Name: Linus R. | Logan king

Period: 3

Activity 1.1.7 Traversing Turtles and 1.1.8 Turtles in Traffic

1.1.7 Traversing Turtles

It's very interesting that they have waited so long to introduce for loops. The reasoning is clearly because they are very related to and used with lists, so they waited until they introduced lists. It's important to know that you can use for loops any time you know how many iterations will be made ahead of time. Please remember this: **Use for loops when you know ahead of time how many iterations through the loop there will be; use while loops when you don't.** Keep in mind that for loops are generally the preferred choice over while loops. When you don't know how many iterations there will be ahead of time, you have to use a while loop. When you do know, it's best to go with a for loop. Why? Because you don't run into the risk of making an infinite loop.

10. See if you can tell me how many elements are in each of the following lists and what ***type*** of elements are in the list.

a) `my_turtles`: 6, turtle.Turtle

b) `turtle_shapes`: 6, string

c) `turtle_colors`: 6, string

d) variable `s` is what ***type*** of variable? string

e) variable `t` is what ***type*** of variable? turtle.Turtle

15. Paste a snip of your code.

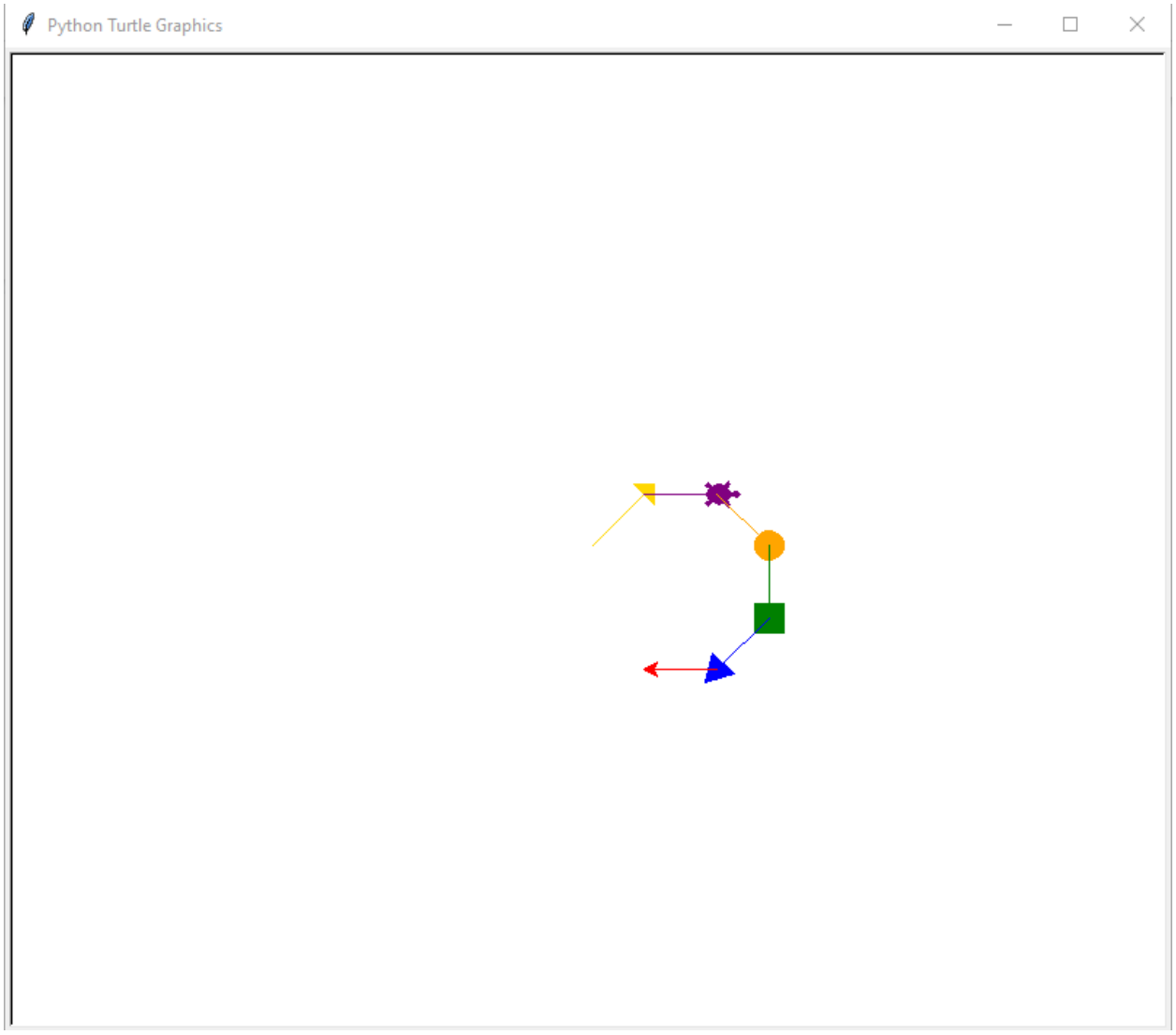
```
#   a117_traversing_turtles.py
```

```
#   Add code to make turtles move in a circle and change colors.

import turtle as trtl
```

```
# create an empty list of turtles

my_turtles = []



# use interesting shapes and colors

turtle_shapes = ["arrow", "turtle", "circle", "square", "triangle", "classic"]

turtle_colors = ["red", "blue", "green", "orange", "purple", "gold"]



for s in turtle_shapes:

    t = trtl.Turtle(shape=s)

    t.penup()

    new_color = turtle_colors.pop()

    t.fillcolor(new_color)

    t.pencolor(new_color)

    my_turtles.append(t)



#

startx = 0

starty = 0

direction = 90



#

for t in my_turtles:

  t.goto(startx, starty)
```

```
  t.setheading(direction)

  t.pendown()

  t.right(45)

  t.forward(50)

  direction = t.heading()

  startx = t.xcor()

  starty = t.ycor()



#

startx = startx + 50

starty = starty + 50



wn = trtl.Screen()

wn.mainloop()
```

