

STAR GAZING WITH PYTHON TURTLE (Part 1) - Create a Star

Introduction: This worksheet is written to create bite size chunks of the Club Leader Resources - Constellation program.

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 `Star_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.

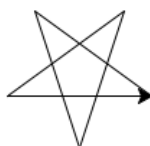
```
t = turtle.Turtle()          #t is the name of the turtle (use your own name if #preferred);  
                             note Turtle() has a capital T
```

5. Draw a Star

```
for side in range(5):  
    t.left(144)  
    t.forward(100)  
  
wn.exitonclick()
```

```
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 and run the code

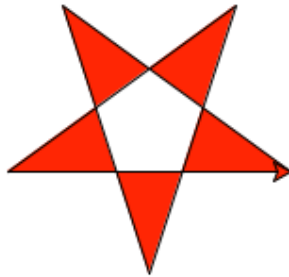


7. Give a star some colour - add this code

```
def drawStar(starSize):          # define drawStar(starSize):
    t.fillcolor("Red")           # change the colour of the turtle to Red
    t.begin_fill()               # begin the fill sequence for the shape
    for side in range (5):       # amend the code in step 5
        t.left(144)
        t.forward(starSize)
    t.end_fill()                 # end the fill sequence for the shape

drawStar(150)
```

8. Save this module as Star_Turtle_02.py and run the code



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

10. Challenges: Create similar shapes by changing the values in the code

Complete Code:

```
#fill a star with a basic colour and variable size
import turtle
wn = turtle.Screen()
t = turtle.Turtle()
def drawStar(starSize):          #define 'drawStar' with a 'starSize'
    t.fillcolor("Red")           #set the starfill colour to Red
    t.begin_fill()               #starting point for the star fill
    for side in range (5):
        t.left(144)
        t.forward(starSize)     #move the star forward 'starSize' steps
    t.end_fill()                 #end point for the star fill
drawStar(150)                   #start the drawStar sequence 150 steps
wn.exitonclick()
```