

## Finals Lab Task 1. Encapsulation

### A Car That Works

For this program, you are tasked to define the following:

Class - Car:

- Properties:
  - `color` (type: str): Represents the color of the car.
  - `price` (type: float): Holds the price of the car.
  - `size` (type: str): Indicates the size of the car, where 'S' represents small, 'M' represents medium, and 'L' represents large.
- Constructor:
  - `__init__(self, color: str, price: float, size: str)`: Initializes the car's `color`, `price`, and `size` properties. The `size` is standardized to uppercase using `size.upper()`.
- Methods
  - Getter Methods:
    - `get_color(self) -> str`: Returns the car's color.
    - `get_price(self) -> float`: Returns the car's price.
    - `get_size(self) -> str`: Returns the car's size.
  - Setter Methods:
    - `set_color(self, color: str) -> None`: Sets the car's color to the specified value.
    - `set_price(self, price: float) -> None`: Sets the car's price to the specified value.
    - `set_size(self, size: str) -> None`: Sets the car's size to the specified value. The size should be one of 'S' for small, 'M' for medium, or 'L' for large. Use conversion of lowercase characters to uppercase using `size.upper()`.
  - `__str__` Method:
    - `__str__(self) -> str`: Returns a formatted string representing the car, following the format "Car (color) - P(price, formatted to two decimal places) - (size descriptor)". The size descriptor is determined based on the size character ('small' for 'S', 'medium' for 'M', and 'large' for 'L').
  - Example Strings:
    - For a red car priced at 19999.85 and of medium size: "Car (red) - P19999.85 - medium"
    - For a blue car priced at 50000.00 and large: "Car (blue) - P50000.00 - large"

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CODE:

### Main.py

```
from carClass import Car

def main():
    car1 = Car("red", 19999.85, "M")
    car2 = Car("blue", 50000.00, "L")
    car3 = Car("green", 12345.67, "S")

    print("Action: Invoking the Car class constructor using  
Car('red', 19999.85, 'M').")
    print("Output:")
    print(car1)
    print("\nAction: Invoking the Car class constructor using  
Car('blue', 50000.00, 'L').")
    print("Output:")
    print(car2)
    print("\nAction: Invoking the Car class constructor using  
Car('green', 12345.67, 'S').")
    print("Output:")
    print(car3)

if __name__ == "__main__":
    main()
```

### carClass.py

```
class Car:
    def __init__(self, color: str, price: float, size: str):
        self.__color = color
        self.__price = price
        self.__size = size.upper()

    # set
    def set_color(self, color: str) -> None:
        self.__color = color

    def set_price(self, price: float) -> None:
        self.__price = price

    def set_size(self, size: str) -> None:
        self.__size = size.upper()

    # get
    def get_color(self) -> str:
```

```
        return self.__color

    def get_price(self) -> float:
        return self.__price

    def get_size(self) -> str:
        return self.__size

# string
    def __str__(self) -> str:
        size_desc = {
            'S': 'small',
            'M': 'medium',
            'L': 'large'
        }.get(self.__size, 'unknown')

        return f"Car ({self.__color}) - P{self.__price:.2f} - {size_desc}"
```

#### OUTPUT:

```
Action: Invoking the Car class constructor using Car('red', 19999.85, 'M').
Output:
Car (red) - P19999.85 - medium

Action: Invoking the Car class constructor using Car('blue', 50000.00, 'L').
Output:
Car (blue) - P50000.00 - large

Action: Invoking the Car class constructor using Car('green', 12345.67, 'S').
Output:
Car (green) - P12345.67 - small

...Program finished with exit code 0
Press ENTER to exit console.
```