

Mapping functions to a Dictionary

In Python, you can map functions to a dictionary by associating function names or keys with the corresponding function objects. This allows you to create a collection of functions and easily select and execute them based on user input or other conditions. Here's an explanation with an example:

Mapping Functions to a Dictionary:

```
```python
def square(x):
 return x ** 2

def cube(x):
 return x ** 3

def add_ten(x):
 return x + 10

Creating a dictionary mapping function names to functions
function_dict = {
 'square': square,
 'cube': cube,
 'add_ten': add_ten
}

Using the dictionary to execute functions
```

```
selected_function = function_dict['square']
result = selected_function(5)
print(result) # Output: 25
```

```
selected_function = function_dict['cube']
result = selected_function(3)
print(result) # Output: 27
```

```
selected_function = function_dict['add_ten']
result = selected_function(15)
print(result) # Output: 25
...
```

In this example, three functions (`square`, `cube`, and `add\_ten`) are defined. These functions are then mapped to keys in the `function\_dict` dictionary. You can dynamically select and execute functions based on the key provided.

### Using Functions as Values in a Dictionary:

Functions can be values in a dictionary just like any other data type. This allows you to organize and encapsulate functionality in a clean and modular way.

```
```python  
def greet(name):  
    return f"Hello, {name}!"  
  
def farewell(name):
```

```
return f"Goodbye, {name}!"
```

```
# Creating a dictionary mapping greetings to functions
```

```
greeting_dict = {  
    'hello': greet,  
    'goodbye': farewell  
}
```

```
# Using the dictionary to execute functions
```

```
selected_greeting = greeting_dict['hello']
```

```
result = selected_greeting('Alice')
```

```
print(result) # Output: Hello, Alice!
```

```
selected_greeting = greeting_dict['goodbye']
```

```
result = selected_greeting('Bob')
```

```
print(result) # Output: Goodbye, Bob!
```

```
...
```

Here, the `greeting_dict` dictionary maps keys ('hello' and 'goodbye') to corresponding greeting functions (`greet` and `farewell`). You can then select and execute the appropriate function based on user input or other conditions.

Mapping functions to a dictionary is particularly useful when you want to provide users with options to choose from or when you need to dynamically select and execute different functions based on specific conditions. It enhances code organization and readability, making it easier to manage and extend functionality.