# Lists

Now that we have finished working on numbers and strings, let's work with the lists and sublists.

WE'LL COVER THE FOLLOWING



## Lists #

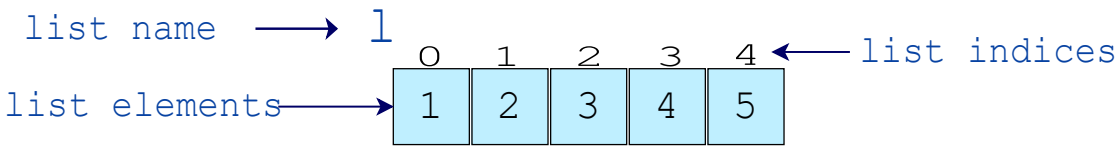
Python lists are data structures that group sequences of elements. Lists **can have elements of several types**, and you can also **mix different types** within the same list (although all elements are usually of the same datatype).

Lists are created using square brackets `[]`, and the elements are separated by commas (`,`). The elements in a list can be accessed by their positions, starting with 0 as the index of the first element.

```
list=[element1,element2,...]
```

For example, to create list `l` with five elements, write

```
l=[1,2,3,4,5]
```



```
l = [1, 2, 3, 4, 5]
print(l) #prints the entire list

print l[0]#prints value at index 0
print l[1]#prints value at index 1
```

## Sublist #

Sometimes you want just a small portion of a list—a sublist. Sublists are simply subsets of a list; they can be retrieved using a technique called *slicing*.

A sublist is created by writing the list name, then separating the start and end indexes with a colon (: ) and enclosing them within square brackets ([]).

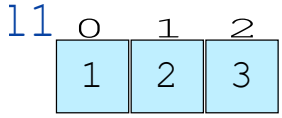
```
sublist=list[startindex:endindex]
```

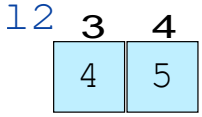
Given a list `l` ,to create sublist `l1` and `l2` write:

```
l=[1,2,3,4,5]

l1=l[0:3]
l2=l[3:5]
```

> **Note:** The start index is inclusive and end index is exclusive in the range.




Write the following python code to print the substring.

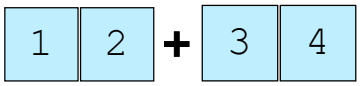
```
l = ['a', 'b', 'c', 'd', 'e']
print l[0:3]
```

# Operations on List

Some basic operations on the lists are explained below:-

## List Concatenation

Lists can be concatenated using the `+` operator

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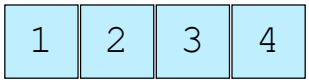


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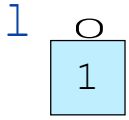
In python,write the following piece of code to concatenate the list:

```
print([1,2] + [3,4])
```

## Traverse a List

Finally, lists can be iterated over using `for` loops in Python.



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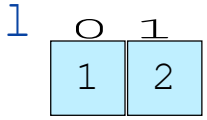


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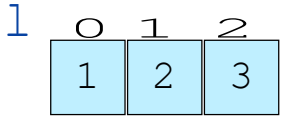


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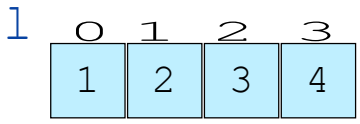


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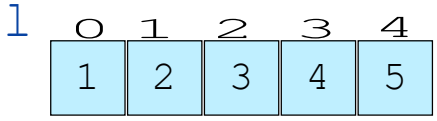


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Use the following piece of code in python to traverse a list element-by-element:

```
l=[1, 2, 4, 8, 10]
for val in l:
  print(val)
```

Now that the basics about the lists and sublists are clear, let's check your knowledge in the upcoming exercises for lists before moving on to the next lesson – 'List comprehension'.

lesson— List comprehension ".