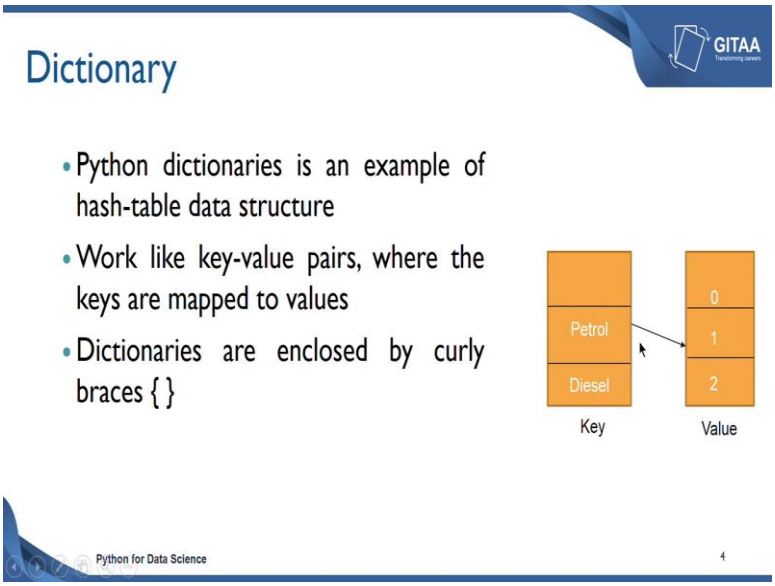
Python for Data Science
Department of Computer Science and Engineering
Indian Institute of Technology, Madras

Lecture – 10
Dictionary

(Refer Slide Time: 00:17)

Welcome to the lecture. In this lecture we will see what is meant by a Dictionary how to create a dictionary in python and also how to access the components of the dictionary, we will also see how to modify the components in the dictionary.

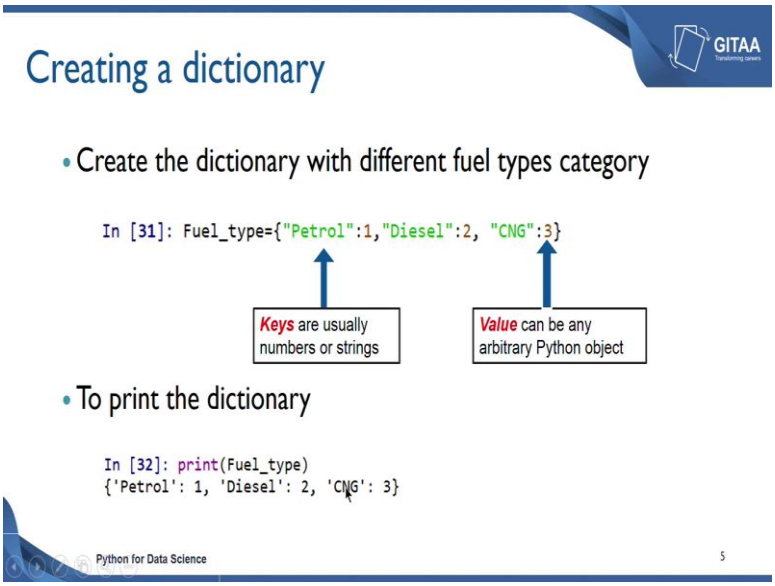
(Refer Slide Time: 00:35)



First let us look at what does mean by dictionary? A dictionary is one of the data structure, which is available in python so, it is an example of hash table data structures. Dictionary basically works like so, it maps keys to the values; so, it is basically called as a key-value pairs. So, dictionaries are enclosed by curly braces. So, let us take an example and see what is meant by keys and what is meant by the values.

So, let us look at these example, we have petrol, diesels; so, which as basically the Fuel types categories. So, I have some values in the right hand side 0s and 1s and 2. Let us say if I wanted to assign a value to the petrol, so these are called as basically the keys and these are called as values. So, we can assign a value of 1 to the petrol and you can also assign a value of 2 to the Diesel we will see how to create a dictionary.

