**Ramin**

**B.5 Level 1-4**

**Level 0: Establishing the Python Turtle Environment**

1. #Level 0
2. **import** turtle
3. pen = turtle.Turtle()
5. pen.color("red")
6. pen.circle(50)

**Level 1: Drawing Basic Shapes**

1. #Level 1
2. **import** turtle
3. pen = turtle.Turtle()
5. #Level 1
6. **def** square(size):
7. **for** i **in** range(4):
8. pen.left(90)
9. pen.forward(size)
11. **def** plus():
12. pen.forward(100)
13. pen.left(90)
14. pen.forward(40)
15. pen.left(90)
16. pen.forward(100)
17. pen.left(-90)
18. pen.forward(100)
19. pen.right(-90)
20. pen.forward(40)
21. pen.right(-90)
22. pen.forward(100)
23. pen.left(-90)
24. pen.forward(100)
25. pen.left(90)
26. pen.forward(40)
27. pen.left(90)
28. pen.forward(100)
29. pen.left(-90)
30. pen.forward(100)
31. pen.left(90)
32. pen.forward(40)
33. pen.left(90)
34. pen.forward(100)
36. **def** circleInSquare(size):
37. pen.reset()
38. pen.color("red")
39. square(size)
40. pen.color("blue")
41. pen.penup()
42. pen.left(90)
43. pen.forward(size / 2)
44. pen.pendown()
45. pen.circle(size / 2)

48. square(100)
49. pen.reset()
50. plus()
51. pen.reset()
52. circleInSquare(175)

**Level 2: Turtle Challenge 3&4 – Filled Shapes**

1. #Level 2
2. **import** turtle
3. pen = turtle.Turtle()
5. **def** square(size):
6. **for** i **in** range(4):
7. pen.left(90)
8. pen.forward(size / 2)
9. pen.begin\_fill()
10. **for** i **in** range(4):
11. pen.right(90)
12. pen.forward(size / 2)
13. pen.end\_fill()
14. **for** i **in** range(4):
15. pen.forward(size / 2)
16. pen.right(90)
17. **for** i **in** range(4):
18. pen.forward(size / 2)
19. pen.left(90)
21. square(200)

**Level 3: Turtle Challenge 5&6 – Spirals**

1. #Level 3
2. **import** turtle
3. pen = turtle.Turtle()

6. **def** spiralSquare(expandSize, stopNumber):
7. lastLine = 0
8. timer = 0
9. size = expandSize
10. **while**(timer <= stopNumber):
11. lastLine += 1
12. pen.left(90)
13. pen.forward(size)
15. **if** (lastLine == 1):
16. size += 10
18. **if** (lastLine == 2):
19. size += 10
21. **if** (lastLine == 3):
22. size += 10
23. lastLine = 0
25. timer += 1
27. spiralSquare(50, 25)

**Level 4: Four Quadrant Cross Challenge**

1. **def** quadrantCross(size, randomColor, singleColor):
3. rangeVal = 11
4. #Change this value if you want to make the Quadrant Cross larger
5. xYVal = size
7. #Left Quadrant
8. **for** i **in** range(0, rangeVal):
9. **if** (randomColor):
10. pen.color(random.randint(0, 255), random.randint(0, 255), random.randint(0, 255))
11. **else**:
12. pen.color(singleColor)
13. yFrom = 10 - i
14. xTo = i
15. pen.penup()
16. pen.goto(0, xYVal \* yFrom)
17. pen.pendown()
18. pen.goto(-xYVal \* xTo, 0)
20. #Bottom Left Quadrant
21. **for** i **in** range(0, rangeVal):
22. **if** (randomColor):
23. pen.color(random.randint(0, 255), random.randint(0, 255), random.randint(0, 255))
24. **else**:
25. pen.color(singleColor)
26. yFrom = -10 + i
27. xTo = i
28. pen.penup()
29. pen.goto(0, xYVal \* yFrom)
30. pen.pendown()
31. pen.goto(xYVal \* -xTo, 0)
33. #Bottom Right Quadrant
34. **for** i **in** range(0, rangeVal):
35. **if** (randomColor):
36. pen.color(random.randint(0, 255), random.randint(0, 255), random.randint(0, 255))
37. **else**:
38. pen.color(singleColor)
39. yFrom = -10 + i
40. xTo = -i
41. pen.penup()
42. pen.goto(-i + i, xYVal \* yFrom)
43. pen.pendown()
44. pen.goto(-xYVal \* xTo, 0)
46. #Right Quadrant
47. **for** i **in** range(0, rangeVal):
48. **if** (randomColor):
49. pen.color(random.randint(0, 255), random.randint(0, 255), random.randint(0, 255))
50. **else**:
51. pen.color(singleColor)
52. yFrom = 10 - i
53. xTo = i
54. pen.penup()
55. pen.goto(0, xYVal \* yFrom)
56. pen.pendown()
57. pen.goto(xYVal \* xTo, 0)

60. #Size, Use Rainbow? If Not use the given color
61. quadrantCross(30, False, "Red")