UYGA VAZIFA

1. O‘zingizga yoqqan biror 8 qatorli she’rni faylga yozish va uni o‘qish dasturini tuzing.
2. Fayldagi satrda @ belgisi mavjud yoki mavjud emasligini aniqlovchi dastur tuzing.

input.txt	output.txt
Ali.vali@gmail.com	Ha
Hello world!	Yo`q

40-dars. PYTHONDA GRAFIKA BILAN ISHLASH

Python dasturlash tilida tasvir chizish uchun *Canvas* deb nomlanuvchi chizish maydonidan foydalaniladi. Canvasning biror qismiga tasvir chizish uchun X va Y koordinatalar tizimi qo‘llaniladi.
Tkinterda X koordinatalari chapdan o‘ngga, Y koordinatalari esa yuqoridan pastga qarab belgilanadi. (0, 0) nuqta Canvasning yuqori chap burchagi hisoblanadi.
Canvas nusxasini yaratayotgan vaqtda uning eni va balandligini ko‘rsatish lozim. Geometrik figura va boshqa obyektlarni joylashtirishda ularning Canvasdagi koordinatasi ko‘rsatiladi. Koordinatani hisoblash yuqori chap burchak, ya’ni (0, 0) dan boshlanadi.

TAYANCH TUSHUNCHALAR

Canvas – Python dasturlash tilida X va Y koordinatalar tizimidan iborat maxsus tasvir chizish maydoni.

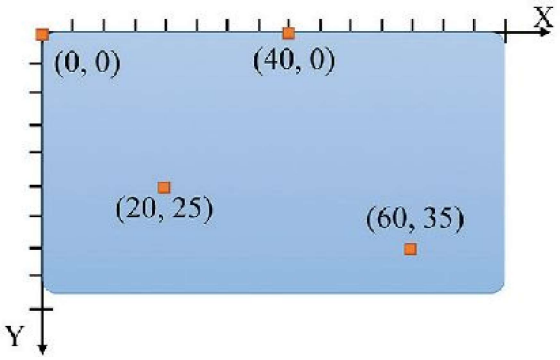


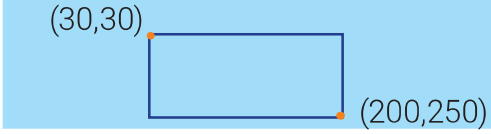
Figura chizish

Figurani chizish uchun maxsus tkinter moduli funksiyalaridan foydalaniladi va koordinatalar ko‘rsatiladi. Birinchi raqam gorizontal (X o‘qi), ikkinchi raqam esa vertikal (Y o‘qi) bo‘yicha joylashuvni belgilaydi.

```
from tkinter import *
window=Tk()
```
Kutubxonadan tkinter modulini yuklab oladi.
Tkinter oynasini yaratadi.

```
draw=Canvas(window, width=400,
height=400)
draw.pack()
```
Eni 400, bo‘yi 400 ga teng Canvas maydoni yaratiladi.

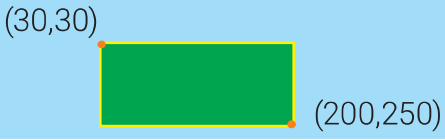
```
draw.create_rectangle(30,30,200,250)
```
Yuqori chap burchagi koordinatasi (30,30), quyi o‘ng burchak koordinatasi (200,250) bo‘lgan to‘g‘ri to‘rtburchakni chizadi.



Figuraga rang berish

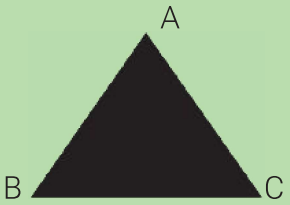
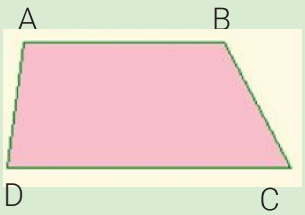
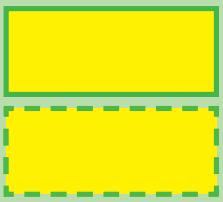
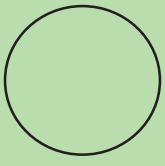
Ma’lumki, kompyuter monitori ekranidagi tasvirlar piksel deb nomlanuvchi kichik rangli nuqtalardan iborat. Dasturda tasvir chizish uchun har bir piksel qaysi rangda bo‘lishini kompyuterga “tushuntirish” lozim.

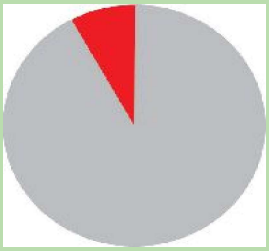
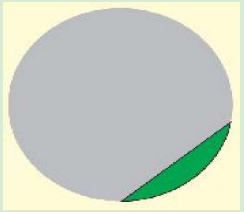
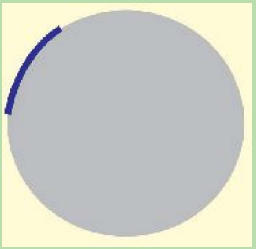
```
.....
draw.create_rectangle(30,30,200,250
                      fill='green',
                      outline='yellow')
```



Yuqoridagi kodning davomi
Yuqori chap burchagi koordinatasi (30,30), quyi o‘ng burchak koordinatasi (200,250), rangi yashil, chegarasi sariq to‘g‘ri to‘rtburchakni chizadi.

