



과목 : 고급프로그래밍(실습8)

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담당 교수	임종관 교수님
학과	지능로봇공학과
학번	1658019
이름	이도훈

목 차

문제1-----3p

참고문헌-----18p

1. Tkinter를 이용한 GUI 프로그래밍

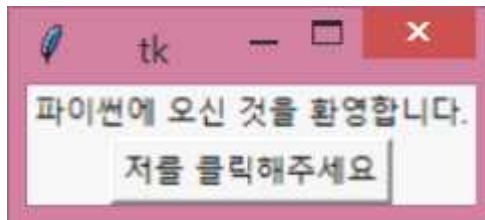
<코드9.1>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import *#tkinter의 모든 정의를 임포트한다

window =Tk()#창 생성
label=Label(window,text="파이썬에 오신 것을 환영합니다.")#레이블 생성
button=Button(window,text="저를 클릭해주세요")#버튼을 생성
label.pack()#창 내부에 레이블 배치
button.pack()#창 내부에 버튼 배치

window.mainloop()#이벤트 루프 생성
```

<코드9.1 출력결과>



<코드9.2>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import *#tkinter의 모든 정의를 임포트한다

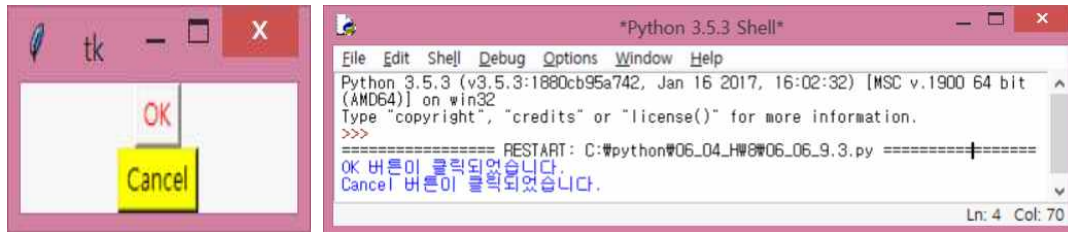
def processOK():
    print("OK 버튼이 클릭되었습니다.")

def processCancel():
    print("Cancel 버튼이 클릭되었습니다.")

window=Tk()#창 생성
btOK=Button(window,text="OK",fg="red",command=processOK)#OK버튼을 창 내부에 버튼
배치
btCancel=Button(window,text="Cancel",bg="yellow",command=processCancel)#Cancel버
튼을 창 내부에 버튼 배치
btOK.pack()
btCancel.pack()

window.mainloop()#이벤트 루프 생성
```

<코드9.2 출력결과>



<코드9.3>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import *#tkinter의 모든 정의를 임포트한다

class ProcessButtonEvent:
    def __init__(self):
        window=Tk()#창 생성
        btOK=Button(window,text="OK",fg="red",command=self.processOK)#OK버튼을 창
        내부에 버튼 배치

        btCancel=Button(window,text="Cancel",bg="yellow",command=self.processCancel)#Cancel
        버튼을 창 내부에 버튼 배치
        btOK.pack()
        btCancel.pack()

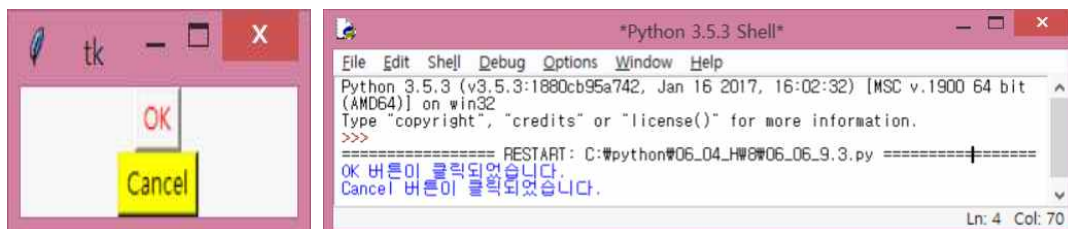
        window.mainloop()#이벤트 루프 생성

    def processOK(self):
        print("OK 버튼이 클릭되었습니다.")

    def processCancel(self):
        print("Cancel 버튼이 클릭되었습니다.")

