Nested Lists Introduction

```
# Lets extend

# What about append first?

l1 = [1, 2, 3, 4]
l2 = [5, 6, 7, 8]

# list concatenation

l1 + l2

[1, 2, 3, 4, 5, 6, 7, 8]

l1

[1, 2, 3, 4]

l2

[5, 6, 7, 8]


# extend

l1.extend(l2)

l1

[1, 2, 3, 4, 5, 6, 7, 8]


l = []
odi = [120, 30, 50]
l.extend(odi)
print(l)

[120, 30, 50]

l

[120, 30, 50]

l.extend("Rahul")

Signature: l.extend(iterable, /)
Docstring: Extend list by appending elements from the iterable.
Type:      builtin_function_or_method
```

```python
l.extend("Rahul")
l
```

```
[120, 30, 50, 'R', 'a', 'h', 'u', 'l']
```

```python
# append
l
```

```
[120, 30, 50, 'R', 'a', 'h', 'u', 'l']
```

```python
l.append(23)
l
```

```
[120, 30, 50, 'R', 'a', 'h', 'u', 'l', 23]
```

```python
l.append?
```

```
Signature: l.append(object, /)
Docstring: Append object to the end of the list.
Type:      builtin_function_or_method
```

```python
# Quiz
l = []
odi = [120, 30, 50]
l.append(odi)
print(l)
```

```
[[120, 30, 50]]
```

Get a scores list including runs from all the formats
```python
odi = [100, 99, 20]
test = [200, 150, 90, 180]
t20 = [20, 50, 100]
```

```python
# the two methods

runs = []

runs.append(odi)
runs.append(test)
runs.append(t20)

runs

[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]



# 2nd method

runs = [odi, test, t20]

runs

[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]


empty = [[], [], []]



# Indexing in the list
# Where is my bag?

runs

[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]

len(runs)

3



# Quizzes

l = [1, 2]
l.append(0)
l.append(3)
```

```
l = l + [3]
print(l)

[1, 2, 0, 3, 3]


nums = [[10, 20, 30], [98, 99]]
nums[0][1]

20

nums[1]

[98, 99]

nums[1][1]

99

runs[0]

[100, 99, 20]

nums[0][0]

10

nums[1]

[98, 99]

# nums[1][2]
```

Iterating a 2D list
```
# The range method

# Without range

runs

[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]

odi

[100, 99, 20]

for i in odi:
    print(i, end=" ")

100 99 20
```

```python
for i in runs:
    print(i)
```

```
[100, 99, 20]
[200, 150, 90, 180]
[20, 50, 100]
```

```python
for i in test:
    print(i)
```

```
200
150
90
180
```

```python
for i in t20:
    print(i)
```

```
20
50
100
```

```python
# Final code

for i in runs:
    # print(i)
    # Iterate on the lists

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

```
100 99 20
200 150 90 180
20 50 100
```

```python
for i in range(5):
    for j in range(5):
        print("*", end=" ")
    print()
```

```
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
```

```python
# Iteration using index
runs
```
```
[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]
```
```python
len(runs)
```
```
3
```

```python
# Index of outer list
for i in range(len(runs)):
    print(i)
```
```
0
1
2
```

```python
# Elements of outer list
for i in range(len(runs)):
    print(runs[i])
```
```
[100, 99, 20]
[200, 150, 90, 180]
[20, 50, 100]
```

```python
for i in range(len(runs)):
    print(len(runs[i]))
```
```
3
4
3
```

```python
# Indexes of all individual elements
```

```python
for i in range(len(runs)):
    # print(len(runs[i]))
    for j in range(len(runs[i])):
        print(i, j)
```

```
0 0
0 1
0 2
1 0
1 1
1 2
1 3
2 0
2 1
2 2
```

```python
# print corresponding elements of inner list


for i in range(len(runs)):
    # print(len(runs[i]))
    for j in range(len(runs[i])):
        print(i, j, runs[i][j], sep=" -> ", end=" ")
    print()
```

```
0 -> 0 -> 100 0 -> 1 -> 99 0 -> 2 -> 20
1 -> 0 -> 200 1 -> 1 -> 150 1 -> 2 -> 90 1 -> 3 -> 180
2 -> 0 -> 20 2 -> 1 -> 50 2 -> 2 -> 100
```

```python
for i in range(len(runs)):
    # print(len(runs[i]))
    for j in range(len(runs[i])):
        print(i, j, runs[i][j], sep=" -> ")
```

```
0 -> 0 -> 100
0 -> 1 -> 99
0 -> 2 -> 20
1 -> 0 -> 200
1 -> 1 -> 150
1 -> 2 -> 90
1 -> 3 -> 180
2 -> 0 -> 20
2 -> 1 -> 50
2 -> 2 -> 100
```

```python
# Printing all elements

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

```
100 99 20
200 150 90 180
20 50 100
```

Find Total runs scored by Sachin in his career?
```python
runs
```

```
[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]
```

```python
# get all the elements

for i in runs:
    for j in i:
        print(j)
```

```
100
99
20
200
150
90
180
20
50
100
```

```python
# Just add them now

total = 0

for i in runs:
    for j in i:
        total += j
print(total)
```

```
1009
```

Print the total scores of each format
```
for i in runs:
    print(i)

[100, 99, 20]
[200, 150, 90, 180]
[20, 50, 100]


for i in runs:
    print(sum(i))

219
620
170
```

Input of 2D lists
```
## Can we apply the same for list input
# R C
# 1st row
# 2nd row
# ...
# Rth row

# Example:
# 3 4
# 1 2 3 4
# 4 5 6 7
# 7 8 9 10

# Take R and C as input

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

```
 3 4
```

```
size
```

```
[3, 4]
```

```
R = size[0]
C = size[1]
```

```
print(R, C)
```

```
3 4
```

```python
# We want to take R no of inputs as list in form of rows
```

```python
for i in range(R):
    row = list(map(int, input().split()))
    print(row[:C])
```

```
 1 2 3 4 5
```

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

```
 4 5 6 7 8
```

```
[4, 5, 6, 7]
```

```
 7 8 9 10 11
```

```
[7, 8, 9, 10]
```

```python
# Full code
```

```python
final = []
size = list(map(int, input().split()))
```

```python
R = size[0]
C = size[1]
```

```python
for i in range(R):
    row = list(map(int, input().split()))
    final.append(row[:C])
```

```python
print(final)
```

```
 3 4
 1 2 3 4
 4 5 6 7
 7 8 9 10
```

```
[[1, 2, 3, 4], [4, 5, 6, 7], [7, 8, 9, 10]]
```

```python
# N A1 A2.... AN
# 3 1 2 3

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

```
 3 1 2 3
```

```python
li
```

```
[3, 1, 2, 3]
```

```python
li = li[1:]
```

```python
li
```

```
[1, 2, 3]
```

```python
li = list(map(int, input().split()))
li = li[1:]
```

```
 3 1 2 3
```

```python
li
```

```
[1, 2, 3]
```

```python
# Misc: Print the max/min runs in ODI, Test, T20 matches separately
```

```python
runs
```

```
[[100, 99, 20], [200, 150, 90, 180], [20, 50, 100]]
```

```python
# And find maximum of runs
```