

Chapter 8 Review Questions

1. The _____ in a string can be accessed individually using an index.
2. The first position or index of a character in a string is _____.
3. The index [-1] accesses the _____ character in the string.
4. If an index is used that is out of range, a _____ exception will be raised.
5. The term _____ indicates that strings cannot be changed.
6. Adding one string to another is referred to as _____.
7. Lists are sequences of data that are mutable which means that they can be _____.
8. The _____ function is used to determine the size of a list.
9. The append function is used to add an item to the _____ of a list.
10. The _____ of an element in a list is used to access the element.
11. A tuple is a list that cannot be _____.
12. A dictionary stores elements as _____ pairs.
13. A set is a collection that cannot contain _____.

Chapter 8 Short Answer Exercises

1. What do the following lines of code output?

```
a_string = 'some words'  
print(a_string[1], end="")  
print(a_string[-1])
```

2. What do the following lines of code output?

```
a_string = 'nothing here'  
for ch in a_string:  
    if ch == 'e':  
        print('Found one.')
```

3. What do the following lines of code output?

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```
a_string = 'Thank you.'  
print(a_string[11])
```

4. What will the string `part1` contain after the following lines of code execute?

```
part1 = 'a good '  
part2 = 'thing'  
part1 = part1 + part2
```

5. What will the string `part3` contain after the following lines of code execute?

```
part1 = 'a good '  
part2 = 'thing'  
part3 = part1 + part2
```

6. What do the following lines of code output?

```
letters = 'ABCDEFGHJIJ'  
afew = letters[:3]  
print(afew)
```

7. What do the following lines of code output?

```
letters = 'ABCDEFGHJIJ'  
afew = letters[1:6:3]  
print(afew)
```

8. What do the following lines of code output?

```
find_it = 'Once'  
phrase = 'once upon a time'  
if find_it in phrase:  
    print('Found.')
```

9. What do the following lines of code output?

```
phrase = 'some words'  
phrase = phrase.strip('s')  
print(phrase)
```

10. What do the following lines of code output?

```
names = ['Amy', 'Beth', 'Darrus']
```

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```
print(names[1])
```

11. What will be the output after the following lines of code execute?

```
search_num = 2
values = [1, 2, 3, 4]
if search_num in values:
    pos = values.index(search_num)
    values[pos] = 0
print(values)
```

12. What do the following lines of code output?

```
date_string = '10/17/22'
date_list = date_string.split('/')
print(date_list[1])
```

13. What do the following lines of code output?

```
numbers = [ 5, 10, 20, 40, 50]
numbers.append(60)
numbers.insert(3, 30)
numbers.remove(5)
print(numbers)
```

14. What do the following lines of code output?

```
pies = {1:'cherry', 2:'apple', 3:'pumpkin'}
print(pies[2])
```

15. What do the following lines of code output?

```
pies = {1:'cherry', 2:'apple', 3:'pumpkin'}
pies[2] = 'peach'
print(pies[2])
```

16. What elements will the set contain after the following statement?

```
set1 = set('Python')
```

17. What elements will the set contain after the following statement?

```
word = set('radar')
```

18. What elements will be output after the following statements?

```
word1 = set('abc')
```

```
word2 = set('def')  
print(word1.union(word2))
```

Chapter 8 Programming Exercises

1. Write a program that creates the list `numbers` below, then adds 7 to the list, sorts the list, and prints the list.

```
numbers = [8, 6, 12, 9, 11, 10]
```

2. Write a program that creates the list `cities` below and removes 'Albany' after making sure that it is in the list, then print the list.

```
cities = ['Dodge', 'York', 'Albany', 'Moor']
```

3. Write a program that requests five integers from the user and creates a list of the numbers. Then sorts the list, and prints the lowest number, the highest number and the sum of the numbers.

4. Write a program that creates the list shown below. Then insert the number 15 in the proper index to maintain the order of the list (do not use `sort`). Then remove the number 11, and reverse the order of the list, and print the list.

```
numbers = [11, 12, 13, 14, 16, 17, 18]
```

5. Write a program that creates a string called `date` and assign it "10,10,22". Split the string into a list and print the list as 10/10/22.
6. Create the list shown below and write the list on separate lines to a file called "pets.txt".

