

TX00FL42-3001

# INHERITANCE

MUATH OTHMAN



# LET'S CHECK HOMEWORKS!

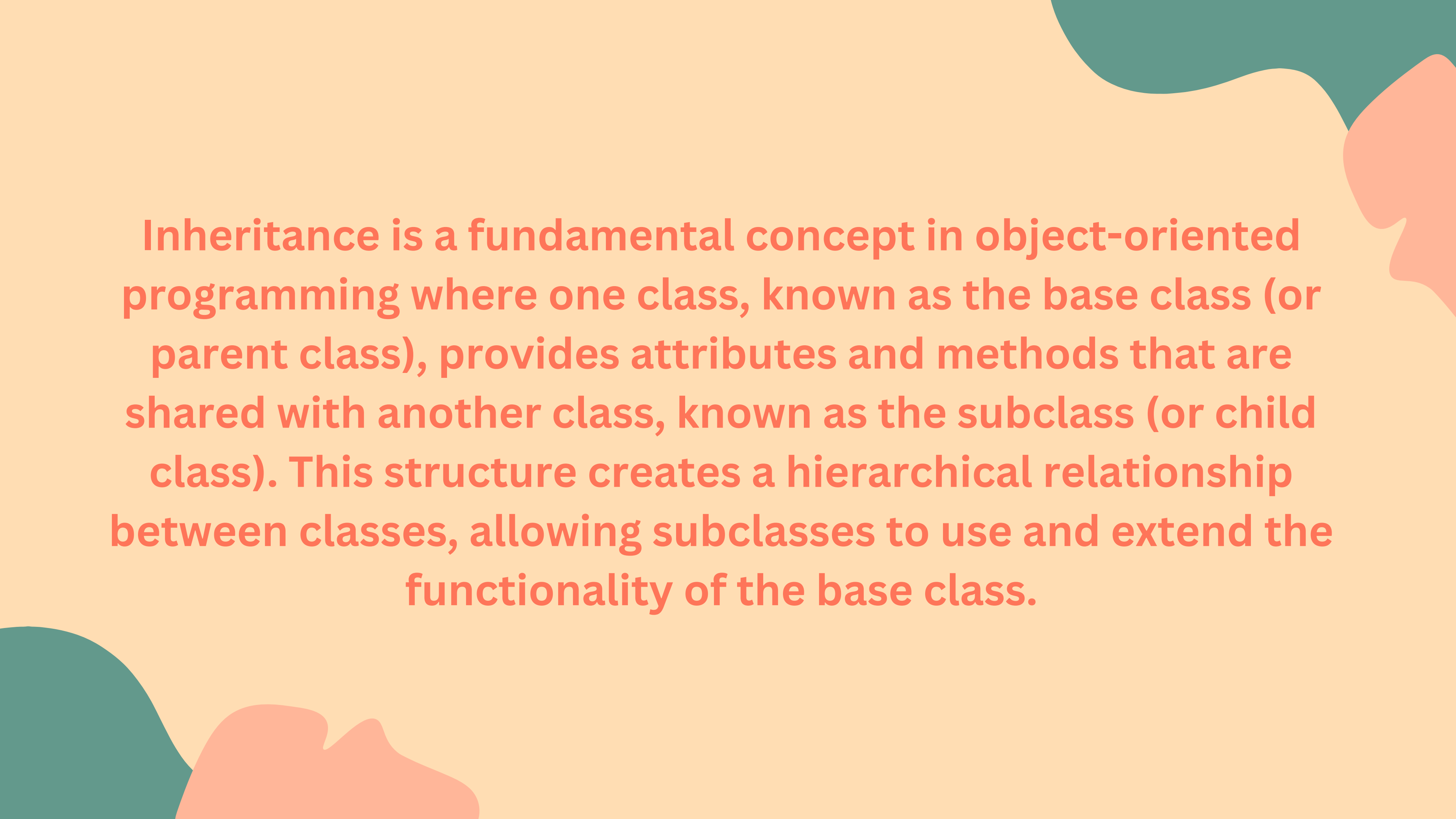


LET'S DO  
TOGETHER  
EXERCISE 4!



