Methods in Python

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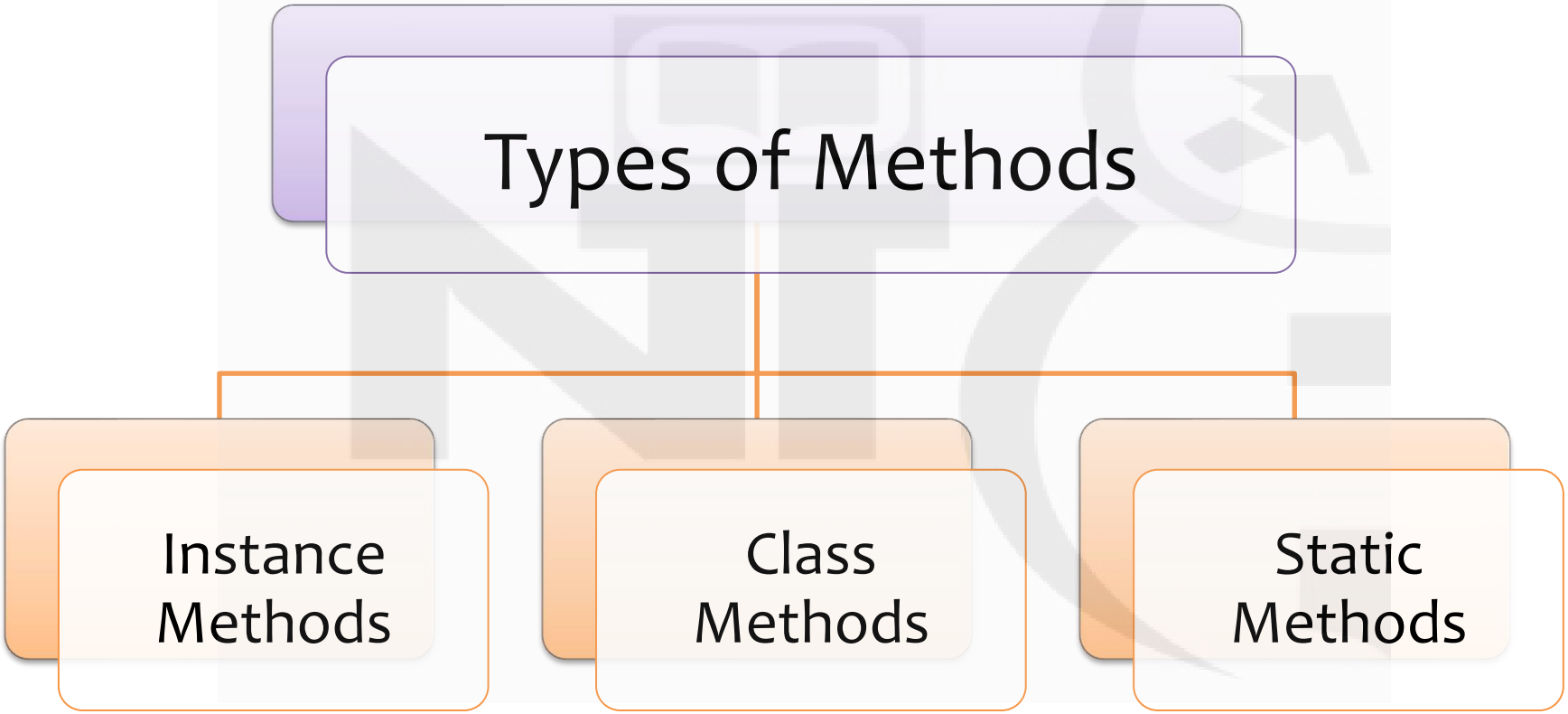
AGENDA

- ✓ Instance Methods
- ✓ Class Methods
- ✓ Static Methods
- ✓ Accessor & Mutator Methods
- ✓ Summary

Python Methods



What is an Instance Method?

- Definition:
  - A method that operates on an instance of a class and can modify object attributes.
- Requires self as the first parameter.
- Example:

```
class Example:
    def __init__(self, value):
        self.value = value

    def show_value(self):
        return self.value

obj = Example(10)
print(obj.show_value())  # Output: 10
```

Key Points about Instance Methods

- Instance methods operate on the instance variables (attributes) of a class.
- They are bound to the instance of the class.
- The first parameter of an instance method is conventionally named self, which refers to the instance calling the method. Through self, instance methods can access and modify the attributes of that instance.
- Instance methods are the most commonly used type of method.

What is a Class Method?

- **Definition:**
  - A method that operates on the class rather than on instance objects.

- Uses **@classmethod** decorator and takes a cls as the first parameter.

- Example:

```
class Example:
    count = 0

    @classmethod
    def increment_count(cls):
        cls.count += 1
        return cls.count

print(Example.increment_count())  # Output: 1
```

Key Points about Class Methods

- Class methods operate on class variables (static variables).
- They are bound to the class itself.
- They are defined using the @classmethod decorator.
- The first parameter is conventionally named cls, which refers to the class itself.
- Class methods can access and modify class-level data but not instance-level data.
- They are often used to create alternative constructors or modify class-level state.

What is a Static Method?

- **Definition:**
  - A method that does not modify the class or instance attributes.

- Uses **@staticmethod** decorator and does not require *self* or *cls*.

- Example:

```
class MathOperations:
    @staticmethod
    def add(a, b):
        return a + b

print(MathOperations.add(5, 3))  # Output: 8
```

Key points about Static Methods

- Static methods are general utility methods that do not have access to instance or class-level data.
- They are defined using the @staticmethod decorator.
- They do not take a self or cls parameter.
- Static methods are called using the class name or an object reference.