## Lesson 12: Multiple Turtles

How to instantiate more than one turtle in the same program? Very simple. So far we used one turtle with a name called **t** in our programs. The line t=turtle.Turtle() creates a turtle object t. This line imports the module called turtle, which has all built in functions (forward, left, right, …) for drawing on the screen with the Turtle object t. Let's create second turtle object with a name t1, t1=turtle.Turtle(). Turtle t1 has the same capability and properties as turtle t. Objects that have the same capabilities and similar properties are defined as *classes* in Python language. Keep in mind that you can name turtle objects as you wish, for example, first one can be Tina and second one –Tommy. You can add third, fourth and so on turtle objects each with its own name. Below, it is shown an example with four turtles.

## Multiple Turtles

1. **Example #1** (Four turtle motion)

```
import turtle
tina = turtle.Turtle()
tina.shape("turtle")
molly = turtle.Turtle()
molly.shape("turtle")
george = turtle.Turtle()
george.shape("turtle")
wilson = turtle.Turtle()
wilson.shape("turtle")

tina.color("black")
tina.forward(100)

molly.left(60)
molly.color("gold")
molly.forward(100)

george.left(40)
george.color("blue")
george.forward(100)

wilson.left(20)
wilson.color("green")
wilson.forward(100)
```
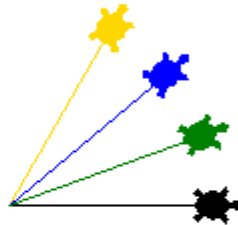
First turtle name is tina, second→molly, third→george, and forth→wilson.

## 2. Example #2

```
import turtle

tina = turtle.Turtle()
tina.shape('turtle')
tina.shapesize(1)
tina.color('blue')
tina.up()
tina.left(90)
tina.forward(100)
tina.forward(20)
tina.write('I am Tina!',font=('Times New Roman',12,'bold'))
tina.forward (50)
tina.right(90)

tommy = turtle.Turtle()
tommy.shape('turtle')
tommy.shapesize(5)
tommy.color('red')
tommy.up()
tommy.forward(50)
tommy.write('I am Tommy!', font=('Times New Roman',12,'bold'))
tommy.forward(150)
```

In the example #2 we added couple of lines that allow to write message on the screen. Each line includes message you want to type, font name font size and font type.

## 3. Example #3 (Simple animation with two turtles)

```
import turtle
turtle.bgcolor('lightblue')

t1 = turtle.Turtle('turtle')
t1.color('red')
t1.pensize(4)

t2 = turtle.Turtle('turtle')
t2.color('green')
t2.pensize(4)

t1.speed(10)
t2.speed(10)
X=10

for i in range (50):
    t1.forward(X)
    t1.left(10)

    t2.forward(X)
    t2.right(10)
```
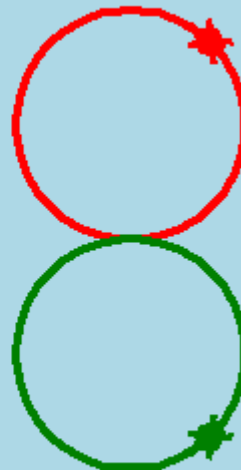
### 4. Example #4 (two turtles motion using function)

```python
1    import turtle
2    turtle.bgcolor('red')
3
4    t1 = turtle.Turtle('turtle')
5    t2 = turtle.Turtle('turtle')
6
7    def multiple(turtle,clr,size):
8        turtle.color(clr)
9        turtle.shapesize(size)
10       turtle.pensize(4)
11       turtle.left(90)
12       turtle.speed(10)
13
14   multiple(t1,'blue',2)
15   multiple(t2,'gold',1)
16
17   X=10
18   for i in range (50):
19       t1.forward(X)
20       t1.left(10)
21       t2.forward(X)
22       t2.right(10)
```
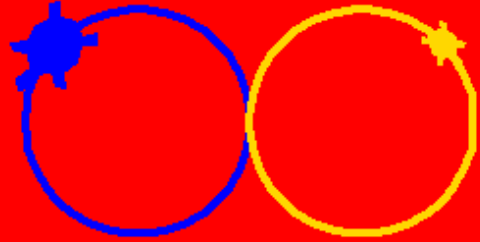
This example shows how to create code with two turtle using our function **multiple** (line #7). Function specifies turtle named t1 and turtle named t2. Parameters of function are following:

a. Turtle name;
b. Turtle colour;
c. Turtle shape size.

