Отчет

Тема: Составление программ циклической структуры в IDE PyCharm Community.

Цель: закрепить усвоенные знания, понятия, алгоритмы, основные принципы составления программ, приобрести навыки составление программ циклической структуры в IDE PyCharm Community.

Постановка задачи.
Задание 1. В соответствии с номером варианта перейти по ссылке на прототип. Реализовать его в IDE PyCharm Community с применением пакета tk. Получить интерфейс максимально приближенный к оригиналу (см. таблицу 1).
Задание 2. Разработать программу с применением пакета tk, взяв в качестве условия одну любую задачу из ПЗ №№ 3 – 8.

Тип алгоритма: циклический.

Текст программы 1 :

```
from tkinter import *
from tkinter import ttk
from random import randint as random
from tkinter import messagebox

wincolor = '#DDD'
root = Tk()
root.title('Sign Up')
root.configure(bg=wincolor)
root.geometry('0x0')
root.minsize(width=585, height=365)
root.maxsize(width=585, height=365)

labwidth = 15
randint = random(0, 2)
randpic = ''
if randint == 0:
   randpic = '●'
elif randint == 1:
   randpic = '●'
elif randint == 2:
   randpic = '✿'
print('SYSTEM REPORT: PASSWORD')
print('\''+randpic+'\' will be in the password'
      if randint != 2 else 'Lucky one, \''+randpic+'\' will be in the password.')

namframe = Frame(root, background=wincolor)
firnam = Label(namframe, text='First Name', width=labwidth, anchor='e', background=wincolor)
nametext = Entry(namframe, width=50, font='Arial 14', background=wincolor)

lasnamframe = Frame(root, background=wincolor)
lasnam = Label(lasnamframe, text='Last Name', width=labwidth, anchor='e', background=wincolor)
lasnametext = Entry(lasnamframe, width=50, font='Arial 14', background=wincolor)

scrnamframe = Frame(root, background=wincolor)
scrnam = Label(scrnamframe, text='Screen Name', width=labwidth, anchor='e', background=wincolor)
scrnametext = Entry(scrnamframe, width=50, font='Arial 14', background=wincolor)

birthframe = Frame(root, background=wincolor)
```

```
birthlab = Label(birthframe, text='Date of Birth', justify='right', width=labwidth, anchor='e',
background=wincolor)
months = [
    u'January', u'February', u'March', u'April', u'May',
    u'June', u'July', u'August', u'September', u'October', u'November',
    u'December']
days = [str(i) for i in range(1, 32)]
years = [str(y) for y in range(1970, 2022)]
listheight = 5
listwidth = 12
monthlist = ttk.Combobox(birthframe, height=listheight, width=listwidth, values=months)
daylist = ttk.Combobox(birthframe, height=listheight, width=listwidth, values=days)
yearlist = ttk.Combobox(birthframe, height=listheight, width=listwidth, values=years)

genframe = Frame(root, background=wincolor)
genvar = IntVar()
genam = Label(genframe, text='Gender', anchor='e', width=labwidth, background=wincolor)
genmale = Radiobutton(genframe, text='Male', variable=genvar, value=1)
genfem = Radiobutton(genframe, text='Female', variable=genvar, value=2)

counframe = Frame(root, background=wincolor)
couname = Label(counframe, text='Country', width=labwidth, anchor='e', background=wincolor)
counbox = ttk.Combobox(counframe, values=['USA', 'Russia', 'Poland', 'Sweden', 'Korea', 'China'])

mailframe = Frame(root, background=wincolor)
mailname = Label(mailframe, text='E-mail', width=labwidth, anchor='e', background=wincolor)
mailtext = Entry(mailframe, width=50, font='Arial 14', background=wincolor)

phoneframe = Frame(root, background=wincolor)
phoname = Label(phoneframe, text='Phone', width=labwidth, anchor='e', background=wincolor)
phonetext = Entry(phoneframe, width=50, font='Arial 14', background=wincolor)

passframe = Frame(root, background=wincolor)
passname = Label(passframe, text='Password', width=labwidth, anchor='e', background=wincolor)
passtext = Entry(passframe, width=50, font='Arial 14', show=randpic, background=wincolor)

conframe = Frame(root, background=wincolor)
confname = Label(conframe, text='Confirm password', width=labwidth, anchor='e', background=wincolor)
conftext = Entry(conframe, width=50, font='Arial 14', show=randpic, background=wincolor)

agreed = IntVar()
agrcheck = Checkbutton(root, text=u'I agree to the Terms of Use', variable=agreed, onvalue=1, offvalue=0,
                       background=wincolor)



def submitclick():
    confirmations = 0
    # AGREEMENT
    if agreed.get() != 1:
        messagebox.showinfo("Information", "You haven't agreed to the Terms of Use. \nWe can't use your
info")
    else:
        print('\nSYSTEM REPORT: AGREEMENT \nUser agreed to the Terms of Use')
        confirmations += 1
    gotinfo = [nametext.get() if nametext.get() != "" else 0,                          # NAME
               lasnametext.get() if lasnametext.get() != "" else 0,                  # LAST NAME
               scrnametext.get() if scrnametext.get() != "" else 0,                  # SCR NAME
               daylist.get()+' '+monthlist.get()+' '+yearlist.get() if               # BIRTH DATE
               daylist.get() != "" and monthlist.get() != "" and yearlist.get != "" else 0,
               'Female' if genvar.get() == 2 else 'Male' if genvar.get() == 1 else 0, # GENDER
               counbox.get() if counbox.get() != "" else 0,                         # COUNTRY
               mailtext.get() if mailtext.get() != "" else 0,                      # E-MAIL
               phonetext.get() if phonetext.get() != "" else 0,                     # PHONE NUMBER
               passtext.get() if passtext.get() == conftext.get() and
               len(passtext.get()) >= 6 else 'PASSERROR' if passtext != "" else 0]  # PASSWORD
    if confirmations == 1:
        for i in gotinfo:
            if i == 0:
                print('...but some fields appeared to be not filled')
                messagebox.showinfo("Information", "You haven't filled the necessary fields. \nPlease, try again")
                break
        else:
            print('\nSYSTEM REPORT: FIELDS\nEverything is filled')
            if gotinfo[-1] == 'PASSERROR':
                print('...but there is an error with the password')
                messagebox.showinfo("Information", "Confirmation of password hasn't passed. Please, try again" +
                                    "\nNote: Your password must be more than 6 characters")
            else:
                print('\nSYSTEM REPORT: PASSWORD\nPassword confirmed')
                confirmations += 1
        info = {'Name': nametext.get(), 'Last name': lasnametext.get(), 'Screen name': scrnametext.get(),
                'Birth date': daylist.get()+' '+monthlist.get()+' '+yearlist.get(),
                'Gender': 'Female' if genvar.get() == 2 else 'Male',
                'Country': counbox.get(), 'Email': mailtext.get(), 'Phone': phonetext.get(),
                'Password': passtext.get()}
    # RECHECK
    if confirmations == 2:
        if messagebox.askokcancel("Question", "Let's recheck info given by you" +
                                  "\nYou're "+info['Name']+" "+info['Last name']+"." +
                                  "\nYou were born in "+info['Birth date']+"." +
                                  "\n\nPAY ATTENTION to these points:" +
                                  "\nE-mail: "+info['Email'] +
                                  "\nPhone number: "+info['Phone']):
            print("\nUSER REGISTERED")
            root.destroy()
            root.quit()


submit = Button(root, text='Submit', width=7, height=2, bg='#009900', fg='#005500', command=submitclick)
cancel = Button(root, text='Cancel', width=7, height=2, bg='#990000', fg='#550000')

namframe.pack(fill=BOTH)
firnam.grid(column=0, row=0, padx=15)
nametext.grid(column=1, row=0)

lasnamframe.pack(fill=BOTH)
lasnam.grid(column=0, row=0, padx=15)
lasnametext.grid(column=1, row=0)

scrnamframe.pack(fill=BOTH)
scrnam.grid(column=0, row=0, padx=15)
scrnametext.grid(column=1, row=0)

birthframe.pack(fill=BOTH)
birthlab.grid(column=0, row=0, padx=15)
monthlist.grid(column=1, row=0)
daylist.grid(column=2, row=0)
yearlist.grid(column=3, row=0)

genframe.pack(fill=BOTH)
```

```
genam.grid(column=0, row=0, padx=15)
genmale.grid(column=1, row=0)
genfem.grid(column=2, row=0)

counframe.pack(fill=BOTH)
couname.grid(column=0, row=0, padx=15)
counbox.grid(column=1, row=0)
counbox.current(0)

mailframe.pack(fill=BOTH)
mailname.grid(column=0, row=0, padx=15)
mailtext.grid(column=1, row=0)

phoneframe.pack(fill=BOTH)
phoname.grid(column=0, row=0, padx=15)
phonetext.grid(column=1, row=0)

passframe.pack(fill=BOTH)
passname.grid(column=0, row=0, padx=15)
passtext.grid(column=1, row=0)

conframe.pack(fill='both')
confname.grid(column=0, row=0, padx=15)
conftext.grid(column=1, row=0)

agrcheck.place(x=170, y=280)
submit.place(x=375, y=310)
cancel.place(x=475, y=310)

root.mainloop()
```

Протокол работы программы 1:

```
Process finished with exit code 0
```

Текст программы 2 :

```
from tkinter import *


def calculate():
    try:
        n = int(entry.get())
        k = 0
        s = 0
        while k <= n:
            s += (n + k) * (n + k)
            k += 1
        answer['text'] = 'n^2 + (n+1)^2 + ... + 2n^2 = '+str(s)
    except ValueError:
        answer['text'] = 'Ошибка ввода данных. \nВведите целое число.'


root = Tk()
root.title('n^2 + (n+1)^2 + (n+2)^2 ... 2n^2')
root.geometry('0x0')
root.minsize(width=400, height=100)
root.maxsize(width=500, height=100)

label = Label(root, text='Введите число:', anchor='e', width=15)
```

```
entry = Entry(root, width=20)
button = Button(root, text='Calculate!', command=calculate)
answer = Label(root)

label.grid(column=0, row=0)
entry.grid(column=1, row=0)
button.grid(column=1, row=1)
answer.grid(column=1, row=2)

root.mainloop()
```

Протокол работы программы 2:

```
Process finished with exit code 0
```

Вывод: в процессе выполнения практического занятия выработал навыки составления программ циклической структуры в IDE PyCharm Community. Были использованы языковые конструкции if,for. Типы данных “Кортежи ”. Работа с библеотекой Ткинтер
Выполнены разработка кода, отладка, тестирование, оптимизация программного кода. Готовые программные коды выложены на GitHu