

DRAWING DIFFERENT SHAPES WITH PROGRAMS USING THE TURTLE MODULE

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Abstrakt

The Python programming language is not limited to solving specific problems. This language allows programmers to enter new and new directions. Python is used in the following areas: Web and Internet programming, database (DB), computer game creation, graphical user interface (GUI), computer vision, rapidly developing Internet of Things (IoT) technology, etc. . This article is about the turtle method, which is a subset of the graphics part of the python programming language.

Key words

turtle, forward, right, penup, pendown, goto.

Introduction. Most programming languages use controls: windows, text boxes, and buttons to interact with the user. These are commonly called graphical user interfaces (GUI). The window in which all the elements are located is the basis of the GUI. Turtle is a unique Python module that draws geometric shapes of varying complexity without writing code. We can use this module to draw various shapes by writing functions such as `turtle.forward()` and `turtle.right()` or other functions. Below are the common methods of the turtle module:

Table 1. Methods and functions for using the Turtle method.

Methods	Parameter	Task of the method
<code>Turtle()</code>	-	Creates and returns a new turtle object.
<code>forward()</code>	amount	Moves the turtle (the drawn shape) forward by the specified amount.

Methods	Parameter	Task of the method
backward()	amount	Moves the turtle (the drawing shape) back by the specified amount
right()	corner	Rotates the turtle (the drawing shape) clockwise
left()	corner	Rotates the turtle (shape being drawn) counterclockwise
color()	Color name	Turtle changes the color of the pen
fillcolor()	Color name	Changing the color of the turtle (the figure being drawn) is used to fill the polygon.
position()	-	Returns the current position
goto()	x, y	Move the turtle (the shape being drawn) to the x, y position

Draw different shapes using Turtle. To use turtle methods and functions, we need to import turtle. Turtle comes with a Python package by default and does not require external installation. As mentioned above, before we can use turtle, we need to import it. We import it as follows:

```
from turtle import *
```

```
#or
```

```
import turtle
```

After importing the turtle library and giving us all the turtle functions, we need to start a new project and turtle. So, we write the following code:

Using Turtle, we draw different shapes using the following programs:

```
import turtle
```

```
mening_1_shaklim = turtle.Turtle() # we have created a general form
```

```
mening_1_shaklim.color('red')
```

```
mening_1_shaklim.forward(50) # moves forward 50 pixels from the starting point
```

```
mening_1_shaklim.up()
```

```
mening_1_shaklim.forward(50)
```

```
mening_1_shaklim.right(90)
```

```
mening_1_shaklim.down()
```

```
mening_1_shaklim.backward(80) # moves back 80 pixels
```

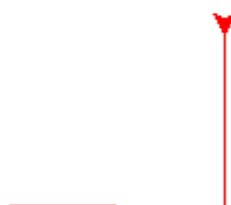


Figure 1. The result of the program.

Draw a straight line with Turtle:

```
from turtle import Turtle, Screen
togri_chiziq=Turtle()
togri_chiziq.pensize(30) # line thickness
togri_chiziq.forward(220) # line length
turtle.done # completing the program
```



Figure 1.1. The result of the program.

So, we have written a program code that draws a line with a width of 30 pixels and a length of 220 pixels. With turtle methods, you can draw different shapes and represent them in different colors. Python has many functions for coding using the turtles library. From them, we will learn how to draw some basic shapes below.

Code to draw a rectangle using turtle:

```
from turtle import *
shakl=Turtle() # draw a rectangle
for i in range(4):
shakl.forward(80)
shakl.right(90)
turtle.done()
```

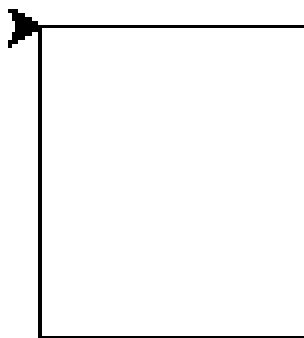


Figure 1.2. The result of the program.

