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PYTHON DATA STRUCTURES: LISTS

Let’s Continue with lists…

methods

- **append() Adds an element at the end of the list**
- **clear() Removes all the elements from the list**
- **copy() Returns a copy of the list**
- **count() Returns the number of elements with the specified value**
- **extend() Add the elements of a list (or any iterable), to the end of the current list**
- **index() Returns the index of the first element with the specified value**
- **insert() Adds an element at the specified position**
- **pop() Removes the element at the specified position**
- **remove() Removes the item with the specified value**
- **reverse() Reverses the order of the list**
- **sort() Sorts the list**

append()

- Adds an element at the end of the list

```
insectList = ["bee", "fly"]
print(insectList)
insectList.append("ant")
print(insectList)
```

- This is equivalent to

```
insectList[len(insectList):] = ["ant"].
```

clear()

- Removes all the elements from the list

```
insectList = ["mosquito", "ladybird", "beetle"]
print(insectList)
insectList.clear()
print(insectList)
```

- Equivalent to

```
del insectList[:].
```

copy()

- Returns a copy of the list
- Equivalent to `insectList[:]`

```
# using only =
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
insectListCopy = insectList
insectListCopy.append("bug")
print(insectList)
print(insectListCopy)

# using the method copy()
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
insectListCopy = insectList.copy()
insectListCopy.append("bug")
print(insectList)
print(insectListCopy)
```

count()

- Returns the number of elements with the specified value

```
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
print(insectList.count("beetle"))
print(insectList.count("fly"))
```

extend()

- Add the elements of a list (or any iterable), to the end of the current list
- This method is equivalent to listA[len(listA):] = iterable.

```
insectList = ["bee", "fly"]
print(insectList)
insectList.extend(["ant", "mosquito"])
print(insectList)
```

index()

- Returns the index of the first element with the specified value

```
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
print(insectList.index("mosquito"))
print(insectList.index("mosquito", 3))
```

index()

- list of list

```
animalList=[]
insectList = ["beetle", "mosquito", "fly"]
fishList = ["codfish","sardine", "salmon"]
mammalList = ["pig","bear","rabit"]
animalList.append(insectList)
animalList.append(fishList)
animalList.append(mammalList)
```

- Index of sardine?

```
animalList.index(“sardine”)
```

- animalList[1].index("sardine")

```
animalList[1][1]
animalList[1].index("sardine")
```

insert()

- Adds an element at the specified position
- The first argument is the index of the element before which to insert.
- For example, a.insert(0, x) inserts at the front of the list.

```
insectList = ["bee", "fly"]
print(insectList)
insectList.insert(0, "ant")
print(insectList)
insectList.insert(2, "mosquito")
print(insectList)
```

pop()

- Removes the element at the specified position, and returns it.
- If no index is specified, pop() removes and returns the last item in the list.

```
# Example 1: No index specified. Removes the last.
insectList = ["mosquito", "ladybird", "ant"]
print(insectList)
insectList.pop()
print(insectList)

# Example 2: Index specified
insectList = ["mosquito", "ladybird", "ant"]
print(insectList)
insectList.pop(1)
print(insectList)
```

remove()

- Removes the first item from the list that has a specific value.
- Returns an error if there is no such item.

```
insectList = ["bee", "ladybird", "ant"]
print(insectList)
insectList.remove("ant")
print(insectList)
```

reverse()

- Reverses the order of the list

```
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
insectList.reverse()
print(insectList)
```

sort()

- Sorts the list
- The arguments can be used to customize the operation.
- sort(key=None/function..., reverse=False/True)

```
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
insectList.sort()
print(insectList)
```

sort()

- sort by dimension

```
insectList = ["beetle", "mosquito", "fly","fly", "mosquito"]
insectList.sort(key=len)
print(insectList)
```

functions

- **sum() - Sums up the numbers in the list**
- **max() - return maximum element of given list**
- **min() - return minimum element of given list**
- **len() - Returns length of the list or size of the list**
- reduce() - apply a particular function passed in its argument to all of the list elements stores the intermediate result and only returns the final summation value
- ord() - Returns an integer representing the Unicode code point of the given Unicode character
- cmp() - This function returns 1, if first list is “greater” than second list
- all() - Returns true if all element are true or if list is empty
- any() - return true if any element of the list is true. if list is empty, return false
- enumerate() - Returns enumerate object of list
- accumulate() - apply a particular function passed in its argument to all of the list elements returns a list containing the intermediate results
- filter() - tests if each element of a list true or not
- map() - returns a list of the results after applying the given function to each item of a given iterable
- lambda() - This function can have any number of arguments but only one expression, which is evaluated and returned.

sum()

- **Sums up the numbers in the list**

```
valueList=[1,22,33,44,12]
sum(valueList)
```

max()

- **return maximum element of given list**

```
valueList=[1,22,33,44,12]
max(valueList)
```

min()

- return minimum element of given list

- valueList=[1,22,33,44,12]
- min(valueList)

len()

- **Returns length of the list or size of the list**

```
animalList=[]
insectList = ["beetle", "mosquito", "fly"]
fishList = ["codfish","sardine", "salmon"]
mammalList = ["pig","bear","rabit"]
animalList.append(insectList)
animalList.append(fishList)
animalList.append(mammalList)
len(animalList)
```