	<b>Course Name: Design Patterns/Thinking LAB</b>		<b>EXPERIMENT NO. 8</b>	
	<b>Course Code: 20CP210P</b> <b>Faculty: Dr. Ketan Sabale</b>		<b>Branch:</b> CSE	<b>Semester: IV</b>
<b>Submitted by:</b> Rhythm Shah <b>Roll no:</b> 22BCP071				

**Objective:** To familiarize students with standard Structural design patterns.

**Experiment:** Explain the Facade design pattern and write a program using any object-oriented programming language to demonstrate the working of Facade design pattern.

## Theory:

Facade is a structural design pattern that provides a simplified interface to a library, a framework, or any other complex set of classes.

Facade pattern hides the complexities of the system and provides an interface to the client using which the client can access the system. This type of design pattern comes under structural pattern as this pattern adds an interface to existing system to hide its complexities.

This pattern involves a single class which provides simplified methods required by client and delegates calls to methods of existing system classes.

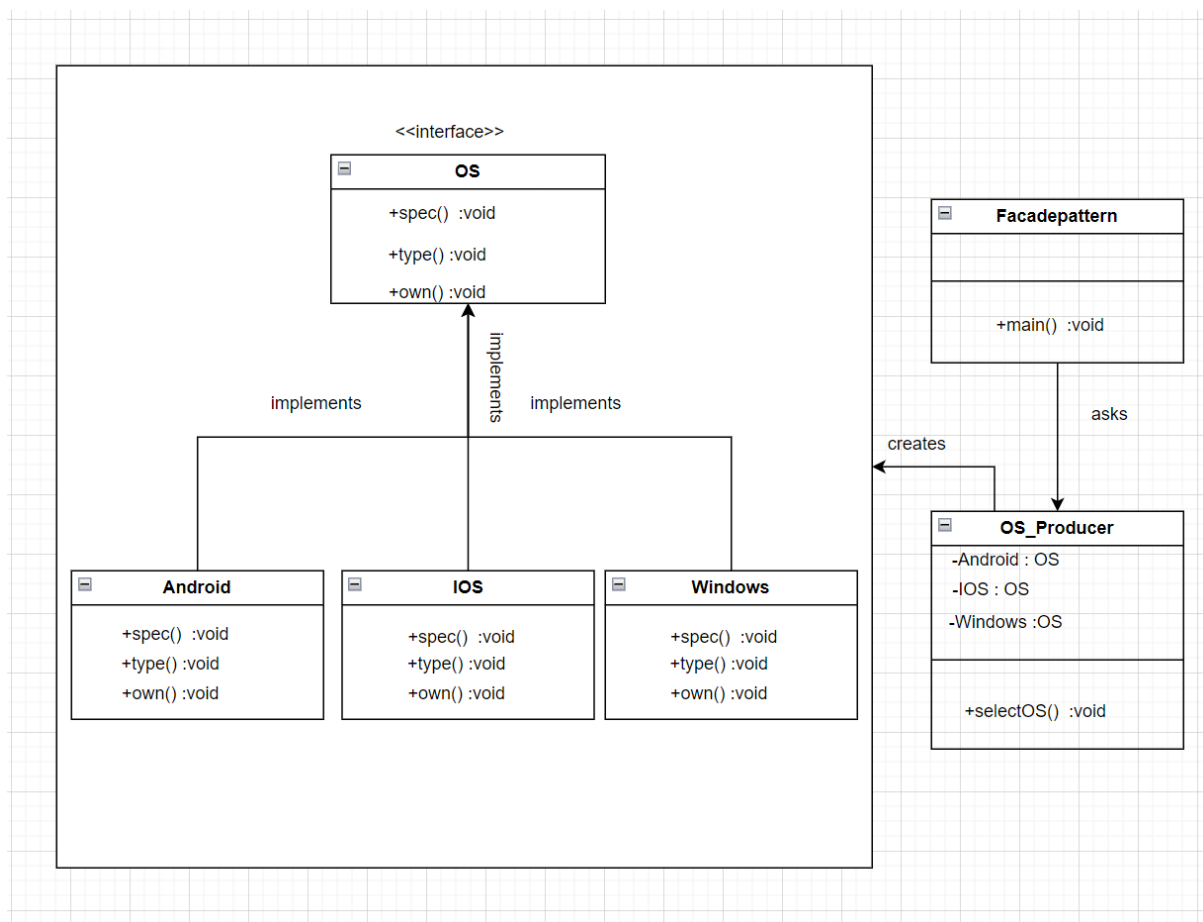
## Implementation:

I have created an OS interface in which two methods are there spec and type. Three classes which are Android, IOS and Windows implements the OS interface, an OS\_Producer is made when we call android or ios or windows all the details of that operating system comes in the output.

In main class which is facade\_pattern os\_producer object is called and user input is taken.

This was the implementation for Facade Design Pattern.

## UML Diagram:



## Code:

```
import java.util.Scanner;

interface OS {
    void spec();
    void type();
    void own();
}

class Android implements OS {

    public void own()
    {
        System.out.println("It is owned and formed by Google");
    }

    public void spec() {
        System.out.println("Android is the most powerful OS");
    }

    public void type() {
        System.out.println("The latest Android version is 14");
    }

}

class IOS implements OS {
    public void own()
    {
        System.out.println("It is owned and formed by Apple");
    }

    public void spec() {
        System.out.println("iOS is the most secure OS");
    }

    public void type() {
        System.out.println("The latest iPhone device is iPhone 15");
    }

}

class Windows implements OS {
    public void own()
    {
```

```

        System.out.println("It is owned and formed by Microsoft");
    }

    public void spec() {
        System.out.println("Windows has high performance and can perform a wide range of
tasks");
    }

    public void type() {
        System.out.println("Windows 11 is the latest");
    }
}

class OS_Producer {
    private OS android;
    private OS ios;
    private OS windows;

    public OS_Producer() {
        android = new Android();
        ios = new IOS();
        windows = new Windows();
    }

    public void selectOS(int choice) {
        switch (choice) {
            case 1:
                android.own();
                android.type();
                android.spec();
                break;
            case 2:
                ios.own();
                ios.type();
                ios.spec();
                break;
            case 3:
                windows.own();
                windows.type();
                windows.spec();
                break;
            default:
                System.out.println("Invalid choice!");
        }
    }
}

public class facadepattern {
    public static void main(String[] args) {

```

```

OS_Producer os_producer = new OS_Producer();
Scanner scanner = new Scanner(System.in);

System.out.println("Select an operating system:");
System.out.println("1. Android");
System.out.println("2. iOS");
System.out.println("3. Windows");

int choice = scanner.nextInt();
os_producer.selectOS(choice);

scanner.close();
}
}

```

## Output:

```

PS E:\Fourth sem\Design pattern lab> cd "e:\Fourth sem\Design pattern lab\" ;
Select an operating system:
1. Android
2. iOS
3. Windows
1
It is owned and formed by Google
The latest Android version is 14
Android is the most powerful OS
PS E:\Fourth sem\Design pattern lab> cd "e:\Fourth sem\Design pattern lab\" ;
Select an operating system:
1. Android
2. iOS
3. Windows
2
It is owned and formed by Apple
The latest iPhone device is iPhone 15
iOS is the most secure OS
PS E:\Fourth sem\Design pattern lab> cd "e:\Fourth sem\Design pattern lab\" ;
Select an operating system:
1. Android
2. iOS
3. Windows
3
It is owned and formed by Microsoft
Windows 11 is the latest
Windows has high performance and can perform a wide range of tasks
PS E:\Fourth sem\Design pattern lab> 

```

