
helpmenu.add_command(label="About...", command=About)

canvas = Canvas(root, width=500, height=500)
color = "red"
result = '#476042'

def callback() :
    global result
    result = askcolor(title = "Colour Chooser")
    result = result[1]

button = Button(root, text='Choose Color', fg="darkgreen", command=callback)
button.pack(side=LEFT, padx=10)

lastx, lasty = 0, 0
```



# 연습문제 3 코드 (3)

---

```
def xy(event) :
    global lastx, lasty
    lastx, lasty = event.x, event.y

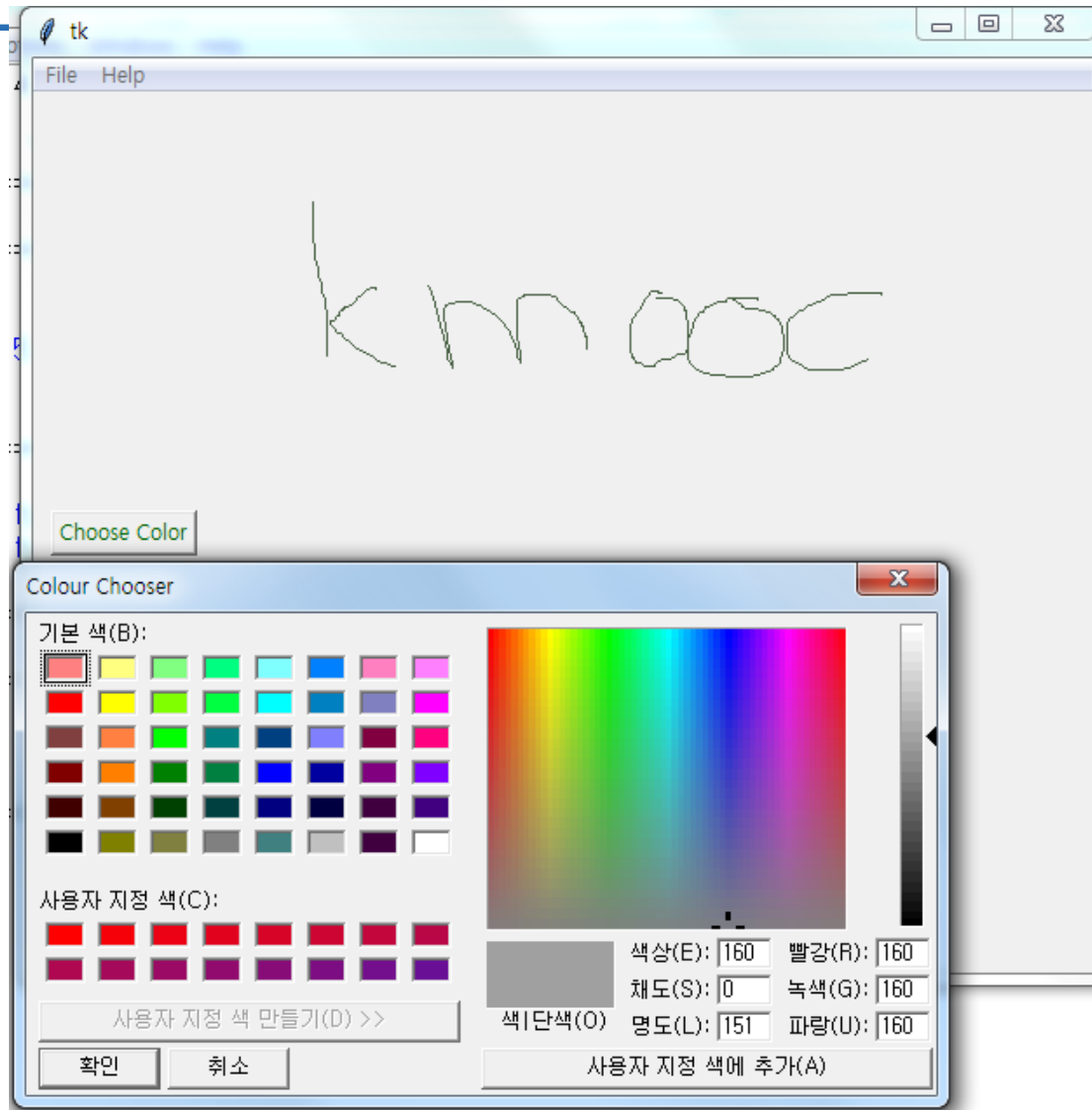
def addLine(event) :
    global lastx, lasty
    canvas.create_line((lastx, lasty, event.x, event.y), fill=result)
    lastx, lasty = event.x, event.y

root.columnconfigure(0, weight=1)
root.rowconfigure(0, weight=1)

canvas.pack()
canvas.bind("<Button-1>", xy)
canvas.bind("<B1-Motion>", addLine)

root.mainloop()
```

# 연습문제 3 결과



# 숙제

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- 연습문제 2, 3번을 입력한 코드와
- 실행 결과를 캡처하여 게시판에 올리시오

# 요약

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- Event 처리과정을 이해한다
- Event마다 실제 실행되는 method 와 어떻게 binding 되는지 이해한다
- file dialog와 color chooser 활용한다

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# 감사합니다

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