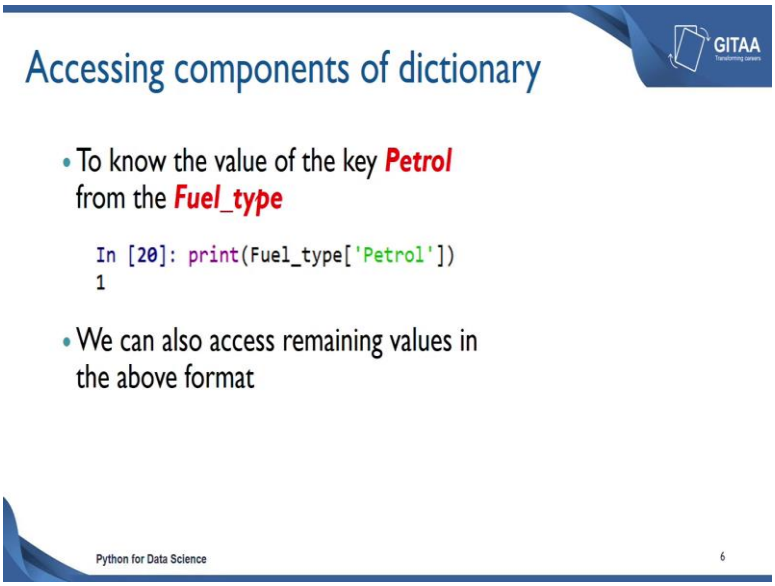
(Refer Slide Time: 01:33)



We will create a dictionary with different Fuel type categories. I will create a dictionary call Fuel_type with Petrol:1. So, this is basically the keys can be a usually numbers or a strings so, it is an immutable type. So, Diesel, CNG these are the keys 1, 2, 3 are these are the values so; it can be of a any data type.

So, to create a dictionary we will use a curly braces, apart from the curly braces we also use a colon to separate the keys and values. So, to the leftmost is of the colon is the keys, right most of the colon are call the values. We will see how to print the dictionary. So, to print the dictionary we have to use the command call print Fuel_type which is basically a dictionary name. The dictionary which we have created earlier will be displayed with the keys and values. So, Petrol will be assigned a value of 1; Diesel will be assigned a value of 2; CNG will be assigned a value of 3.

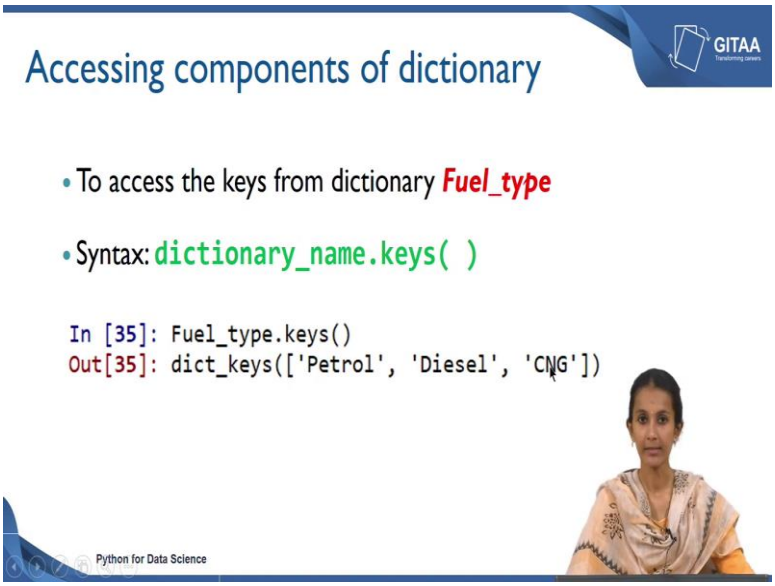
(Refer Slide Time: 02:49)



Let us see how to access the components of the dictionary? So, we can access a components of a dictionary by using its keys. So, in this we saw using the based on the index number we access a components. But in dictionary we will be using the keys to access the components.

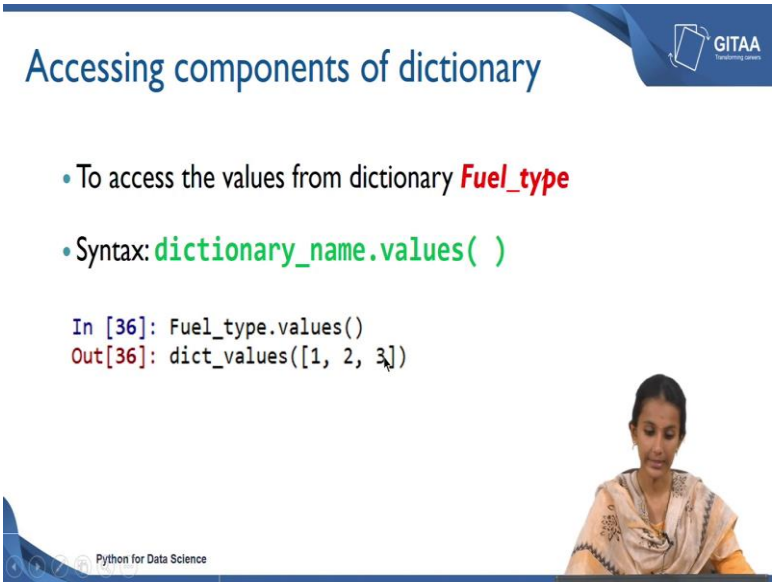
So, let us say if I wanted to know the value of the key, Petrol from the dictionary Fuel_type. So, I will use this below command print; Fuel_type which is basically have a dictionary name. So, I wanted to know the value of the key petrol. So, within the square bracket so, I will mention the key name so which is the petrol. Once you have done so, I will be getting an output of 1; similarly to access the remaining values so, you can use this format.

(Refer Slide Time: 03:39)



Next I wanted to access the keys from the dictionary Fuel_type. Syntax: is dictionary_name which is our Fuel_type dictionary name.keys. If you give Fuel_type which is our basically dictionary name.keys so, it throws you on output of keys. So, it shows as dict_keys, which has basically values Petrol, Diesel and CNG.

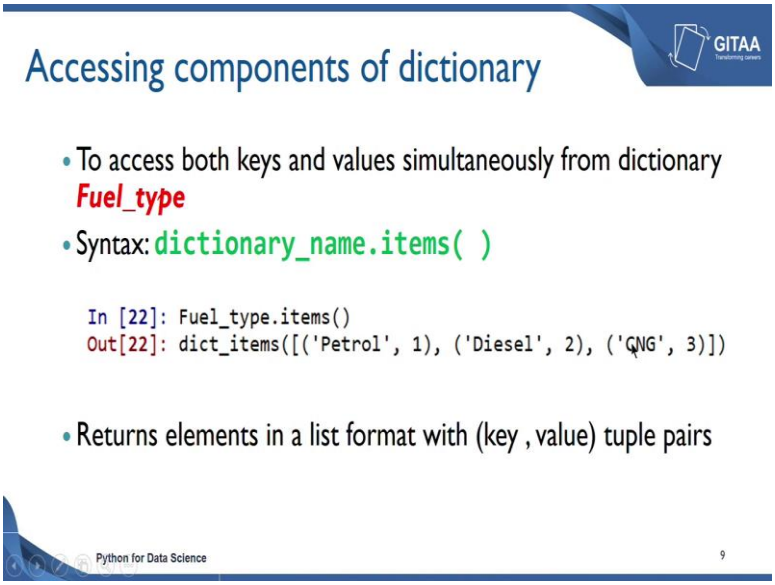
(Refer Slide Time: 04:11)



If you wanted to access the values from the dictionary Fuel_type the Syntax again dictionary name. So, we have to replace the keys with values now because, we need to access the values from the dictionary; so, dot values. So, if you give Fuel_type.values.

So, it basically throws you an values. So, now, dict_values of 1, 2 and 3. So, 1 corresponds to Petrol, 2 corresponds to Diesel and three corresponds to the CNG.

