

Scala classes and objects

Scala 2 classes and objects with explanations and code examples:

1. Basic Class and Object Example:

```
class Point(val xc: Int, val yc: Int) {  
  var x: Int = xc  
  var y: Int = yc  
  
  def move(dx: Int, dy: Int): Unit = {  
    x = x + dx  
    y = y + dy  
    println("Point x location : " + x)  
    println("Point y location : " + y)  
  }  
}  
  
object Demo {  
  def main(args: Array[String]): Unit = {  
    val pt = new Point(10, 20)  
    pt.move(10, 10)  
  }  
}
```

Output:

```
Point x location : 20  
Point y location : 30
```

This example defines a class `Point` with two variables and a method `move` that updates the point coordinates. The object `Demo` contains the main method to create and move a `Point` object.

2. Class with Constructor Parameters and Print Statements:

```
class Dog(name: String, breed: String, age: Int, color: String)
{
    println("My name is: " + name + ", my breed is: " + breed)
    println("I am: " + age + " and my color is: " + color)
}

object Main {
    def main(args: Array[String]): Unit = {
        var obj = new Dog("tuffy", "papillon", 5, "white")
    }
}
```

Output:

```
My name is: tuffy, my breed is: papillon
I am: 5 and my color is: white
```

The primary constructor parameters are used to initialize the object and print details directly during instantiation.

3. Inheritance Example:

```
class Shape(val posX: Int, val posY: Int) {
    var x: Int = posX
    var y: Int = posY

    def move(dx: Int, dy: Int): Unit = {
        x = x + dx
        y = y + dy
        println("New x position : " + x)
        println("New y position : " + y)
    }
}
```

```

    }
}

class Square(length: Int, width: Int) extends Shape(5, 6) {
    var l: Int = length
    var w: Int = width

    def reSize(l1: Int, w1: Int): Unit = {
        l = l + l1
        w = w + w1
        println("New length: " + l)
        println("New width: " + w)
    }
}

```

This shows basic inheritance where class `Square` extends `Shape` and inherits its fields and methods.

4. More Advanced Example with a Vehicle Class:

```

class Car(val manufacturer: String, brand: String, var model:
String) {
    var speed: Double = 0
    var gear: Any = 0
    var isOn: Boolean = false

    def start(keyType: String): Unit = {
        println(s"Car started using the $keyType")
        isOn = true
    }

    def selectGear(gearNumber: Any): Unit = {
        gear = gearNumber
        println(s"Gear has been changed to $gearNumber")
    }
}

```

```

def accelerate(rate: Double, seconds: Double): Unit = {
    speed += rate * seconds
    println(s"Car accelerates at $rate per second for $seconds
seconds.")
}

def brake(rate: Double, seconds: Double): Unit = {
    speed -= rate * seconds
    println(s"Car slows down at $rate per second for $seconds
seconds.")
}

def stop(): Unit = {
    speed = 0
    gear = 0
    isOn = false
    println("Car has stopped.")
}
}

```

This demonstrates class fields, methods, and basic state management. These examples cover typical Scala 2 class features: constructors, methods, inheritance, and object creation with the `new` keyword.