After we determined function we call function with name turtle **t1** (line #14) and call function with name turtle **t2** (line #15)

## 5. **Example #5** (Moving Turtles)

```python
import turtle

maya = turtle.Turtle('turtle')
maya.color('red','green')
maya.penup()
maya.setpos(-200,0)
maya.pendown()
maya.speed(10)


pepe = turtle.Turtle('turtle')
pepe.color('blue','gold')
pepe.speed(10)
pepe.penup()
pepe.setpos(0,-200)
pepe.pendown()
pepe.left(90)

for j in range (7):

    maya.begin_fill()
    pepe.begin_fill()

    for i in range (4):
        maya.forward(50)
        maya.right(90)
        pepe.forward(50)
        pepe.left(90)
    maya.forward(50)
    pepe.forward(50)
    maya.end_fill()
    pepe.end_fill()
```
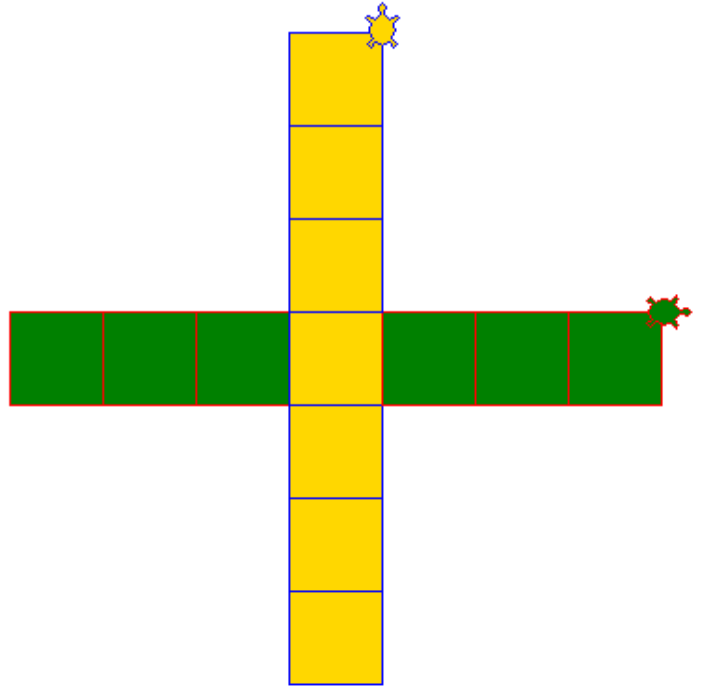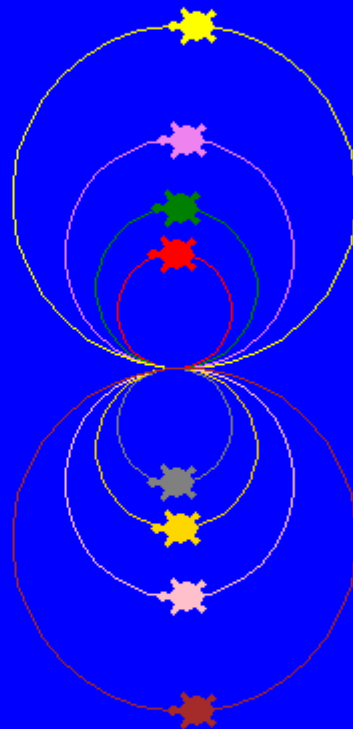
## 6. Example #6

Code and Result:

```python
import turtle
turtle.bgcolor('blue')
t1 = turtle.Turtle('turtle')
t1.color('red')
t1.speed(10)
t2 = turtle.Turtle('turtle')
t2.color('gray')
t2.speed(10)
t3 = turtle.Turtle('turtle')
t3.color('green')
t3.speed(10)
t4 = turtle.Turtle('turtle')
t4.color('gold')
t4.speed(10)
t5 = turtle.Turtle('turtle')
t5.color('violet')
t5.speed(10)
t6 = turtle.Turtle('turtle')
t6.color('pink')
t6.speed(10)
t7 = turtle.Turtle('turtle')
t7.color('yellow')
t7.speed(10)
t8 = turtle.Turtle('turtle')
t8.color('brown')
t8.speed(10)
t1.speed(10)
t2.speed(10)
for i in range(54):
    t1.forward(5)
    t1.left(10)
    t2.forward(5)
    t2.right(10)
    t3.forward(7)
    t3.left(10)
    t4.forward(7)
    t4.right(10)
    t5.forward(10)
    t5.left(10)
    t6.forward(10)
    t6.right(10)
    t7.forward(15)
    t7.left(10)
    t8.forward(15)
    t8.right(10)
```