ProcessButtonEvent()
```

<코드9.3 출력결과>



<코드9.4>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import *#tkinter의 모든 정의를 임포트한다

class WidgetsDemo:
    def __init__(self):
        window=Tk()#창 생성
        window.title("위젯데모")#제목 설정

        #체크 버튼과 라디오 버튼을 frame1에 추가
        frame1=Frame(window)
        frame1.pack()

        self.v1=IntVar()
        c b t B o l d = C h e c k b u t t o n ( f r a m e 1 , t e x t = " 굵 게
",variable=self.v1,command=self.processCheckbutton)

        self.v2=IntVar()
        rbRed=Radiobutton(frame1, text="빨간색", bg="red", variable=self.v2, value=1,
command=self.processRadiobutton)

        rbYellow=Radiobutton(frame1, text="노란색", bg="yellow", variable=self.v2,
value=2, command=self.processRadiobutton)

        cbtBold.grid(row=1,column=1)
        rbRed.grid(row=1, column=2)
        rbYellow.grid(row=1,column=3)

        #레이블, 엔트리, 버튼, 메시지를 frame2에 추가
        frame2=Frame(window)
        frame2.pack()
        label=Label(frame2,text="이름을 입력하세요")
        self.name=StringVar()

        entryName=Entry(frame2,textvariable=self.name)
        btGetName=Button(frame2, text="이름을 가져오기
",command=self.processButton)
        message=Message(frame2, text="위젯 데모 입니다.")
```

```

label.grid(row=1, column=1)
entryName.grid(row=1,column=2)
btGetName.grid(row=1,column=3)
message.grid(row=1,column=4)

#텍스트를 추가
text=Text(window)#텍스트를 생성 및 창에 추가
text.pack()
text.insert(END, "팁\nTkinter를 학습하는 최고의 방법은 잘 짜여진")
text.insert(END, "예제를 세세히 읽고 애플리케이션을 생성하는데")
text.insert(END, "직접 사용해보는 것이다.")
window.mainloop()#이벤트 루프 생성

```

```

def processCheckbutton(self):
    print("체크 버튼이 " + ("선택되었습니다." if self.v1.get()==1 else "해제되었습니다."))

```

```

def processRadiobutton(self):
    print(("빨간색" if self.v2.get()==1 else "노란색") + " 이 선택 되었습니다.")

```

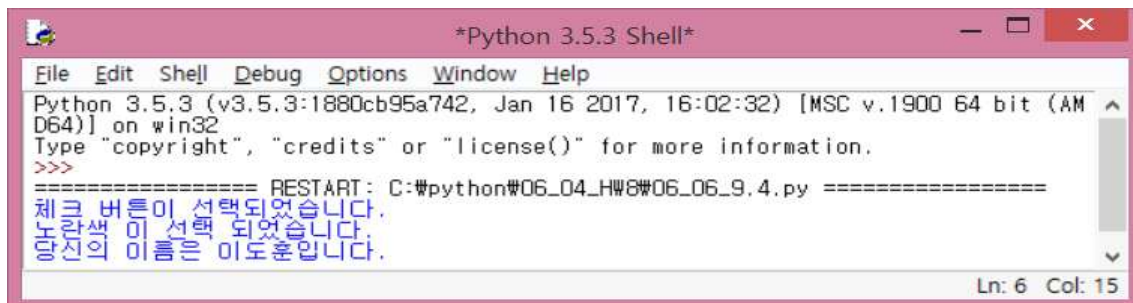
```

def processButton(self):
    print("당신의 이름은 " + self.name.get()+"입니다.")

