

Course Name	ITD 2313 – Script Programming
Instructor	Andy Tripp
Student Name	Timothy Obinda
Due date	11/02/2025
Grade	Put grade earned here
Grading Comments	Put instructor comments here

INSTRUCTIONS FOR THE EXERCISE

You should always read the instructions in full. It is best to do a full read through before starting the assignment. Each screenshot needs to be appropriately labeled.

In this instruction, you are given information to execute specific examples in the text. You are given the Section, Subsection, and a page number to identify a set of steps. On each page listed, there will be 1 or more numbered tasks to perform. These numbered tasks will be what you are to type in, execute, and then grab the screen shots of. Those screenshots will then go into your submission document.

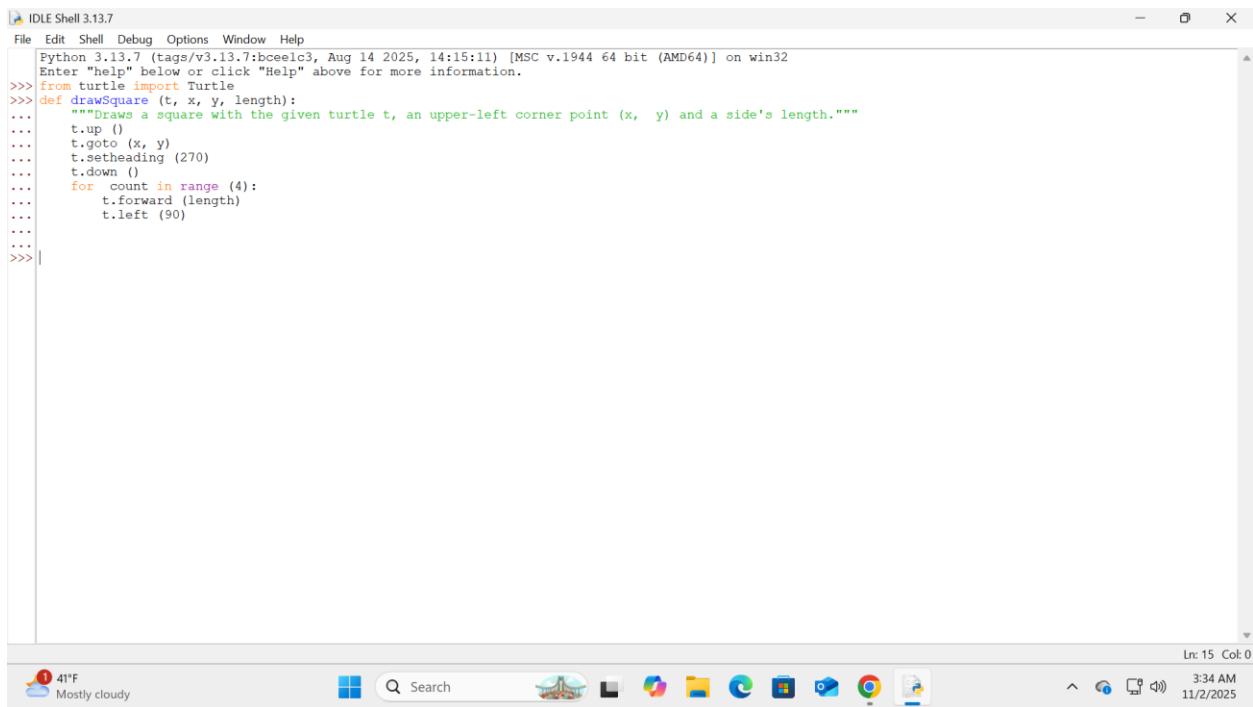
Some advice, copy this instruction set into your submission document and then put the screen shots under each numbered task. Each individual book page in the instructions should be in a different screen shot. For any single book page, you may have all the numbered tasks on that page to be in a single screen shot.

Simple Graphics

Turtle Operations

Page 191

1. The middle of the page has the draw square function code example block does spill over to the top of the next page. Create an example that utilizes the function and grabs a screen shot of the results.



The screenshot shows the IDLE Shell 3.13.7 interface. The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. The shell window displays the following Python code:

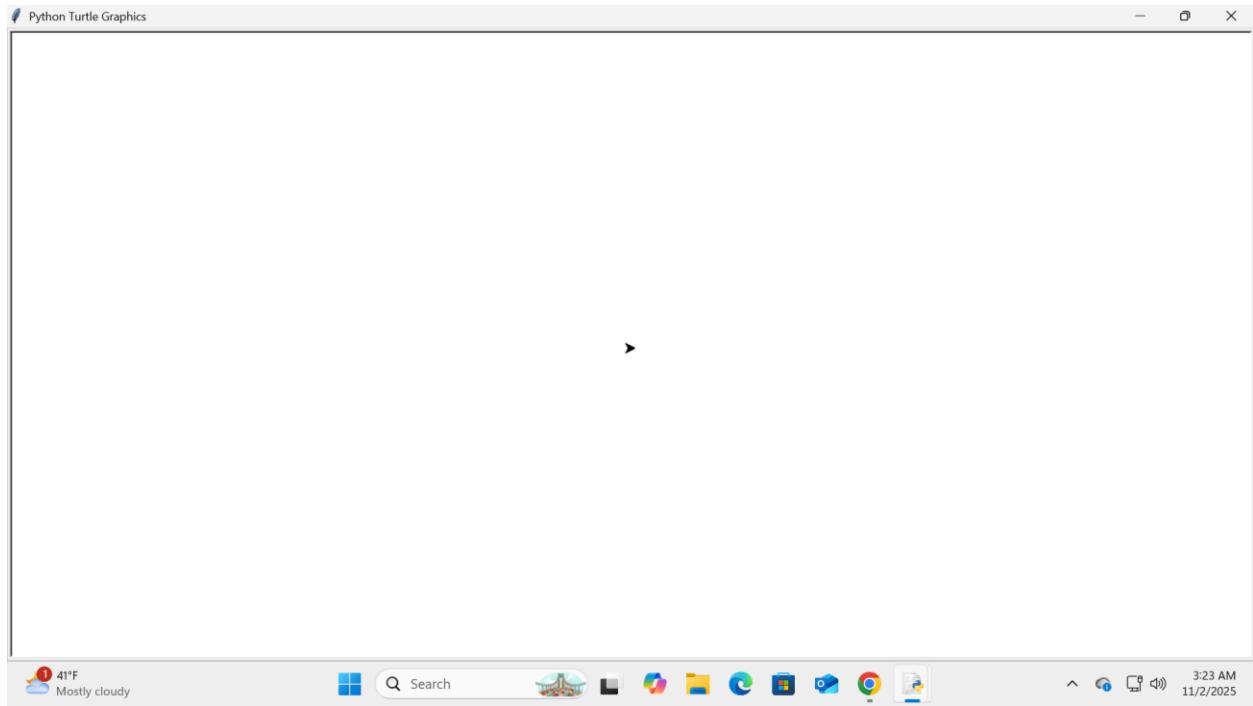
```
File 3.13.7 (tags/v3.13.7-1+0-gcbeelc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> from turtle import Turtle
>>> def drawSquare (t, x, y, length):
...     """Draws a square with the given turtle t, an upper-left corner point (x, y) and a side's length."""
...     t.up ()
...     t.goto (x, y)
...     t.setheading (270)
...     t.down ()
...     for count in range (4):
...         t.forward (length)
...         t.left (90)
...
>>> |
```

The status bar at the bottom right indicates Ln: 15 Col: 0. The taskbar at the bottom shows various icons for Windows applications like File Explorer, Edge, and Google Chrome.

