

Session 4 Skill Review: Design a Spirograph

You can create a spirograph using squares. You will use loops to make the design.

1.
 - a. Open IDLE (Python).
 - b. From the File menu, select *New File*.
 - c. From the File menu, select *Save*.
 - d. Type **spiro** as the file name. Click *Save*.
2. Import the Turtle library. Set the speed and screen size.

```
from turtle import *
speed("fast")
screensize (2000, 2000)
```

3. Use a *for* loop to repeat instructions to draw each line in a square. Run the program.

```
#draw square
for line in range(4):
    forward(100)
    right(90)
```



4. Draw squares forever using a *while* loop.

```
#loop forever
while True:
    #draw square
    for line in range(4):
        forward(100)
        right(90)
```

5. Indent the square code to make it part of the *while* loop:

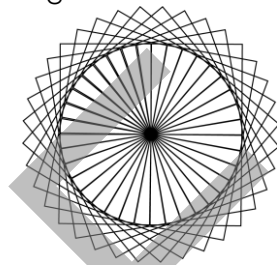
- a. Select the square code:

```
#loop forever
while True:
    #draw square
    for line in range(4):
        forward(100)
        right(90)
```

- b. Press TAB on the keyboard to move it over. Run the program.

```
while True:
    #draw square
    for line in range(4):
        forward(100)
        right(90)
```

Indent the code below while True: so that it becomes part of the forever loop.



6. To make the spirograph, angle the pen, before drawing a new square:

a. Place the cursor at the end of the *while True* line. Press ENTER on the keyboard.

```
while True:
    |
    #draw square
    for line in range(4):
        forward(100)
        right(90)
```

The cursor must be at the same indent level as *for line in range*. This will make the command part of the *while* loop, not the square loop.



b. Turn right to change the angle. Run the program.

```
while True:
    right(62)
    #draw square
    for line in range(4):
        forward(100)
        right(90)
```

The angle should be a value that cannot be divided evenly into 360. For example, 19, 38, 47, or 62.



7. Import the Random library:

```
from turtle import *
import random
speed("fast")
```



8. Above the *while* loop, create a *linecolor* variable with a list of colors:

```
#random colors
linecolor=("crimson", "fuchsia", "indigo")

#loop forever
while True:
    right(62)
```

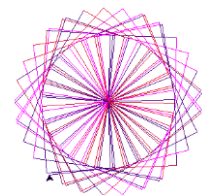
olive	turquoise
teal	orange
tomato	lime

Find more [color names](#):

9. Make each line a different color using `random.choice` and the *linecolor* variable name:

```
#random values
linecolor=("orange", "plum", "teal")

while True:
    right(62)
    #draw square
    for line in range(4):
        pencolor(random.choice(linecolor))
        forward(100)
        right(90)
```



10. Run the program to see each line change color.

11. Close the program.