```

WidgetsDemo()

<코드9.4 출력결과>



<코드9.5>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import *

class ChangeLabelDemo:
    def __init__(self):
        window =Tk()#창 생성
        window.title("레이블 변결하기 데모")#제목 설정

        #레이블을 frame1에 추가
        frame1=Frame(window)
        frame1.pack()
        self.lbl=Label(frame1, text="프로그래밍은 재미있습니다.")
        self.lbl.pack()

        #frame2에 레이블, 엔트리, 버튼과, 두 라디오 버튼을 추가
        frame2=Frame(window)
        frame2.pack()
        label=Label(frame2,text="텍스트를 입력하세요:")
        self.msg=StringVar()
        entry=Entry(frame2,textvariable=self.msg)
        btChangeText=Button(frame2,text="텍스트를          변경한다",          command
=self.processButton)
        self.v1=StringVar()
        rbRed=Radiobutton(frame2,text="빨간색",bg="red",variable=self.v1, value="R")
        rbYellow=Radiobutton(frame2,    text="노란색",bg="Yellow",    variable=self.v1,
value="Y", command=self.processRadiobutton)

        label.grid(row=1,column=1)
        entry.grid(row=1, column=2)
        btChangeText.grid(row=1, column=3)
        rbRed.grid(row=1, column=4)
        rbYellow.grid(row=1, column=5)

        window.mainloop()#이벤트 루프 생성

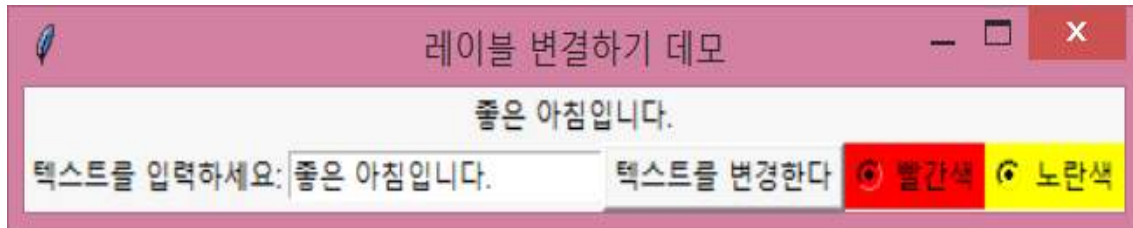
    def processRadiobutton(self):
        if self.v1.get()=='R':
            self.lbl["fg"]="red"
        elif self.v1.get()=='Y':
```

```
self.lbl["fg"]="yello"
```

```
def processButton(self):  
    self.lbl["text"]=self.msg.get()
```

ChangeLabelDemo()

<코드9.5 출력결과>



<코드9.11>

```
#_*_coding=cp949  
#_*_coding:euc-kr  
from tkinter import *  
  
class LoanCalculator:  
    def __init__(self):  
        window=Tk()#창 생성  
        window.title("대출 계산기")#제목 설정  
  
        Label(window, text="연이율").grid(row=1, column=1, sticky=W)  
        Label(window, text="대출년수").grid(row=2, column=1,sticky=W)  
        Label(window, text="대출금").grid(row=3, column=1,sticky=W)  
        Label(window, text="월상환금").grid(row=4, column=1,sticky=W)  
        Label(window, text="총상환금").grid(row=5, column=1,sticky=W)  
  
        self.annualInterestRateVar=StringVar()  
        Entry(window, textvariable=self.annualInterestRateVar,  
justify=RIGHT).grid(row=1, column=2)  
  
        self.numberOfYearsVar=StringVar()  
        Entry(window, textvariable=self.numberOfYearsVar, justify=RIGHT).grid(row=2,  
column=2)  
  
        self.loanAmountVar=StringVar()  
        Entry(window, textvariable=self.loanAmountVar, justify=RIGHT).grid(row=3,
```


column=2)

```
self.monthlyPaymentVar=StringVar()
lblMonthlyPayment=Label(window,
textvariable=self.monthlyPaymentVar).grid(row=4, column=2, sticky=E)
```

```
self.totalPaymentVar=StringVar()
lblTotalPayment=Label(window, textvariable=self.totalPaymentVar).grid(row=5,
column=2, sticky=E)
```

```
btComputePayment=Button(window, text="상환금 계산하기", command =
self.computePayment).grid(row=6,column=2, sticky=E)
```

```
window.mainloop()#이벤트 루프 생성
```

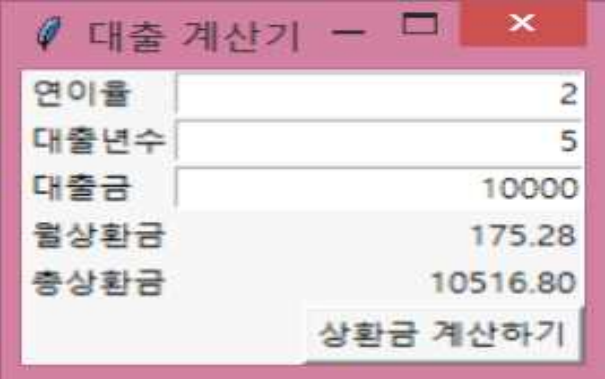
```
def computePayment(self):
    monthlyPayment=self.getMonthlyPayment(float(self.loanAmountVar.get()),
float(self.annualInterestRateVar.get())/1200, int(self.numberYearsVar.get()))
    self.monthlyPaymentVar.set(format(monthlyPayment,"10.2f"))
    totalPayment=float(self.monthlyPaymentVar.get())*12
    int(self.numberYearsVar.get())
    self.totalPaymentVar.set(format(totalPayment,"10.2f"))
```

```
def getMonthlyPayment(self, loanAmount, monthlyInterestRate,numberYears):
```

```
monthlyPayment=loanAmount*monthlyInterestRate/(1-1/(1+monthlyInterestRate)**(nu
mberOfYears*12))
    return monthlyPayment
```

LoanCalculator()

<코드9.11 출력결과>



연이율	2
대출년수	5
대출금	10000
월상환금	175.28
총상환금	10516.80

상환금 계산하기

<코드9.12>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import*
class ImageDemo:
    def __init__(self):
        window=Tk()#창 생성
        window.title("이미지 데모")#제목 설정
        #PhotoImage 객체를 생성
        KoreaImage=PhotoImage(file="image/korea.gif")
        chinaImage=PhotoImage(file="image/china.gif")
        leftImage=PhotoImage(file="image/left.gif")
        rightImage=PhotoImage(file="image/right.gif")
        usImage=PhotoImage(file="image/usIcon.gif")
        ukImage=PhotoImage(file="image/ukIcon.gif")
        crossImage=PhotoImage(file="image/x.gif")
        circleImage=PhotoImage(file="image/o.gif")

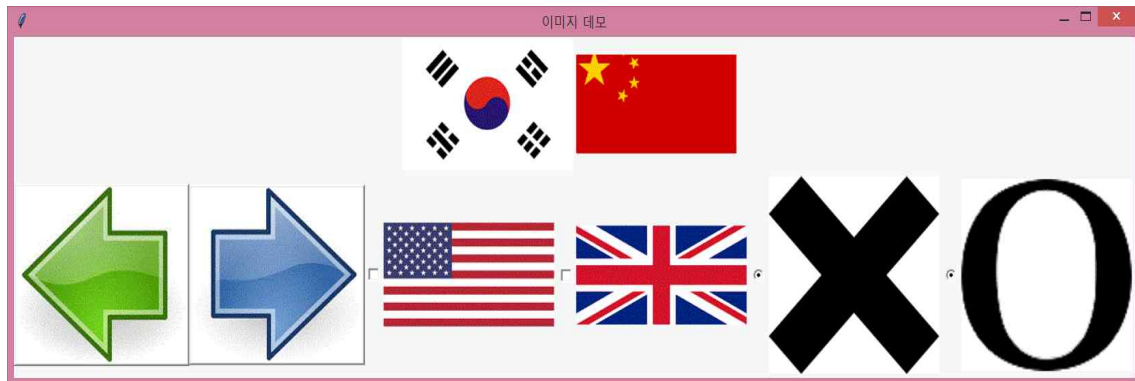
        #frame1은 레이블과 캔버스를 포함한다.
        frame1=Frame(window)
        frame1.pack()
        Label(frame1,image=KoreaImage).pack(side=LEFT)
        canvas=Canvas(frame1)
        canvas.create_image(90,50,image=chinaImage)
        canvas["width"]=200
        canvas["height"]=100
        canvas.pack(side=LEFT)

        #frame2는 버튼, 체크버튼, 라디어 버튼을 포함
        frame2=Frame(window)
        frame2.pack()
        Button(frame2,image=leftImage).pack(side=LEFT)
        Button(frame2,image=rightImage).pack(side=LEFT)
        Checkbutton(frame2,image=usImage).pack(side=LEFT)
        Checkbutton(frame2,image=ukImage).pack(side=LEFT)
        Radiobutton(frame2,image=crossImage).pack(side=LEFT)
        Radiobutton(frame2,image=circleImage).pack(side=LEFT)

        window.mainloop()

ImageDemo()
```

