

Name: \_\_\_\_\_ Section: \_\_\_\_ Andrew Id: \_\_\_\_\_

15-112 Fall 2016 Quiz 3a

\* Up to 30 minutes. No calculators, no notes, no books, no computers. \* Show your work!

\* No lists or recursion

1. **Code Tracing** [10 pts]: Indicate what this prints. Place your answer (and nothing else) in the box beside the code.

```
def ct1(s):
    # Hint: ord('A') > ord('9')
    t = 'Z'
    for c in s.upper():
        if (c > t[-1]): t += c
        elif (c >= 'A'): t += str(ord(c) - ord('A'))
        else: t += 'n' + c
    return t
print(ct1("a1B2")) # hint: prints 6 characters
```

2. **Reasoning Over Code** [10 pts]:

Find an argument for the following function that makes it return True. Place your answer (and nothing else) in the box below the code:

```
def rc1(s):
    if (not isinstance(s, str)): return False
    if ('0' in s): return False
    t,n = s[1:-1], int(s[0]+s[-1])
    return (t.isalpha() and (t == t[0]*(n//2)))
```

s =

3. **Short Answers** [25 pts] Be very brief.

- a. Very briefly: Why do we need to use %% to include a single % in string formatting?
  
- b. For what value of t is s.split(t) equivalent to s.splitlines()?
  
- c. Without using string.digits, provide a Python expression that is equivalent to (c in string.digits).
  
- d. If s is a non-empty string and (s[s.find('d')] != 'd'), then what must be true in general about s?
  
- e. Provide a line or two of Python that raises this exception:  
TypeError: 'str' object does not support item assignment

4. **Free Response: makeEdits(spec)** [55 pts]

Background: This problem uses a string called 'spec' which is a string of lowercase letters followed by editing commands on that string, separated by dots (.). There are two kinds of editing commands: '1cd' which means replace all c's with d's, and '2e' which means delete all the e's. For example:

'abcabde.1ax.2b'

Here, we make the edits on this spec as follows

start with 'abcabde'

replace all a's with x's to get 'xbcbde'

delete all b's to get 'xcxde'

With this in mind, write the function makeEdits(spec) that takes a spec as just described and returns the string that results from making the edits in the spec. For example:

makeEdits('abcabde.1ax.2b') returns 'xcxde'

makeEdits('abcabde.1ax.2b.1xy') returns 'ycyde'

5. **Bonus/Optional: Code Tracing** [2.5 pts] What will this print? Place your answer in the box.

```
def bonusCt1():  
    for t in range(2,100):  
        s = str(t)  
        while (len(s) < 10): s = s * int(s)  
        if (len(s) > 20000): return len(s)  
print(bonusCt1())
```