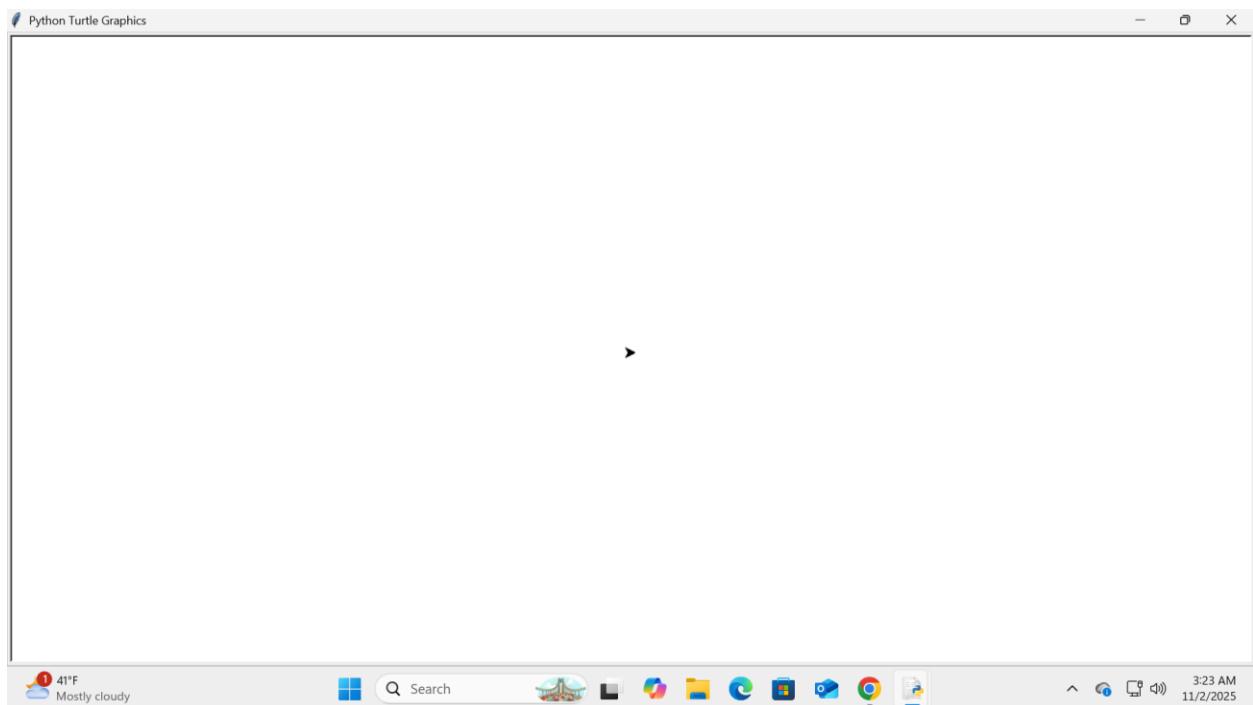
Object Instantiation and *turtle* module

Pages 192 – 193

1. You will need to create a python program file for this one for best results but you can enter it into the interactive if you want. On page 192, there are 2 single line code example blocks that set up the turtle object. Those will need to be entered before doing the code on page 193.



2. The steps in the middle of the page should build the image at the bottom of the page. Do the steps and implement them.

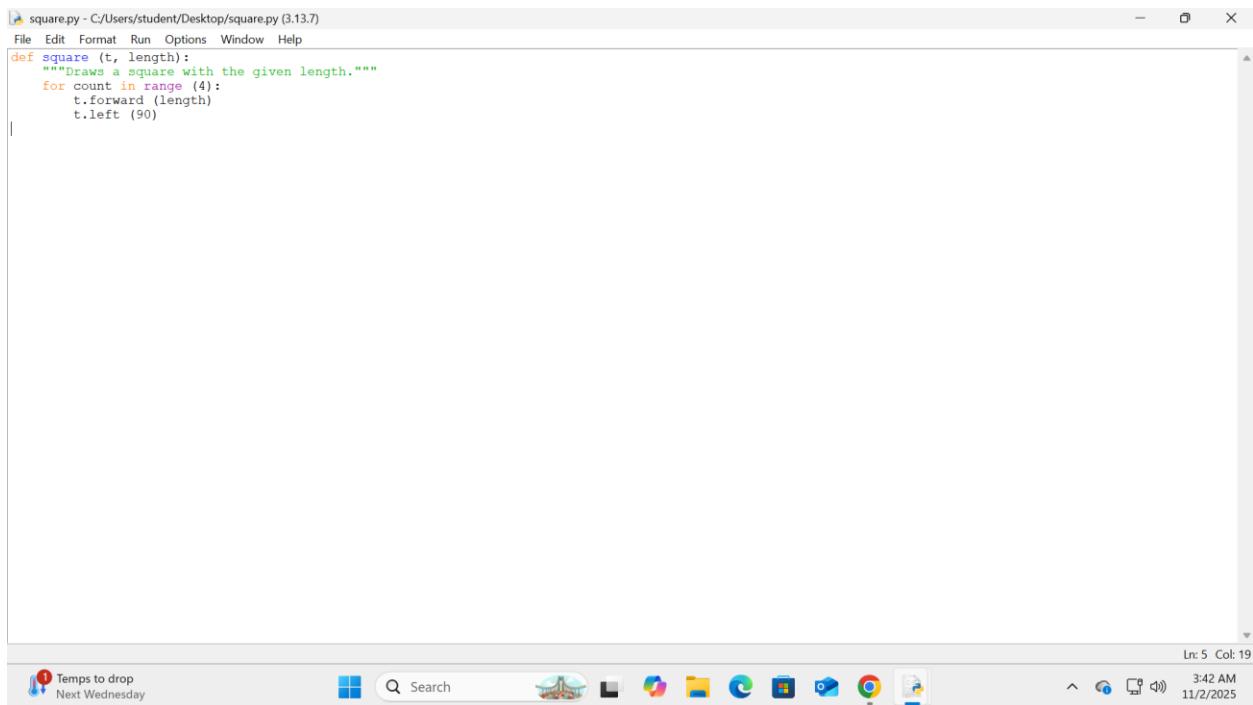


3. You may need to review the pages preceding pages to set up the turtle module.

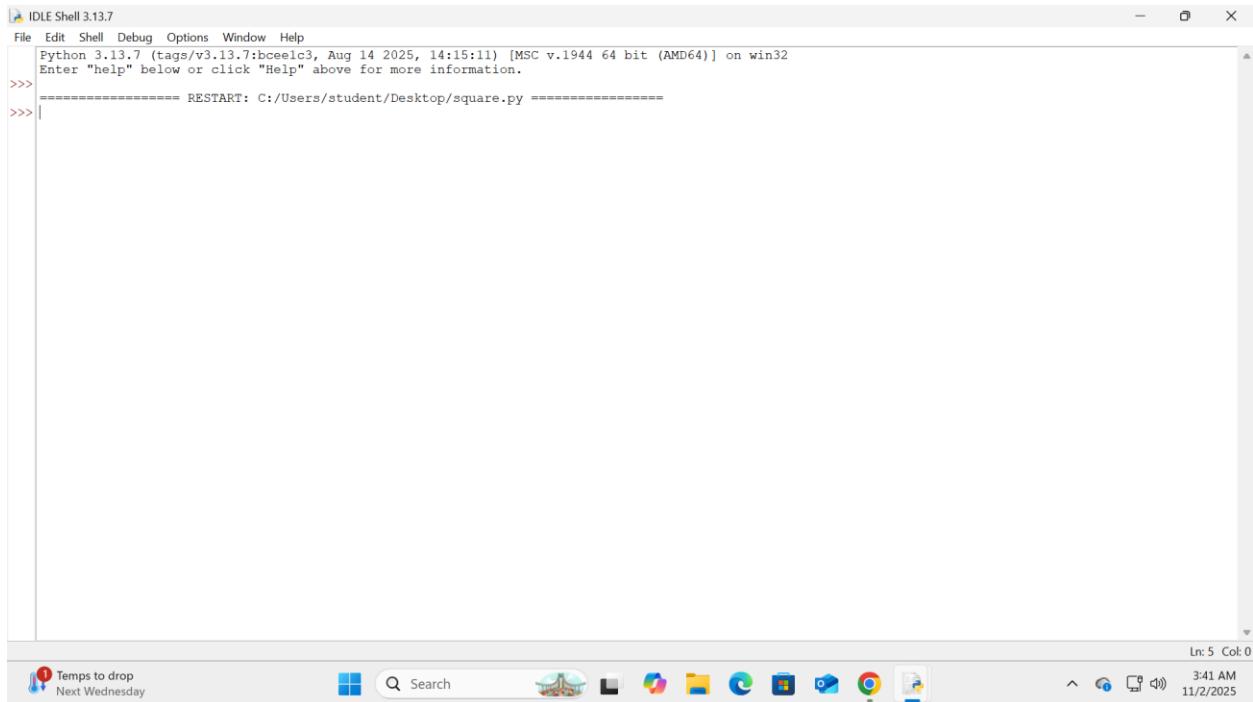
Drawing two-dimensional object

Page 194

1. There is a square function, and a hexagon function code example blocks on this page. Create the code that will utilize those functions once you have them entered. It may be easier to accomplish this using a python program file instead of interactive mode.