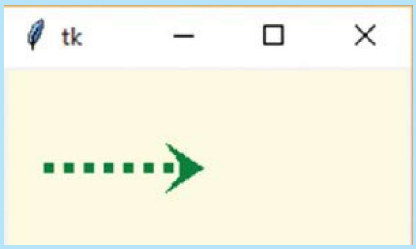
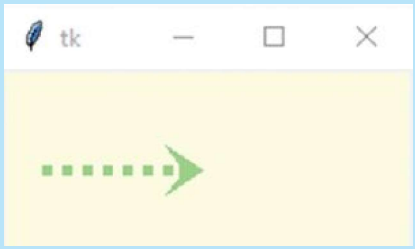
Python dasturlash tilida tkinter modulining figurali obyektlarni chizish uchun mo‘ljallangan bir nechta funksiyalari mavjud.

Funksiya va tavsifi	Dasturdagi ko‘rinishi	Natijasi
create_line() to‘g‘ri chiziq	c.create_line(10, 10, 190, 50)	
create_polygon() ixtiyoriy ko‘pburchak A(100,10), B(20,90), C(180,90)	c.create_polygon(100, 10, 20, 90, 180, 90)	
create_polygon() ixtiyoriy ko‘pburchak *A(20,10), B(140,10), C(180,80) , C(10,80)*	c.create_polygon(20, 10, 140, 10, 180, 80, 10, 80, fill='pink', outline='green')	
create_rectangle() to‘g‘ri to‘rtburchak *yuqori chap va quyi o‘ng koordinatasi berilgan.*	c.create_rectangle(40, 40, 140, 80, fill='yellow', outline='green', width=3, activedash=(5, 4))	
create_oval() Aylana *Aylana bo‘lganligi uchun kvadrat koordinatasi beriladi.*	c.create_ oval (50, 60, 150, 160, width=2)	

create_oval() Oval *To‘rtburchak koordinatasi beriladi.*	c.create_oval(10, 20, 190, 60, fill='red', outline='white')	
c.create_arc **sektor** ***Start*** sektor boshlangan gradus ***extent*** qo‘shilgan burchak gradusi	c.create_oval(20, 20, 180, 180, fill='lightgrey', outline='white') c.create_arc(20, 20, 180, 180, start=90, extent=25, fill='red')	
c.create_arc ***segment*** *style=**CHORD*** *segment ekanligini ifodalaydi*	c.create_oval(20, 20, 180, 180, fill='lightgrey', outline='white') c.create_arc(20, 20, 180, 180, start=270, extent=80, style=CHORD, fill='green')	
c.create_arc ***yoy uzunligi*** *style=ARC yoy ekanligini ifodalaydi* *outline='darkblue' yoy chegarasi*	c.create_oval(20, 20, 180, 180, fill='lightgrey', outline='white') c.create_arc(20, 20, 180, 180, start=180, extent=-50, style=ARC, outline='darkblue', width=5)	
create_text() ***Matn***	c.create_text(100, 100, text="GRAFIKA", justify=CENTER, font="ARIAL 14", fill="grey")	

MISOL

from tkinter import *	Kutubxonadan tkinter modulini yuklab oladi.
win = Tk()	Tkinter oynasini yaratadi.
c = Canvas(win, width=200, height=200, bg='lightyellow') c.pack()	Eni 200, bo‘yi 200 ga teng och sariq rangli Canvas maydoni yaratiladi.
c.create_line(20, 50, 100, 50,	Boshlanishi (20,50), oxiri (100,50) nuqtada,
fill='green',	rangi yashil,
width=5,	qalinligi 5,
arrow=LAST,	ko‘rsatgich belgisi oxirida,
dash=(3,4),	3-piksel bo‘yalgan, 4-piksel bo‘yalmagan uzuq-uzuq,

activefill='lightgreen', arrowshape="10 20 10") win.mainloop()	sichqoncha olib borilganda, och yashil rangga kiruvchi, ko‘rsatgich o‘lchamlari ko‘rsatilgan chiziq chizadi.
	

MAVZU YUZASIDAN SAVOLLAR

1. Foydalanuvchi grafik interfeysi yordamida figuralar chizish mumkinmi?
2. Python dasturlash tilida grafik obyektlar qanday chiziladi?
3. Grafik obyektlar chizish uchun qaysi maydondan foydalaniladi?

41-dars. AMALIY MASHG‘ULOT

Misol. Radiusi tasodifiy qiymatga teng 20 ta doira chizing. Doira ichini ranglar to‘plamidagi tasodifiy rangga bo‘yang.

from tkinter import *	Kutubxonadan tkinter modulini yuklab oladi.
from random import *	Kutubxonadan random modulini yuklab oladi.
window=Tk()	Tkinter oynasini yaratadi.
canvas=Canvas(window, width=400, height=400) canvas.pack()	Eni 400, bo‘yi 400 ga teng Canvas maydonini yaratadi.
for i in range(1,21):	20 ta siklni tashkil etiladi.
color=choice(['yellow', 'red', 'green', 'blue', 'pink', 'grey', 'purple'])	choice() funksiyasi ranglar kortejidan tasodifiy rangni tanlab oladi.
x0=randint(0, 300)	X o‘q bo‘yicha (0, 300) sonlar orasidan tasodifiy koordinatani tanlab oladi.
y0=randint(0, 300)	Y o‘q bo‘yicha (0, 300) sonlar orasidan tasodifiy koordinatani tanlab oladi.
d=randint(0, 150)	(0, 150) sonlar orasidan radius uchun tasodifiy qiymatni tanlab oladi.
canvas.create_oval(x0,y0,x0+d,y0+d, fill=color)	Tasodifiy tanlab olingan koordinata bo‘yicha radiusi tasodifiy qiymatga teng, rangi esa ranglar kortejidan tasodifiy tarzda tanlab olingan doira chizadi.