

Two-Dimensional Lists (or List of Lists)

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List of lists

A two-dimensional list, or nested list, or list of lists, is a list that contains other lists as elements.

```
legends=[['Leia', 'Luke'], ['Aragorn', 'Legolas'], ['Picard', 'Data']]
```

```
print(legends)
```

```
print(legends[0]) #elements in row 1
```

```
print(legends[1]) #elements in row 2
```

List of lists

It can be helpful to think of two-dimensional lists as having rows and columns

```
legends=[ ['Leia', 'Luke'],  
          ['Aragorn', 'Legolas'],  
          ['Picard', 'Data'] ]
```

	Column 0	Column 1
Row 0	'Leia'	'Luke'
Row 1	'Aragorn'	'Legolas'
Row 2	'Picard'	'Data'

List of lists

It can be helpful to think of two-dimensional lists as having rows and columns

```
legends=[ ['Leia', 'Luke'],  
          ['Aragorn', 'Legolas'],  
          ['Picard', 'Data'] ]
```

	Column 0	Column 1
Row 0	legends[0][0]	legends[0][1]
Row 1	legends[1][0]	legends[1][1]
Row 2	legends[2][0]	legends[2][1]

List of lists

```
legends=[ ['Leia', 'Luke'], ['Aragorn', 'Legolas'], ['Picard', 'Data'] ]
```

```
print(legends[0][0]) #for Leia
```

```
print(legends[0][1]) #for Luke
```

```
print(legends[1][0]) #for Aragorn
```

```
print(legends[1][1]) #for Legolas
```

```
print(legends[2][0]) #for Picard
```

```
print(legends[2][1]) #for Data
```

Using nested for loops - list of lists

```
import random
```

```
rows=4
```

```
cols=2
```

```
values=[[0,0],[0,0],[0,0],[0,0]]
```

```
for r in range(rows):
```

```
    for c in range(cols):
```

```
        values[r][c]=random.randint(1,100)
```

```
print(values)
```

What if we wanted to
print each list element
on a separate line?

Using nested for loops - List of lists

The outer loop refers to the sublists (as a whole)

The inner loop refers to the elements of the sublists

```
legends=[['Leia', 'Luke'], ['Aragorn', 'Legolas', 'Sam'], ['Picard', 'Data']]
```

#By index

```
for row in range(len(legends)):
    print(legends[row])
    for col in range(len(legends[row])):
        print(legends[row][col])
```

Using nested for loops - List of lists

The outer loop refers to the sublists (as a whole)

The inner loop refers to the elements of the sublists

```
legends=[['Leia', 'Luke'], ['Aragorn', 'Legolas', 'Sam'], ['Picard', 'Data']]
```

```
#By item
```

```
for row in legends:
```

```
    print(row)
```

```
    for col in row:
```

```
        print(col)
```