

What is Abstraction in OOPS?

Pankaj - 4 Comments

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What is Abstraction in OOPS?

- Core Object-Oriented Programming Concept
- Process of hiding the internal data and implementation from the outer world.
- Two Types:
 - Data Abstraction
 - Process Abstraction



Abstraction is one of the core **concepts of Object-Oriented Programming**.

Abstraction defines a model to create an application component. The implementation of abstraction depends on the language-specific features and processes.

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1. What is Abstraction?

describe things in simple terms. It's used to create a boundary between the application and the client programs.

2. Abstraction in Real Life

Abstraction is present in almost all the real life machines.

- Your car is a great example of abstraction. You can start a car by turning the key or pressing the start button. You don't need to know how the engine is getting started, what all components your car has. The car internal implementation and complex logic is completely hidden from the user.
- We can heat our food in Microwave. We press some buttons to set the timer and type of food. Finally, we get a hot and delicious meal. The microwave internal details are hidden from us. We have been given access to the functionality in a very simple manner.

3. Abstraction in OOPS

Objects are the building blocks of Object-Oriented Programming. An object



access only for required functions and properties to the other programs. This is the general procedure to implement abstraction in **OOPS**.

4. What are the different types of abstraction?

There are two types of abstraction.

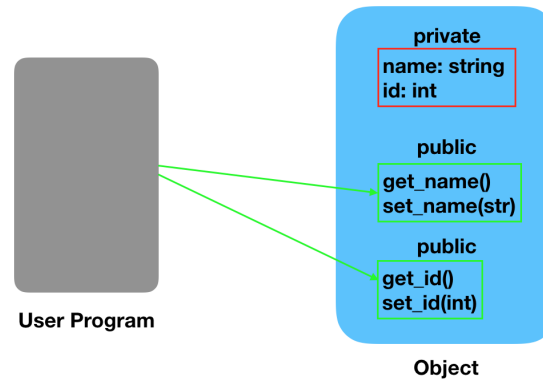


1. Data Abstraction
2. Process Abstraction

4.1) Data Abstraction

provided through some methods.

Data Abstraction



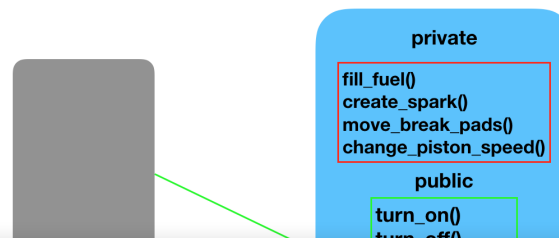
Data Abstraction



4.2) Process Abstraction

We don't need to provide details about all the functions of an object. When we hide the internal implementation of the different functions involved in a user operation, it creates process abstraction.

Process Abstraction



[Process Abstraction](#)

5. Abstraction in Java

Abstraction in Java is implemented through **interfaces** and **abstract classes**. They are used to create a base implementation or contract for the actual implementation classes.

Car.java: Base interface or abstract class

```
package com.journaldev.oops.abstr;

public interface Car {

    void turnOnCar();

    void turnOffCar();

    String getCarType();
}
```

ManualCar.java, AutomaticCar.java:
implementation classes of Car.



```
public class ManualCar implements Car {  
  
    private String carType = "Manual";  
  
    @Override  
    public void turnOnCar()  
        System.out.println("Manual Car is started.");  
    }  
  
    @Override  
    public void turnOffCar()  
        System.out.println("Manual Car is stopped.");  
    }  
  
    @Override  
    public String getCarType()  
        return this.carType;  
    }  
}
```

```
package com.journaldev.oops.abstraction;  
  
public class AutomaticCar implements Car {  
  
    private String carType = "Automatic";  
  
    @Override  
    public void turnOnCar()  
        System.out.println("Automatic Car is started.");  
    }  
}
```



```
    @Override  
    public String getCarType()  
    {  
        return this.carType;  
    }  
}
```



User Program: Let's look at a test program where the Car functions will be used.

```
package com.journaldev.oops.abstraction;  
  
public class CarTest {  
  
    public static void main(String[] args) {  
        Car car1 = new Car("SUV", "Red", "Ford", "Mustang", "2018");  
        Car car2 = new Car("Sedan", "Blue", "Toyota", "Camry", "2017");  
  
        car1.turnOnCar();  
        car1.turnOffCar();  
        System.out.println("Car 1: " + car1.getCarType());  
  
        car2.turnOnCar();  
        car2.turnOffCar();  
        System.out.println("Car 2: " + car2.getCarType());  
    }  
}
```


details are hidden from the client program.

References: [Wikipedia](#), [Oracle Docs](#)



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Pankaj

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passion.

Comments

A. Rouabah says:

April 3, 2020 at 2:47 pm

Your definition of abstraction is definitely that of encapsulation and not of abstraction. Abstraction is a model of real-world objects limited to a specific context where we represent details related to that context with high accuracy and omit the rest!

Encapsulation is what you defined abstraction.

Thanks for the effort!

[Reply](#)

Ayorinde says:

March 26, 2020 at 3:55 pm

I am new in programming, especially OOP. Your article is good. Hope I will be able to master it.



John says:

October 27, 2019 at 2:26 am

Wow. Just change relapse
'Abstraction' with
'Encapsulation' and it will be a
nice article.

Reply



Micky says:

September 30, 2019 at 1:19 am

Nice theme and logo sir,
Now it's much better to study
any topic

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