

# AI Programming

Lecture 24

# Preview

- Ch. 10 윈도 프로그래밍

- 10.2 기본 위젯 활용
- 10.3 위젯의 배치와 크기 조절
- 10.4 키보드와 마우스 이벤트 처리
- 10.5 메뉴와 대화상자

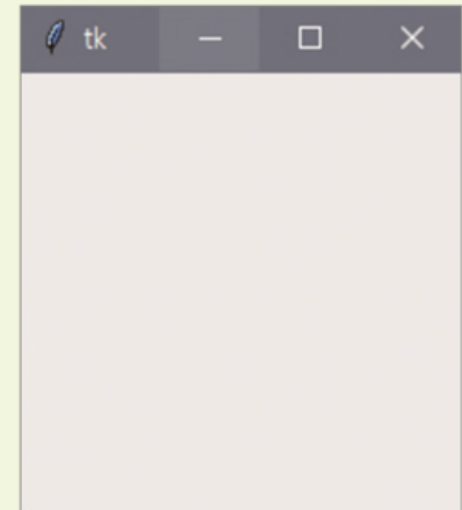
## 10.2 기본 위젯 활용

# Widget

- **Widget**
  - Graphical elements of windows
  - Texts, button, check boxes

Code10-01.py

```
1 from tkinter import * GUI module
2
3 window = Tk() Make a base window
4
5 ## 이 부분에서 화면을 구성하고 처리 ##
6
7 window.mainloop() Run the program till the window closes.
```



# Widget

- Title and size of widget

Code10-02.py

```
1 from tkinter import *
2
3 window = Tk()
4 window.title("윈도창 연습")
5 window.geometry("400x100")
6 window.resizable(width = FALSE, height = FALSE)
7
8 window.mainloop()
```

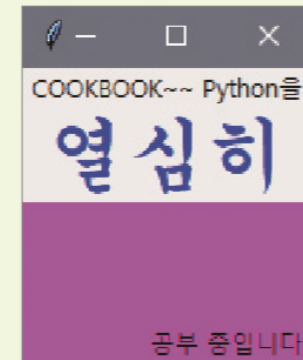


# Label

- Label
  - Widget that displays text or image

Code10-03.py

```
1 from tkinter import *
2 window = Tk()
3
4 label1 = Label(window, text = "COOKBOOK~~ Python을")
5 label2 = Label(window, text = "열심히", font = ("궁서체", 30), fg = "blue")
6 label3 = Label(window, text = "공부 중입니다.", bg = "magenta", width = 20, height = 5,
7               anchor = SE)
8 label1.pack()
9 label2.pack()
10 label3.pack()
11
12 window.mainloop()
```

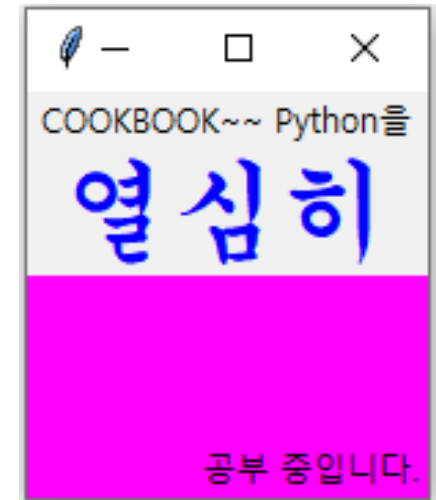


# Label

- `Label(window, options)`

```
4 label1 = Label(window, text = "COOKBOOK~~ Python을")  
5 label2 = Label(window, text = "열심히", font = ("궁서체", 30), fg = "blue")
```

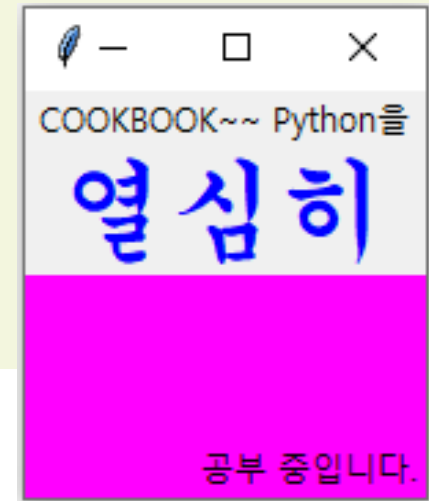
- `text`: string to be displayed
- `font`: font of text
- `fg`: foreground (font) color



