Object Oriented Programming

Programming Paradigm using Python

BEPEC CT
OOPS Agenda

1 Introduction to OOPS

1. What is OOPS
2. Why OOPS
3. Creating Simple OOPS Code

2 What is Class & Object?

1. What is Instance, Instance Attribute
2. Access the Instance Attribute & Update it
3. What is Class Attribute?

3 Encapsulation & Abstraction

1. Public & Non-Public Attributes
2. Name Mangling
3. Getter & Setter Commands

Methods 4

1. Calling Methods
2. Non-Public Methods
3. Methods & Return Statements

Aggregation 5

1. Aggregation vs Composition
2. “is” Operator
3. Aliasing, Mutability & Cloning

Inheritance 6

1. Using Super
2. Types of Inheritance
3. Overloading & Overriding
4. Polymorphism

What is OOPS?

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- Object Oriented Programming is a ***programming paradigm*** based on the concept of ***Objects***, which can contain data***(attributes)*** and code***(methods)***
- Programming paradigms are different ways or styles in which a given program or programming language can be organized. Each paradigm consists of certain structures, features, and opinions about how common programming problems should be tackled.

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Types of Programming Paradigm?

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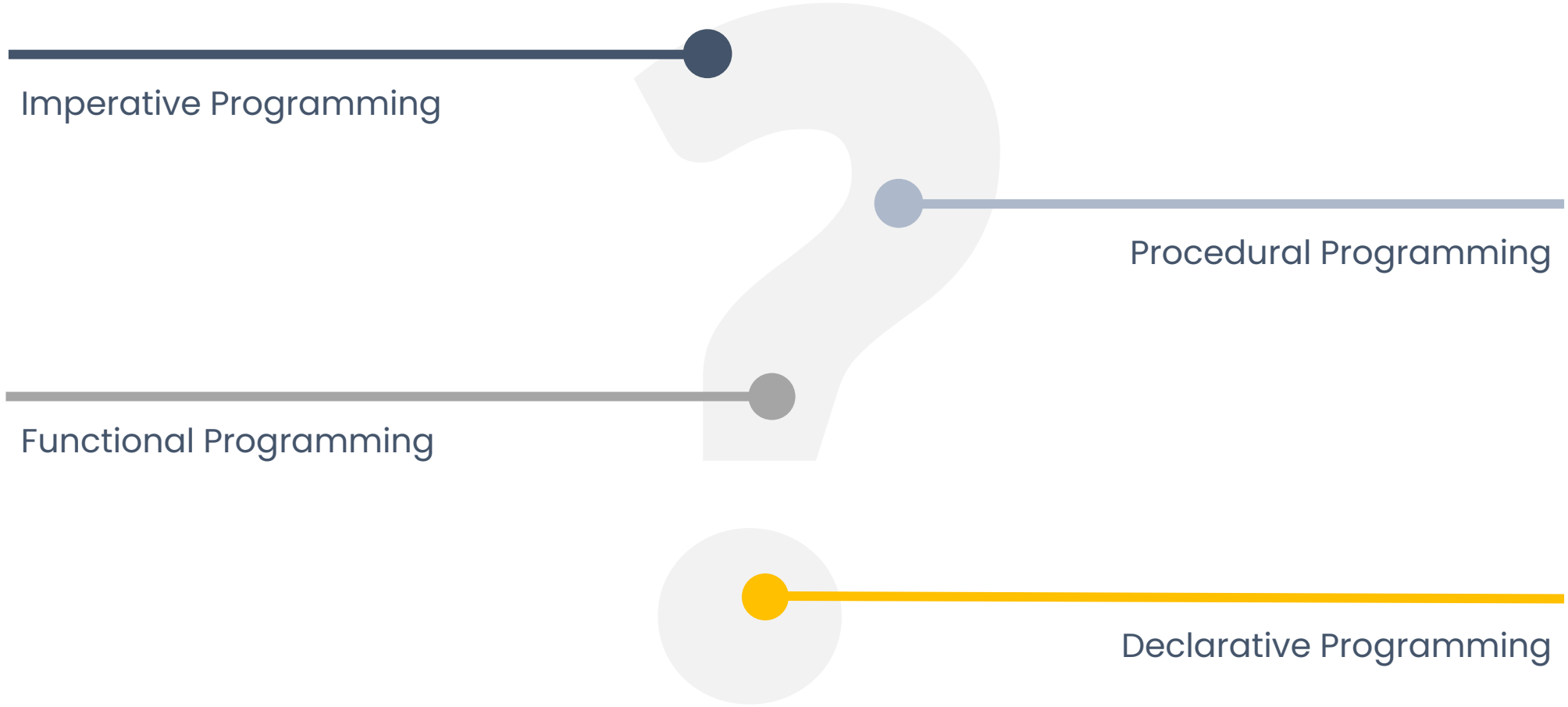