<코드9.12 출력결과>



<코드9.13>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import*

class MenuDemo:
    def __init__(self):
        window=Tk()
        window.title("메뉴 데모")

        menubar=Menu(window)
        window.config(menu=menubar)#메뉴 바를 출력
        #폴다운 메뉴를 생성, 메뉴바에 추가
        operationMenu=Menu(menubar,tearoff=0)
        menubar.add_cascade(label="연산",menu=operationMenu)
        operationMenu.add_command(label="더하기",command=self.add)

        operationMenu.add_command(label="빼기", command=self.subtract)
        operationMenu.add_separator()
        operationMenu.add_command(label="곱하기", command=self.multiply)
        operationMenu.add_command(label="나누기", command=self.divide)

        exitmenu=Menu(menubar,tearoff=0)
        menubar.add_cascade(label="나가기", menu=exitmenu)
        exitmenu.add_command(label="종료하기", command=window.quit)

        frame0=Frame(window)
        frame0.grid(row=1,column=1,sticky=W)

        #이미지를 생성
```

```

plusImage=PhotoImage(file="image/plus.gif")
minusImage=PhotoImage(file="image/minus.gif")
timesImage=PhotoImage(file="image/times.gif")
divideImage=PhotoImage(file="image/divide.gif")

Button(frame0,image=plusImage,command=self.add).grid(row=1,column=1,sticky=W)

Button(frame0,image=minusImage,command=self.subtract).grid(row=1,column=2)

Button(frame0,image=timesImage,command=self.multiply).grid(row=1,column=3)
Button(frame0,image=divideImage,command=self.divide).grid(row=1,column=4)


frame1=Frame(window)
frame1.grid(row=2,column=1,pady=10)

Label(frame1,text="숫자 1:").pack(side=LEFT)
self.v1=StringVar()
Entry(frame1,width=5,textvariable=self.v1,justify=RIGHT).pack(side=LEFT)
Label(frame1,text="숫자 2:").pack(side=LEFT)
self.v2=StringVar()
Entry(frame1,width=5,textvariable=self.v2, justify=RIGHT).pack(side=LEFT)
Label(frame1,text="결과:").pack(side=LEFT)
self.v3=StringVar()
Entry(frame1,width=5,textvariable=self.v3,justify=RIGHT).pack(side=LEFT)


#버튼을 frame2에 추가
frame2=Frame(window)
frame2.grid(row=3,column=1,pady=10,sticky=E)
Button(frame2,text="더하기",command=self.add).pack(side=LEFT)
Button(frame2,text="빼기",command=self.subtract).pack(side=LEFT)
Button(frame2,text="곱하기",command=self.multiply).pack(side=LEFT)
Button(frame2,text="나누기",command=self.divide).pack(side=LEFT)


mainloop()

def add(self):
    self.v3.set(eval(self.v1.get()+eval(self.v2.get())))

def subtract(self):
    self.v3.set(eval(self.v1.get()-eval(self.v2.get())))