A screenshot of a Windows desktop environment. In the center is a code editor window titled "square.py - C:/Users/student/Desktop/square.py (3.13.7)". The window contains Python code for drawing a square:def square (t, length):
 """Draws a square with the given length."""
 for count in range (4):
 t.forward (length)
 t.left (90)The status bar at the bottom of the code editor shows "Ln: 5 Col: 19". Below the code editor is the Windows taskbar, which includes icons for the Start button, Search, File Explorer, and several pinned applications like Microsoft Edge and File Explorer. A notification in the bottom-left corner says "Temps to drop Next Wednesday". The system tray shows the date and time as "3:42 AM 11/2/2025".



IDLE Shell 3.13.7

File Edit Shell Debug Options Window Help

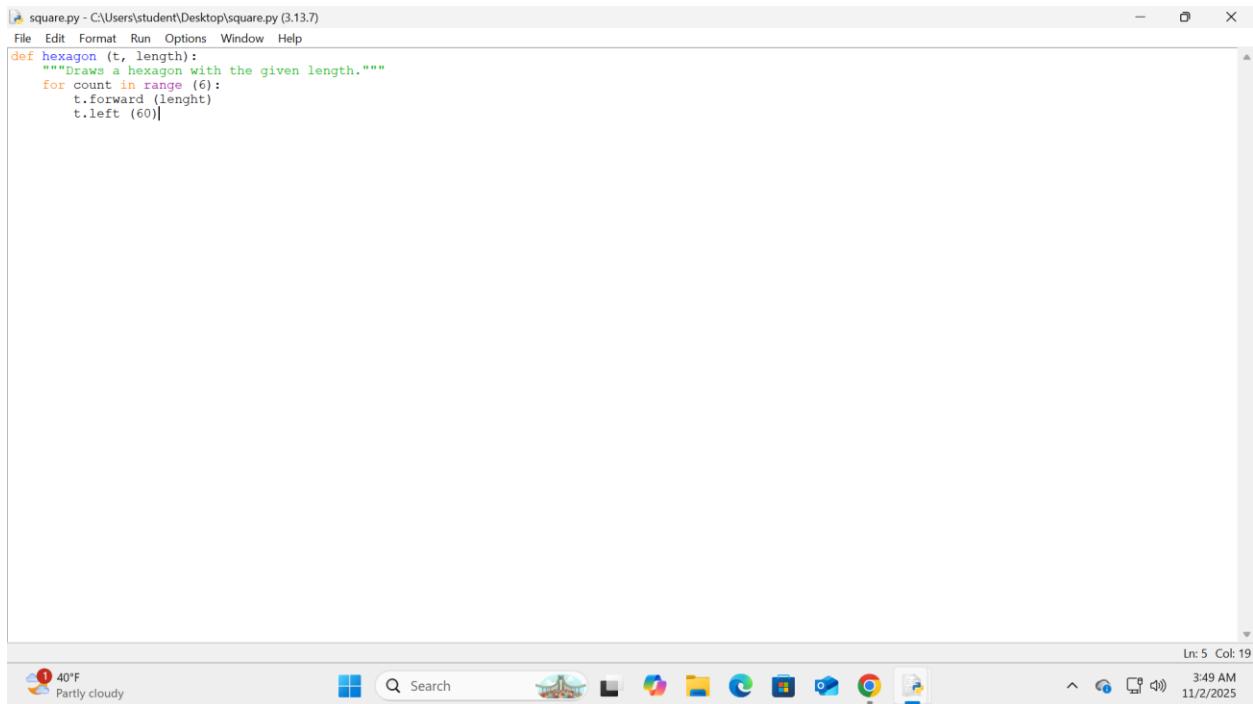
```
Python 3.13.7 (tags/v3.13.7:fbceefc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> ===== RESTART: C:/Users/student/Desktop/square.py =====
>>> |
```

Temps to drop
Next Wednesday

Search

3:41 AM
11/2/2025

2. Draw the square separately from the hexagon. One screen shot showing a square drawn.



square.py - C:\Users\student\Desktop\square.py (3.13.7)

File Edit Format Run Options Window Help

```
def hexagon (t, length):
    """Draws a hexagon with the given length."""
    for count in range (6):
        t.forward (length)
        t.left (60)|
```

40°F
Partly cloudy

Search

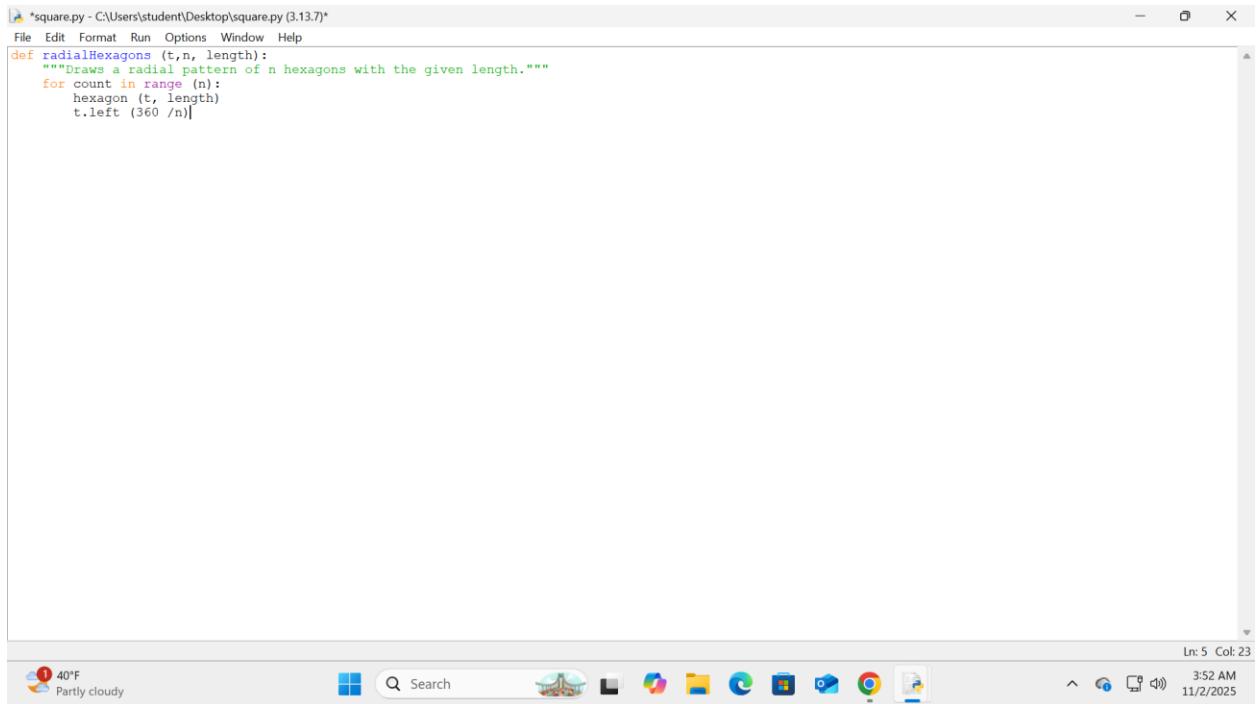
3:49 AM
11/2/2025

The screenshot shows the IDLE Shell 3.13.7 window. The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. A status bar at the bottom right shows Ln: 5 Col: 0. The main window displays the Python interpreter's welcome message and the command >>> followed by a blank line for input.