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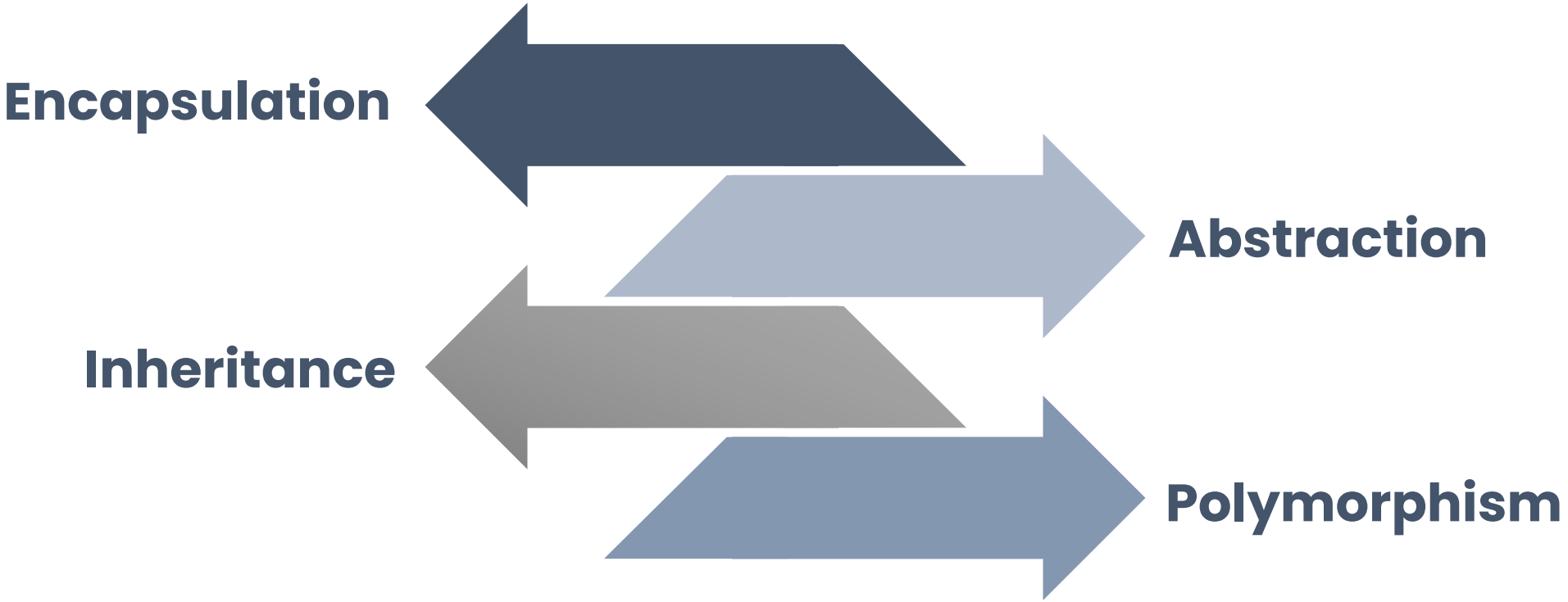