(Refer Slide Time: 04:49)

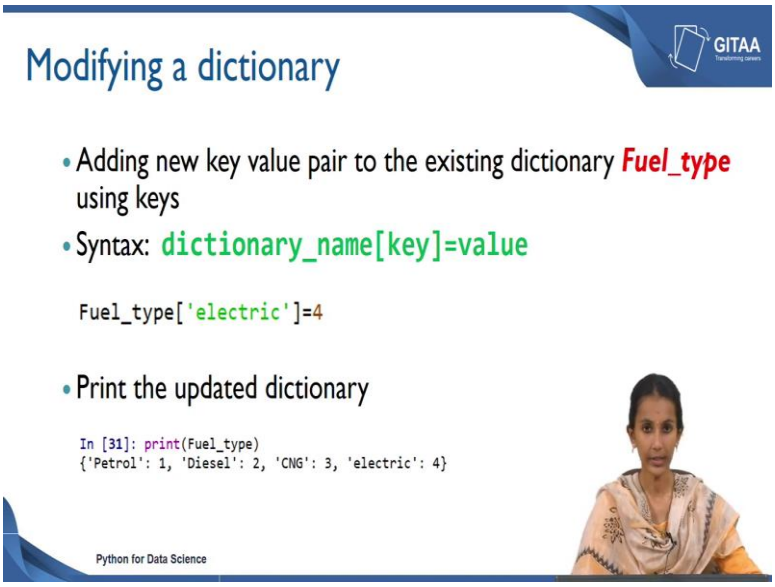


Next if you wanted to access both the keys and values, there is one in built command which gives as an output; syntax is, dictionary_name.items. So, which is basically dictionary name is Fuel_type.items it throws you a key value pairs which is basically keys and values. So, we have dict items Petrol which is our key and one corresponds to the value of that key.

Similarly we have a Diesel and the corresponding value; CNG and the corresponding values, it displays a output with the less format of. It returns an elements in the list format with the key and value which is a tuple pairs. So, these are the tuple pairs so, Petrol 1; so, they have been enclose in a parentheses so, this becomes our tuple. So, this is our another tuple this is our another tuple so it has a tuple pairs.

(Refer S

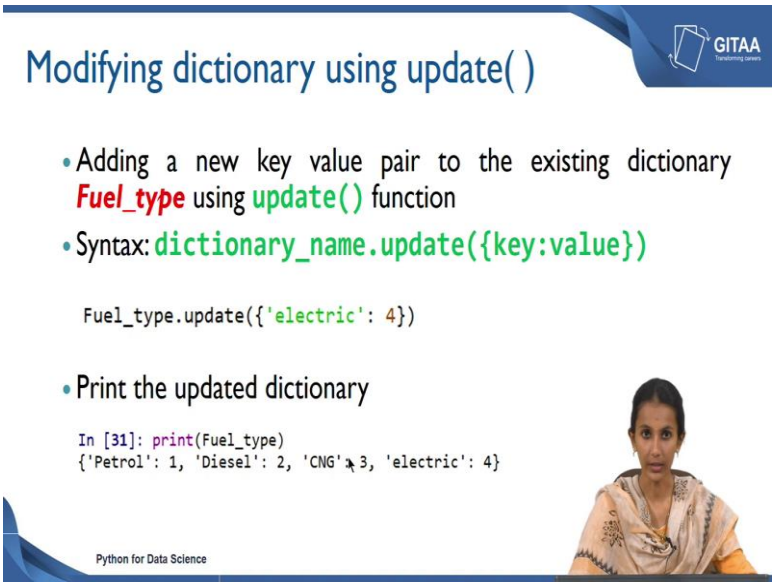
lide Time: 05:51)



Dictionary is a mutable data structure, we can also modify the components in the dictionary; let us see how to do that. So, we can also add a new key value pair to the existing dictionary; Fuel_type using the keys. So, basically the Syntax is dictionary_name, the new key which has to be added to the existing dictionary and the new value which has to be given to the key respective key.