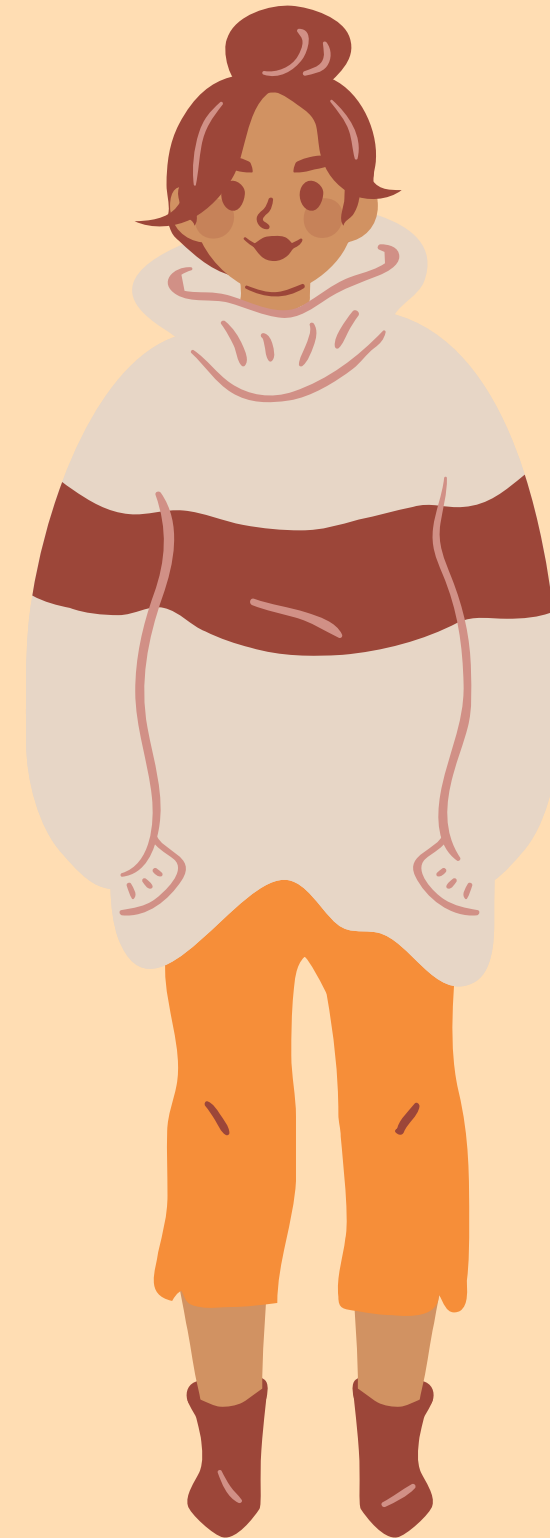
# WHAT IS INHERITANCE?



The background is a solid light orange color. It features abstract, organic shapes in teal and a darker shade of orange. One teal shape is in the top right corner, and another is in the bottom left corner. A darker orange shape is on the right side, partially overlapping the teal shape. The text is centered in the middle of the slide.

Inheritance is a fundamental concept in object-oriented programming where one class, known as the base class (or parent class), provides attributes and methods that are shared with another class, known as the subclass (or child class). This structure creates a hierarchical relationship between classes, allowing subclasses to use and extend the functionality of the base class.

