VIETCODE ACADEMY INTRODUCTION TO PROGRAMMING

Class 4:
List

TEACHER INFORMATION

TEACHER

TEACHING ASSISTANT

List

Imagine like what we learned in lesson one that in order to store a beef data, we need to use a box that is a variable.

So, in order to save many values such as beef, chicken, and dog meat for Teacher Lion to eat after each teaching session, we need to use a refrigerator. Now the refrigerator is the list in python

=> Arrays in programming are used to store more than 1 data

Create list

```
refrigerator=["beef", "chicken", "pork"]
```

In the above example, the refrigerator list is created with 3 values: beef, chicken, and pork

=> To create the list:

name_of_list = [value 1, value 2, value 3, ...]

The values in the list (value 1, value 2,..) can be string, int, or even boolean.

Get value from list

In the list the elements will have position increasing from left to right starting from 0

To get a value in the list we need to use the syntax name_of_list[index] where index is the position of the value in the list

For example: To print the value "beef" from the refrigerator list as below, what command do we need to use?

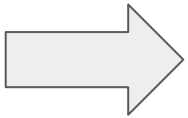
```
refrigerator=["beef", "chicken", "pork"]
```

```
print(refrigerator[0])
```

Syntax in list

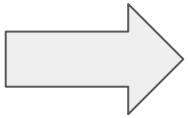
1. len(name_of_list): This syntax gives the number of elements of the array (name_of_list).

```
refrigerator=["beef", "chicken", "pork"]
print(len(refrigerator))
```



2. name_of_list.append(new_value): This syntax adds a new value (new_value) to the last position of the list (name_of_list)

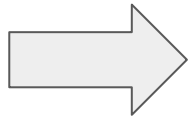
```
refrigerator=["beef", "chicken", "pork"]
refrigerator.append("fish")
print(refrigerator)
```



Syntax in list

3. name_of_list.insert(index, new_value): This syntax adds a new value (new_value) to position (index), and then all elements with position greater than or equal to index will be pushed to the right.

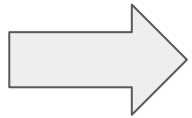
```
refrigerator=["beef", "chicken", "pork"]
refrigerator.insert(1,"fish")
print(refrigerator)
```



```
['beef', 'fish', 'chicken', 'pork']
```

4. name_of_list.pop(index): This syntax removes the element at the position (index) of the array (name_of_list), and then all the elements with position greater than the index will be moved to the left.

```
refrigerator=["beef", "chicken", "pork"]
refrigerator.pop(1)
print(refrigerator)
```

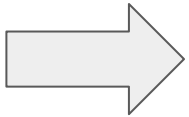


```
['beef', 'pork']
```

Syntax in list

5. name_of_list.remove(value): This syntax will remove the FIRST element whose value is value in the list, and then all the following elements are moved to the left

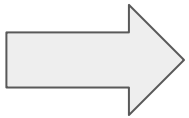
```
refrigerator=["beef", "chicken"]
refrigerator.remove("beef")
print(refrigerator)
```



```
['chicken']
```

6. name_of_list.sort(): This syntax rearranges the elements in the array in ascending order from left to right. If it is an int, it will be sorted by amount and if it is a string, it will be sorted like a dictionary.

```
refrigerator=["chicken", "beef"]
refrigerator.sort()
print(refrigerator)
```

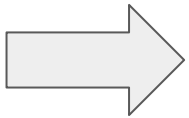


```
['beef', 'chicken']
```

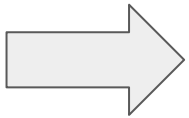
Syntax in list

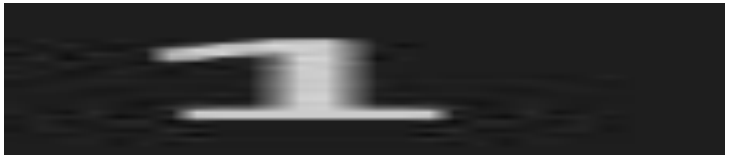
7. min(name_of_list), max(name_of_list): This syntax returns the minimum (min) or maximum (max) value of the list

```
numbers=[1,2,9,4,100,6]
max_number=max(numbers)
print(max_number)
```




```
numbers=[1,2,9,4,100,6]
min_number=min(numbers)
print(min_number)
```





There are also many other syntaxes in list, which can be found at:

https://www.w3schools.com/python/python_ref_list.asp

Loop in list

To loop through the elements in the array, the simplest way is to run the variable i from position 0 to the last position then call name_of_list[i]

```
refrigerator=["beef", "chicken", "pork"]
for i in range(0, len(refrigerator)):
    print(refrigerator[i])
```

Loop in list

However in Python there is a simpler way than using the syntax:

for variable in name_of_list:

    code

Now the variable will be the values in the array (name_of_list) from left to right, respectively

```
refrigerator=["beef", "chicken", "pork"]
for i in refrigerator:
    print(i)
```

PRACTICE WITH INCLASS4