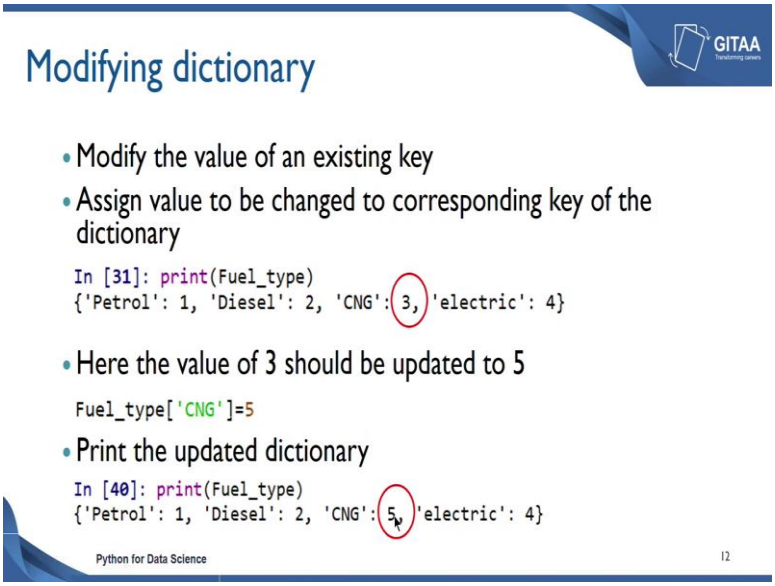
So, now, I wanted to add the fourth key value path to the existing dictionary or dictionary name is Fuel_type. So, I wanted to add a new key which is a electric. So, it has a value of 4. So, when you print the updated dictionary when you use print(Fuel_type), it will be throwing an output which says four key value pairs. So, which is basically Petrol, Diesel 2, CNG 3, and now electric four which has been added to the existing dictionary. So, this is we have done using the key value pairs. So, I am assigning a key and value to the existing dictionary. So, you can also use the built in functions which is available in python we will also look at how to do that.

(Refer Slide Time: 07:11)



So, the command is using the update command you can also add the key value pairs to the existing dictionary. So, the syntax is we have to specify the dictionary name dot update within the parentheses you have to specify the key, which you wanted to add and the colon and the corresponding values. So, the dictionary name is Fuel_type, I am using the built in function which is update so, dot update, key which is a electric; so, I am using the single quotes colon 4, which is the corresponding value for the electric, when you print the updated dictionary you will be getting an output like this. So, you can also assign a key values to the existing dictionary or else can you see update function as well.

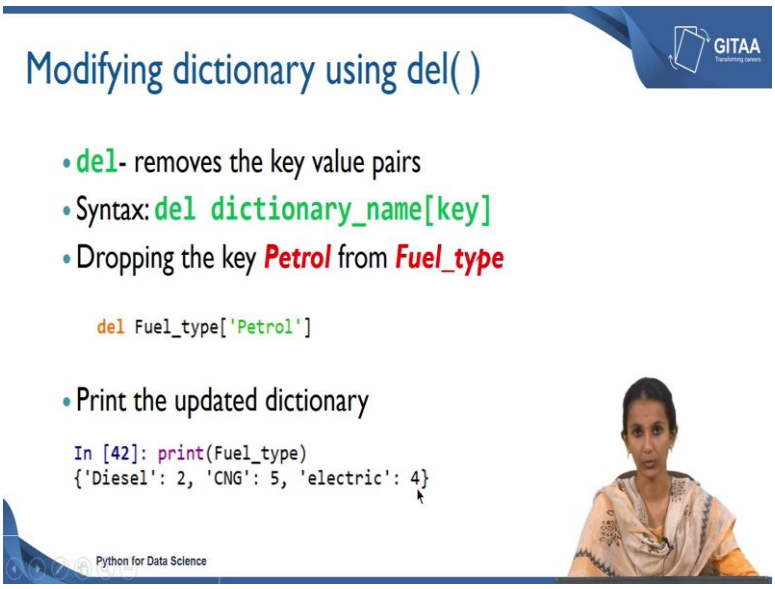
(Refer Slide Time: 08:05)



So, if you wanted to modify the value of an existing key in the Fuel_type, we can also do that, let us see how to do that. So, assign a value to be changed to the corresponding key of the dictionary. So, basically our dictionary is Fuel_type right. So, this is our existing dictionary I have four key value pairs, which is Petrol is corresponds to 1, Diesel corresponds to 2, CNG corresponds to 3.