# Label

- `Label(window, options)`

```
6 label3 = Label(window, text = "공부 중입니다.", bg = "magenta", width = 20, height = 5,  
    anchor = SE)  
7  
8 label1.pack()  
9 label2.pack()  
10 label3.pack()
```



- `bg`: background color
- `width/height`: width/height of widget
- `anchor`: location of widget, (N, NE, E, SE, S, SW, W, NW, CENTER)



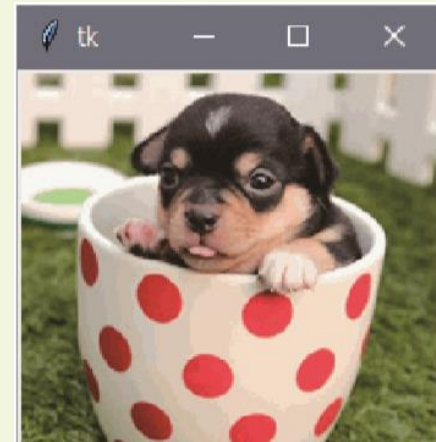
# Label

- Image label

- `PhotoImage(file="파일명")`

Code10-04.py

```
1 from tkinter import *
2 window = Tk()
3
4 photo = PhotoImage(file = "gif/dog.gif")
5 label1 = Label(window, image = photo)
6
7 label1.pack()
8
9 window.mainloop()
```



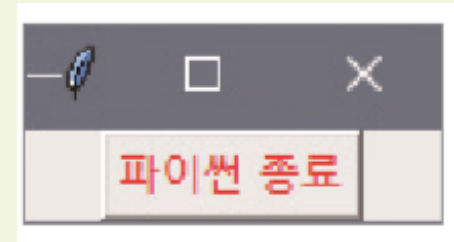
# Button

- **Button**

- `Button(window, options)`

Code10-05.py

```
1 from tkinter import *
2 window = Tk()
3
4 button1 = Button(window, text = "파이썬 종료", fg = "red", command = quit)
5
6 button1.pack()
7
8 window.mainloop()
```

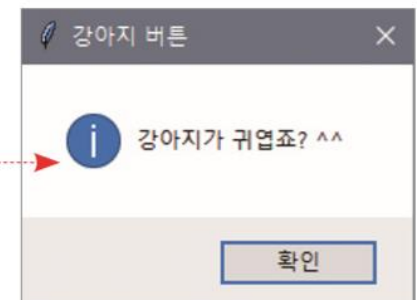
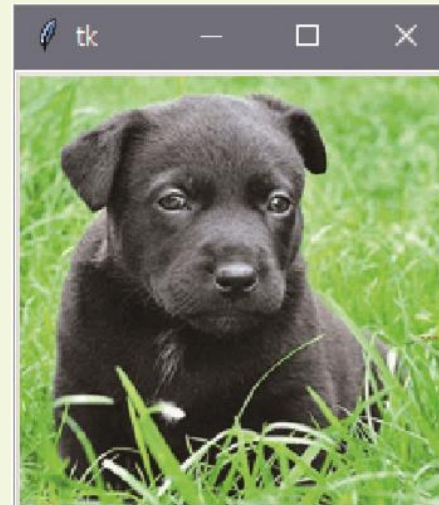


# Button

- Button with custom command

Code10-06.py

```
1 from tkinter import *
2 from tkinter import messagebox
3
4 ## 함수 선언 부분 ##
5 def myFunc() :
6     messagebox.showinfo("강아지 버튼", "강아지가 귀엽죠? ^^")
7     showinfo(제목, 내용)
8 ## 메인 코드 부분 ##
9 window = Tk()
10
11 photo = PhotoImage(file = "gif/dog2.gif")
12 button1 = Button(window, image = photo, command = myFunc )
13
14 button1.pack()
15
16 window.mainloop()
```



