

## Finals Task 2. Inheritance

### Problem School Performance

Note: You are to create 4 separate python files for this task:

- **performer.py**(base class)
- **singer.py**(sub class)
- **dancer.py**(sub class)
- **test\_class.py** – following the required test cases

In a school musical performance, different types of performers participate. For this program, we will be implementing the performers.

Base Class - Performer:

- Properties:
  - `name` (type: str): Represents the name of the performer.
  - `age` (type: int): Represents the age of the performer.
- Constructor:
  - `__init__(self, name: str, age: int)`: Initializes the `name` and `age` properties.
- Getters
  - `get_name(self) -> str`: Returns the name
  - `get_age(self) -> int`: Returns the age

Subclass - Singer:

- Inherits From: **Performer**
- Additional Property:
  - `vocal_range` (type: str): Represents the vocal range of the singer.
- Constructor:
  - `__init__(self, name: str, age: int, vocal_range: str)`: Initializes the `name` and `age` properties by calling the parent class's constructor and sets the `vocal_range` property.
- Getter:
  - `get_vocal_range(self) -> str`: Returns the vocal range of the singer.
- Method:
  - `sing(self) -> None`: Prints "{name} is singing with a {vocal\_range} range."

Subclass - Dancer:

- Inherits From: **Performer**
- Additional Property:
  - **dance\_style** (type: str): Represents the dance style of the dancer.
- Constructor:
  - **\_\_init\_\_(self, name: str, age: int, dance\_style: str)**: Initializes the **name** and **age** properties by calling the parent class's constructor and sets the **dance\_style** property.
- Getter:
  - **get\_dance\_style(self) -> str**: Returns the dance style of the dancer.
- Method:
  - **dance(self) -> None**: Prints "{name} is performing {dance\_style} dance."

### Sample output for the Test Class

#### Test Cases

##### Test case 1

Should return [ 'John', 25 ] when invoking the methods [ `get_name()`, `get_age()` ] of the **Performer** class with properties [ Name: 'John' , Age: 25 ].

##### Test case 2

Should return [ 'Emily', 28, 'Ballet' ] when invoking the methods [ `get_name()`, `get_age()`, `get_dance_style()` ] of the **Dancer** class with properties [ Name: 'Emily' , Age: 28, Dance Style: 'Ballet' ].

##### Test case 3

Should return 'Emily is performing Ballet dance.' when invoking the `dance()` method of the **Dancer** class with properties ( Name: 'Emily' , Age: 28, Dance Style: 'Ballet' ).

##### Test case 4

Should make **Dancer** class a subclass of **Performer** class.

##### Test case 5

Should return [ 'Linda', 35, 'Soprano' ] when invoking the methods [ `get_name()`, `get_age()`, `get_vocal_range()` ] of the **Singer** class with properties ( Name: 'Linda' , Age: 35, Vocal Range: 'Soprano' ).

##### Test case 6

Should return 'Linda is singing with a Soprano range.' when invoking the `sing()` method of the **Singer** class with properties ( Name: 'Linda' , Age: 35, Vocal Range: 'Soprano' ).

### CODE:



```
class Performer:  
    def __init__(self, name: str, age: int):  
        self._name = name  
        self._age = age
```

💡 5 usages

```
def get_name_(self) -> str:  
    return self._name
```

💡 3 usages

```
def get_age_(self) -> int:  
    return self._age
```

 singer.py ×

```
from performer import Performer
```

💡 2 usages

```
class Singer(Performer):  
    def __init__(self, name: str, age: int, vocal_range: str):  
        Performer.__init__(self, name, age)  
        self._vocal_range = vocal_range
```

💡 1 usage

```
def get_vocal_range(self) -> str:  
    return self._vocal_range
```

💡 1 usage

```
def sing(self) -> None:  
    print(f"{self.get_name()} is singing with a {self._vocal_range} range.")
```

 dancer.py ×

```
from performer import Performer

3 usages
class Dancer(Performer):
    def __init__(self, name: str, age: int, dance_style: str):
        Performer.__init__(self, name, age)
        self._dance_style = dance_style

    1 usage
    def get_dance_style(self) -> str:
        return self._dance_style

    1 usage
    def dance(self) -> None:
        print(f"{self.get_name()} is performing {self._dance_style} dance.")


```

 test\_class.py ×

```
from performer import Performer
from singer import Singer
from dancer import Dancer

performer = Performer(name="Justin", age=25)
print(performer.get_name(),
      performer.get_age())

dancer = Dancer(name="Emily", age=25, dance_style="Ballet")
print(dancer.get_name(),
      dancer.get_age(),
      dancer.get_dance_style())

dancer.dance()

print(issubclass(Dancer, Performer))

singer = Singer(name="Linda", age=35, vocal_range="Soprano")
print(singer.get_name(),
      singer.get_age(),
      singer.get_vocal_range())

singer.sing()
```

## OUTPUT:

```
C:\Users\COMILAB\AppData\Local\Programs\Python\Python311\python.exe C:\Users\COMILAB\PycharmProjects\pythonProject\test_class.py
Justin 25
Emily 25 Ballet
Emily is performing Ballet dance.
True
Linda 35 Soprano
Linda is singing with a Soprano range.

Process finished with exit code 0
```