3. The second screen shot shows the Hexagon being drawn.

Page 194 – 195

1. Now do the RadialHexagons code and grab the screen shot. It starts at the bottom of page 194.



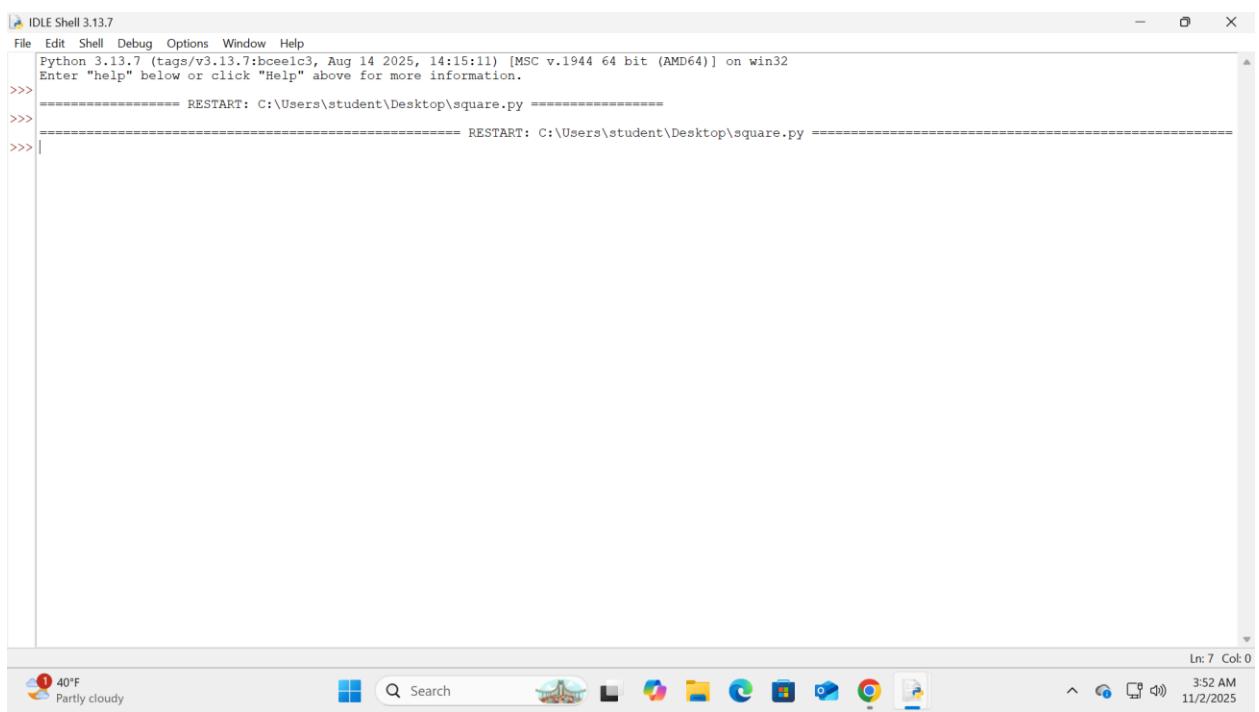
```
*square.py - C:\Users\student\Desktop\square.py (3.13.7)*
File Edit Format Run Options Window Help
def radialHexagons (t,n, length):
    """Draws a radial pattern of n hexagons with the given length."""
    for count in range (n):
        hexagon (t, length)
        t.left (360 /n)
```

Ln: 5 Col: 23

40°F Partly cloudy

Search

3:52 AM 11/2/2025



```
IDLE Shell 3.13.7
File Edit Shell Debug Options Window Help
Python 3.13.7 (tags/v3.13.7:bcce1c3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> ===== RESTART: C:\Users\student\Desktop\square.py =====
>>> ===== RESTART: C:\Users\student\Desktop\square.py =====
>>> |
```

Ln: 7 Col: 0

40°F Partly cloudy

Search

3:52 AM 11/2/2025

2. Use the function at the top and then the steps below that for the radial hexagon image

The screenshot shows a Windows desktop environment with three main windows:

- Code Editor (Top Window):** The title bar reads "square.py - C:\Users\student\Desktop\square.py (3.13.7)". The menu bar includes File, Edit, Format, Run, Options, Window, and Help. The code defines two functions:

```
def square (t, length):
    """Draws a square with the given length."""
    for count in range (4):
        t.forward (length)
        t.left (90)

def radialHexagons (t,n, length):
    """Draws a radial pattern of n hexagons with the given length."""
    for count in range (n):
        hexagon (t, length)
        t.left (360 /n)
```
- Terminal (Second Window):** The title bar reads "IDLE Shell 3.13.7". The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. It displays Python version information and a command-line interface:

```
Python 3.13.7 (tags/v3.13.7:bcce1c3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> ===== RESTART: C:\Users\student\Desktop\square.py =====
>>> |
```
- Taskbar (Bottom):** Shows the Windows Start button, a search bar, and icons for various applications including File Explorer, Edge, and Mail. The system tray indicates it's 3:57 AM on 11/2/2025.

3. Finish the subsection by doing the radial patterns function and examples near the bottom of the page.

The image shows a Windows desktop environment with three windows open:

- Top Window:** A code editor titled "square.py - C:\Users\student\Desktop\square.py (3.13.7)". It contains Python code for drawing radial hexagons:

```
def radialHexagons(t, n, length):
    """Draws a radial pattern of n hexagons with the given length."""
    for count in range(n):
        hexagon(t, length)
        t.left(360 /n)
```

- Middle Window:** An IDLE Shell window titled "IDLE Shell 3.13.7". It shows the Python interpreter prompt and the command to restart the script:

```
>>> Python 3.13.7 (tags/v3.13.7-rc1-16099-ge7c936c, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> ===== RESTART: C:\Users\student\Desktop\square.py =====
>>> |
```

- Bottom Window:** A taskbar at the bottom of the screen, showing the Windows Start button, a search bar, and various pinned icons.

Examining a Object's Attributes

Pages 195-197

1. On page 195, there are some examples of how to use the attributes, and you may not see any results in the turtle screen.

The screenshot shows a Windows desktop environment with two windows open. The top window is the 'IDLE Shell 3.13.7' application, which is a Python interactive shell. The bottom window is the 'Python Turtle Graphics' application, which is a graphics window used for drawing shapes. Both windows are running on a Windows 10 operating system, as indicated by the taskbar icons and the classic Start button.

IDLE Shell 3.13.7 Window Content:

```
>>> ===== RESTART: C:/Users/student/Desktop/polygons.py =====
Traceback (most recent call last):
  File "C:/Users/student/Desktop/polygons.py", line 1, in <module>
    from polygons import*
  File "C:\Users\student\Desktop\polygons.py", line 6, in <module>
    square (t, 50)
NameError: name 'square' is not defined
>>>
```

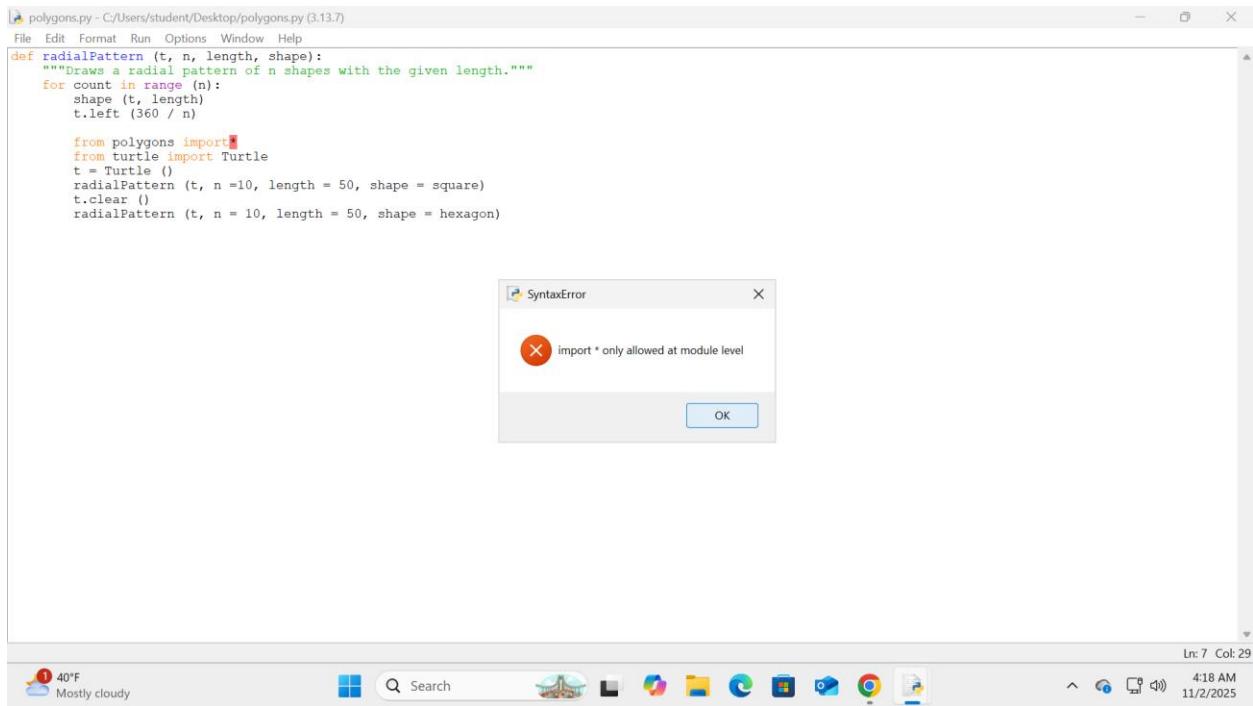
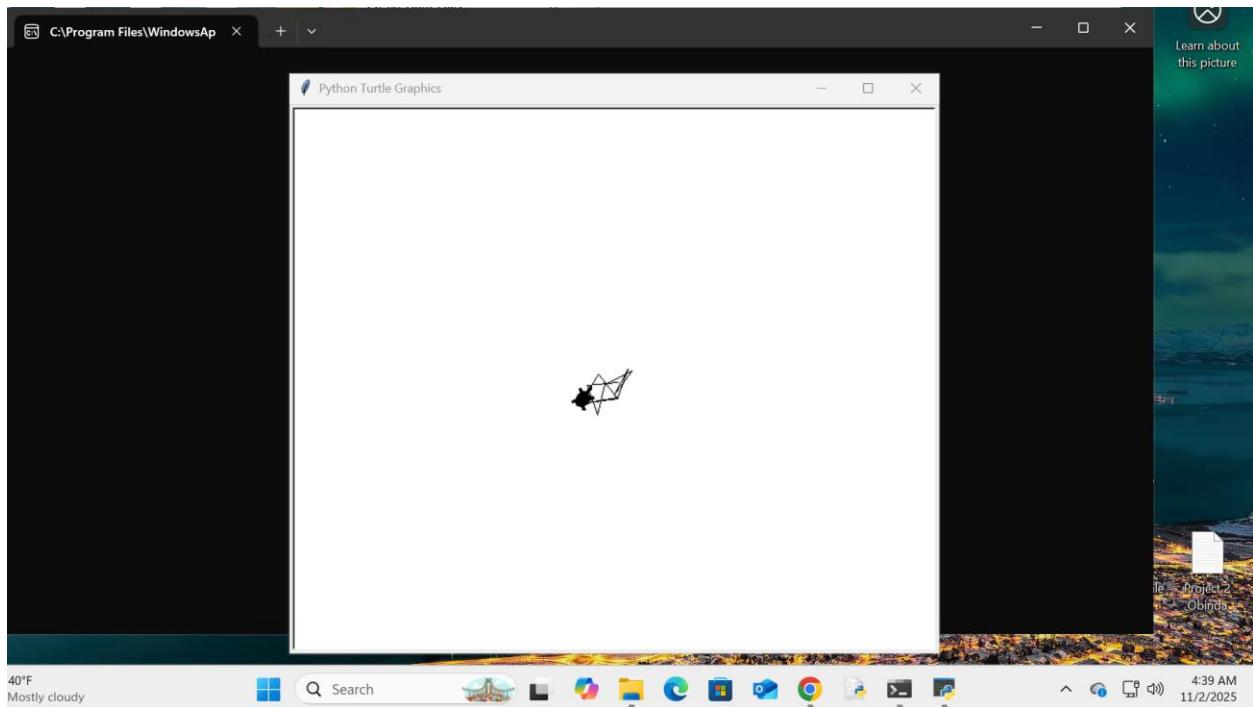
Python Turtle Graphics Window Content:

The Python Turtle Graphics window is currently empty, showing a blank white canvas.

Taskbar Details:

- IDLE Shell 3.13.7 Window:** L: 11 Col: 0
- Python Turtle Graphics Window:** L: 11 Col: 0
- Taskbar Icons (Left to Right):** Weather (Tems to rise Tomorrow), Search, Task View, File Explorer, Edge browser, Mail, Google Chrome, File Explorer, Python Turtle Graphics.
- Taskbar Clock:** 4:10 AM 11/2/2025

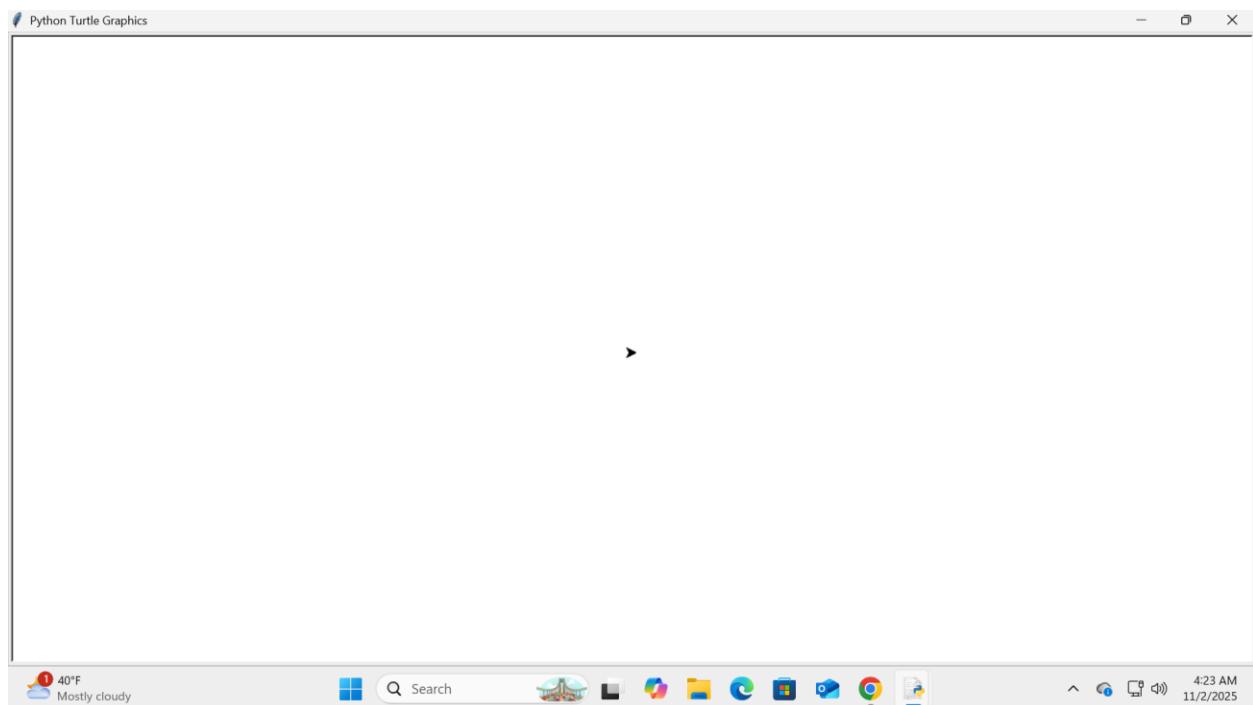
2. For the screen shot, work with the code example block that does the random walk and grab the screen shot of the resulting walk.

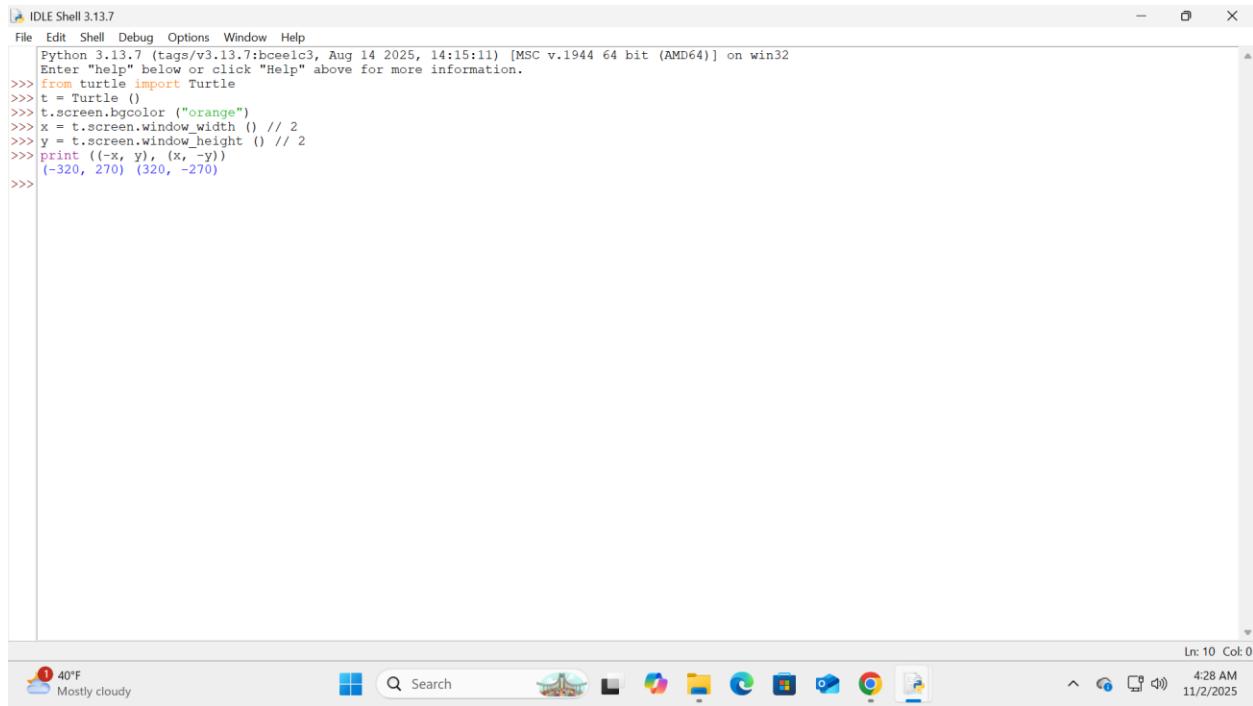


IDLE Shell 3.13.7

```
File Edit Shell Debug Options Window Help
Python 3.13.7 (tags/v3.13.7-bceelc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> from turtle import Turtle
>>> t = Turtle()
>>> t.position()
(0.00, 0.00)
>>> t.heading()
0.0
>>> t.isdown()
True
>>>
```

Ln: 11 Col: 0





IDLE Shell 3.13.7

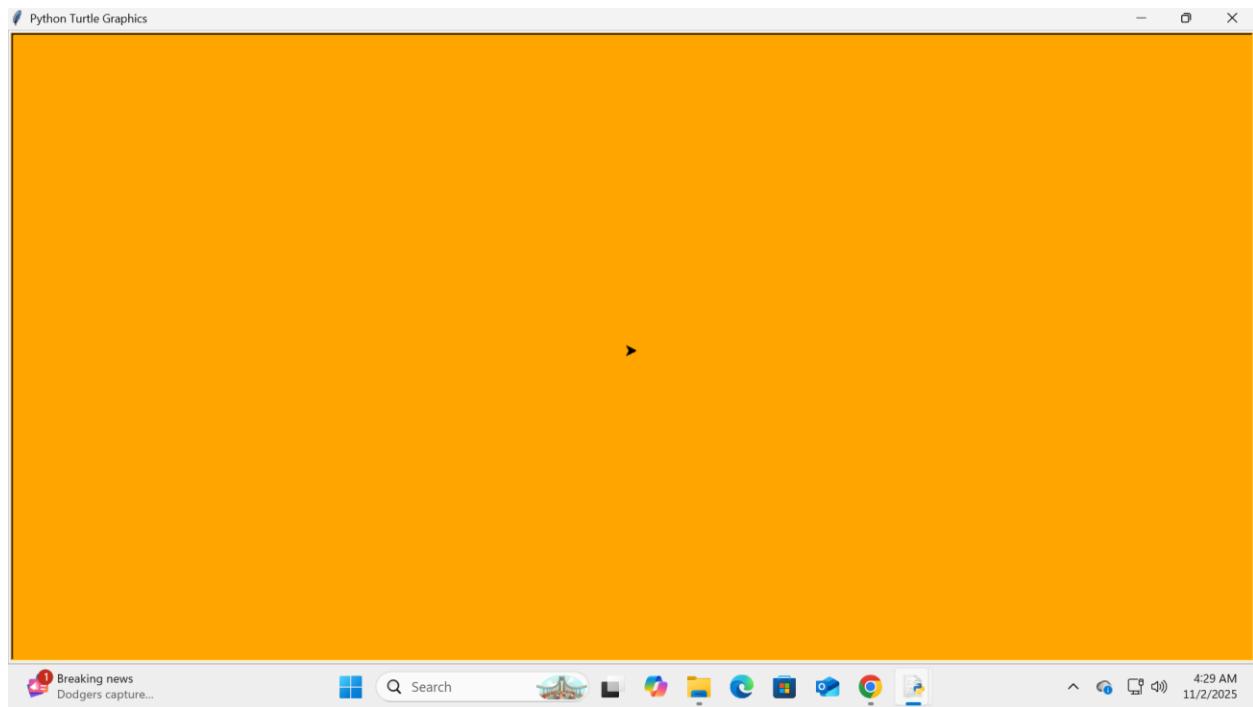
```
File Edit Shell Debug Options Window Help
Python 3.13.7 (tags/v3.13.7:bce1c3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> from turtle import Turtle
>>> t = Turtle()
>>> t.screen.bgcolor ("orange")
>>> x = t.screen.window_width () // 2
>>> y = t.screen.window_height () // 2
>>> print ((-x, y), (x, -y))
(-320, 270) (320, -270)
>>>
```

Ln: 10 Col: 0

40°F Mostly cloudy

Search

4:28 AM 11/2/2025



It would benefit you experiment with the code example bloc

k on pages 198 - 199. It should be part of the download for this chapter. Experiment it and make some changes and observe the results, but you do not need to take any screen shots of the results.

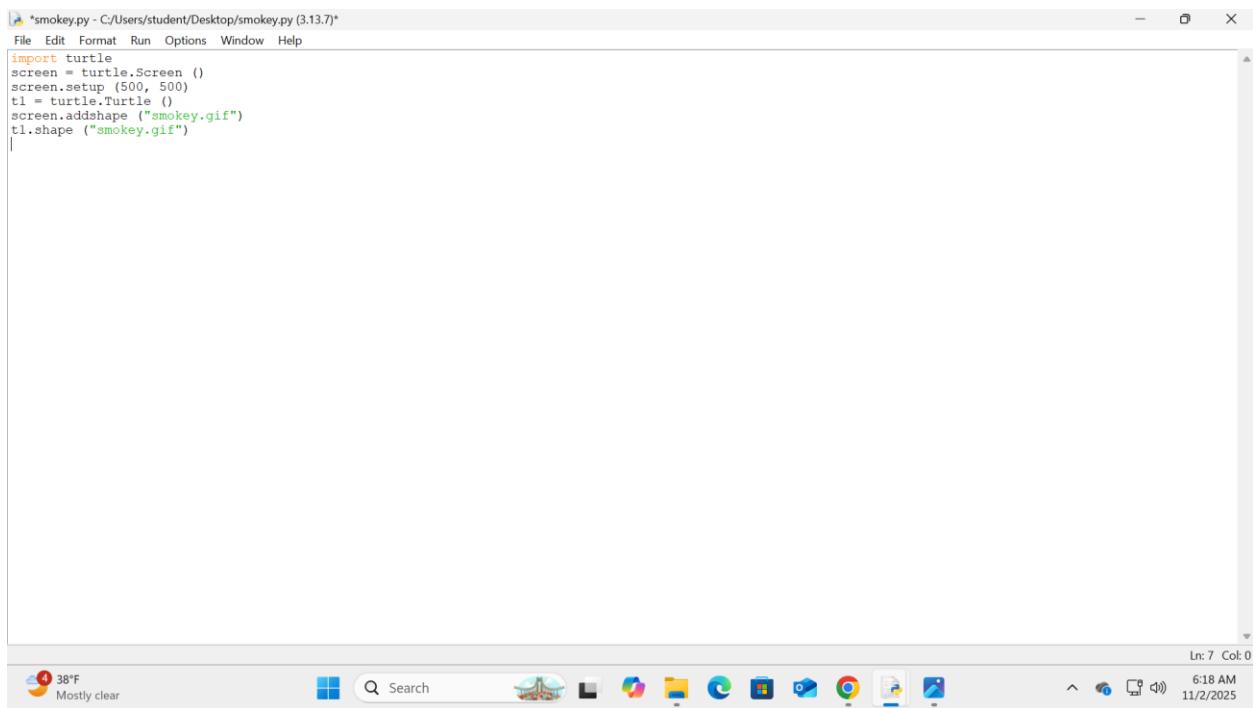
The case study will not be captured as part of this assignment either but would benefit you to review the case study.

