1. Write a program that opens an output file with the filename my\_name.txt, writes your name to the file, then closes the file.

2. Write a program that opens the my\_name.txt file that was created by the program in problem 1 reads your name from the file, displays the name on the screen, then closes the file.

3. Write code that does the following: opens an output file with the filename number\_list.txt, uses a loop to write the numbers 1 through 100 to the file, then closes the file.

4. Write code that does the following: opens the number\_list.txt file that was created by the code you wrote in question 3, reads all of the numbers from the file and displays them, then closes the file.

Advanced

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1. Personal Web Page Generator

Write a program that asks the user for his or her name, then asks the user to enter a sentence that describes himself or herself. Here is an example of the program’s screen:

Enter your name: Julie Taylor

Describe yourself: I am a computer science major, a member of the

Jazz club, and I hope to work as a mobile app developer after I graduate.

Once the user has entered the requested input, the program should create an HTML file, containing the input, for a simple Web page. Here is an example of the HTML content, using the sample input previously shown:

<html>

<head>

</head>

<body>

<center>

<h1>Julie Taylor</h1>

</center>

<hr />

I am a computer science major, a member of the Jazz club,

and I hope to work as a mobile app developer after I graduate.

<hr />

</body>

</html>

2. What will the following code display?

try:

x = float('abc123')

print('The conversion is complete.')

except IOError:

print('This code caused an IOError.')

except ValueError:

print('This code caused a ValueError.')

print('The end.')

3. What will the following code display?

Try:

x = float('abc123')

print(x)

except IOError:

print('This code caused an IOError.')

except ZeroDivisionError:

print('This code caused a ZeroDivisionError.')

Except:

print('An error happened.')

print('The end.')

**String Exercises**

1. Assume choice references a string. The following if statement determines whether choice is equal to ‘Y’ or ‘y’:

if choice == 'Y' or choice == 'y':

Rewrite this statement so it only makes one comparison, and does not use the or operator.

(Hint: use either the upper or lower methods.)

2. Write a loop that counts the number of space characters that appear in the string referenced by mystring.

3. Write a loop that counts the number of digits that appear in the string referenced by mystring.

4. Write a loop that counts the number of lowercase characters that appear in the string referenced by mystring.

5. Write a function that accepts a string as an argument and returns true if the argument ends with the substring '.com'. Otherwise, the function should return false.

**Advanced**

1. Alphabetic Telephone Number Translator

Many companies use telephone numbers like 555-GET-FOOD so the number is easier for their

customers to remember. On a standard telephone, the alphabetic letters are mapped to numbers in the following fashion:

A, B, and C = 2

D, E, and F = 3

G, H, and I = 4

J, K, and L = 5

M, N, and O = 6

P, Q, R, and S = 7

T, U, and V = 8

W, X, Y, and Z = 9

Write a program that asks the user to enter a 10-character telephone number in the format XXXXXX-XXXX. The application should display the telephone number with any alphabetic characters that appeared in the original translated to their numeric equivalent. For example, if the user enters 555-GET-FOOD, the application should display 555-438-3663

2. Sentence Capitalizer

Write a program with a function that accepts a string as an argument and returns a copy of the string with the first character of each sentence capitalized. For instance, if the argument is “hello. my name is Joe. what is your name?” the function should return the string “Hello. My name is Joe. What is your name?” The program should let the user enter a string and then pass it to the function. The modified string should be displayed.

**Multiple choice:**

1. You can use the operator \_\_\_ to determine whether a key exists in a dictionary.

1. &

2. In

3. ˆ

4. ?

2. You use \_\_\_ to delete an element from a dictionary.

1. the remove method

2. the erase method

3. the delete method

4. the del statement

3. The function \_\_\_ returns the number of elements in a dictionary:

1. size()

2. len()

3. elements()

4. count()

4. You can use \_\_\_  to create an empty dictionary.

1. {}

2. ()

3. []

4. empty()

5. The method \_\_\_ returns a randomly selected key-value pair from a dictionary.

1. pop()

2. random()

3. popitem()

4. rand\_pop()

6. The method \_\_\_ returns the value associated with a specified key and removes that keyvalue

pair from the dictionary.

1. pop()

2. random()

3. popitem()

4. rand\_pop()

7. The dictionary method \_\_ returns the value associated with a specified key. If the key isnot found, it returns a default value.

1. pop()

2. key()

3. value()

4. get()

8. The method \_\_\_ returns all of a dictionary’s keys and their associated values as a

sequence of tuples.

1. keys\_values()

2. values()

3. items()

4. get()

9. The following function \_\_\_ returns the number of elements in a set:

1. size()

2. len()

3. elements()

4. count()

10. You can add one element to a set with this method.

1. append

2. add

3. update

4. merge

**Coding exercises:**

11. After the following code executes, what elements will be members of set3?

set1 = set(['d', 'e', 'f'])

set2 = set(['a', 'b', 'c', 'd', 'e'])

set3 = set1.difference(set2)

12. After the following code executes, what elements will be members of set3?

set1 = set(['d', 'e', 'f'])

set2 = set(['a', 'b', 'c', 'd', 'e'])

set3 = set2.difference(set1)

13. After the following code executes, what elements will be members of set3?

set1 = set([1, 2, 3])

set2 = set([2, 3, 4])

set3 = set1.symmetric\_difference(set2)

14. Look at the following code:

set1 = set([100, 200, 300, 400, 500])

set2 = set([200, 400, 500])

Which of the sets is a subset of the other?

Which of the sets is a superset of the other?

15. Assume the variable dct references a dictionary. Write an if statement that determines whether the key 'Jim' exists in the dictionary. If so, delete 'Jim' and its associated value.

17. Assume each of the variables set1 and set2 references a set. Write code that creates another set containing all the elements of set1 and set2, and assigns the resulting set to the variable set3.

18.. Assume each of the variables set1 and set2 references a set. Write code that creates another set containing only the elements that are found in both set1 and set2, and assigns the resulting set to the variable set3.

**NumPy Exercise**

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1. Write a NumPy program to convert a list of numeric values into a one-dimensional NumPy array.

Expected Output:

Original List: [12.23, 13.32, 100, 36.32]

One-dimensional NumPy array: [ 12.23 13.32 100. 36.32]

2. Write a NumPy program to create a 3x3 matrix with values ranging from 2 to 10.

Expected Output:

[[ 2 3 4]

[ 5 6 7]

[ 8 9 10]]

3. Write a NumPy program to reverse an array (first element becomes last).

Original array:

[12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37]

Reverse array:

[37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12]

4. Write a NumPy program to find the number of elements of an array, length of one array element in bytes and total bytes consumed by the elements.

Expected Output:

Size of the array: 3

Length of one array element in bytes: 8

Total bytes consumed by the elements of the array: 24

5. Write a NumPy program to create a new shape to an array without changing its data.

Reshape 3x2:

[[1 2]

[3 4]

[5 6]]

Reshape 2x3:

[[1 2 3]

[4 5 6]]

6. Write a NumPy program to count the occurrence of a specified item in a given NumPy array.

Sample Output:

Original array:

[10 20 20 20 20 0 20 30 30 30 0 0 20 20 0]

1

7

3

4

7. Write a NumPy program to remove nan values from a given array.

Sample Output:

Original array:

[200. 300. nan nan nan 700.]

After removing nan values:

[200. 300. 700.]