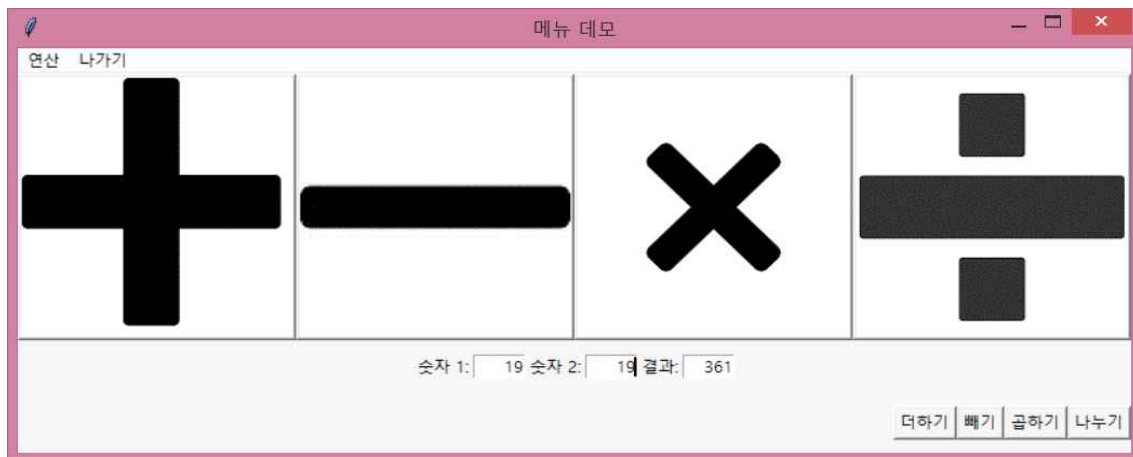
```

```
def multiply(self):
    self.v3.set(eval(self.v1.get())*eval(self.v2.get()))
```

```
def divide(self):
    self.v3.set(eval(self.v1.get())/eval(self.v2.get()))
```

MenuDemo()

<코드9.13 출력결과>



<코드9.14>

```
#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import*
```

```
class PopupMenuDemo:
```

```
    def __init__(self):
        window=Tk()
        window.title("팝업 메뉴 데모")
```

```
        self.menu=Menu(window,tearoff=0)
        self.menu.add_command(label="선그리기",command=self.displayLine)
        self.menu.add_command(label="타원그리기",command=self.displayOval)
        self.menu.add_command(label="사각형 그리기",command=self.displayRect)
        self.menu.add_command(label="지우기",command=self.clearCanvas)
```

```
        self.canvas=Canvas(window,width=200,
                             height=100,bg="white")
        self.canvas.pack()
```

```

self.canvas.bind("<Button-3>",self.popup)

window.mainloop()

def displayRect(self):
    self.canvas.create_rectangle(10,10,190,90,tags="rect")

def displayOval(self):
    self.canvas.create_oval(10,10,190,90,tags="oval")

def displayLine(self):
    self.canvas.create_line(10,10,190,90,tags="line")
    self.canvas.create_line(10,90,190,10,tags="line")

def clearCanvas(self):
    self.canvas.delete("rect","oval","line")

def popup(self,event):
    self.menu.post(event.x_root,event.y_root)

```

PopupMenuDemo()

<코드9.14 출력결과>



<코드9.19>

```

#_*_coding=cp949
#_*_coding:euc-kr
from tkinter import*

class ScrollText:
    def __init__(self):
        window=Tk()
        window.title("텍스트 스크롤 데모")

```

