Chapter 10 exercises:

1. Can a Python list hold a mixture of integers and strings? yes

2. What happens if you attempt to access an element of a list using a negative index?

3. What Python statement produces a list containing the values 45, −3, 16 and 8, in that order? Lst = [45, -3, 16, 8]

4. Given the statement

lst = [10, -4, 11, 29]

(a) What expression represents the very first element of lst? 10

(b) What expression represents the very last element of lst? 29

(c) What is lst [0]? 10

(d) What is lst [3]? 29

(e) What is lst [1]? -4

(f) What is lst [-1]? 29

(g) What is lst [-4]? 10

(h) Is the expression lst [3.0] legal or illegal? Illegal

5. Given the statements

lst = [3, 0, 1, 5, 2]

x = 2

evaluate the following expressions:

(a) lst [0]? 3

(b) lst [3]? 5

(c) lst[x]? 1

(d) lst[-x]? 5

(e) lst [x + 1]? 5

(f) lst[x] + 1? 2

(g) lst[lst[x]]? 0

(h) lst[lst[lst[x]]]? 3

6. What function returns the number of elements in a list? Len ()

7. What expression represents the empty list? Lst []

8. Given the list

lst = [20, 1, -34, 40, -8, 60, 1, 3]

evaluate the following expressions:

(a) lst = [20, 1, -34, 40, -8, 60, 1, 3]

(b) lst [0:3] = [20, 1, -34,]

(c) lst [4:8] = [-8, 60, 1, 3]

(d) lst [4:33] = [-8, 60, 1, 3]

(e) lst [-5:-3] = [40, -8]

(f) lst [-22:3] = [20, 1, -34]

(g) lst [4:] = [-8, 60, 1, 3]

(h) lst [:] = [20, 1, -34, 40, -8, 60, 1, 3]

(i) lst [:4] = [20, 1, -34, 40]

(j) lst [1:5] = [1, -34, 40, -8]

(k) -34 in lst

(l) -34 not in lst

(m) len (lst) = 8

9. An assignment statement containing the expression a[m:n] on the left side and a list on the right side can modify list a. Complete the following table by supplying the m and n values in the slice assignment statement needed to produce the indicated list from the given original list.

|  |  |  |  |
| --- | --- | --- | --- |
| Original List | Target List | Slice indices | |
| m | n |
| [2, 4, 6, 8, 10] | [2, 4, 6, 8, 10, 12, 14, 16, 18, 20] | 0 | 5 |
| [2, 4, 6, 8, 10] | [-10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10] | 6 | 10 |
| [2, 4, 6, 8, 10] | [2, 3, 4, 5, 6, 7, 8, 10] |  |  |
| [2, 4, 6, 8, 10] | [2, 4, 6, 'a', 'b', 'c', 8, 10] |  |  |
| [2, 4, 6, 8, 10] | [2, 4, 6, 8, 10] | 0 | 5 |
| [2, 4, 6, 8, 10] | [] |  |  |
| [2, 4, 6, 8, 10] | [10, 8, 6, 4, 2] |  |  |
| [2, 4, 6, 8, 10] | [2, 4, 6] |  |  |
| [2, 4, 6, 8, 10] | [6, 8, 10] |  |  |
| [2, 4, 6, 8, 10] | [2, 10] |  |  |
| [2, 4, 6, 8, 10] | [4, 6, 8] |  |  |

10. Write the list represented by each of the following expressions.

(a) [8] \* 4 = [8, 8, 8, 8]

(b) 6 \* [2, 7] = [2, 7, 2, 7, 2, 7, 2, 7, 2, 7, 2, 7]

(c) [1, 2, 3] + ['a', 'b', 'c', 'd'] = [1, 2, 3, ‘a’, ‘b’, ‘c’, ‘d’]

(d) 3 \* [1, 2] + [4, 2] = [1, 2, 1, 2, 1, 2, 4, 2]

(e) 3 \* ([1, 2] + [4, 2]) = [1, 2, 4, 2, 1, 2, 4, 2, 1, 2, 4, 2]

11. Write the list represented by each of the following list comprehension expressions.

(a) [x + 1 for x in [2, 4, 6, 8]] = [3, 5, 7, 9]

(b) [10\*x for x in range (5, 10)] = [50, 60, 70, 80, 90]

(c) [x for x in range (10, 21) if x % 3 == 0] = [12, 15, 18]

(d) [(x, y) for x in range (3) for y in range (4)] = [(0, 0), (0, 1), (0, 2), (0, 3), (1, 0), (1, 1), (1, 2), (1, 3), (2, 0), (2, 1), (2, 2), (2, 3)]

(e) [(x, y) for x in range (3) for y in range (4) if (x + y) % 2 == 0] = [(0, 0), (0, 2), (1, 1), (1, 3), (2, 0), (2, 2)]