Image Processing

The *images* module

Pages 206

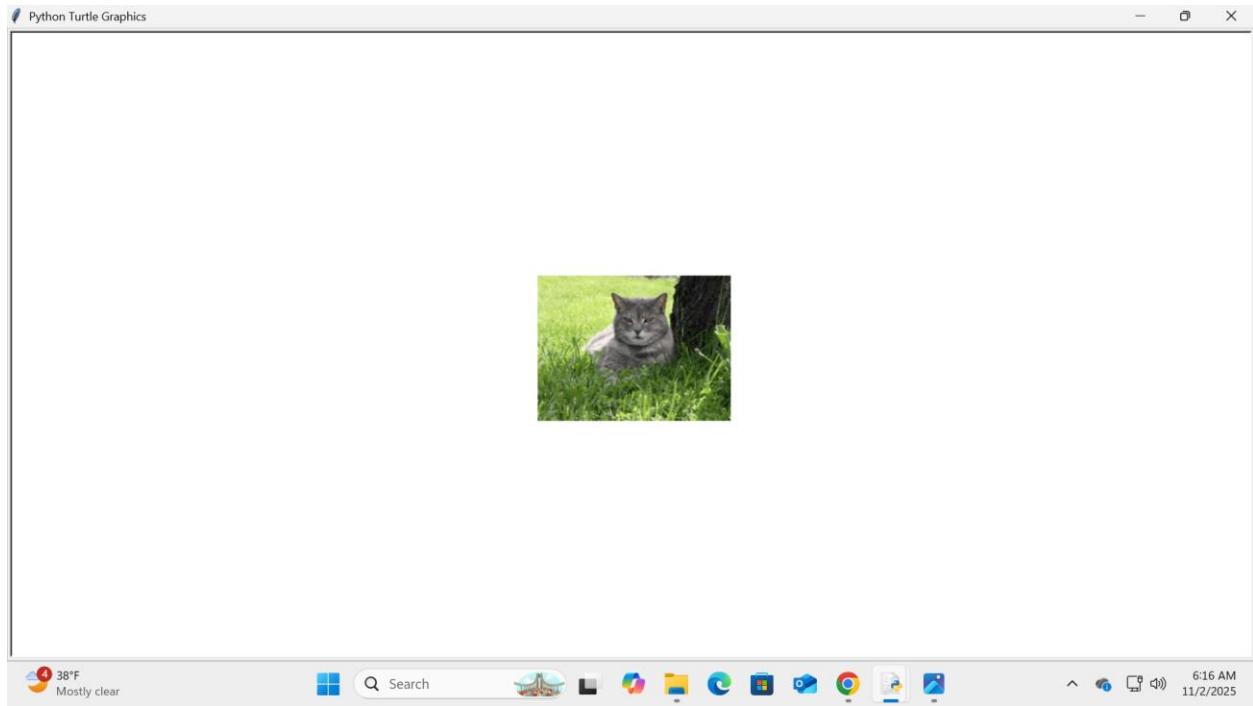
1. On the very bottom of the page is the Smokey image display code example block



A screenshot of a Windows desktop environment. At the top, there is a taskbar with various icons for applications like File Explorer, Microsoft Edge, and the Start button. The main focus is a code editor window titled "smokey.py - C:/Users/student/Desktop/smokey.py (3.13.7)". The code inside the editor is:

```
import turtle
screen = turtle.Screen ()
screen.setup (500, 500)
tl = turtle.Turtle ()
screen.addshape ("smokey.gif")
tl.shape ("smokey.gif")
```

The code uses the Python turtle module to set up a screen, create a turtle object, and add a shape named "smokey.gif". The status bar at the bottom of the code editor shows "Ln: 7 Col: 0". Below the taskbar, the system tray displays the weather (38°F, Mostly clear), a power icon, and the date and time (6:18 AM, 11/2/2025).



Page 207

1. The first code example blocks at the top of the page and is obtaining width and height info for an image

A screenshot of a Windows desktop environment. At the top is a window titled "smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)". The menu bar includes File, Edit, Format, Run, Options, Window, and Help. The code editor contains the following Python script:

```
import turtle
screen = turtle.Screen ()
screen.setup (500, 500)
tl = turtle.Turtle ()
screen.addshape ("smokey.gif")
tl.shape ("smokey.gif")
tl.shape.getWidth ()
```

The status bar at the bottom right shows "Ln: 7 Col: 20". Below the window is a taskbar with various icons, including the Start button, a search bar, and pinned apps like File Explorer, Edge, and Mail. The system tray shows the date and time as "11/3/2025 2:13 AM".

A screenshot of the IDLE Shell 3.13.7 window. The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. The shell displays the following Python session:

```
>>> ===== RESTART: C:\Users\student\Desktop\smokey.py =====
>>> Enter "help" below or click "Help" above for more information.
>>> ===== RESTART: C:\Users\student\Desktop\smokey.py =====
>>> Traceback (most recent call last):
>>>   File "C:\Users\student\Desktop\smokey.py", line 7, in <module>
>>>     tl.shape.getWidth ()
>>> AttributeError: 'function' object has no attribute 'getWidth'
```

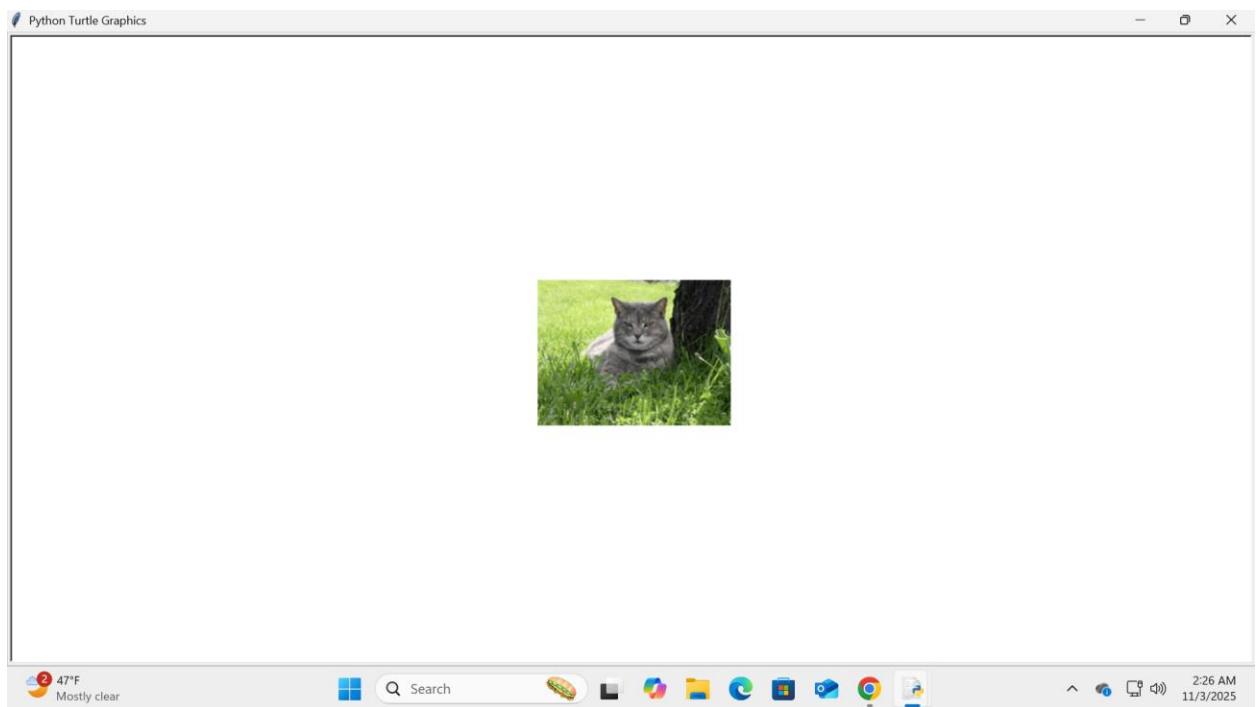
The status bar at the bottom right shows "Ln: 9 Col: 0". Below the window is a taskbar with various icons, including the Start button, a search bar, and pinned apps like File Explorer, Edge, and Mail. The system tray shows the date and time as "11/3/2025 2:13 AM".

2. Just under that is another code example block that prints some of the attribute information

```
smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)
File Edit Format Run Options Window Help
import turtle
screen = turtle.Screen ()
screen.setup (500, 500)
tl = turtle.Turtle ()
screen.addshape ("smokey.gif")
tl.shape ("smokey.gif")
print (tl.shape)
filename: smokey.gif
Width: 198
Height: 149
```

Ln: 10 Col: 11

47°F Mostly clear Search



3. The next code example block on this page is about 1/2 down on the page and gets pixel information

The screenshot shows a Windows desktop environment. At the top is the taskbar with various pinned icons. In the center is the IDLE Python editor window titled "smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)". The code in the editor is:

```
import turtle
screen = turtle.Screen ()
screen.setup (500, 500)
tl = turtle.Turtle ()
screen.addshape ("smokey.gif")
tl.shape ("smokey.gif")
tl.getpixel (0,0)
```

The status bar at the bottom of the editor window indicates "Ln: 7 Col: 17". Below the taskbar, the system tray shows the date and time as "11/3/2025 2:32 AM".

