Name: _____ Recitation: _____ Andrew Id: _____

15-112 Spring 2019 Quiz 4

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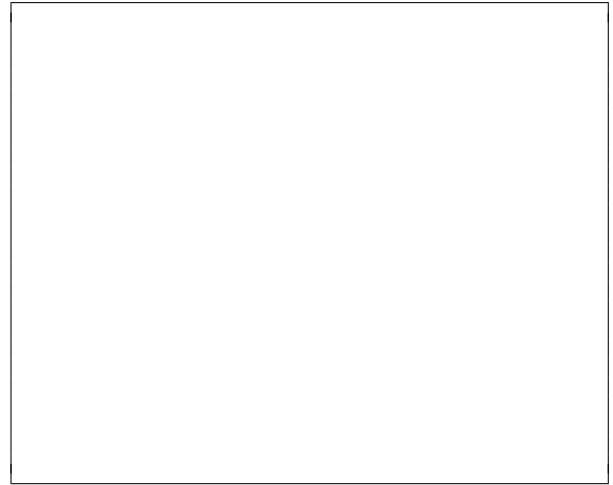
Do not use dictionaries, sets, or recursion on this quiz.

1. (35 points) **Free Response:** Write the function `findLongestStreak(lst)` which takes a list of numbers, `lst`, and returns the longest streak of numbers which occur in the list. A streak of numbers is a list of numbers where each number is one greater than the one that occurred before it- for example, `[4, 5, 6, 7]`. So `findLongestStreak([3, 4, 8, 2, 3, 4, 5, 7, 8, 9])` would return `[2, 3, 4, 5]`. If there is more than one streak with the longest length, return the first one that occurs in the list.

2. (30 points) **Code Tracing:** Indicate what the following program prints. Place your answer (and nothing else) in the box to the right of the code.

```python
import copy
def ct(a):
    b = a
    c = copy.copy(a)
    b[0] = 42
    a.append("wow")
    c[3] = 2 * c[3]
    b = b[:2] + ["hi"] + b[2:]
    c.pop(1)
    a[-2] = 112
    print("a:", a)
    print("b:", b)
    print("c:", c)

z = ["feb", "14", 1, 100]
ct(z)
print("z:", z)
```

```
a: [42, '14', 1, 112, 'wow']
b: [42, '14', 'hi', 1, 100, 'wow']
c: ['feb', 1, 200]
z: [42, '14', 1, 112, 'wow']
```

3. (35 points) **Fill-in-the-Blank:** Recall the part of the Tortoise Animation program from hw4 where you had to draw "buttons" at the bottom of the screen. The code below creates a similar animation which has ten square buttons on the bottom of the screen, sized such that they fill the screen width completely, each with a number 0 written on top. There is also a circle in the upper-left corner of the screen. The screen appears as shown below:
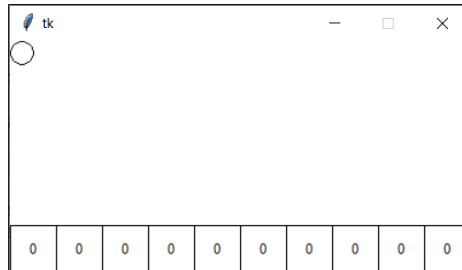
Add code to the framework below to implement the following features:

- When the user types a digit from 0 to 9, add 1 to the number in the appropriate box (the 0th box is the left-most one; the 9th is the right-most). Hint: you should only write one if statement, not 10!!!

- When the user clicks one of the ten buttons, add 1 to the number in the button that was clicked.

- When the total sum of the boxes hits a multiple of 5, move the circle 5 pixels to the right. The circle is allowed to move off the screen this way.

Note that we have replaced `data`, `event`, and `canvas` with `d`, `e`, and `c` to save writing time.

```python
def init(d):
    d.boxes = [0] * 10
    d.size = d.width / 10
    d.circleX = 0

def redrawAll(c, d):
    c.create_oval(d.circleX, 0, d.circleX + 20, 20)
    for box in range(len(d.boxes)):
        c.create_rectangle(box * d.size, d.height - d.size, (box + 1) * d.size, d.height)
        c.create_text((box + 0.5) * d.size, d.height - d.size/2, text=str(d.boxes[box]))

def keyPressed(e, d):




def mousePressed(e, d):
```

YOU MAY CONTINUE WRITING CODE ON THIS PAGE.