Drawing a pattern using turtle:

```
import turtle
ranglar = ['yellow','purple', 'blue', 'red','green','white','black','orange,']
shakl = turtle.Pen()
turtle.bgcolor('white') # set the background color
for x in range(360): # start a cycle, perform repeated processes
shakl.pencolor(ranglar[x%6])
shakl.width(x/100 + 1) # width of shape lines
shakl.forward(x)
shakl.left(59)
turtle.done
```

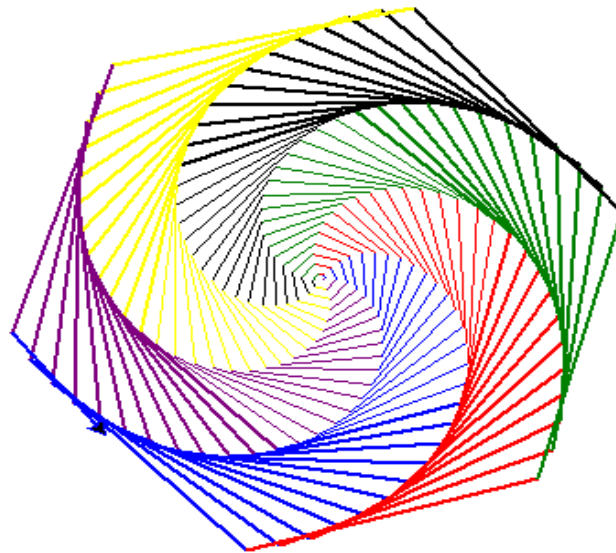


Figure 1.3. The result of the program.

Draw an ellipse:

```
from math import *
a= 364
b= 169
for i in range(361):
x= i*(pi/180)
y= a*sin(x)
z= b*cos(x)-b
kld= 25*(pi/180)
y1=y*cos(kld)+z*sin(kld)
z1= y*sin(kld) - z*cos(kld)
goto(y1,z1)
```

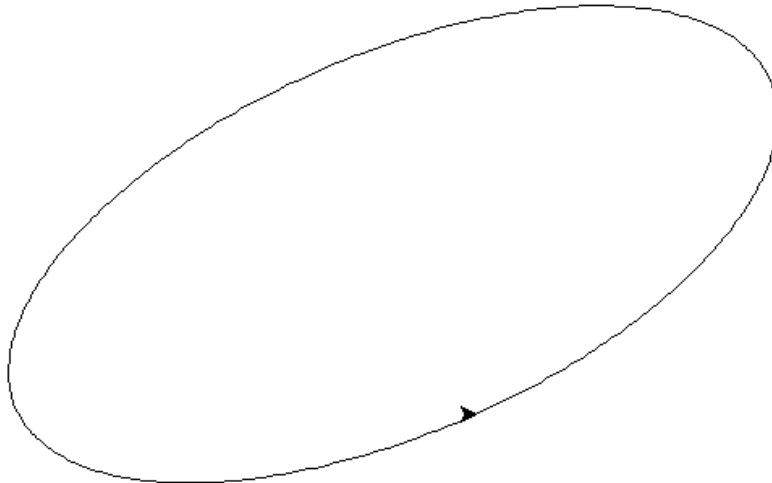


Figure 1.4. The result of the program.

Draw a parallelogram shape:

```
import turtle
paralgrm = turtle.Turtle()
paralgrm.speed(3) # shape drawing speed
for i in range(2):
    paralgrm.forward(180)
    paralgrm.left(60) # corresponding angles
    paralgrm.forward(100)
    paralgrm.left(120) # corresponding angles
```



Figure 1.5. The result of the program.

Conclusion. In general, the capabilities of the Python programming language are much broader. In this article, you were given a brief overview of the capabilities of the Turtle module, and now you can easily work with it yourself..

REFERENCES.

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