

MORE FUN WITH PYTHON TURTLE (Part 1)

Introduction: This worksheet adds further knowledge and exercises to the 'Turtle-snowflakes' worksheet, which should be completed before this exercise.

Start:

1. Setup and assemble the Raspberry Pi (RPi) environment:
 - a. Connect RPi to a monitor, keyboard and mouse
 - b. Power up the RPi module
 - c. Observe the start-up script
2. Login and enter password
3. Start the GUI by typing 'startx'
4. Open the Python 3 programming environment IDLE3
5. Click on **File** and **Open New Window**
6. Click on **File** and **Save As** and naming it `Turtle-01.py`

Coding:

[Note the use of the comment # (hashtag) this will add further information about the code behaviour. Be careful to observe the use of capital and small letters.]

1. Enter the following code into the new window:
2. Before you start to write your program import the Turtle Library

```
import turtle          #Import the Turtle Library
```

3. Next create a window to display the turtle window. Assign this to a variable.

```
wn = turtle.Screen()   #wn = variable; note Screen has a capital S
```

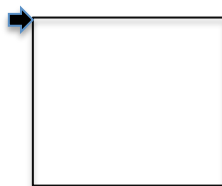
4. Give your turtle a name.

```
t = turtle.Turtle()     #t is the name of the turtle (use your own name if
                        #preferred); note Turtle() has a capital T
```

5. Use a loop to create a square shape
(Numbers 4 and 90 were chosen specifically to draw a square; four sides each at 90° (ie 360°/4) to each other)

```
for i in range(4):      #for i in range(4) means repeat a number of
                        #sequences 4 times. The : (colon) indicates an
                        #indent of four spaces needs to be inserted
                        #before entering the follow code.
    t.forward(50)        #moves turtle forward 50 points
    t.right(90)          #turns turtle 90°
wn.exitonclick()        #shuts the turtle graphics window
```

6. Save this module and run the code



7. What shape is produced when the sequence is changed to 8 and the angle 45°?

MORE FUN WITH PYTHON TURTLE (Part2)

Start:

1. Setup and assemble the Raspberry Pi (RPi) environment:
 - a. Connect RPi to a monitor, keyboard and mouse
 - b. Power up the RPi module
 - c. Observe the start-up script
2. Login and enter password
3. Start the GUI by typing 'startx'
4. Open the Python 3 programming environment IDLE3
5. Click on **File** and **Open New Window**
6. Click on **File** and **Save As** and naming it Turtle-02.py

Coding:

1. Import turtle library

```
import turtle          #import turtle library
```

2. Next create a window to display the turtle window. Assign this to a variable.

```
wn = turtle.Screen()   #wn = variable; note Screen has a capital S
```

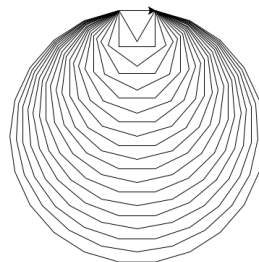
3. Give your turtle a name.

```
t = turtle.Turtle()    #t is the name of the turtle (use your own
                        #name if preferred); note Turtle() has a
                        #capital T
```

4. Use a double loop to create a new shape

```
for NumberOfSides in range(3,23):          #range(3,23) means 3 through
                                            #to 23.
    for i in range(NumberOfSides):          #range(NumberOfSides) means
                                            #repeat sequence one step for
                                            #each side.
        t.right (360/NumberOfSides)        #/ means divide
        t.forward (50)                    #move the turtle forward 50
                                            #points
wn.exitonclick()                          #shuts the turtle graphics
                                            #window
```

5. Save this module and run the code



6. How many shapes can you recognize? Can you name the shapes?

MORE FUN WITH PYTHON TURTLE (Part3)

Start:

1. Setup and assemble the Raspberry Pi (RPi) environment:
 - a. Connect RPi to a monitor, keyboard and mouse
 - b. Power up the RPi module
 - c. Observe the start-up script
2. Login and enter password
3. Start the GUI by typing 'startx'
4. Open the Python 3 programming environment IDLE3
5. Click on **File** and **Open New Window**
6. Click on **File** and **Save As** and naming it Turtle-03.py

Coding:

1. Import turtle library

```
Import turtle      #import turtle library
```

2. Next create a window to display the turtle window. Assign this to a variable.

```
wn = turtle.Screen()    #wn = variable; note Screen has a capital S
```

3. Give your turtle a name.

```
t = turtle.Turtle()      #t is the name of the turtle (use your  
                          #own name if preferred); note Turtle()  
                          #has a capital T
```

4. Use **for**, **if** and **else** to create a shape

```
for NumberOfSides in range(4, 12):      #range through 4 to 12  
    for i in range(NumberOfSides):      #repeat one step for each  
                                        #side  
        if NumberOfSides%2:             #This allows you to do  
                                        #different things for odd and  
                                        #even numbers.  
            t.forward(50)                #turtle forward  
                                        #NumberOfSides%2 is true  
                                        #(i.e. NumberOfSides is odd)  
        else:  
            t.backward(50)               #turtle backward if  
                                        #NumberOfSides is false  
                                        #(i.e. NumberOfSides is even)  
        t.left(360/NumberOfSides)  
wn.exitonclick()                        #shuts the turtle graphics  
                                        #window
```

5. Save the module and run the code
6. Change the values of the range statement
7. Can you explain what is happening?