## 7. Example #7 (Moving Car)

Code and Result:

```python
import turtle
t=turtle.Turtle()
t.color('coral')
t1=turtle.Turtle()
t2=turtle.Turtle()
t1.color('gray')
t2.color('gray')

t.penup()
t1.penup()
t2.penup()

t.shape('square')
t1.shape('circle')
t2.shape('circle')

t.turtlesize(4,12)
t1.turtlesize(2)
t2.turtlesize(2)

for i in range(150):
    t.goto(-400+5*i,0)
    t1.goto(-460+5*i,-60)
    t2.goto(-340+5*i,-60)
```

## 8. Example #8 (Cat, pixel art)

```python
import turtle

a1=turtle.Turtle()
a1.hideturtle()
a1.pendown()
a1.goto(0,0)



for j in range (13):
    a1.penup()
    a1.goto(0,20*j)
    a1.goto(320,20*j)
    a1.penup()
    a1.goto(0,20*j)
    a1.pendown()
    a1.goto(320,20*j)

for i in range (17):
    a1.penup()
    a1.goto(20*i,0)
    a1.goto(20*i,240)
    a1.penup()
    a1.goto(20*i,0)
    a1.pendown()
    a1.goto(20*i,240)
```

```python
bl=turtle.Turtle('square')
bl.penup()
bl.color('black')
bl.pensize(5)
bl.begin_fill()
bl.goto(140,0)
bl.down()
bl.left(90)
bl.fd(40)
bl.rt(90)
bl.fd(20)
bl.left(90)
bl.fd(80)
bl.rt(90)
bl.fd(140)
bl.rt(90)
bl.fd(120)
bl.rt(90)
bl.fd(60)
bl.rt(90)
bl.fd(40)
bl.rt(90)
bl.fd(20)
bl.lt(90)
bl.fd(40)
bl.lt(90)
bl.fd(60)
bl.lt(90)
bl.fd(80)
bl.rt(90)
bl.fd(60)
bl.end_fill()
bl.hideturtle()
```

```
b2=turtle.Turtle('square')
b2.penup()
b2.color('black')
b2.pensize(5)
b2.begin_fill()
b2.goto(280,120)
b2.down()
b2.lt(90)
b2.fd(80)
b2.lt(90)
b2.fd(20)
b2.rt(90)
b2.fd(20)
b2.lt(90)
b2.fd(40)
b2.rt(90)
b2.fd(20)
b2.rt(90)
b2.fd(60)
b2.rt(90)
b2.fd(20)
b2.lt(90)
b2.fd(20)
b2.rt(90)
b2.fd(20)
b2.lt(90)
b2.fd(20)
b2.rt(90)
b2.fd(80)
b2.rt(90)
b2.fd(40)
b2.end_fill()
b2.hideturtle()
```

```python
b3=turtle.Turtle('square')
b3.penup()
b3.color('black')
b3.pensize(5)
b3.begin_fill()
b3.goto(160,100)
b3.down()
b3.lt(90)
b3.fd(100)
b3.lt(90)
b3.fd(20)
b3.lt(90)
b3.fd(20)
b3.rt(90)
b3.fd(20)
b3.lt(90)
b3.fd(20)
b3.rt(90)
b3.fd(80)
b3.rt(90)
b3.fd(20)
b3.lt(90)
b3.fd(20)
b3.rt(90)
b3.fd(20)
b3.lt(90)
b3.fd(20)
b3.lt(90)
b3.fd(100)
b3.lt(90)
b3.fd(20)
b3.rt(90)
b3.fd(20)
b3.lt(90)
b3.fd(40)
b3.rt(90)
b3.fd(20)
b3.lt(90)
b3.fd(40)
b3.lt(90)
b3.fd(20)
b3.rt(90)
b3.fd(40)
b3.lt(90)
b3.fd(20)
b3.rt(90)
b3.fd(20)
b3.end_fill()
b3.hideturtle()

b4=turtle.Turtle('square')
b4.penup()
b4.color('blue')
b4.pensize(5)
b4.goto(110,140)

b5=turtle.Turtle('square')
b5.penup()
b5.color('white')
b5.pensize(5)
b5.goto(50,140)
```