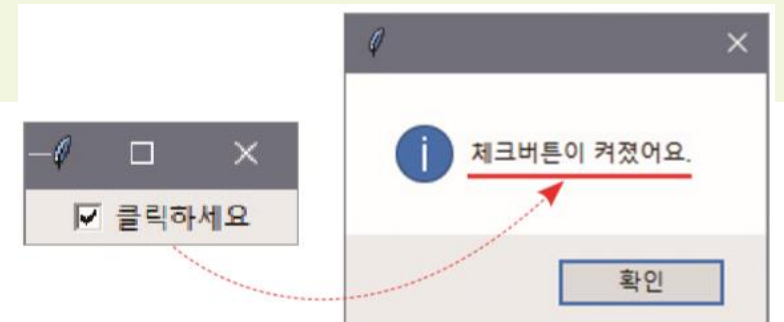
# Check Button

- Check button

- Checkbutton(window, options)

Code10-07.py

```
1  from tkinter import *
2  from tkinter import messagebox
3  window = Tk()
4
5  ## 함수 선언 부분 ##
6  def myFunc() :
7      if chk.get() == 0 :
8          messagebox.showinfo("", "체크버튼이 꺼졌어요.")
9      else :
10         messagebox.showinfo("", "체크버튼이 켜졌어요.")
12  ## 메인 코드 부분 ##
13  chk = IntVar()
14  cb1 = Checkbutton(window, text = "클릭하세요", variable = chk, command = myFunc)
15
16  cb1.pack()
17
18  window.mainloop()
```



# Radio Button

- Radio button

- Radiobutton(window, options)

Code10-08.py

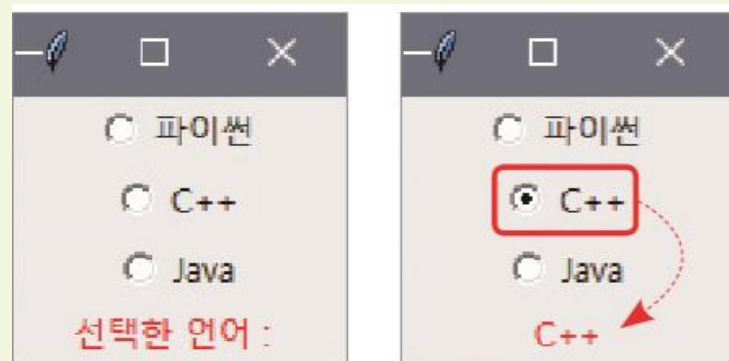
```
1 from tkinter import *
2 window = Tk()
3
4 ## 함수 선언 부분 ##
5 def myFunc() :
6     if var.get() == 1 :
7         label1.configure(text = "파이썬")
8     elif var.get() == 2 :
9         label1.configure(text = "C++")
10    else :
11        label1.configure(text = "Java")
```

`widget.configure(옵션=값)`

# Radio Button

- (cont'd)

```
13  ## 메인 코드 부분 ##
14  var = IntVar()
15  rb1 = Radiobutton(window, text = "파이썬", variable = var, value = 1, command = myFunc)
16  rb2 = Radiobutton(window, text = "C++", variable = var, value = 2, command = myFunc)
17  rb3 = Radiobutton(window, text = "Java", variable = var, value = 3, command = myFunc)
18
19  label1 = Label(window, text = "선택한 언어 : ", fg = "red")
20
21  rb1.pack()
22  rb2.pack()
23  rb3.pack()
24  label1.pack()
25
26  window.mainloop()
```



## 10.3 위젯의 배치와 크기 조절

# Alignment

- **Horizontal alignment**

- `widget.pack(side = LEFT)`

Code10-09.py

```
1 from tkinter import *
2 window = Tk()
3
4 button1 = Button(window, text = "버튼1")
5 button2 = Button(window, text = "버튼2")
6 button3 = Button(window, text = "버튼3")
7
8 button1.pack( side = LEFT )
9 button2.pack( side = LEFT )
10 button3.pack( side = LEFT )
11
12 window.mainloop()
```





