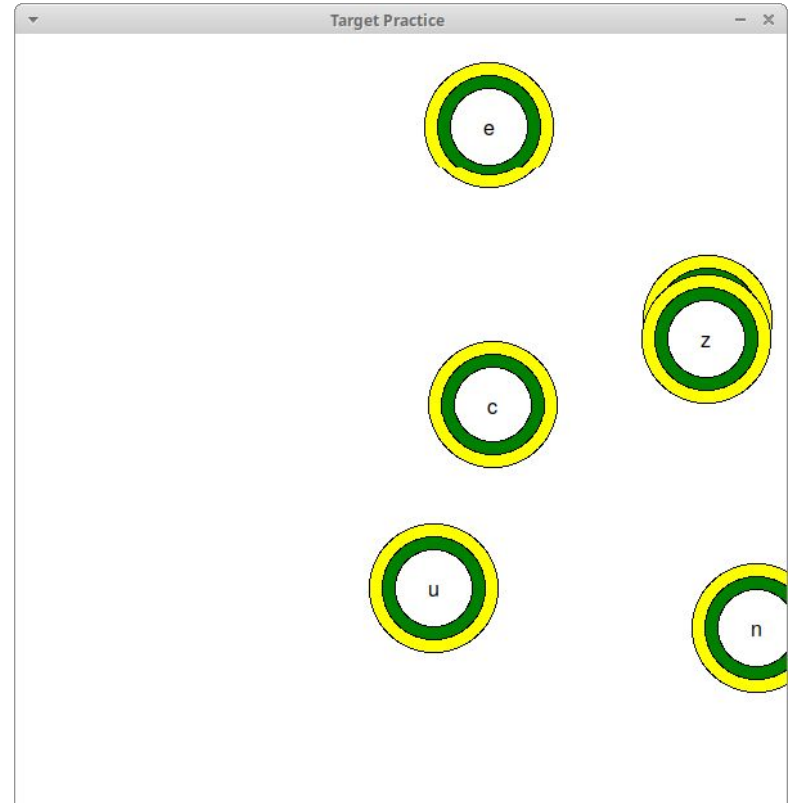# Example: Moving Targets

Use types the character in the middle of the target to "hit" it

Example: Moving targets

Target class

- manages a single target

```
10   class Target:
11
12       def __init__(self, center):
13           """
14           Constructor. Initializes a target with the given center A target
15           consists of 3 concentric circles with a random character in the center
16           """
17           circle1 = Circle(center, 50)
18           circle1.setFill("yellow")
19
20           circle2 = Circle(center, 40)
21           circle2.setFill("green")
22
23           circle3 = Circle(center, 30)
24           circle3.setFill("white")
25
26           self.shapes = [circle1, circle2, circle3]
27
28           randomCharacter = random.choice(string.ascii_lowercase)
29           self.text = Text(center, randomCharacter)
30
31           self.vely = -random.randrange(1,5)
```

Example: Moving targets

Target methods for drawing, moving, changing text, and figuring out if the target has been hit

```python
28    def draw(self, win):
29        for shape in self.shapes:
30            shape.draw(win)
31        self.text.draw(win)
32
33    def move(self):
34        for shape in self.shapes:
35            shape.move(0, self.vely)
36        self.text.move(0, self.vely)
37
38    def isHit(self, char):
39        return char == self.text.getText()
40
41    def setText(self, newText):
42        self.text.setText(newText)
43
```

Example: Moving targets

We can test Target before using it in our final program

```python
44  if __name__ == "__main__":
45
46      win = GraphWin("Test Targets", 600, 400)
47
48      # test creating and drawing a target
49      target1 = Target(Point(100, 300))
50      target1.draw(win)
51
52      target2 = Target(Point(500, 300))
53      target2.draw(win)
54
55      # Test moving a target
56      win.getMouse()
57      for i in range(100):
58          target1.move()
59
60      # Test isHit and setting text
61      win.getMouse()
62      target1.setText("a")
63      print(target1.isHit("a"))
64      print(target1.isHit("z"))
```

Example: Managing a list of Targets

```python
from graphics import *
from Target import *

def createTargets(win, numTargets):
    targets = []
    for i in range(numTargets):
        pos = Point(random.randrange(600), 600+random.randrange(100))
        target = Target(pos)
        target.draw(win)
        targets.append(target)
    return targets

def checkHitTargets(targets, key):
    numHit = 0
    for target in targets:
        if target.isHit(key):
            target.setText("Got it!")
            numHit = numHit + 1
    return numHit

def moveTargets(targets):
    for target in targets:
        target.move()
```

Example: main

```python
29
30  def main():
31      print("Press escape to exit")
32      numTargets = int(input("Enter a number of targets: "))
33      win = GraphWin("Target Practice", 600, 600)
34      win.setBackground("white")
35
36      targets = createTargets(win, numTargets)
37
38      numHit = 0
39      key = win.checkKey()
40      while key != "Escape":
41          if key is not None:
42              numHit += checkHitTargets(targets, key)
43          moveTargets(targets)
44          update(30)
45          key = win.checkKey()
46
47      print("You hit %d targets!"%numHit)
48
49  main()
```