What is Class & Object

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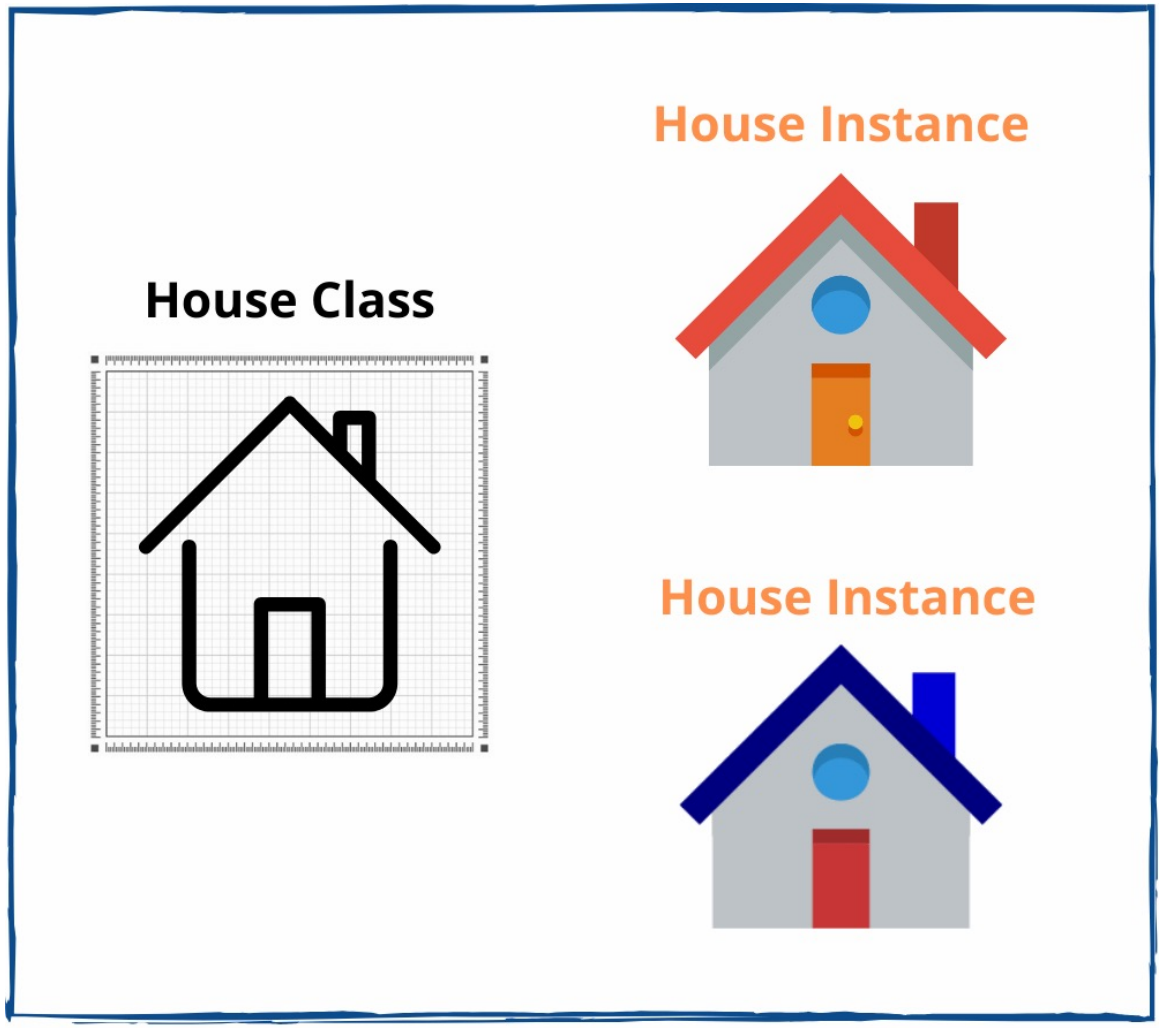

Advantages of OOPS

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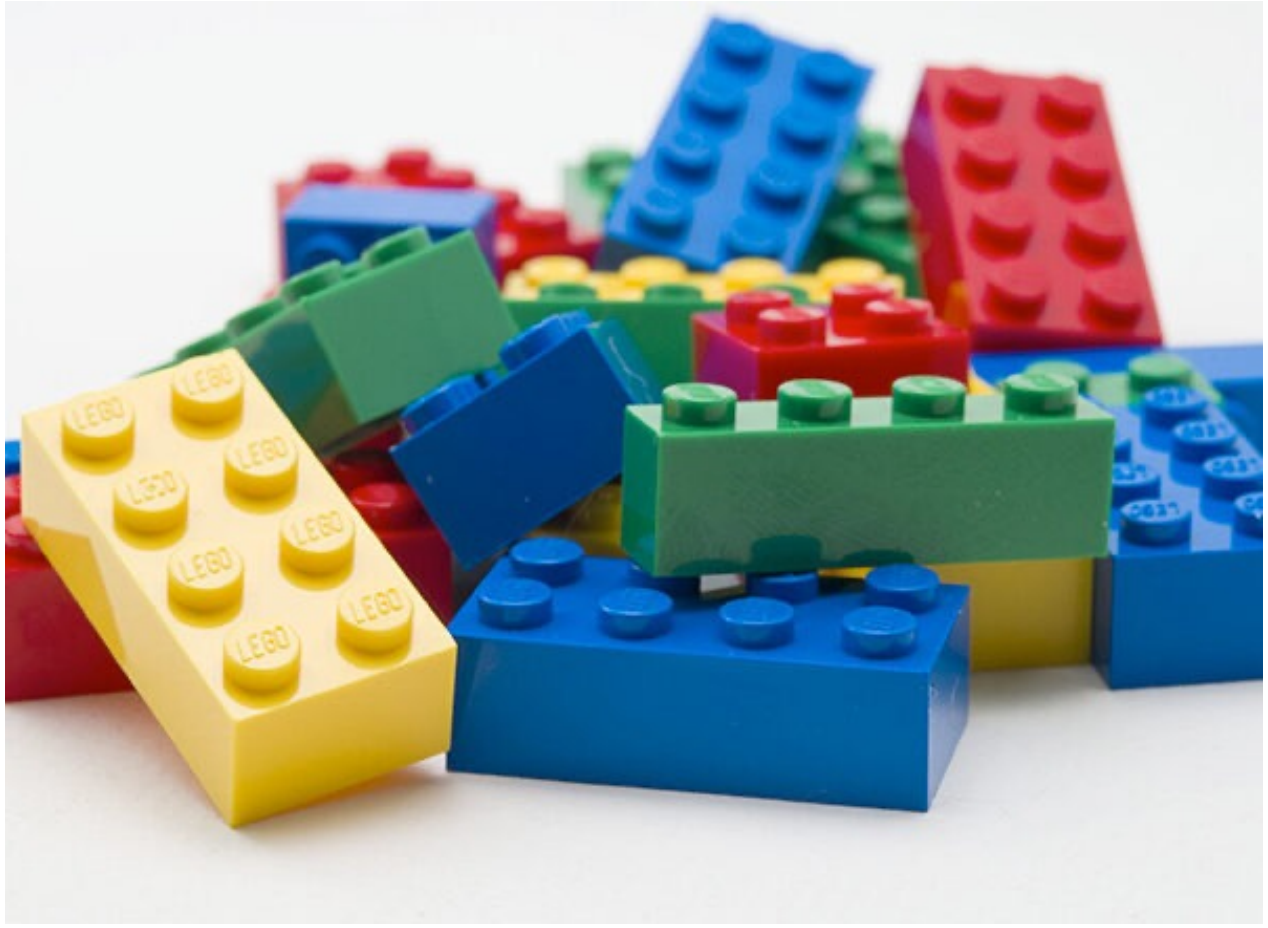

