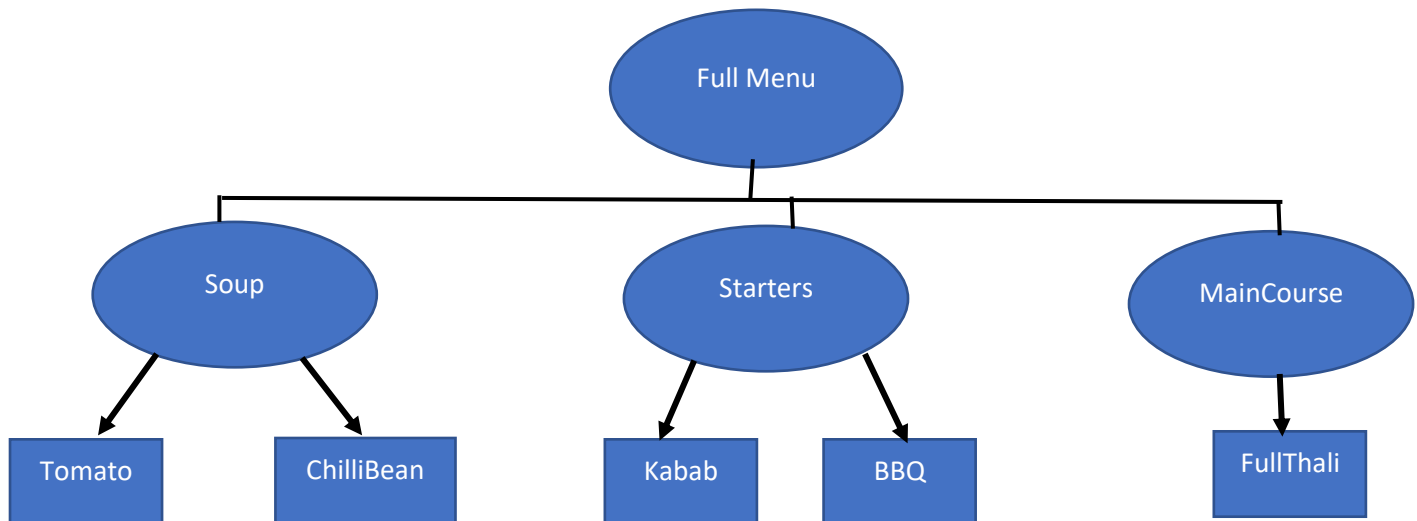# Experiment – 7

Aim – Composite design pattern (Structural pattern)

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Concept - Allowing clients to operate on hierarchy of objects.

Hierarchy :-

MenuItems.java

```java
import java.util.ArrayList;
import java.util.List;

interface Component{
    void showPrice();
}

class Leaf implements Component{
    int price;
    String name;

    public Leaf(String name , int price) {
        this.price = price;
        this.name = name;
    }

    @Override
    public void showPrice() {
        System.out.println(name + " : " + price + '\n');
    }
}

class Composite implements Component{
```

```java
    String name;
    List<Component> items = new ArrayList<>();

    public Composite(String name) {
        this.name = name;
    }

    public void addComponent(Component com){
        items.add(com);
    }

    @Override
    public void showPrice() {
        System.out.println(name);
        for (Component c : items){
            c.showPrice();
        }
    }
}
```

Restaurant.java

```java
//this is main class for testing composite objects

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

        Component sp1 = new Leaf("Tomato_Soup",200);
        Component sp2 = new Leaf("ChilliBean_Soup",250);
        Component str1 = new Leaf("Kabab",300);
        Component str2 = new Leaf("BBQ",350);
        Component th1= new Leaf("Full_Thali",500);

        Composite soup = new Composite("SOUP");
        Composite starter = new Composite("STARTER");
        Composite mainCourse = new Composite("Main_Course");
        Composite fullmenu = new Composite("Full_Menu");

        soup.addComponent(sp1);
        soup.addComponent(sp2);
        starter.addComponent(str1);
        starter.addComponent(str2);
        mainCourse.addComponent(th1);

        fullmenu.addComponent(soup);
        fullmenu.addComponent(starter);
        fullmenu.addComponent(mainCourse);

        fullmenu.showPrice();
        //starter.showPrice();


    }
}
```

Output : -

```
"C:\Program Files\Java\jdk-17.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2021.3.3\lib\idea_rt.jar=53
Full_Menu
SOUP
Tomato_Soup : 200 Rs

ChilliBean_Soup : 250 Rs

STARTER
Kabab : 300 Rs

BBQ : 350 Rs

Main_Course
Full_Thali : 500 Rs


Process finished with exit code 0
```