```

frame1=Frame(window)
frame1.pack()
scrollbar=Scrollbar(frame1)
scrollbar.pack(side=RIGHT,fill=Y)
text=Text(frame1,width=40,height=10,wrap=WORD,
yscrollcommand=scrollbar.set)

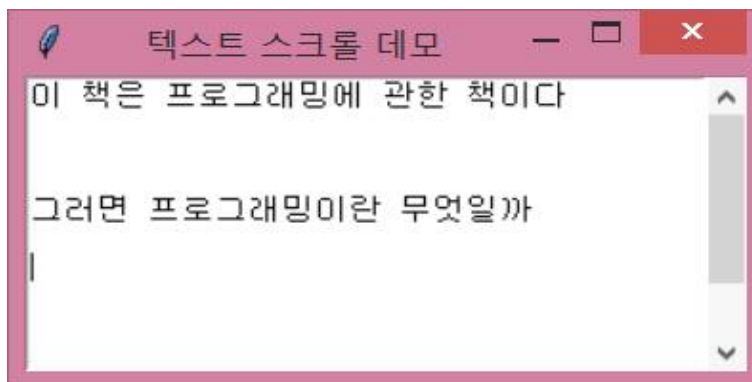
text.pack()
scrollbar.config(command=text.yview)

window.mainloop()

```

ScrollText()

<코드9.19 출력결과>



<코드9.20>

```

#_*_coding=cp949
#_*_coding:euc-kr
import tkinter.messagebox
import tkinter.simpledialog
import tkinter.colorchooser

tkinter.messagebox.showinfo("showinfo","이것은 안내 메세지 입니다. ")

tkinter.messagebox.showwarning("showwarning","이것은 경고 메세지입니다.")
tkinter.messagebox.showerror("showerror","이것은 에러 메세지입니다")

isYes=tkinter.messagebox.askyesno("askyesno","계속?")
print(isYes)

```

```
isOK=tkinter.messagebox.askokcancel("askokcancel","OK?")
print(isOK)
```

```
isYesNoCancel=tkinter.messagebox.askyesnocancel(
    "askyesnocancel","예,아니오,취소?")
```