# LET'S TAKE EXAMPLE

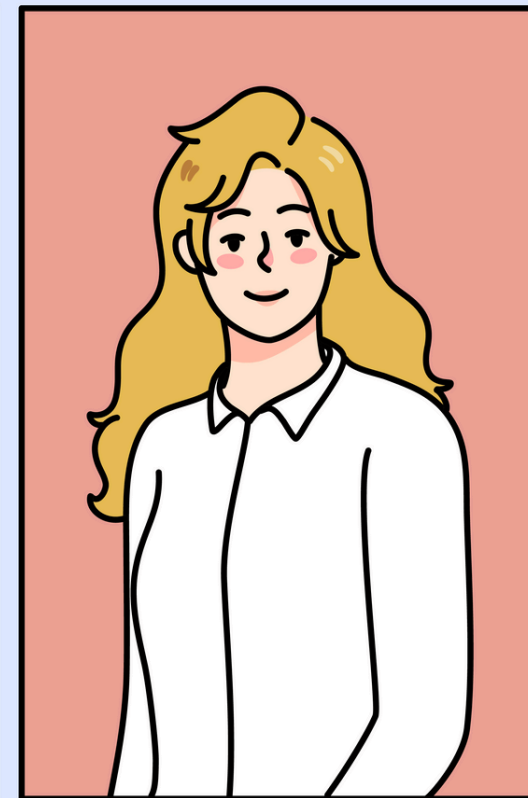
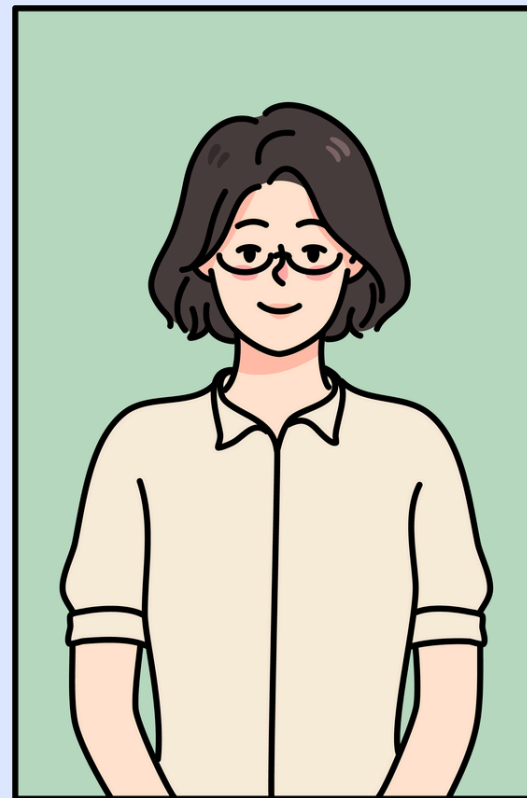
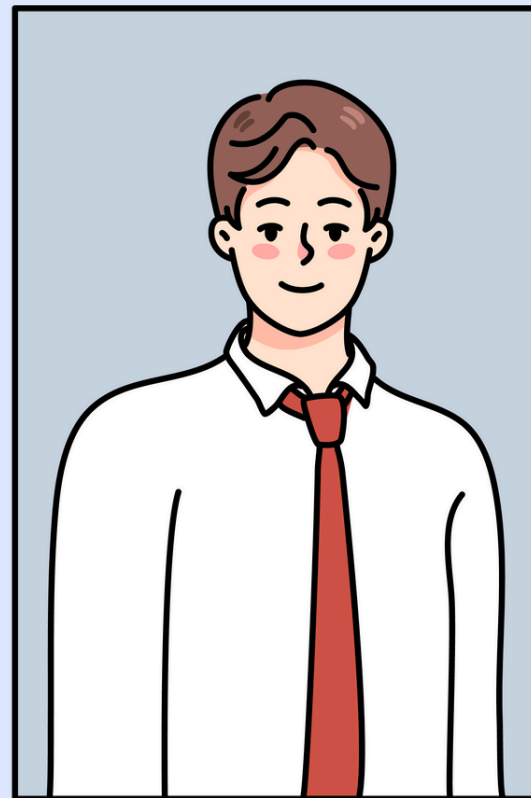








