Homework 7
Lists and Tuples

TRUE/FALSE

1. Invalid indexes do not cause slicing expressions to raise an exception.

   ANS:

2. Lists are dynamic data structures such that items may be added to them or removed from them.

   ANS:

3. Arrays, which are allowed by most other programming languages, have more capabilities than Python list structures.

   ANS:

4. A list cannot be passed as an argument to a function.

   ANS:

5. The **`remove`** method removes all occurrences of an item from a list.

   ANS:

6. The **`sort`** method rearranges the elements of a list so they are in ascending or descending order.

   ANS:

7. The index of the first element in a list is **`1`**, the index of the second element is **`2`**, and so forth.

   ANS:

8. The index **`-1`** identifies the last element in a list.

   ANS:

9. To calculate the average of the numeric values in a list, the first step is to get the total of values in the list.

   ANS:

10. In slicing, if the end index specifies a position beyond the end of the list, Python will use the length of the list instead.

    ANS:

11. In order to create graphs using the **matplotlib** package, you need to import the **pyplot** module.

    ANS:

12. To add a descriptive label to the X and Y axes of a graph when using the **matplotlib** package, you need to import the **labels** module.

    ANS:

MULTIPLE CHOICE

1. What are the data items in a list called?

   a. data
   b. elements
   c. items
   d. values

   ANS:

2. When working with multiple sets of data, one would typically use a(n)

   a. list
   b. tuple
   c. nested list
   d. sequence

   ANS:

3. The primary difference between a tuple and a list is that

   a. you don't use commas to separate elements in a tuple
   b. a tuple can only include string elements
   c. a tuple cannot include lists as elements
   d. once a tuple is created, it cannot be changed

   ANS:

4. What is an advantage of using a tuple rather than a list?

   a. Tuples are not limited in size.
   b. Tuples can include any data as an element.
   c. Processing a tuple is faster than processing a list.
   d. There is never an advantage to using a tuple.

   ANS:

5. Which list will be referenced by the variable **number** after the following code is executed?

```
number = range(0, 9, 2)
```

   a. **[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]**
   b. **[1, 3, 5, 7, 9]**
   c. **[2, 4, 6, 8]**
   d. **[0, 2, 4, 6, 8]**

ANS:

6. Which of the following would you use if an element is to be removed from a specific index?

   a. a **`del`** statement
   b. a **`remove`** method
   c. an **`index`** method
   d. a **`slice`** method

   ANS:

7. What is the first negative index in a list?

   a. **`0`**
   b. **`-1`**
   c. **`-0`**
   d. the size of the list minus 1

   ANS:

8. Which method can be used to place an item at a specific index in a list?

   a. **`append`**
   b. **`index`**
   c. **`insert`**
   d. **`add`**

   ANS:

9. Which method or operator can be used to concatenate lists?

   a. **`*`**
   b. **`+`**
   c. **`%`**
   d. **`concat`**

   ANS:

10. Which method can be used to convert a list to a tuple?

    a. **`append`**
    b. **`tuple`**
    c. **`insert`**
    d. **`list`**

    ANS:

11. Which method can be used to convert a tuple to a list?

    a. **`append`**
    b. **`tuple`**
    c. **`insert`**
    d. **`list`**

    ANS:

12. What will be the value of the variable **`list`** after the following code executes?

```
list = [1, 2]
list = list * 3
```

a. `[1, 2] * 3`
b. `[3, 6]`
c. `[1, 2, 1, 2, 1, 2]`
d. `[1, 2], [1, 2], [1, 2]`

ANS:

13. What will be the value of the variable **`list`** after the following code executes?

```
list = [1, 2, 3, 4]
list[3] = 10
```

a. `[1, 2, 3, 10]`
b. `[1, 2, 10, 4]`
c. `[1, 10, 10, 10]`
d. Nothing; this code is invalid

ANS:

14. What will be the value of the variable **`list2`** after the following code executes?

```
list1 = [1, 2, 3]
list2 = []
for element in list1:
    list2.append(element)
list1 = [4, 5, 6]
```

a. `[1, 2, 3]`
b. `[4, 5, 6]`
c. `[1, 2, 3, 4, 5, 6]`
d. Nothing; this code is invalid

ANS:

15. This function in the **`random`** module returns a random element from a list.

a. `choice`
b. `choices`
c. `sample`
d. `random_element`

ANS:

16. This function in the **`random`** module returns multiple, nonduplicated random elements from a list.

a. `choice`
b. `choices`
c. `sample`
d. `random_element`

ANS:

17. What values will **`list2`** contain after the following code executes?

```
list1 = [1, 2, 3]
list2 = [item + 1 for item in list1]
```

a. `[1, 2, 3]`
b. `[2, 3, 4]`
c. `[6, 7, 8]`
d. `[[1, 2, 3],[2, 3, 4],[3, 4, 5]]`
ANS:

18. What values will list2 contain after the following code executes?

```
list1 = [1, 10, 3, 6]
list2 = [item * 2 for item in list1 if item > 5]
```

a. `[2, 20, 6, 12]`
b. `[10, 6]`
c. `[20, 12]`
d. `[[1, 10, 3, 6],[1, 10, 3, 6]]`
ANS:

19. In order to create a graph in Python, you need to include

a. `import matplotlib`
b. `import pyplot`
c. `import matplotlib.pyplot`
d. `import matplotlib`
`import pyplot`

ANS:

20. What will be the output after the following code is executed?

```
import matplotlib.pyplot as plt
def main():
    x_crd = [0, 1 , 2, 3, 4, 5]
    y_crd = [2, 4, 5, 2]
    plt.plot(x_crd, y_crd)

if __name__ == '__main__':
    main()
```

a. It will display a simple line graph.
b. It will display a simple bar graph.
c. Nothing; `plt` is not a Python method.
d. Nothing; the number of x-coordinates do not match the number of y-coordinates.

ANS:

COMPLETION

1. A(n) _____ is an object that holds multiple items of data.

ANS:

2. Each element in a tuple has a(n) _____ that specifies its position in the tuple.

ANS:

3. The built-in function _____ returns the length of a sequence.

   ANS:

4. Tuples are _____ sequences which means that once a tuple is created, it cannot be changed.

   ANS:

5. A(n) _____ is a span of items that are taken from a sequence.

   ANS:

6. Lists are _____, which means their elements can be changed in a program.

   ANS:

7. The _____ method is commonly used to add items to a list.

   ANS:

8. The _____ exception is raised when a search item is not in the list being searched.

   ANS:

9. The _____ method reverses the order of the items in a list.

   ANS:

10. The _____ function returns the item that has the lowest value in the sequence.

    ANS:

11. A list _____ is a concise expression that creates a new list by iterating over the elements of an existing list.

    ANS:

12. The _____ package is a library you can use in Python to create two-dimensional charts and graphs.

    ANS:

13. The _____ function can be used to convert a list to a tuple.

    ANS: