Johnest Wheyne D. Ogania
BSCS-C204

Final Task 3
Simple Polymorphism

Problem:

Finals Task 3. Simple Polymorphism

Problem. Chirp and Tweet

Create a simple program to demonstrate basic polymorphism with bird sounds.

Class - Bird:

- Methods:
  - `def make_sound(self) -> None`: An abstract method that represents making a sound. It doesn't have a specific implementation in the base class `Bird`.

Class - Sparrow (extends Bird):

- Methods:
  - `def make_sound(self) -> None`: Overrides the `make_sound` method from the base class `Bird`. It prints the sound "Chirp Chirp" when called.

Class - Parrot (extends Bird):

- Methods:
  - `def make_sound(self) -> None`: Overrides the `make_sound` method from the base class `Bird`. It prints the sound "Tweet Tweet" when called.

Class - BirdCage:

- Methods:
  - `def make_bird_sounds(self, birds: List) -> None`: Accepts a list of `Bird` objects as input. Iterates through the list of birds and calls the `make_sound` method on each bird to make its sound.

Note:

- *The test cases are not outputs of your main file but of a hidden test file. Create and implement the classes instructed to test your code.*
- *Each class should be defined in its own file, with the file name following camelCase conventions (e.g., `bankAccount.py`).*

TEST CASES:

Test Cases

Test case 1
Should return ['Chirp Chirp'] when invoking the method [make_sound()] of Sparrow object returned when invoking the Sparrow() constructor of the Sparrow class.

Test case 2
Should return ['Tweet Tweet'] when invoking the method [make_sound()] of Parrot object returned when invoking the Parrot() constructor of the Parrot class.

Test case 3
Should return ['Chirp Chirp'] when invoking the method [make_sound()] of Bird object returned when invoking the Sparrow() constructor of the Sparrow class and return ['Tweet Tweet'] when invoking the method [make_sound()] of Bird object returned when invoking the Parrot() constructor of the Parrot class.

Test case 4
Should make Bird class an abstract.

Test case 5
Should return ['Chirp Chirp', 'Tweet Tweet'] when invoking the method [make_bird_sounds([Sparrow(), Parrot()])] of BirdCage object returned when invoking the BirdCage() constructor of the BirdCage class.

Code:

Main.py | bird.py | sparrow.py | parrot.py | birdCage.py

```python
from abc import ABC, abstractmethod

class Bird(ABC):  6 usages

    @abstractmethod  1 usage
    def make_sound(self) -> str:
        pass

```

Main.py | bird.py | sparrow.py | parrot.py | birdCage.py

```python
from bird import Bird

class Sparrow(Bird):  2 usages

    def make_sound(self) -> str:  1 usage
        return "Chirp Chirp"

```

Main.py | bird.py | sparrow.py | parrot.py | birdCage.py

```python
from bird import Bird

class Parrot(Bird):  2 usages

    def make_sound(self) -> str:  1 usage
        return "Tweet Tweet"

```

Main.py | bird.py | sparrow.py | parrot.py | birdCage.py

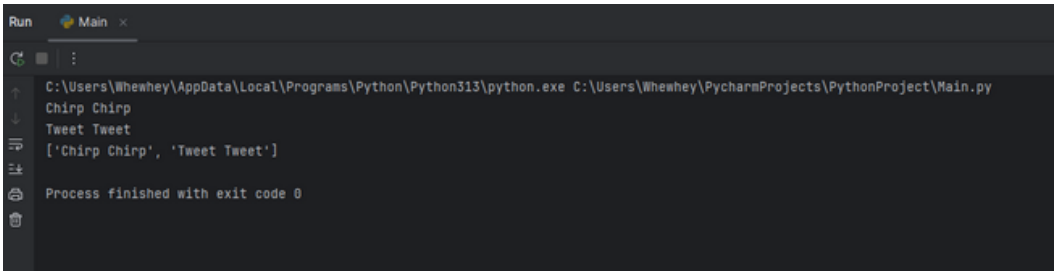
```python
from typing import List
from bird import Bird

class BirdCage:  2 usages

    def make_bird_sounds(self, birds: List[Bird]) -> list:  1 usage
        return [bird.make_sound() for bird in birds]

```

Output:


Run
Main
C:\Users\Whewhey\AppData\Local\Programs\Python\Python313\python.exe C:\Users\Whewhey\PycharmProjects\PythonProject\Main.py
Chirp Chirp
Tweet Tweet
['Chirp Chirp', 'Tweet Tweet']
Process finished with exit code 0