

## In-Class Question 15

Question)

In the lecture notes, you were shown an example with multiple turtles moving inside the turtle window.

The example has been slightly modified to make a turtle racing game. The new program is shown below.

```
import turtle
import random

def createOneTurtle(thisColor, x, y):
    thisTurtle = turtle.Turtle()
    thisTurtle.fillcolor(thisColor)
    thisTurtle.shape("turtle")
    thisTurtle.shapesize(2, 2)
    thisTurtle.up()
    thisTurtle.goto(x, y)
    allTurtles.append(thisTurtle)

def changeOneTurtle():
    index = random.randint(0, 4)
    allTurtles[index].forward(random.randint(10, 20))

turtle.hideturtle()

allTurtles = []

createOneTurtle("red", -200, 100)
createOneTurtle("green", -200, 50)
createOneTurtle("blue", -200, 0)
createOneTurtle("cyan", -200, -50)
createOneTurtle("magenta", -200, -100)

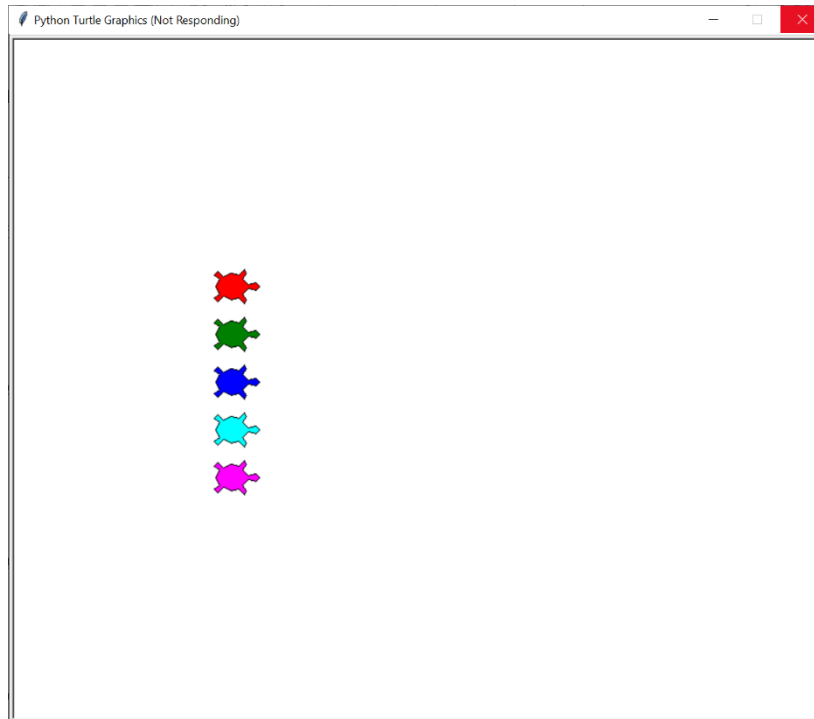
finished = False
while not finished:
    changeOneTurtle()
    for thisTurtle in allTurtles:
        if SEE_QUESTION >= 200:
            print(thisTurtle.fillcolor(), "wins!")
            finished = True

turtle.done()
```

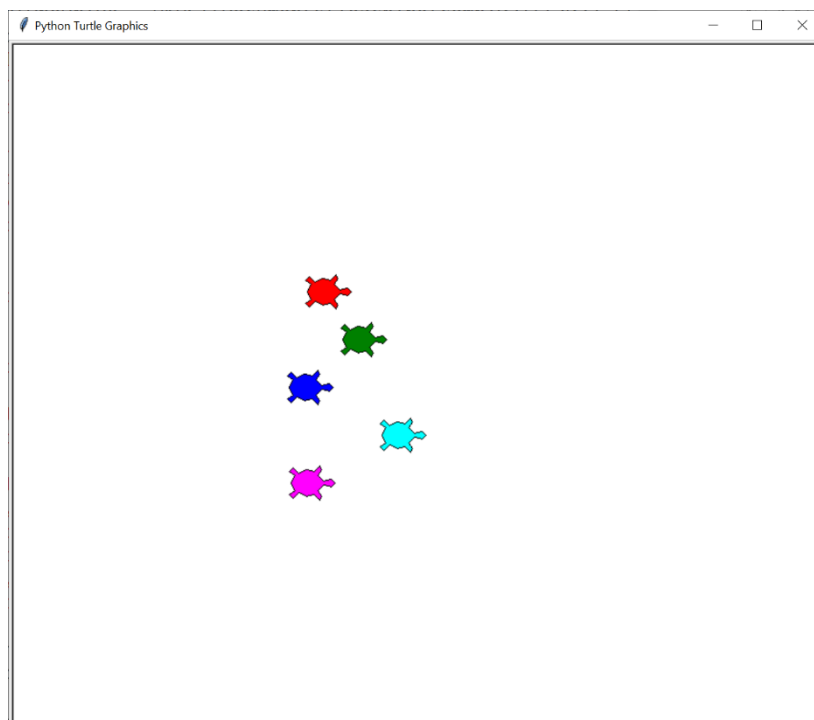
As you can see, the content of **SEE\_QUESTION** is not shown in the above code.