```
print(isYesNoCancel)
```

```
name=tkinter.simpledialog.askstring(
    "askstring","이름을 입력하세요")
```

```
print(name)
```

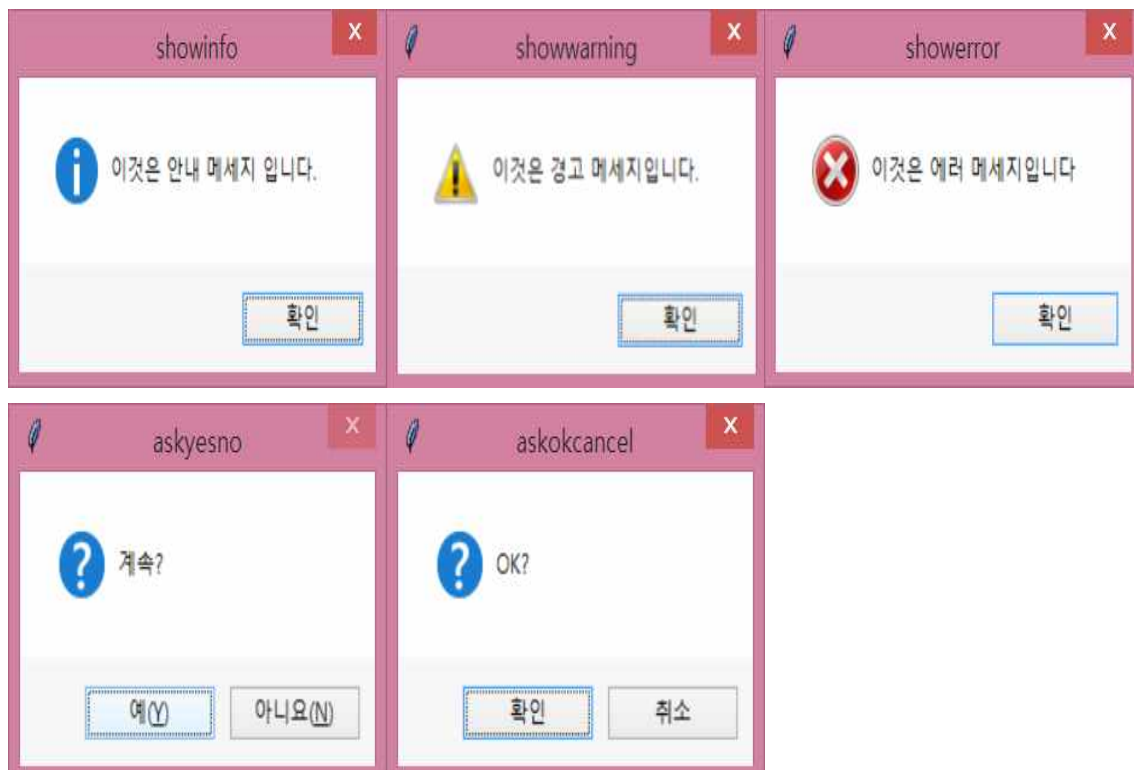
```
age=tkinter.simpledialog.askinteger(
    "askinteger","나이를 입력하세요")
```

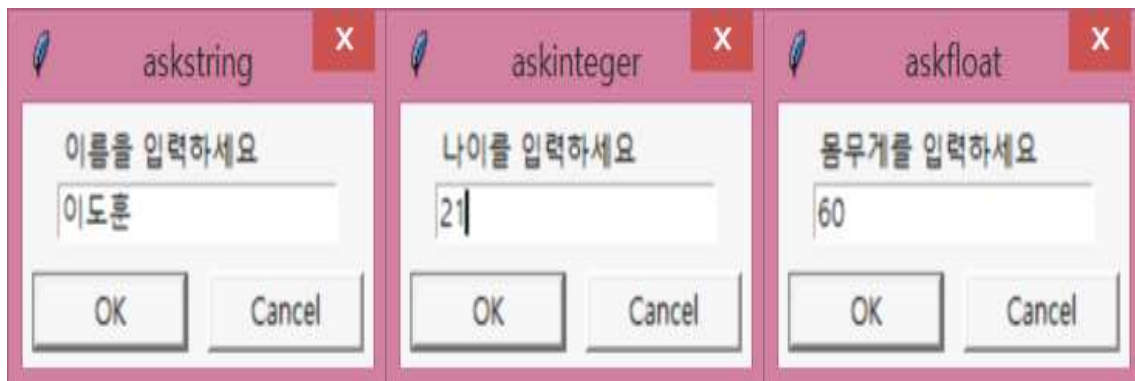
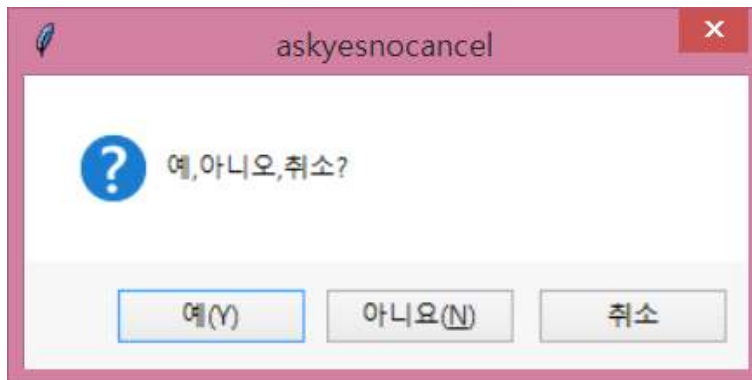
```
print(age)
```

```
weight=tkinter.simpledialog.askfloat(
    "askfloat","몸무게를 입력하세요")
```

```
print(weight)
```

<코드9.20 출력결과>





참고문헌

1. Y. Daniel Liang, Introduction to Programming Using Python, 생능출판사, 2015