Lists

This lesson will introduce lists in Python and focus on how to use them.

WE'LL COVER THE FOLLOWING

Grouping items together

Until now we have learned that a variable can only hold a single item. But there are many ways to hold multiple values and refer to all of them by a single variable in Python, and the most popular is a *list*. A **list** can hold multiple values at the same time. These values could belong to any data type.

Lists are mostly used to store similar kinds of information. For example, if we want to store the marks of 50 students of a class, we would not want to make 50 separate variables. Instead, we hold them in a list.

To make a list we need to enclose all items separated by commas in `[]` and assign them to a variable.

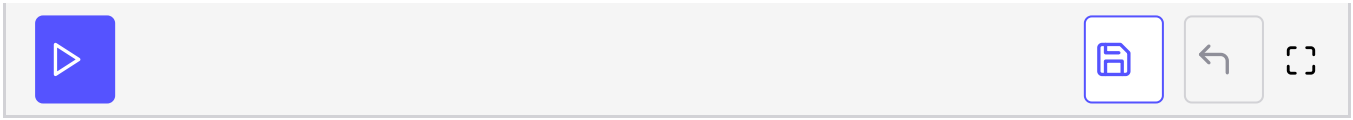
```
scores = [24,25,23,34,30]
names = ['John Snow','Ned Stark','Bran Stark','Jamie Lannister','Sam Tarly']
print(names)
print(scores)
```

In the first line, we create a list called `scores`, while in the second line we create a list called `names`. We can print the entire list just by giving its name to the `print` statement.

Indexing

A list is similar to a string in the sense that we can access the elements in the list by *indexing*.

```
scores = [24,25,23,34,30]
names = ['John Snow','Ned Stark','Bran Stark','Jamie Lannister','Sam Tarly']
print(scores[1])
print(names[len(names)-1])
```



In **line 3**, we access the second element of `scores` by indexing. In the last line, we access the last element of `names`. The index of the last element is equal to the length of the list - 1. We retrieve the length of the list by using `len`.

Appending a list

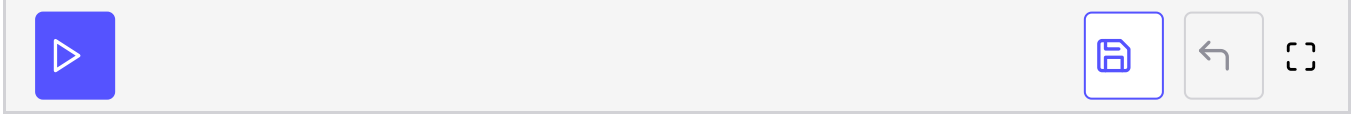
Adding an element at the end of a list is known as **appending**. It is a very common use case in programming where we create an empty list and add items as we go through the program, and then use the items in the list when needed.

We can create an empty list with empty `[]`. To append to a list, we do `listname.append(item)` where `listname` is the name of the list, `.append` is the keyword to append, all followed by a parenthesis. Inside the parenthesis, we specify the variable name of the item that we want to add, or the item directly.

```
objects = []
objects.append('chair')
objects.append('table')

x = 'phone'
objects.append(x)

print(objects)
```



In **line 1**, we create an empty list called `objects`. In the next line, we append the string `chair` to it. **Line 3** is the same as it appends `table` to the list. In **line**

5, we create variable `x` with the value `phone`. We append `x` to the list in **line 6**. In **line 8**, we verify our additions to the list by printing the list.

We will keep learning about lists as we move along this course because they will be used many times. In the next lesson, we will look at *loops*.