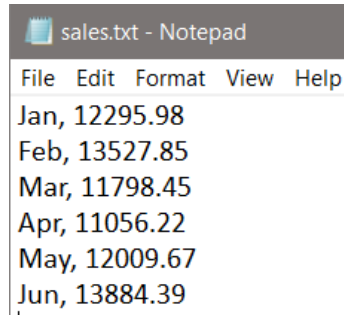
```
pet_list = ['cat', 'dog', 'hamster', 'iguana']
```

7. Write a program that creates the list below in main, and passes it to a function called `get_squares` that squares the numbers in the list and returns the modified list. Then output the list from main.

```
values = [2, 4, 6, 8, 10]
```

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8. Create a file with the data below called "sales.txt", and write a program that reads the file and create two lists. One list will contain the month names and one list will contain the sales numbers (floats). Plot the data with the month on the X axis and the amount on the Y axis using pyplot.



```
sales.txt - Notepad
File Edit Format View Help
Jan, 12295.98
Feb, 13527.85
Mar, 11798.45
Apr, 11056.22
May, 12009.67
Jun, 13884.39
```

9. Modify program #8 to include "Company Sales Data" as the chart title, "Thousands" as the y-label, "Months" as the x-label, and diamonds as the marker symbols, and add a grid to the background.
10. Complete Program #8 plotting a pie chart instead of a line chart.
11. Write a program that creates a dictionary called "values" with the key/value pairs below. Then add the pair 6:'six', replace 'number' with 'three', and print just the values (not the keys).

1: 'one', 2:'two', 3:'number', 4:'four', 5:'five'

12. Write a program that creates an empty set named "myset" and adds the even numbers from 2 through 20 using a loop, and displays the set.
13. Write a program that creates three empty sets named "even", "odd", and "both". Using a single loop, populate "even" with the even numbers 2 through 20, and populate "odd" with the odd numbers 1 through 19. Assign the union of "even" and "odd" to the set named "both", and display "both".
14. Write a program that creates the two sets below, and creates and displays a third set that is the union of the two.

```
set1 = set([1, 2, 3, 4, 5, 6, 7])
```

```
set2 = set([5, 6, 7, 8, 9, 10, 11])
```

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15. Write a program that creates the two sets below, and creates and displays a third set that is the intersection of the two.

```
set1 = set([1, 2, 3, 4, 5, 6, 7])
set2 = set([5, 6, 7, 8, 9, 10, 11])
```

Chapter 8 Programming Challenges

#1 – Decryption

Type or copy/paste this single line of text into a file named “message.txt” and write a program that reads the file and decrypts the text using the key below.

```
thg:tgllt:tga:thgllt:by:9Thg:tga:thorg:and:makgt:9a:fgw:dollart:To:fggd:hgr:9tga:TurT
lgt:from:Thg:thgllt:ThaT:9thg:hat:told.
```

Key: ‘t’ is ‘s’, ‘.’ is space, ‘T’ is ‘t’, ‘g’ is ‘e’, and ‘9’ is newline

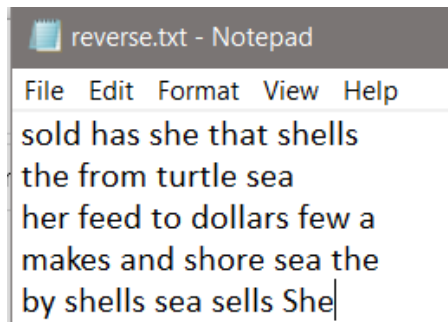
#2 - Reverse Lines and Words

Create a file named “reverse.txt” with the lines exactly as shown in the sample file below. Do not include spaces at the ends of the lines.

Write a program that reads the file and uses lists and strings to reverse the order of the lines and to reverse the words in each line. Then display the resulting five (5) lines of text.

Hint: consider a function to split, reverse and print.

reverse.txt:



```
reverse.txt - Notepad
File Edit Format View Help
sold has she that shells
the from turtle sea
her feed to dollars few a
makes and shore sea the
by shells sea sells She
```