So, now, we wanted to change the value of 3 to 5 right. So, we will look at how to do that. So, dictionary name which is our existing dictionary Fuel_type. So, we wanted to update the value of 3 to 5 right; so, within the square brackets mention the key which is CNG and the corresponding value which you wanted to update now. So, now, I am specifying 5, when you print updated dictionary you will be able to see the changes. So, now, CNG value which has 3; now it has been change to 5. So, you can also modify the value of the existing key as well.

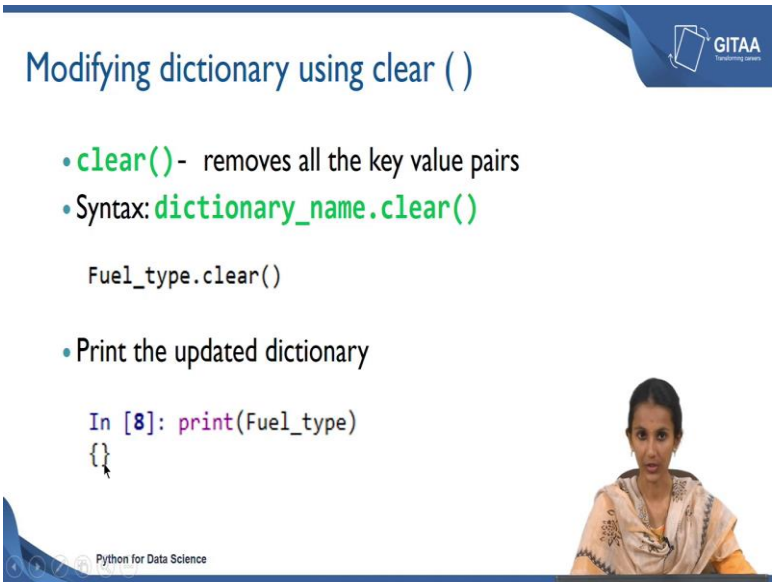
(Refer Slide Time: 09:19)



We saw how to add components to the dictionary; we will also see how to remove components from the dictionary as well. So, there are built in functions so, you can use the del function as well. So, del what it does is it removes the key value pairs from the dictionary. Syntax is del followed by the dictionary name and the respective key which you wanted to remove. So, let us say if you wanted to remove Petrol from the Fuel_type, the command will be del Fuel_type which is basically have a dictionary name so, the key is Petrol, right.

So, when use that so, del Fuel_type[‘Petrol’]. So, if you print the updated dictionary we already had four key value pairs. So, once we have use this command so, it the Petrol and the corresponding value has been deleted from the dictionary. So, now, you will have only three key value pairs which is basically, Diesel which corresponds to 2, CNG we already modified 3 to 5. So, now, CNG will have a value of 5 and electric which has a value of 4.

(Refer Slide Time: 10:37)



Next we look at how to clear the key value pairs from the dictionary. So, clear what it does is it removes all the key value pairs from the dictionary and it will be a null dictionary. So, the Syntax is dictionary_name.clear(). So, if you use Fuel_type.clear, when you print the updated dictionary so, it will written a null dictionary. So, there will not be any elements in this dictionary.

(Refer Slide Time: 11:11)

So, let us summarise we saw how to create a dictionary. So, the dictionaries were created using the curly brackets apart from the curly brackets. So, there was also a colon. So, to the left of the colon is called as a key, to the right of the colon is called as a values. So, the keys are mutable, values can be of any data type. So, we also saw how to access the components. So, you can access the components using the keys from the dictionary.

We also saw how to modify the dictionary, we also saw how to add a elements to the dictionary using a update and also we saw how to assign a key values to the existing dictionary. And we also looked at how to remove elements from the dictionary; so, you can use one is del command so, which removes a key value pairs from the dictionary or else you can use the clear command as well.

Thank you.