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Object Oriented Programming With Real world Example

COde MaFia Mar 26, 2018 · 4 min read ★

You are familiar with OOP concept theoretically but if interviewer ask to tell the concept with OOP concept then a lot of us are fail to answer.

Basically why we are write coding ,to solve our real world problem right.
In OOP a logic is right base on the object with this features
1.abstraction
2.encapsulation
3.inheritance
4.polymorphism
There are a lot of Car,bike,ATM and coffee machine.and there brands and name also different.
In OOP those are called object .

Objects logic are done by classes for example ,by phone we can call,Bluetooth ,take photo etc. those every logic
will be divide as classes.When we are creating class we need consider about SOLID principle.

Example for object and class

```
1  public class Phone
```

```
4   public int IMINumber{get; set;}
5   public string Type{get; set;}
6   public void Dial
7   {
8   //implemention of function
9   }
10  public void SendMassage
11  {
12  //implemention of function
13  }
14  }
```

ObjectAndClass.cs hosted with ♡ by GitHub view raw

Abstraction

Before know about abstraction in OOP.We need to know what is the meaning of abstraction in English.

Abstraction means only show relevant data and details rest of others are hide.this is the most important pillar in OOP. This is mostly done by *interfaces rather than abstract class*.

> ***Interface***
>
> *Abstraction is done by classes or interface.*
>
> *Abstract classes may have not implemented methods.*
>
> ***Abstract class***
>
> *Abstract classes may have implemented methods.*
>
> *We can generate tv by remote ,here remote is the interface between tv and man.*
>
> ***When interface and when abstract classes***
>
> *So if you need multiple inheritance and a clear blueprint than has only the design and not the implementation; you go for* ***interface.*** *If you don't need multiple inheritance but you need a mix of design plan and pre-implementation then abstract class is your choice.*

Some real world example

1.When we are making a call it only concatenate about the numbers and display that in

2. We send data from Bluetooth we really do not know how it connect with other phone or devices.

Encapsulation

Both Abstraction and Encapsulation works hand in hand because abstraction which have to show in a level that particular
details access by encapsulation.

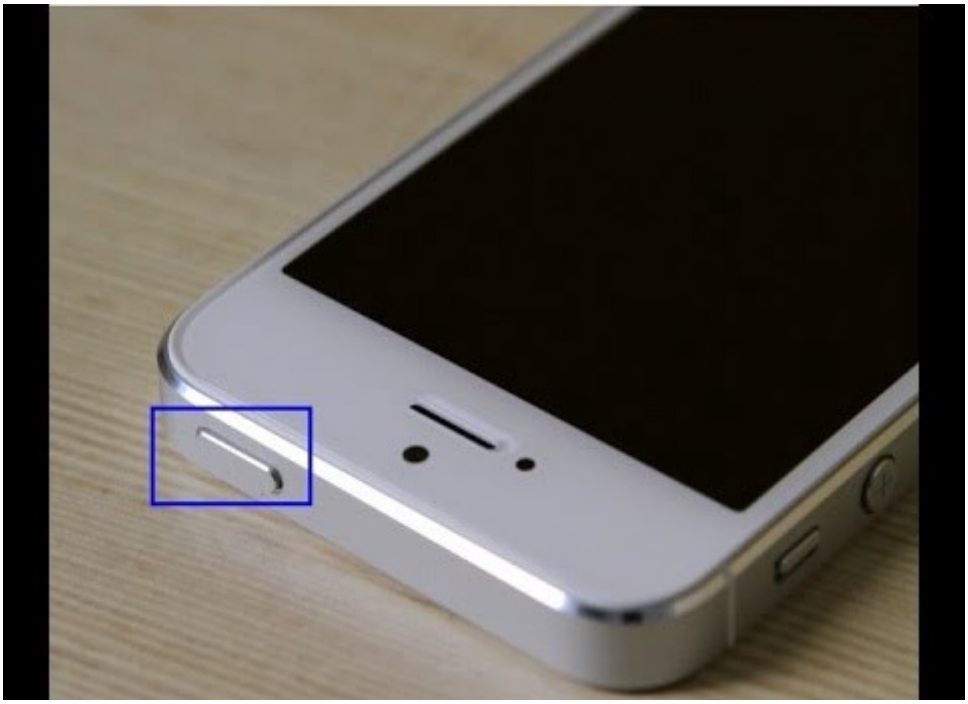
In real time we are using Encapsulation for security purpose.

Example
1.When we turn on the Bluetooth we can assess to connect to other phone but not access to call or send sms from that
phone that level is hidden from encapsulation(some of abstraction is available).
2.If i connect with kajas phone and kajas connect with sumanie phone ,but i do not have access to connect with sumanie is phone
through kajas phone.this kind of hidden will handle by encapsulation.

This are handle by access specifier like public,private,protected and internal.

Polymorphism

Simple example for it is,we are turn on the phone by one button at the same time we can turn off the phone by the same button.



Example

We can send normal text massage and we can send video massage also.

In here we need to change the mode.