# Alignment

- Horizontal alignment

- `widget.pack(side = RIGHT)`

Code10-10.py

```
1 from tkinter import *
2 window = Tk()
3
4 btnList = [None] * 3
5
6 for i in range(0, 3):
7     btnList[i] = Button(window, text = "버튼" + str(i + 1))
8
9 for btn in btnList :
10     btn.pack( side = RIGHT )
11
12 window.mainloop()
```

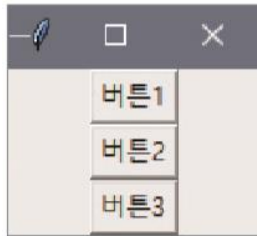
>>> btnList  
[<tkinter.Button object .!button>, <tkinter.Button object .!button2>,  
<tkinter.Button object .!button3>]



# Alignment

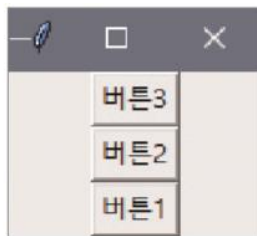
- **Vertical alignment**

- `widget.pack(side = TOP)`



`btn.pack(side = TOP)`

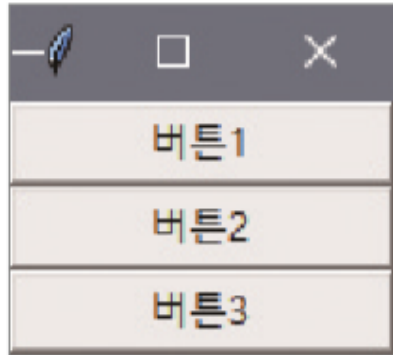
- `widget.pack(side = BOTTOM)`



`btn.pack(side = BOTTOM)`

# Width

- Filling the width of widget to window
  - `widget.pack(fill = X)`

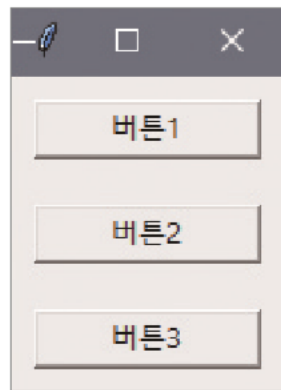


```
btn.pack(side = TOP, fill = X)
```

# Padding

- **Making margins between widgets**

- `widget.pack(padx = pixelVal, pady = pixelVal)`



```
btn.pack(side = TOP, fill = X, padx = 10, pady = 10)
```

# Padding

- Making margins inside widget

- `widget.pack(ipadx = pixelVal, ipady = pixelVal)`



```
btn.pack(side = TOP, fill = X, ipadx = 10, ipady = 10)
```



```
btn.pack(side = TOP, fill = X, ipadx = 10, ipady = 10, padx = 10, pady = 10)
```

# Summary

- **Widget and label**

```
1 from tkinter import *
2
3 window = Tk()
4 window.title("윈도창 연습")
5 window.geometry("400x100")
6 window.resizable(width = FALSE, height = FALSE)
7
8 window.mainloop()
```

```
1 from tkinter import *
2 window = Tk()
3
4 photo = PhotoImage(file = "gif/dog.gif")
5 label1 = Label(window, image = photo)
6
7 label1.pack()
8
9 window.mainloop()
```

# Summary

- Buttons

```
1 from tkinter import *
2 window = Tk()
3
4 button1 = Button(window, text = "파이썬 종료", fg = "red", command = quit)
5
6 button1.pack()
7
8 window.mainloop()
```

```
13 ## 메인 코드 부분 ##
14 var = IntVar()
15 rb1 = Radiobutton(window, text = "파이썬", variable = var, value = 1, command = myFunc)
16 rb2 = Radiobutton(window, text = "C++", variable = var, value = 2, command = myFunc)
17 rb3 = Radiobutton(window, text = "Java", variable = var, value = 3, command = myFunc)
```

# Summary

- **Layout of widget**

- `widget.pack(side = LEFT)`
- `widget.pack(side = RIGHT)`
- `widget.pack(side = TOP)`
- `widget.pack(side = BOTTOM)`

