How to Unpack a List in Python

Summary: in this tutorial, you'll learn how to unpack a list in Python to make your code more concise.

Introduction to the list unpacking

The following example defines a list (https://www.pythontutorial.net/python-basics/python-list/) of strings (https://www.pythontutorial.net/python-basics/python-string/) :

```
colors = ['red', 'blue', 'green']
```

To assign the first, second, and third elements of the list to variables (https://www.pythontutorial.net/python-basics/python-variables/) , you may assign individual elements to variables like this:

```
red = colors[0]
blue = colors[1]
green = colors[2]
```

However, Python provides a better way to do this. It's called sequence unpacking.

Basically, you can assign elements of a list (https://www.pythontutorial.net/python-basics/python-list/) (and also a tuple (https://www.pythontutorial.net/python-basics/python-tuples/)) to multiple variables. For example:

```
red, blue, green = colors
```

This statement assigns the first, second, and third elements of the `colors` list to the `red` , `blue` , and `green` variables.

In this example, the number of variables on the left side is the same as the number of elements in the list on the right side.

If you use a fewer number of variables on the left side, you'll get an error. For example:

```
colors = ['red', 'blue', 'green']
red, blue = colors
```

Error:

```
ValueError: too many values to unpack (expected 2)
```

In this case, Python could not unpack three elements to two variables.

Unpacking and packing

If you want to unpack the first few elements of a list and don't care about the other elements, you can:

- First, unpack the needed elements to variables.
- Second, pack the leftover elements into a new list and assign it to another variable.

By putting the asterisk (`*`) in front of a variable name, you'll pack the leftover elements into a list and assign it to a variable. For example:

```
colors = ['red', 'blue', 'green']
red, blue, *other = colors
```

```
print(red)
print(blue)
print(other)
```

Ouptut:

```
red
blue
['green']
```

This example assigns the first and second elements of the `colors` list to the `red` and `green` variables. And it assigns the last element of the list to the `other` variable.

Here's another example:

```
colors = ['cyan', 'magenta', 'yellow', 'black']
cyan, magenta, *other = colors

print(cyan)
print(magenta)
print(other)
```

Output:

```
cyan
magenta
['yellow', 'black']
```

This example assigns the first and second elements to variables. It packs the last two elements in a new list and assigns the new list to the `other` variable.

Summary

- Unpacking assigns elements of the list to multiple variables.
- Use the asterisk (*) in front of a variable like this *variable_name to pack the leftover elements of a list into another list.