

List

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A list variable



List is a data type

- A variable of the list type is used to store multiple items in a single variable.
- It is one of four built-in data types for store multiple items in a single variable.
 - List
 - Tuple
 - Set
 - Dictionary

List

```
mylist = ["apple", "banana", "cherry"]  
print(mylist)
```

A list variable allows duplicates

```
mylist = ["apple", "banana", "banana", "cherry"]  
print(mylist)
```

size of a list variable (or number of elements)

Using a function called `len()`

- `len(mylist)`

Accessing a list variable using index

An index is an integer

- First element is indexed by 0
- Last element is indexed by `len - 1`

What happens if you read an element from a list using index greater than `len - 1`?

Declaring a variable as a list variable with no element

```
a = []
```


Do all elements in the same list variable need to have the same type?

```
a = [11, 22, 33, 44]  
b = ["you", "are", "not", "welcome"]  
c = [True, True, False, False]
```

How about

```
d = [44, "are", False]
```

Elements in the same list variable do not have to have the same type. This is not frequently used, but this is allowed.

Quiz

```
a = [1, 2.5, "welcome", False]
# write your code to
# print the size of a
# print the type of a
# print the type of the first element in a
# print the type of the last element in a
```

Change An Item in a List Variable

```
a = [1, 2.5, "welcome", False]  
print(a)  
a[0] = "not"
```

Insert an item at a certain index

```
thislist = ["apple", "banana", "cherry"]  
thislist.insert(2, "watermelon")  
print(thislist)
```

Append an item to a list variable

```
thislist = ["apple", "banana", "cherry"]  
thislist.append("orange")  
print(thislist)
```

Remove Specified Item Using the Item itself

```
thislist = ["apple", "banana", "cherry"]  
thislist.remove("banana")  
print(thislist)
```

Remove Specified Item using an index

```
thislist = ["apple", "banana", "cherry"]  
item = thislist.pop(1)  
print(thislist)  
print(item)
```

When you do not specify the index, it removes the element from the end.

```
thislist = ["apple", "banana", "cherry"]  
item = thislist.pop()  
print(thislist)  
print(item)
```

Delete all items in a list variable

```
thislist = ["apple", "banana", "cherry"]  
thislist.clear()  
print(thislist)
```


Sort items in a list variable in the ascending or the decending order

```
thislist = [100, 50, 65, 82, 23]  
thislist.sort()  
print(thislist)
```

```
thislist = [100, 50, 65, 82, 23]  
thislist.sort(reverse = True)  
print(thislist)
```