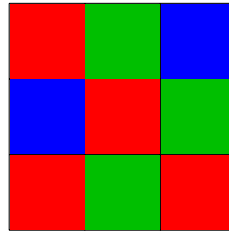Name: _____   Andrew Id: _____

15-112 Fall 2021 Quiz 6

Up to 20 minutes. No calculators, no notes, no books, no computers. Show your work!
Do not use dictionaries, sets, try/except, or recursion on this quiz.

1. (5 points) **Code Tracing**: Assume that the following image is 3x3 and each box shows one pixel – each pixel has 100% (255) of only one color component. What will the code print when given this image as the input `pic`? Write your answer, and nothing else, in the box next to the code.

```python
def ct(pic):
    w = ImageWriter.getWidth(pic);
    h = ImageWriter.getHeight(pic);
    x = 0
    for i in range(w):
        for j in range(h):
            c = ImageWriter.getColor(pic, i, j)
            if c == [0,0,255]:
                print("B at", x)
            x += 1
    print(x)
ct(pic)
```

2. (5 points) **Reasoning Over Code**: Choose a 3x3 picture which, when given to the function `roc` as input, causes it to return `True`. Assume that each square in the answer space is a pixel, and each pixel is either white or has 100% (255) of only one color component. Label each pixel with a single color (R for red, G for green, B for blue, and W for white).

```python
def roc(pic):
    w = ImageWriter.getWidth(pic);
    h = ImageWriter.getHeight(pic);
    x = 0
    for i in range(w):
        for j in range(h):
            c = ImageWriter.getColor(pic, i, j)
            if c == [255,0,0]:
                x += 1
            elif c == [0,255,0]:
                x += 10
            elif c == [0,0,255]:
                x += 100
    return x == 123
```

Answer space:

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3. (10 points) **Free Response**: Halfies

Let's say you have an image that is horizontally divided into two halves. Each half is a different color and size. There is nothing else in the image.

Write the function `findTallerHalf(pic)` that takes an already loaded picture as input parameter, and determines which side (top or bottom) is taller in the given pic. If the top and bottom are the same size, choose top.

Examples:

Should return "top"
since the top half is taller

Should return "bottom"
since the bottom half is taller

```
def findTallerHalf(pic):
```