Nested Lists Introduction

```
# Lets extend

# What about append first?

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

l2 = []
l2.append(l)
print(l2)

[[1, 2, 3, 4]]


# extend

l3 = []
l3.extend(l)
print(l3)

[1, 2, 3, 4]

print(l)

[1, 2, 3, 4]


# Quiz

l = [1, 2]
l.append(0)
l2 = [3]
l.extend(l2)
l = l + l2
print(l)

[1, 2, 0, 3, 3]
```

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

```python
# the two methods

score = []
score.append(odi)
score.append(test)
score.append(t20)

print(score)

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

# score1 = []
# score1.append(odi, test, t20)

demo = [odi, test, t20]
print(demo)

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



# If you are using extend method you will get op like following

new = odi + test + t20  # new.extend(odi), new.extend(test)...
print(new)

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




# Indexing in the list

# Where is my bag?

nums = [[10, 20, 30], [98, 99]]
print(nums[0][0])

10

nums = [[10, 20, 30], [98, 99]]
print(nums[1][1])

99
```

Iterating a 2D list

```
# The range method

# Without range


score

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

print(len(score))

3

# indexes of outer list

for i in range(len(score)):
    print(i)

0
1
2

for i in range(len(score)):
    print(score[i])

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

# getting len of internal lists

for i in range(len(score)):
    print(len(score[i]))

3
4
3

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

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

```python
# printing indexes of all elements

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

```
0->0 0->1 0->2
1->0 1->1 1->2 1->3
2->0 2->1 2->2
```

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

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

```python
total = 0
for i in range(len(score)):
    for j in range(len(score[i])):
        # print(score[i][j])
        total += score[i][j]
print(total)
```

```
1009
```

```python
# sum function

# sum(score)
# sum doesnt work on Nested list

sum([2, 4, 5])
```

```
11
```

```python
# Print the scores of each format

score
```

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

```python
for i in range(len(score)):
    print(sum(score[i]))
```

```
219
620
170
```

Input in nested loops

```python
# Given a list of numbers, create another list containing squares of
these numbers

l = [1, 2, 3, 4]


## Square function

def square(x):
    return x*x

print(square(4))

16

for i in l:
    print(square(i))

1
4
9
16


# Using int on all values of string.split() list

s = input().split()

 1 2 3 4

print(s)

['1', '2', '3', '4']

for i in s:
    print(int(i))

1
2
```

```
3
4
```

```python
li = []
for i in s:
    #print(i, type(i))
    #print(int(i))
    li.append(int(i))
print(li)
```

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

```python
# mapping the square values
```

```python
print(l)
```

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

```python
# map(function, iterable)
```

```python
l1 = list(map(square, l))
```

```python
print(l1)
```

```
[1, 4, 9, 16]
```

```python
s
```

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

```python
l2 = list(map(int, s))
```

```python
print(l2)
```

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

```python
# Combining the code
```

```python
# s = input().split()
```

```python
# we are replacing s
l3 = list(map(int, input().split()))
```

```
 1 2 3 4
```

```python
print(l3)
```

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

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

```
 3 4
```

```python
R = l[0]
C = l[1]
print(R, C)
```

```
3 4
```

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

```
 1 2 3 4
```

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

```
 5 6 7 8
```

```
[5, 6, 7, 8]
```

```
 7 8 9 10
```

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

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

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

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

```
print(res)
```

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

```python
res = []
for i in range(R):
    row = list(map(int, input().split()))
    # Slice the row according to the len of col
    res.append(row[0:C])
print(res)
```

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

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

```python
# Full code

l = list(map(int, input().split()))
R = l[0]
C = l[1]

res = []
for i in range(R):
    row = list(map(int, input().split()))
    # Slice the row according to the len of col
    res.append(row[0:C])
print(res)
```

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

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

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

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

 3 1 2 3

print(l)

[3, 1, 2, 3]

N = l[0]

x = l[1:]

print(x)

[1, 2, 3]
```

```python
# Doubts

l = list(map(int, input().split()))
R = l[0]
C = l[1]

res = []
for i in range(R):
    row = list(map(int, input().split()))
    # Slice the row according to the len of col
    res.append(row[0:C])
print(res)

 1 3
 1 2 3

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

```python
# Misc: Print the sum in ODI, Test, T20 matches separately
```

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