OOP Cheat Sheet

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Kotlin Classes

```
Class Student()
```

class declaration has class **name**, the class **header** (with parameters and the primary constructor)

```
Class Student(name: String))
```

Constructors

`init` keyword is used for the initializer block, so when instance is created the initializer block is executed
`Constructor` keyword is omitted for primary constructor.

Object

```
Val student= Student("Safa")
```

Abstract Classes

```
abstract class Animal(val name: String,
val age: Int){
 abstract fun talk()
    }
```

An abstract object does not have an implementation in its class

Inheritance

```
abstract class Animal(val name: String, val
age: Int){
 abstract fun talk()
    }
```

Class Cat inherit class Animal

```
class Cat(name: String,age: Int):
Animal(name,age){
        override fun talk() {
            println("$name: Meow")
        }
    }
```

Method overriding

Talk function is overridden in Cat class

Access data member

```
 Val cat = Cat("Leo",7)
cat.name// Leo
cat.age// 7
cat.talk()//Leo: Meow
```

Interfaces

Interfaces in Kotlin contain declarations of abstract methods and method implementations.

```
interface Human {
        fun talk()
        fun walk() {
         // optional body
        }
}
```

Implementing interfaces

```
class Child : MyInterface {
    override fun bar() {
        // body
    }
}
```

Polymorphism

```
    fun printNum(n : Int){
        println("printNum(n : Int)")
        println("$n")
    }
    fun printNum(n : Double){
        println("printNum(n : Double)")
        println("$n")
    }
     val a = 1
     val b = 2.5
  //Using compile time polymorphism
        printNum(a)
//output:printNum(n : Int)
1
        printNum(b)
printNum(n : Int)
//output:printNum(n : Double)
2.4
```

Encapsulation

Scope modifiers and keywords

public

It can be accessed anywhere
And it is the default visibility

private

It does not accessible outside the file it is defined in (same class)

protected

the member has the same visibility as private, but that it is also visible in subclasses.