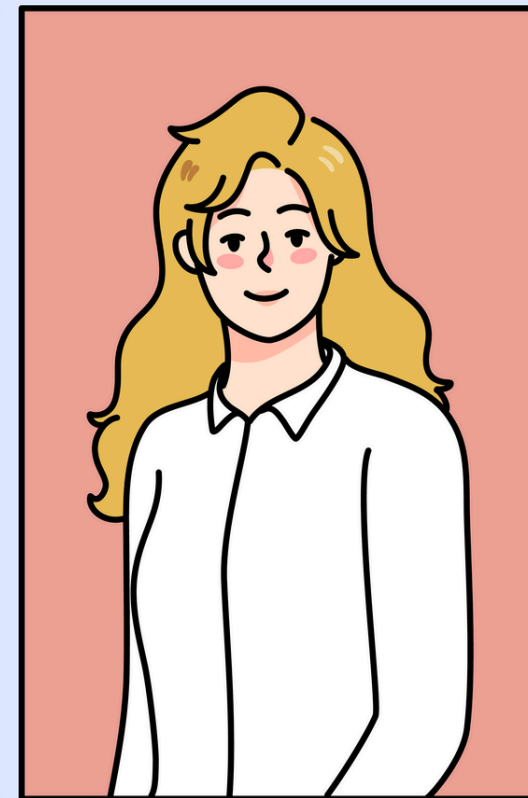
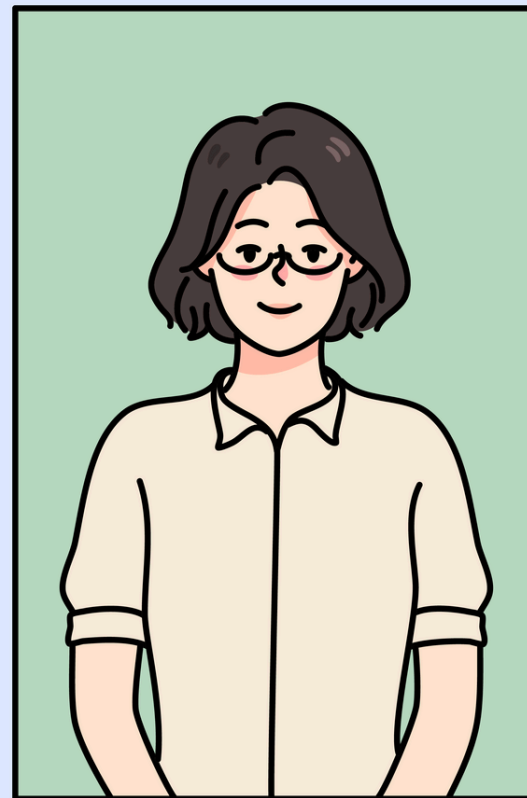
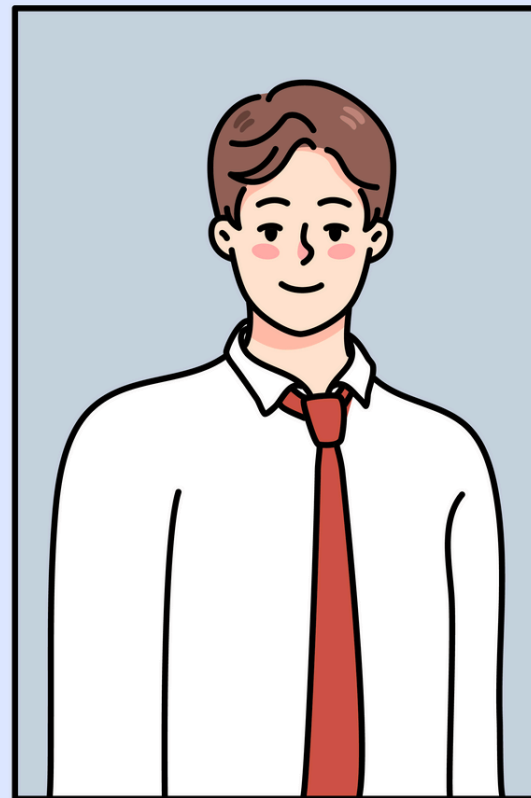
Hourly Hourly Month Hourly Month





# EMPLOYEES

Hourly Hourly Month Hourly Month



# EXAMPLE: BASE CLASS




```
class Employee:

    total_employees = 0

    def __init__(self, first_name, last_name):
        Employee.total_employees = Employee.total_employees + 1
        self.employee_number = Employee.total_employees
        self.first_name = first_name
        self.last_name = last_name

    def print_information(self):
        print(f"{self.employee_number}: {self.first_name} {self.last_name}")
```

# EXAMPLE: MAIN



```
employees = []  
employees.append(Employee("Viivi", "Virta"))  
employees.append(Employee("Ahmed", "Habib"))  
  
for e in employees:  
    e.print_information()
```



# EXAMPLE: SUBCLASSES

```
class HourlyPaid(Employee):  
  
    def __init__(self, first_name, last_name, hourly_pay):  
        self.hourly_pay = hourly_pay  
        super().__init__(first_name, last_name)  
  
  
class MonthlyPaid(Employee):  
  
    def __init__(self, first_name, last_name, monthly_pay):  
        self.monthly_pay = monthly_pay  
        super().__init__(first_name, last_name)
```

# EXAMPLE: MAIN

```
employees = []  
employees.append(HourlyPaid("Viivi", "Virta", 12.35))  
employees.append(MonthlyPaid("Ahmed", "Habib", 2750))  
employees.append(Employee("Pekka", "Puro"))  
employees.append(HourlyPaid("Olga", "Glebova", 14.92))  
  
for e in employees:  
    e.print_information()
```

The background is a solid light orange color. In the top right corner, there is a teal shape that curves downwards and to the left, and an orange shape that curves downwards and to the right. In the bottom left corner, there is a teal shape that curves upwards and to the right, and an orange shape that curves upwards and to the left.

# EXERCISE



# EXAMPLE: METHOD OVERRIDING



```
def print_information(self):  
    super().print_information()  
    print(f"Hourly pay: {self.hourly_pay}")
```

# EXAMPLE: SUBCLASSES

```
class HourlyPaid(Employee):  
  
    def __init__(self, first_name, last_name, hourly_pay):  
        self.hourly_pay = hourly_pay  
        super().__init__(first_name, last_name)  
  
    def print_information(self):  
        super().print_information()  
        print(f"Hourly pay: {self.hourly_pay}")  
  
class MonthlyPaid(Employee):  
  
    def __init__(self, first_name, last_name, monthly_pay):  
        self.monthly_pay = monthly_pay  
        super().__init__(first_name, last_name)  
  
    def print_information(self):  
        super().print_information()  
        print(f"Monthly pay: {self.monthly_pay}")
```

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# EXERCISE



# EXAMPLE: MULTIPLE INHERITANCE

```
class Vehicle:
    def __init__(self, speed):
        self.speed = speed

class SportsItem:
    def __init__(self, weight):
        self.weight = weight

class Bicycle(Vehicle, SportsItem):
    def __init__(self, speed, weight, gears):
        Vehicle.__init__(self, speed)
        SportsItem.__init__(self, weight)
        self.gears = gears
```

# EXAMPLE: MAIN



```
b = Bicycle(45, 18.7, 3)
print(b.gears)
print(b.speed)
print(b.weight)
```

# EXAMPLE: INITIALIZER



*# Incorrect initializer calls*

```
super.__init__(speed)
```

```
super.__init__(weight)
```

*# Correct initializer calls*

```
Vehicle.__init__(self, speed)
```

```
SportsItem.__init__(self, weight)
```



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# EXERCISE