

# TASK 4

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## Exercise 1&2&3

```
2 //1
3 class Animal{
4     void makeSound(){
5         print("Animal makes a sound");
6     }
7 }
8 class Dog extends Animal{
9     void makeSound(){
10        print("Dog barks");
11    }
12 }
13
14 class Cat extends Animal{
15     void makeSound(){
16        print("Cat meows");
17    }
18 }
19 //2
20 class Car {
21     String brand;
22     String model;
23     int year;
24     Car(this.brand, this.model, this.year);
25     Car.oldcar(this.brand, this.model):year=2000;
26
27     void display() {
28         print('Brand: $brand, Model: $model, Year: $year');
29     }
30 }
31
32 //3
33 class Student{
34     String name;
35     double grade;
36     Student(this.name, this.grade);
37     void showInfo(){
38         print("$name has a grade of $grade");
39     }
40 }
```

## Exercise 4&5:

```
41
42 //4
43 class Book{
44     String title;
45     String author;
46     int pages;
47     Book(this.title, this.author, this.pages);
48     void Bookinfo(){
49         print('Title: $title, Author: $author, Pages: $pages');
50     }
51 }
52 //5
53 class Temperature{
54     double _celsius;
55     Temperature(this._celsius);
56
57     void toFahrenheit(){
58         double fahrenheit = (_celsius * 1.8) + 32;
59         print('Temperature in Fahrenheit: $fahrenheit');
60     }
61
62     void toKelvin(){
63         double kelvin = _celsius + 273.15;
64         print('Temperature in Kelvin: $kelvin');
65     }
66
67 }
```

## Exercise 6:

```
//6
class Rectangle{
    double _width;
    double _height;
    Rectangle(this._width, this._height);

    double get width => this._width;
    double get height => this._height;
    double get area => width * height;
    double get perimeter => 2 * (width + height);

    set width(double value) {
        if (value > 0) {
            _width = value;
        } else {
            print('Width must be positive.');
```

## Exercise 7&8:

```
102 //7
103 class Calculator {
104     double add(double num1, double num2) {
105         return num1 + num2;
106     }
107     double subtract(double num1, double num2) {
108         return num1 - num2;
109     }
110     double multiply(double num1, double num2) {
111         return num1 * num2;
112     }
113     double divide(double num1, double num2) {
114         return num1 / num2;
115     }
116     void calculate(double x,double y,Function operation){
117         print(operation(x,y));
118     }
119 }
120
121 //8
122 class Movie {
123     String title;
124     String director;
125     String rating;
126     Movie(this.title, this.director, [this.rating = 'Not Rated']);
127     void showDetails() {
128         print('Title: $title, Director: $director, Rating: $rating');
129     }
130 }
```

## Exercise 9:

```
1 //9
2 class SmartDevice {
3     String brand;
4     String model;
5     SmartDevice(this.brand, this.model);
6     void showDetails() {
7         print('Brand: $brand, Model: $model');
8     }
9 }
10
11 class Smartphone extends SmartDevice {
12     String os;
13     Smartphone(String brand, String model, this.os) : super(brand, model);
14     void showDetails() {
15         super.showDetails();
16         print('OS: $os');
17     }
18 }
19
20 class Laptop extends SmartDevice {
21     String ram;
22     Laptop(String brand, String model, this.ram) : super(brand, model);
23     void showDetails() {
24         super.showDetails();
25         print('RAM: $ram');
26     }
27 }
28 }
```

## Main:

```
1 Run | Debug
2 void main(){
3     print("Q1");
4     var dog = Dog();
5     var cat = Cat();
6     dog.makeSound();
7     cat.makeSound();
8
9     print("Q2");
10    var car1 = Car('BMW', 'M1', 2022);
11    var car2 = Car.oldcar('Hynadai', 'Verna');
12    car1.display();
13    car2.display();
14
15    print("Q3");
16    List<Student> students = [
17        Student('Youssef', 3.5),
18        Student('Ahmed', 4.0),
19        Student('Hany', 3.8),
20    ];
21    students.forEach((student) => student.showInfo());
22
23    print("Q4");
24    Book book1 = Book('No Longer Human', 'Dazai Osmsa', 200);
25    Book book2 = Book('The Slient Paient', 'Alex Michaelides', 400);
26    Book book3 = Book('The Great Gatsby', 'F. Scott Fitzgerald', 300);
27    book1.Bookinfo();
28    book2.Bookinfo();
29    book3.Bookinfo();
30
31    print("Q5");
32
33    Temperature temperature = Temperature(25);
34    temperature.toFahrenheit();
35    temperature.toKelvin();
36 }
```

```

194
195     print("Q6");
196     Rectangle rectangle = Rectangle(5, 10);
197     rectangle.display();
198     rectangle.width = -20;
199
200     print("Q7");
201     Calculator calculator = Calculator();
202     calculator.calculate(10, 5, calculator.add);
203     calculator.calculate(10, 5, calculator.subtract);
204     calculator.calculate(10, 5, calculator.multiply);
205     calculator.calculate(10, 5, calculator.divide);
206
207     print("Q8");
208     List<Movie> movies = [
209         Movie('Pulp Fiction', 'Quentin Tarantino', '5'),
210         Movie('The Godfather', 'Francis Ford Coppola', '4.3'),
211         Movie('The Dark Knight', 'Christopher Nolan'),
212     ];
213
214     print("All movies:");
215     movies.forEach((movie) => movie.showDetails());
216
217
218     print("Q9");
219     SmartDevice smartphone = Smartphone('Samsung', 'Galaxy S20', 'Android 11');
220     smartphone.showDetails();
221     Laptop laptop = Laptop('Dell', 'XPS 15', '16GB RAM');
222     laptop.showDetails();
223

```

## Output:

```

Connecting to VM Service at ws://127.0.0.1:1751/wj6_DDlJKhI=ws
Connected to the VM Service.
Q1
Dog barks
Cat meows
Q2
Brand: BMW, Model: M1, Year: 2022
Brand: Hynadai, Model: Verna, Year: 2000
Q3
Youssef has a grade of 3.5
Ahmed has a grade of 4.0
Hany has a grade of 3.8
Q4
Title: No Longer Human, Author: Dazai Osmsa, Pages: 200
Title: The Slient Paient, Author: Alex Michaelides, Pages: 400
Title: The Great Gatsby, Author: F. Scott Fitzgerald, Pages: 300
Q5
Temperature in Fahrenheit: 77.0
Temperature in Kelvin: 298.15
Q6
Width: 5.0, Height: 10.0, Area: 50.0, Perimeter: 30.0
Width must be positive.
Q7
15.0
5.0
50.0
2.0
Q8
All movies:
Title: Pulp Fiction, Director: Quentin Tarantino, Rating: 5
Title: The Godfather, Director: Francis Ford Coppola, Rating: 4.3
Title: The Dark Knight, Director: Christopher Nolan, Rating: Not Rated
Q9
Brand: Samsung, Model: Galaxy S20
OS: Android 11
Brand: Dell, Model: XPS 15
RAM: 16GB RAM

```