Class Naming Convention

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- For Class Names we use Pascal Case/Upper Camel Case as the Naming Convention.
- First Letter of each word is capitalised
- **Example: BmiCalculator**

Instance

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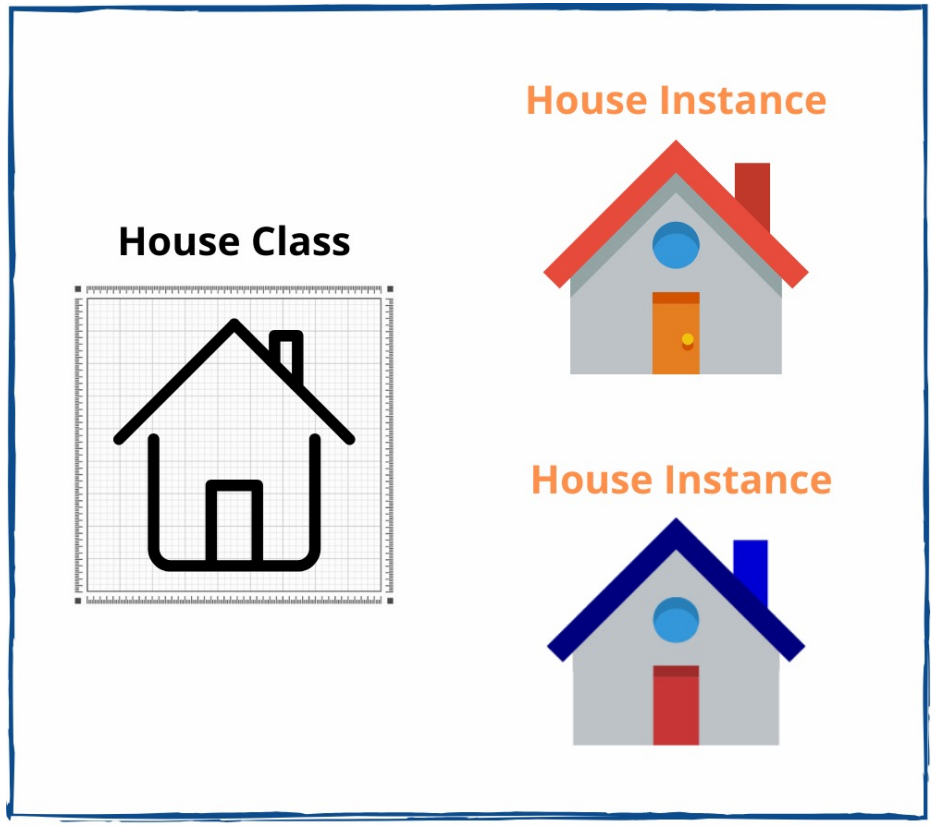
- Instance is an Object Created from Class
- Class = Abstract, Instance = Concrete

Abstract



Concrete

Instance Attributes

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- The Attributes of an Object, They belong to a particular object

__init__()

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- Special Method used to define the initial state of the object
- We need to call it when we create an Instance

Self

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- Self is a generic way of referring to the current instance of the class

```
def __init__(self, name, idnumber):
    self.name = name
```

Of the instance that being created

To the instance attribute "name"

Assign the value to the variable