

List []

- A list is a data structure that holds an ordered collection of items i.e. you can store a sequence of items in a list.

The list of items should be enclosed in square brackets so that Python understands that you are specifying a list. Once you have created a list, you can add, remove or search for items in the list. Since we can add and remove items, we say that a list is a mutable data type i.e. this type can be altered.

Runs

```
runs = [100, 150, 99, 20, 99, 200, 99, 120]
```

type

```
print(runs)
```

```
[100, 150, 99, 20, 99, 200, 99, 120]
```

```
print(type(runs))
```

```
<class 'list'>
```

len function

```
print(len(runs))
```

```
8
```

Indexing in list: Like we used to have in our attendance register, roll no.

quiz 2

```
print(runs)
```

```
[100, 150, 99, 20, 99, 200, 99, 120]
```

```
runs[0]
```

```
100
```

```
l = [5, 1, -2, 2, 3, 4]  
print(l[2])
```

```
-2
print(len(l))
6
print(l[5])
4
l
[5, 1, -2, 2, 3, 4]
```

```
## Negative indexing: Topper from bottom :)
```

```
# quiz
```

```
runs
[100, 150, 99, 20, 99, 200, 99, 120]
print(runs[-1])
120
runs = [10, 55, 4, 67, 17]
print(runs[0] + runs[-1] + runs[-3])
31
print(runs[0])
print(runs[-1])
print(runs[-3])
10
17
4
```

```
## Let Sachin play another match: append
```

```
# quiz
```

```
runs
[100, 150, 99, 20, 99, 200, 99, 120]
```

```
centurian = 250
runs.append(centurian)
print(runs)

[100, 150, 99, 20, 99, 200, 99, 120, 250]
```

quiz

```
runs = [10, 55, 4, 67, 17]
runs.append(6)
runs.append(200)
print(runs[-1] + runs[2])

204
```

```
print("abc")

abc

print(runs)

[10, 55, 4, 67, 17, 6, 200]
```

Insert at index: runs.insert(index, value)

Quiz

```
runs = [100, 150, 99, 20, 99, 200, 99, 120]
runs.insert(1, 99)
print(runs)

[100, 99, 150, 99, 20, 99, 200, 99, 120]
```

```
l = [1, 2, 3, 3, 5, 6, 7, 5]
l.insert(5, 10)
print(l)

[1, 2, 3, 3, 5, 10, 6, 7, 5]
```

Iterating a list

```
for i in range(5):  
    print(i)
```

```
0  
1  
2  
3  
4
```

runs

```
[100, 99, 150, 99, 20, 99, 200, 99, 120]
```

```
# 5 1 2 3 4 5
```

```
l = input().split()
```

```
print(type(l))
```

```
print(l)
```

```
print(type(l[0]))
```

```
l = list(map(int, input().split()))
```

```
l.pop(0)
```

```
print(type(l))
```

```
print(l)
```

```
print(type(l[0]))
```

```
print(l)
```

```
m = map(int, input().split())
```

```
print(m)
```

```
# A1, A2, ..., An
```

```
l = list(map(int, input().split()))
```

```
print(l)
```

```
def square(x):  
    return x * x
```

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

```
l = list(map(square, l))
```

```
print(l)
```

```
l = [1, 2, 3]
l1 = [4, 5, 6]

l * 2
```

```
# Lists are iterable as well
```

```
for i in runs:
    print(i, end=" ")

100 99 150 99 20 99 200 99 120
```

```
# Iteration protocol
```

```
l = [3, 4, 5, 6]
x = iter(l)
print(next(x))
3
print(next(x))
4
print(next(x))
5
print(next(x))
6
print(next(x))
```

```
-----
-----
StopIteration                                Traceback (most recent call
last)
/var/folders/zn/hkv6562d6_d30glfs8yc76900000gn/T/ipykernel_10208/32676
91084.py in <module>
----> 1 print(next(x))
```

StopIteration:

```
# Total runs scored by Sachin in his career
```

```
# quiz
```

```
# Sum
```

```
print(runs)
```

```
[100, 99, 150, 99, 20, 99, 200, 99, 120]
```

```
total = 0
```

```
for i in runs:
```

```
    total += i
```

```
print(total)
```

```
986
```

```
print(sum(runs))
```

```
986
```

```
#### Iterating a list using ranges
```

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

```
total = 0
```

```
for i in runs:
```

```
    if i % 2 == 0:
```

```
        total += i
```

```
print(total)
```

```
6
```

```
for i in runs:
```

```
    print(i, end=" ")
```

```
1 2 3 4 5
```

```
runs
```

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

Iterating a list using ranges

runs

[1, 2, 3, 4, 5]

len(runs)

5

Here i is index of our list

```
for i in range(5):  
    print(runs[i], end=' ')
```

1 2 3 4 5

```
for i in range(len(runs)):  
    if i % 2 == 0:  
        print(runs[i])
```

1

3

5

runs

[1, 2, 3, 4, 5]

total_even = 0

```
for i in range(len(runs)):  
    if i % 2 == 0:  
        total_even += runs[i]
```

print(total_even)

9

total = 0

```
for i in range(0, len(runs), 2):  
    total += runs[i]
```

print(total)

9

Doubts

runs

[1, 2, 3, 4, 5]

runs[-1]

5

```
runs(-1)
```

```
-----  
-----  
TypeError                                Traceback (most recent call  
last)  
/var/folders/zn/hkv6562d6_d30glfs8yc76900000gn/T/ipykernel_10208/37405  
36810.py in <module>  
----> 1 runs(-1)
```

```
TypeError: 'list' object is not callable
```

```
runs
```

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

```
for i in runs:  
    print(i, end=" ")
```

```
1 2 3 4 5
```

```
for i in range(len(runs)):  
    print(i, end=" ")
```

```
0 1 2 3 4
```

```
round(3.4)
```

```
3
```

```
round(3.6)
```

```
4
```

```
round(3.5)
```

```
4
```