Paste a snip of the output.



16. a) Did deleting a color from the colors list cause an error? If so, why? If not, why not?

It did, because it can't pop an empty list.

a) Did deleting a shape from the shapes list cause an error? If so, why? If not, why not?

It worked, because it probably defaults to the normal shape.

c1. In what situations would lists be used instead of single variables?

If you want to store a lot of data, then it would be hard to do that in a bunch of different variables, but it would be easy to do in a list.

c2. What are some other types of elements that you didn't use in the activity that you think would be appropriate to represent in a list?

Integers and Floats, because then you could store a lot of numbers in the same place.

1.1.8 Turtles in Traffic

10. With the program as written in #7, what would be the result if a score of 95 was input? How would you fix this code?

The result would be D. I would fix it by switching the order of the grades so it would check for A, then B, then C, then D.

The Turtles in traffic aspect of this activity was a bit confusing to me at first. Making my screen bigger allowed me to see this more clearly. The code given in step 15 basically sets up a column of horizontal turtles on the left side of the screen and a row of 6 vertical turtles at the top of the screen. You are supposed to write code so that the turtles will then advance to the opposite side of the screen without colliding. I cut the extent of my turtle limits to -200 to 200 for both x and y axes so that I could easily see them on the screen when I would run the program.

15-19. I am going to give you some leeway on how you program your turtles to avoid colliding (or to recover from colliding), but your program should meet the following specs:

a) All turtles must not have an xcor or ycor less than -200 nor greater than 200 at any time.

b) When turtles reach the other side, they should stop and turn gray.

c) You must have at least 3 horizontal turtles and 3 vertical turtles moving across the screen.

Upload your final .py program, named and commented appropriately, with this submission. An appropriate name for my .py file would be dw_118turtlesInTraffic.py. Use your initials or name instead of dw. main.py will not earn full credit.

I am not sure that I did this correctly, I did what I interpreted of the problem. If this is not what is wanted, please let me know.