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**Article Name**

**Clarify the following points:**

Abstraction, Encapsulation, Dunder method, Args and kwordargs in python

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**1- Abstraction:**

* Abstraction in the real world:

Making coffee with a coffee machine is a good example of abstraction, you need to know how to use your coffee machine to make coffee, you need to supply water and coffee beans, turn it on and choose the type of coffee you want to get, the thing you don't need to know is how the coffee machine works Indoors To make a fresh cup of coffee, you don't need to know the ideal water temperature or the amount of ground coffee you need to use.

* الترجمة طويلة جدًا ولا يمكن حفظها.
* Abstraction in programming:

Objective programming languages provide the idea of abstraction which hides the internal implementation details, similar to a coffee machine in your kitchen, you only need to know the object function available to be called and the input parameters required to start a particular process, but you don't need to understand how this code works The function or types of actions it has to perform to generate the expected result.

* An abstract class is a class that contains at least one abstract function.
* An abstract function is a function that has only the function definition but does not contain the implementation (i.e. no "Body", which is empty)
* Use abstract functions and abstract classes:

Abstract functions are mostly defined when two or more subclasses do the same thing in different ways through different implementations, they derive the same abstract class, and then they make two different codes for the abstract functions.

**1- Encapsulation:**

Encapsulation is one of the fundamental concepts in object-oriented programming (OOP). **It describes the idea of wrapping data and the methods that work on data within one unit**. This puts restrictions on accessing variables and methods directly and can prevent the accidental modification of data

* Abstraction Vs Encapsulation :

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| Abstraction | Encapsulation |
| It is the process of gaining information | It is a method that helps wrap up data into a single module |
| The problems in this technique are solved at the interface level | Problems in encapsulation are solved at the implementation level |
| It can hide unwanted information | The data is hidden using methods such as getters and setters |
| It can be implemented using abstract classes and interfaces | It helps hide data using a single entity, or using a unit with the help of method that helps protect the information |
| The complexities of the implementation are hidden using interface and abstract class | It can be implemented using access modifiers like public, private and protected |
| The abstraction can be performed using objects that are encapsulated within a single module | Objects in encapsulation don’t need to be in abstraction |

**3- Dunder method:**

Magic methods in Python are the special methods that start and end with the double underscores. They are also called dunder methods. Magic methods are not meant to be invoked directly by you, but the invocation happens internally from the class on a certain action. For example, when you call an object , internally, the \_\_init\_\_() method will be called.

**4- Args and kwordargs:**

* **Args:**

In Python, the single asterisk \*args can be used as an argument to pass an unlimited-length list of non-keyworded arguments to functions. It should be noted that the asterisk (\*) is a necessary element here, as although the word args is familiar among programmers, it is unofficial.

* **kwordargs:**

The two-star figure \*\*kwargs is used to pass a variable-length dictionary from the named arguments to the defined function. Once again, two asterisks (\*\*) are required, as the word kwargs is well known to programmers, but it is unofficial.