Here is Polymorphism used.

```
public class Samsumg : Mobile
{
    public void Massage()
    {
        Console.WriteLine("Text massage  sent");
    }


    public void Massage(string MassageType)
    {
        Console.WriteLine("Change the massage type " + MassageType + " Type");
    }
}
```

PhoneDifferentMassageType.cs hosted with ♡ by GitHub view raw

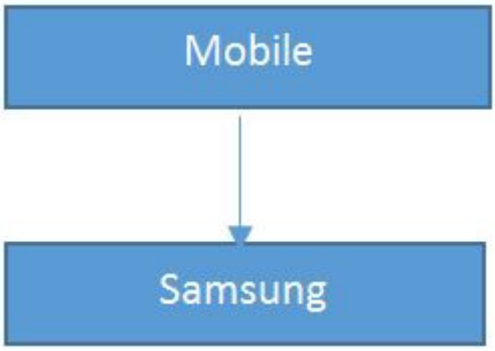
Inheritance

Creating a new class (sub class) from base/super cass is called inheritance.

When we inherit all the features from base/super class will be in in the sub class.

There are mainly 4 types of inheritance:

1. Single level inheritance
2. Multi-level inheritance
3. Hierarchical inheritance
4. Hybrid inheritance
5. Multiple inheritance



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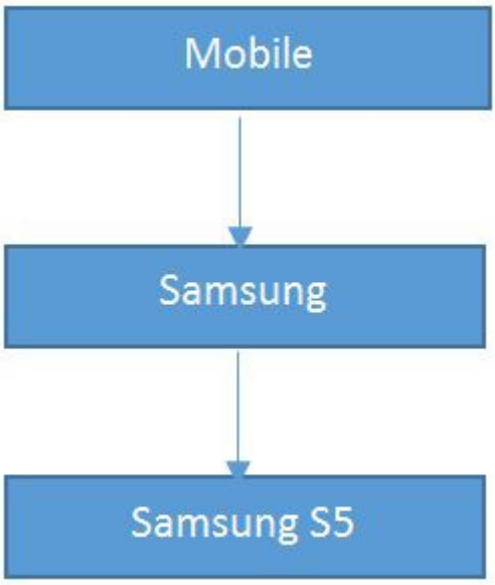
Here some features of mobile is used in Samsung brand.

Multi-level inheritance



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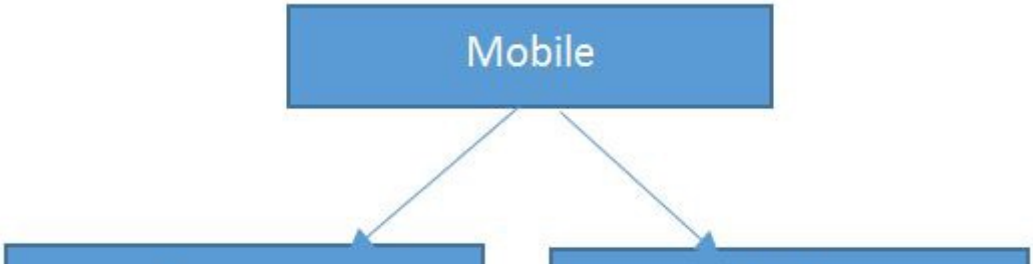
S5 have more features than Samsung J1 ,so they use new features with old features.

Hierarchical inheritance



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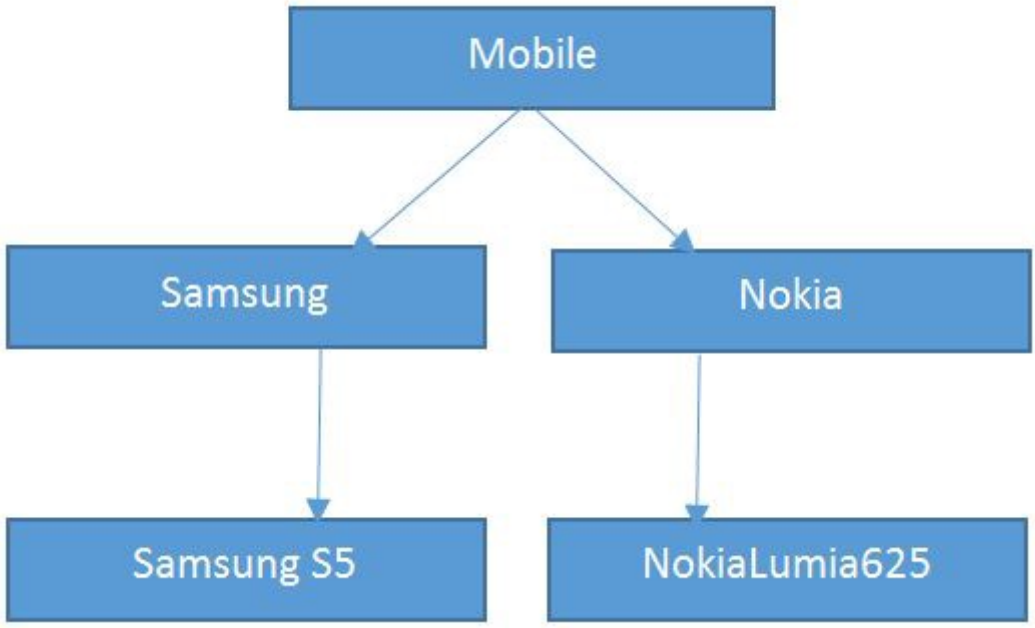
Some of the features may use in two type of brands.

Hybrid inheritance



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Some of the features may use in two type of brands, those brands may publish new brands with new features.

Multiple inheritance

Here we can not use abstract class just because their may be duplicate values .that is ,we use interfaces.

But we need to clear that both methods are used abstraction.