Object Oriented Programming

BE(CSE) II-Semester

Prepared by
S. Durga Devi,
Assistant Professor,
CSE,CBIT

Unit-V

Simple Graphics using Turtle

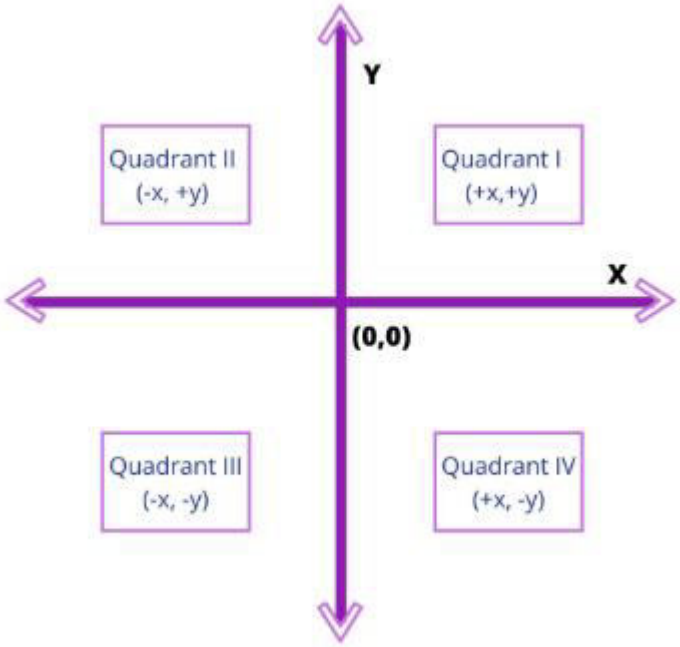
S. Durga Devi ,CSE,CBIT

- Turtle is another module to create funny graphics. This has been introduced to the kids. But extremely useful for the adult also. Very fun to learn.
- Turtle let you to draw like on drawing board. We can draw pictures .
- Using turtle we can control the movement of the pictures.
- Like a robo we can give commands to the turtle like move forward , turn left, right in degree. By using these commands we can create different moving pictures.

Turtle methods

1. **forward(distance)or fd():** moves the turtle forward by specified distance
2. **backward(distance):**moves the turtle backward by specified distance. opposite to the direction the turtle is headed.
3. **right(angle) or rt():** turns the turtle right by angle units . Angle (integer or float)
4. **left(angle):** turns the turtle left by angle units. Angle (integer or float)
5. **penup():** picks up the turtle pen-no drawing when moving
6. **pendown():** put down the turtle pen- drawing when moving
7. **color():** changes the turtle pen color
8. **position():** returns the current position of the turtle
9. **goto(x,y):** moves the turtle to specified position
10. **home():** moves turtle to starting position (0,0)
11. **pensize(number):** size of the pen number should be in integer
12. **seth() or setheading(angle):** set the orientation of the turtle to angle.

Screen of the turtle



Turtle origin at 0,0 position. Screen divided into four quadrants.

How to use turtle module ?

- To make use of turtle methods import turtle module.
- Example TurtleEx1.py

```
from turtle import *
#create turtle object
t=Turtle()
bgcolor("green")
t.forward(100)
t.right(90)
t.left(90)
```

turtle2.py

```
# create a square
from turtle import *
from time import *
t=Turtle()
bgcolor("green")
color("red")#  color of the turtle
for i in range(4):
        t.forward(100)
        sleep(1)
        t.right(90)
```

turtl3.py

```
from turtle import *
from time import *
shape("square")
sleep(1)
left(45)
sleep(1)
forward(50)
sleep(1)
exitonclick()
```

turtle4.py

draw a red color rectangle

```
from turtle import *
color('red')
for i in range(4):
        forward(100)
        right(90)
```

Turtle5.py

program to demonstrate use of setposition(), pendown() and penup() methods

```
from turtle import *
from time import *
bgcolor("green")
color("red")# turtle color
shape("circle")# turtle shape
setposition(50,-70)
forward(50)
sleep(1)
penup()
sleep(1)
forward(150)
sleep(1)
pendown()
forward(200)
```

Note: we can omitt creating turle object

turtle6.py

- Draw a red color thin pen on yellow background

```
from turtle import *
Bgcolor(“yellow”)
color("red")
 fillcolor(“green”)# fills the pen color
pensize(2)
#speed(5)
for angle in range(0,360,20):
        seth(angle)
        circle(100)
```

```
from turtle import *   # importing the module
trtl = Turtle()    #making a turtle object of Turtle class for drawing
trtl.pencolor('red')    #making colour of the pen red
trtl.pensize(5)    #choosing the size of pen nib
trtl.speed(1)    #choosing the speed of drawing
trtl.shape('turtle')   #choosing the shape of pen nib
trtl.forward(150)    #drawing a line of 200 pixels
trtl.right(90)    #asking turtle to turn 90 degrees
trtl.forward(150)    #drawing a line of 200 pixels
trtl.penup()    # preparing for moving pen without drawing
trtl.setpos(-140,-120)    # making the new position of the turtle
trtl.pendown()   # bringing the pen down for drawing again
trtl.pencolor('green')    # choosin the pen colour as green
trtl.write('CBIT,CSE3', font=("Arial", 20, "bold"))    # chosing the font
trtl.penup()
trtl.ht()    # hiding the turtle from the screen
```

References

- https://docs.python.org/3/library/turtle.html
- https://docs.python.org/3/library/turtle.html#turtle.forward

- https://www.vivaxsolutions.com/web/python-turtle.aspx - for more examples