Here is a description of how the game works:

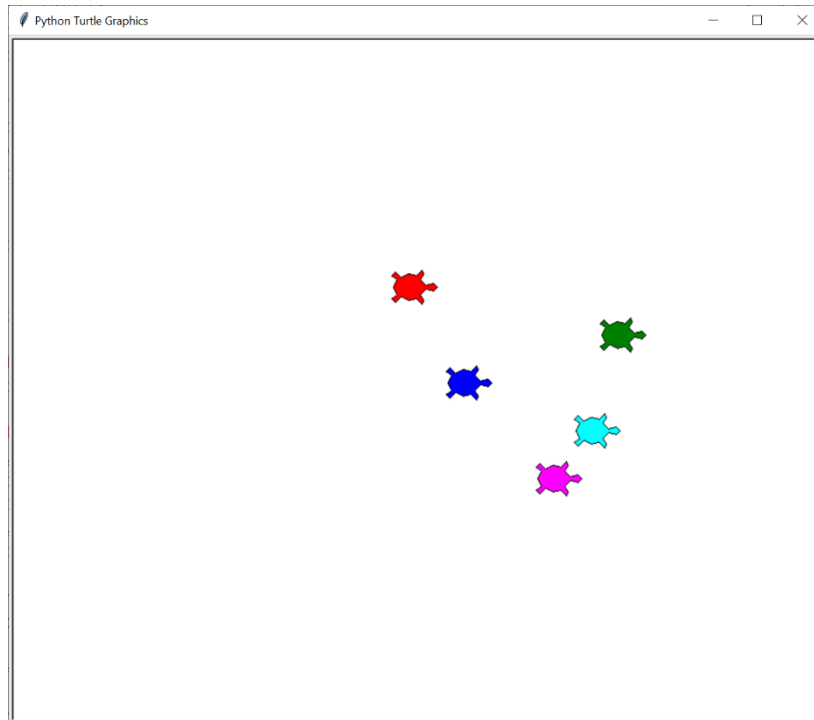
1. Initially the program puts **5 turtles of different colours** on the left-hand side of the window.



2. The turtles then race towards the right-hand side.



3. The turtle who first reaches an **x position of 200 or more** wins the race. In the following example, the green turtle has won the race.



4. A message is then shown on the Python shell.

**green wins!**

What is the missing code that needs to replace **SEE\_QUESTION**? You need to enter the missing code.

Correct answer(s):

- `thisTurtle.xcor()`
- `thisTurtle.pos()[0]`
- `thisTurtle.position()[0]`

Explanation:

- This question contains a modified program based on an example from the notes 'Creating Turtle Objects'
- The objective of the modified program is to make a turtle racing game, in which five turtles race to first reach the right-hand side of the window
- The code in this question mainly changes the way the turtles are placed initially (on the left-hand side of the window) and how they are moved when the program is running (moving from left to right inside the window)
- The turtle who reaches the right-hand side of the window wins the race, i.e. its x coordinate is greater than or equal to 200
- As you can see from the code, **SEE\_QUESTION** forms part of the condition which checks whether a turtle wins
- Therefore, the code you need to put there is some code that retrieves the x position of the turtle
- The straightforward code is `thisTurtle.xcor()`, but the other two answers also work correctly