The screenshot shows a Windows desktop environment. At the top is the taskbar with various pinned icons. In the center is the IDLE Shell window titled "IDLE Shell 3.13.7". The shell output shows:

```
File Edit Shell Debug Options Window Help
Python 3.13.7 (tags/v3.13.7-ibceelc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.

>>> ===== RESTART: C:\Users\student\Desktop\smokey.py =====
Traceback (most recent call last):
  File "C:\Users\student\Desktop\smokey.py", line 7, in <module>
    tl.getpixel (0,0)
AttributeError: 'Turtle' object has no attribute 'getpixel'
>>>
```

The status bar at the bottom of the shell window indicates "Ln: 9 Col: 0". Below the taskbar, the system tray shows the date and time as "11/3/2025 2:31 AM".

4. The next code example block on this page is about 3/4 down that does a straight line on an image canvas.

The screenshot shows a Windows desktop environment. At the top is a taskbar with various icons. Below it is a code editor window titled "smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)". The code in the editor is:

```
import turtle
screen = turtle.Screen ()
screen.setup (500, 500)
tl = turtle.Turtle ()
screen.addshape ("smokey.gif")
tl.shape ("smokey.gif")
tl.shape = tl.shape (150, 150)
tl.shape.draw ()
blue = (0, 0, 255)
y = tl.shape.getHeight () // 2
for x in range (tl.shape.getWidth ()):
    tl.shape.setPixel (x, y - 1, blue)
    tl.shape.setPixel (x, y, blue)
    tl.shape.setPixel (x, y + 1, blue)
tl.shape.draw ()
```

The status bar at the bottom of the code editor shows "Ln: 15 Col: 12". The taskbar includes icons for File Explorer, Edge, and other system tools. The system tray shows the date and time as "11/3/2025 2:41 AM".

The screenshot shows the IDLE Shell 3.13.7 window. The title bar says "IDLE Shell 3.13.7". The shell displays the following text:

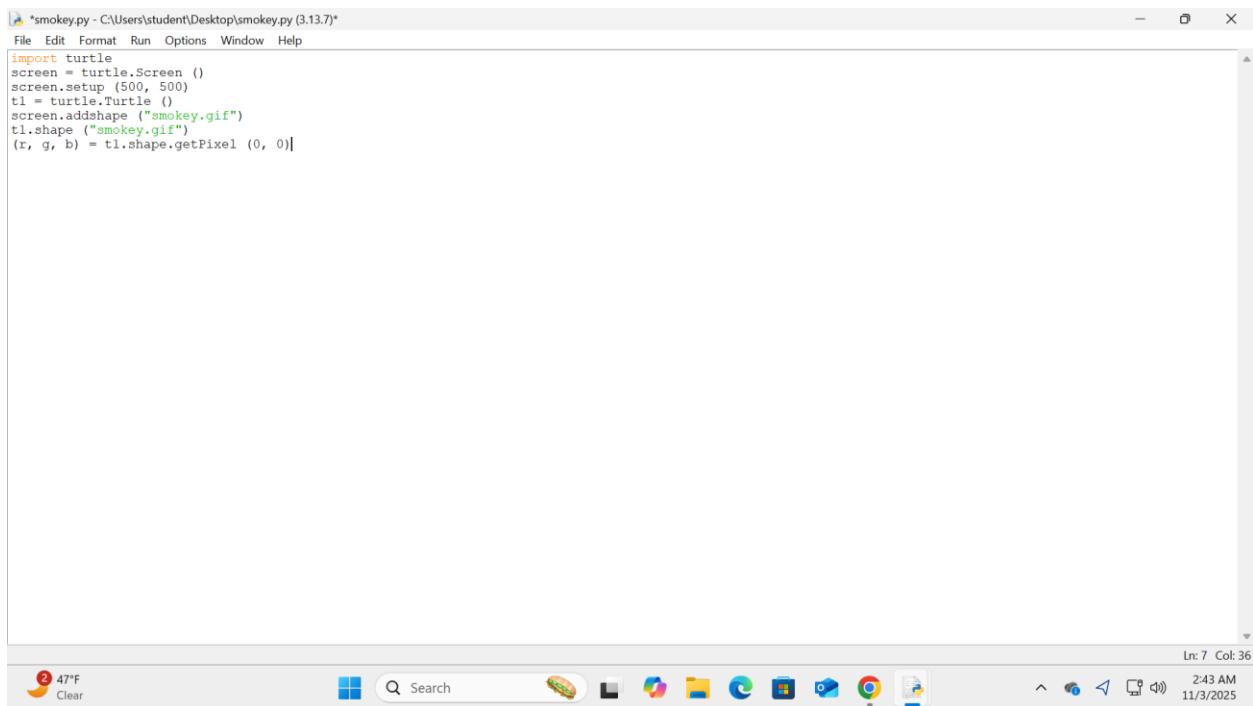
```
File Edit Shell Debug Options Window Help
Python 3.13.7 (tags/v3.13.7-ibceelc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> ===== RESTART: C:\Users\student\Desktop\smokey.py =====
Traceback (most recent call last):
  File "C:\Users\student\Desktop\smokey.py", line 7, in <module>
    tl.shape = tl.shape (150, 150)
TypeError: RawTurtle.shape() takes from 1 to 2 positional arguments but 3 were given
>>> |
```

The status bar at the bottom shows "Ln: 9 Col: 0". The taskbar at the bottom of the screen is identical to the one in the previous screenshot.

A word on tuples

Page 209

1. The first code example block on this page gets some r,g,b information from the Smokey image followed by displaying that information.



The screenshot shows a Windows desktop environment. In the center is a code editor window titled "smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)". The code inside the editor is:

```
import turtle
screen = turtle.Screen()
screen.setup(500, 500)
t1 = turtle.Turtle()
screen.addshape("smokey.gif")
t1.shape("smokey.gif")
(r, g, b) = t1.shape.getPixel(0, 0)
```

The taskbar at the bottom of the screen displays several icons, including the Start button, a weather widget showing 47°F, a search bar, and various application icons like File Explorer, Edge, and Google Chrome. The system tray shows the date and time as 11/3/2025 and 2:43 AM.

The screenshot shows a Windows desktop environment. At the top is the taskbar with various icons for apps like File Explorer, Edge, and Mail. In the center is the 'IDLE Shell 3.13.7' window, which has a menu bar (File, Edit, Shell, Debug, Options, Window, Help) and a command-line interface. The command-line output is as follows:

```
Python 3.13.7 (tags/v3.13.7:fbceefc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.

>>> ===== RESTART: C:\Users\student\Desktop\smokey.py =====
Traceback (most recent call last):
  File "C:\Users\student\Desktop\smokey.py", line 7, in <module>
    (r, g, b) = tl.shape.getPixel (0, 0)
AttributeError: 'function' object has no attribute 'getPixel'

>>>
```

The status bar at the bottom right of the IDLE window shows 'Ln: 9 Col: 0'. The system tray icon indicates 'Tems to rise Tomorrow'.

2. The second code example block is setting a specific pixel to a color.
3. The last code example block on this page is the doing the average over 3 numbers.

The screenshot shows a Windows desktop environment. At the top is the taskbar with various pinned icons. In the center is the "IDLE Shell 3.13.7" window, which has a menu bar (File, Edit, Shell, Debug, Options, Window, Help) and a code editor area. The code editor contains Python code:

```
Python 3.13.7 (tags/v3.13.7:fbceefc3, Aug 14 2025, 14:15:11) [MSC v.1944 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>> def average (triple):
...     (a, b, c) = triple
...     return (a + b + c) // 3
...
>>> average ((40, 50, 60))
50
>>> |
```

The status bar at the bottom of the IDLE window shows "Ln: 9 Col: 0". The taskbar also displays a weather widget for "Tempt to drop Next Wednesday" and the system clock "2:46 AM 11/3/2025".

Copying an Image

Page 211

1. Going to make a copy of the Smokey image with that code at the bottom of this page.

The screenshot shows a Windows desktop environment. In the center is a code editor window titled "smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)". The window contains Python code for a turtle graphics program. Below the code editor is a taskbar with various icons, including the Start button, a weather widget showing 47°F and Clear, a search bar, and pinned application icons for File Explorer, Edge, and others. The system tray shows the date and time as 11/3/2025 at 2:53 AM.

```
smokey.py - C:\Users\student\Desktop\smokey.py (3.13.7)
File Edit Format Run Options Window Help
import turtle
screen = turtle.Screen()
screen.setup(500, 500)
tl = turtle.Turtle()
screen.addshape("smokey.gif")
tl.shape("smokey.gif")
new_turtle = tl.shape.clone()
new_turtle.shape.draw()
grayscale(new_turtle.shape)
new_turtle.shape.draw()
tl.shape.draw
```

There is a lot of image manipulation in this chapter that you should experiment with yourself. This includes the blurring of the image and the resizing of the image.