

PROBLEM 1 : *(What are the types and values? (24 points))*

Consider the following variables and their values for the table below.

```
words = ['red', 'green', 'tree', 'play']
str = 'Oh! no! not now!'
```

List in the table the type of variable and its value after being assigned the expression.

variable = expression	Type	Value
a = "yes"	string	"yes"
b = str[2]		
c = words[-1]		
d = 13/4		
e = 5 + 2.0 * 4		
f = len(words)		
g = words[2][1]		
h = words[1].upper()		
i = str.split()[1]		
j = str[5:6] + str[:2]		
k = str.find("not") > str.find("now")		
m = "y".join(['mo', 'bo'])		
n = 24 % 7		

PROBLEM 2 : (*How Many? - Simple Function (8 points)*)

The restaurant *Durham Durham* has lots of discounts on meals.

1. On Mondays, the lower cost item is 50% off. On Tuesdays, the lower cost item is 10% off.
2. In April and May you get \$5 off your meal after other discounts, but note the total should not be negative.

Write the function `dinnerPrice` that has four parameters: **item1** and **item2** are floats representing the cost of two food items, **day** is a string representing the current day of the week, and **month** is a string representing the current month. This function returns the total cost of dinner after applying discounts explained above.

call	returns	comment
<code>dinnerPrice(8.5, 4.0, "Wednesday", "May")</code>	7.5	\$5 off for May, $8.5 + 4.0 - 5 = 7.5$
<code>dinnerPrice(8.5, 4.0, "Monday", "January")</code>	10.5	50% off 4.0, $8.5 + 2.0 = 10.5$
<code>dinnerPrice(2.5, 2.0, "Monday", "April")</code>	0.0	50% off 2.0, \$5 off for April
<code>dinnerPrice(5.0, 10.0, "Tuesday", "May")</code>	9.5	10% off 5.0, \$5 off for May

```
def dinnerPrice(item1, item2, day, month):
```

Debugging (6 points)

Consider the following `countWordInPhrases` function that has two parameters, where `listPhrases` is a list of Strings, and `word` is a String. The lines have been numbered. This function is suppose to count how many phrases in `listPhrases` that `word` occurs in, but does not work correctly.

```
1 def countWordInPhrases(listPhrases, word):
2     count = 0
3     for phrase in listPhrases:
4         if word in phrase:
5             count += 1
6     return count

listPhrases = ["great Tuesday", "one sunny day", "day in and out"]
```

Here are two calls, one with a wrong answer and one with a correct answer

CALL	returns	correct answer
<code>countWordInPhrases(listPhrases, "day")</code>	3	2
<code>countWordInPhrases(listPhrases, "and")</code>	1	1

Q1. Explain why the first call above is returning the wrong answer.

Q2. Explain how to correct the code above so it always returns the intended answer.

Write the function `stretchOut` which has one string parameter and returns a transformed version of the string using these rules

1. make the word all lowercase
2. If the word has fewer than three characters, return the lowercase version
3. If the word starts with a vowel, return the lowercase version
4. Otherwise return a word with the first letter repeated twice, the second letter repeated twice and the string "eh" added to the end.

Assume a function `isVowel` exists that you can call to determine if a one-character string is a vowel, `isVowel(ch)` returns true if and only if `ch` is a vowel ('a', 'e', 'i', 'o', 'u')

call	returns	comment
<code>stretchOut("strike")</code>	"sstrikeeh"	repeat s and t, add 'eh'
<code>stretchOut("Worm")</code>	"wwoormeh"	repeat w and o, add 'eh'
<code>stretchOut("Hi")</code>	"hi"	length less than 3
<code>stretchOut("apple")</code>	"apple"	starts with vowel

Dietary Restrictions

In this problem you'll write code to process a file of information regarding food and calories for a single serving of food. The data file has information on each line in the format:

food type, food name, calories-per-serving

where the first two entries on a line are strings and the third entry is an integer.

For example, here's a data file named 'food.txt':

```
meat,venison,134
meat,ground beef,218
meat,filet mignon,179
fruit,apple,60
fruit,banana,80
fruit,grapes,90
fruit,orange,50
fruit,watermelon,54
fish,salmon,150
fish,flounder,100
fish,catfish,120
snack,doritos,120
snack,ritz crackers,80
snack,pretzels,107
meat,rabbit,131
meat,pastrami,198
meat,sausage,216
```

The function call `printData("food.txt")` prints the output below

```
['meat', 'venison', '134']
['meat', 'ground beef', '218']
['meat', 'filet mignon', '179']
['fruit', 'apple', '60']
['fruit', 'banana', '80']
['fruit', 'grapes', '90']
['fruit', 'orange', '50']
['fruit', 'watermelon', '54']
['fish', 'salmon', '150']
['fish', 'flounder', '100']
['fish', 'catfish', '120']
['snack', 'doritos', '120']
['snack', 'ritz crackers', '80']
['snack', 'pretzels', '107']
['meat', 'rabbit', '131']
['meat', 'pastrami', '198']
['meat', 'sausage', '216']
```

The function `printData` is shown below, it generates the output above.

```
def printData(fname):
    f = open(fname)
    for st in f:
        data = st.strip().split(",")
        print data
    f.close()
```

Part A (8 points)

Write a function `category` that takes two parameters: the name of a data file and the name of a category like "meat" or "snack", The function returns a list of the foods in the given category that are stored in the data file.

call	returns
<code>category("food.txt", "fruit")</code>	<code>['apple', 'banana', 'grapes', 'orange', 'watermelon']</code>
<code>category("food.txt", "fish")</code>	<code>["salmon", "flounder", "catfish"]</code>
<code>category("food.txt", "stuff")</code>	<code>[]</code>

```
def category(filename, category):
```

Part B (8 points)

Write the function `biggest` that returns the ***name of the food that has the most calories*** per serving as stored in the file passed to `heaviest`.

For example, `biggest("foods.txt")` should return "ground beef" since that has the most calories per serving, 218, of any food in the data file "foods.txt"

```
def biggest(filename):
```