Name: _____ Andrew Id: _____

15-112 Spring 2023 Quiz 6
Up to 20 minutes. No calculators, no notes, no books, no computers. Show your work!
Do not use dictionaries, try/except, or recursion on this quiz.

1. (10 points) **Code Tracing**: Indicate what the following program prints. Place your answer (and nothing else) in the box next to the code. Ensure strings are enclosed with quotes and the uppercase and lowercase are distinguishable.
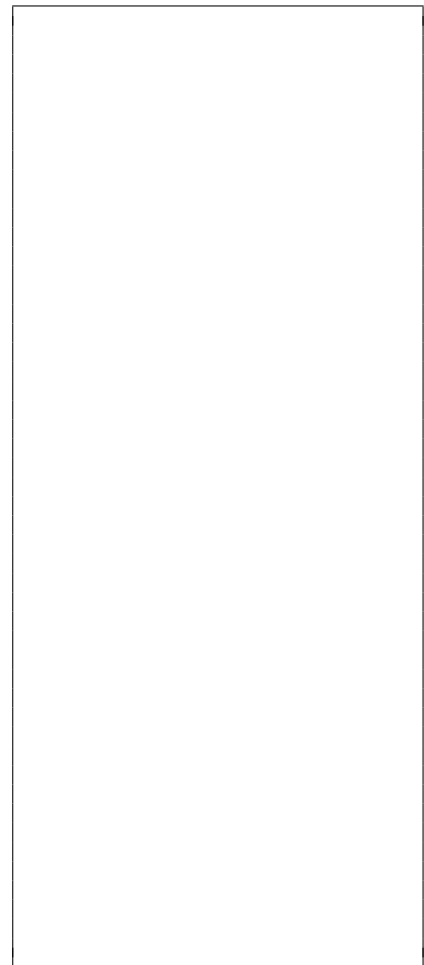
```python
class R(object):
    def __init__(self, msg):
        self.msg = msg
        print("R")
    def __repr__(self):
        return f"R({self.msg})"
    def bar(self):
        return self.msg.replace('o', 'ooo')
    def __eq__(self, other):
        if isinstance(other, R):
            return self.msg.lower() == other.msg.lower()
        return False

class S(R):
    def __init__(self, x):
        super().__init__("h" + x)
    def __repr__(self):
        return f"S({self.msg})"

class T:
    def __init__(self, x):
        self.x = x
    def bar(self):
        return "hello" + self.x
    def __repr__(self):
        return f"T({self.x})"

r1 = R("hello")
r2 = R("HELLO")
s = S("ello")
t = T("hello")

print(r1 == r2)
print(r1 == s)
print(r1 == t)
print(type(r1) == type(s))
print(type(r1) == type(t))
print(isinstance(r2, type(r1)))
print(isinstance(s, type(r1)))
print(isinstance(t, type(r1)))
print(r1, r1.bar())
print(r2, r2.bar())
print(s, s.bar())
print(t, t.bar())
```
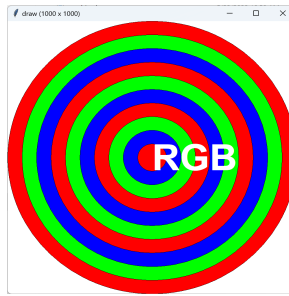
2. (10 points) **Free Response**:

Write the function `drawRGBTarget(canvas, width, height, n)`, which draws a target with n concentric circles with alternating colors (red, green, blue) and the label `RGB` as shown below:

In this example, the number of concentric circles is 10. You can assume that the canvas has equal width and height. The biggest circle should span the entire canvas and always be red. The font should be bold, and its size should equal the radius of the smallest circle. Your code should be able to handle window resizes. As usual, this question will have partial credit.

Here's another example with `n = 6`:
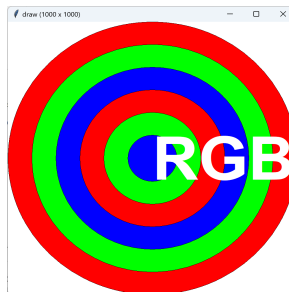
You may continue your work on the back of this page...

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NOTHING ON THIS PAGE WILL BE GRADED.