

Lists

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Class Today

- String Refresher
- Lists
- Practice

What is a string?

Example

H	E	L	L	O
0	1	2	3	4

- The word 'HELLO' has how many letters? This is referred to as a string's length.
- Notice that the positions go from 0 to 4.
- The positions always start with 0.
- Because strings have individually named positions, programmers can access each individual letter.

Finding the Length

- To find the length of a string, use *len()*

```
myString = 'pumpkin'  
print('The length of the string is', len(myString))
```

- Why do we care about length?
 - Password verification
 - Field validity: 10 digit phone number
 - When traversing through a string, it sets the boundaries of the loop

Accessing Elements

- When accessing the individual elements of a string, use square brackets after the name

```
fName = 'Susan'
```

```
mName = 'Rachel'
```

```
lName = 'Smith'
```

```
initials = fName[0] + mName[0] + lName[0]
```



String
Concatenation

Repetition

- In Python, you can multiply strings.
- What do you think would be the outcome of the following?
word = 'go'
newWord = word*3

Slicing

- This is often referred to as substring
- You use the string followed by [:]
- Example:
name = 'Joe Smith'
fname = name[0:3]
- The first number represents the starting index, and the second number represents one past the upper bound of where we want to stop.

What is a List?

Lists

- Give me a list of colors...
- A list is a type of container or data structure that stores a group of items. Very similar to a string.
- They do not have to be the same type (unlike in other languages)
 - `colorList = ['red','blue','green','purple']`
 - `randomList = [5,'blue',7,num]`

Common List Methods

- `append()`
This will append items to the end of a list
Ex: `myList.append('abc')`
- `pop()`
Removes the item from the list at a specified position
Ex: `myList.pop(3)`
- `remove()`
Removes the first occurrence of a specified item
Ex: `myList.remove('apple')`

More Methods

Operation	Description
<code>len(list)</code>	Find the length of the list.
<code>list1 + list2</code>	Produce a new list by concatenating list2 to the end of list1.
<code>min(list)</code>	Find the element in list with the smallest value.
<code>max(list)</code>	Find the element in list with the largest value.
<code>sum(list)</code>	Find the sum of all elements of a list (numbers only).
<code>list.index(val)</code>	Find the index of the first element in list whose value matches val.
<code>list.count(val)</code>	Count the number of occurrences of the value val in list.

Practice Together

Write a program that reads integers from the user and stores them in a list. Your program should continue reading values until the user enters 0. Then it should display all of the values entered by the user (except for the 0) in order from smallest to largest, with one value appearing on each line. Use either the sort method or the sorted function to sort the list.

Practice Together

Write a program that reads integers from the user and stores them in a list. Use 0 as a sentinel value to mark the end of the input. Once all of the values have been read your program should display them (except for the 0) in reverse order, with one value appearing on each line.

Your Turn

Read in two words from the user. Using lists, determine if the words are palindromes