Python Crash Course:

chapter 9, OOP & Python Pillow Exercise:

1. Car, Battery & Electric_car Classes and a test of them:

=>

```
class Car:
    def __init__(self, make, model, year):
        self.model = model
        self.make = make
        self.year = year
        self.odometer = 0

    def get_full_name(self):
        return f'{self.year} {self.make} {self.model}'

    def print_odometer(self):
        print(f'This car has {self.odometer} miles on it.')

    def update_odometer(self,num):
        if num < self.odometer:
            print('You can not roll back a odometer!')
            return
        self.odometer = num;

    def increment_odometer(self, num):
        self.odometer += num;

class Battery:
    def __init__(self, size=60):
        self.size = size;

    def describe_battery(self):
        print(f'This car has {self.size}-KW battery.')
```

```
    def print_range(self):
        print(f'This car can go approximately 3 miles per battery
percentage.\nYou have {self.size * 3} miles after a full charge and
{self.size * 3/2} miles for half of the battery.')

class Electric_car(Car):
    def __init__(self, make, model, year, battery_size = 60):
        super().__init__(make, model, year);
        self.battery = Battery(battery_size);


c1 = Car("Audi", "A4", 2016)
c2 = Electric_car("Tesla", "Model S", 2016);

print(c1.get_full_name())
print(c2.get_full_name())

c1.increment_odometer(30);
c2.increment_odometer(60);

c1.print_odometer();
c2.print_odometer();
c2.battery.print_range();
```

results:

```
2016 Audi A4
2016 Tesla Model S
This car has 30 miles on it.
This car has 60 miles on it.
This car can go approximately 3 miles per battery percentage.
You have 180 miles after a full charge and 90.0 miles for half of the battery.
```

2. Pillow Exercise:

=>

```
from PIL import Image
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```
img = Image.open('pic.jpg')
img = img.crop((2500,575, 3450,1550));
img = img.convert('L');
img.show();
```

Main Image:

Converted Image: