Bridge Pattern

Design Patterns

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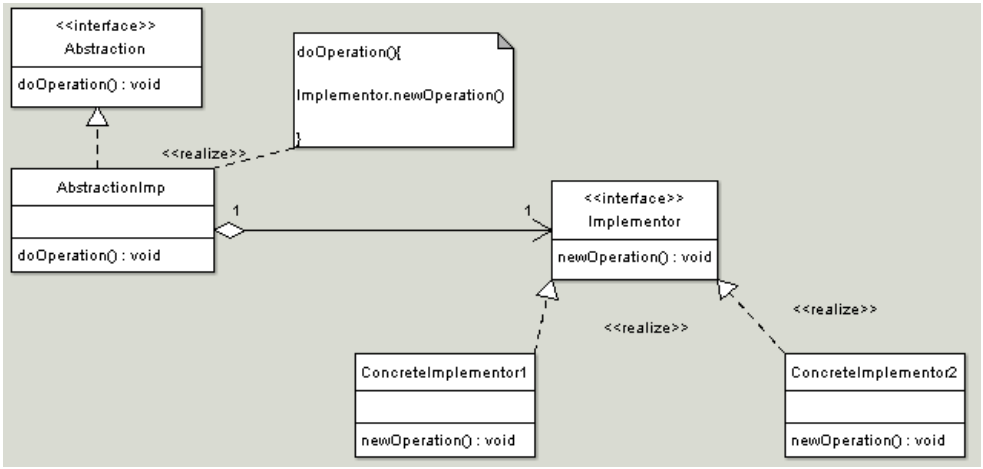
Introduction

This assignment is an application that I created to show how the bridge pattern works. In this application I am using warming up food to represent the bridge pattern. I use microwaves and toasters to heat foods.



The UML Diagram for Bridge

The UML Diagram for the bridge pattern, shown on the right, shows the classes that are needed to have the requirements. The Food interface represents the Abstraction interface and ConcreteFood represents AbstractionImp. The Heater interface represents the Implementer, and the Toaster and Microwave implement the Heater like the ConcreteImplementers. The table below shows how all of the classes were used.

Food	This is the interface that represents the Abstraction interface.
ConcreteFood	This is the class that represents the AbstractionImp class. It inherits from Food.
Heater	This interface represents the Implementer interface.
Microwave	This class is one of the ConcreteImplementer classes. It inherits from the Heater interface.
Toaster	This class is one of the ConcreteImplementer classes. It inherits from the Heater interface.
Form1	This is the client that shows the bridge pattern in action

Narrative

```
public interface Heater
{
    void heat(string food);
}
```

This is the interface for Heating up the food.

```
public class Microwave : Heater
{
    public void heat(string food)
    {
        MessageBox.Show("Enjoy your microwaved " + food);
    }
}
```

This is the microwave class. It inherits from the Heater interface. It shows a message saying that it microwaved the food.

```
public class Toaster : Heater
{
    public void heat(string food)
    {
        MessageBox.Show("Enjoy your wonderfully toasted " + food);
    }
}
```

This is the toaster class. It inherits from the Heater interface. It shows a message saying that it toasted the food.

```
public interface Food
{
    void warm(Heater heater);
}
```

This is the Food interface.

```
public class ConcreteFood : Food
{
    private string name;

    public ConcreteFood(string name)
    {
        this.name = name;
    }

    public void warm(Heater heater)
    {
        heater.heat(name);
    }
}
```

This is the ConcreteFood class. It inherits from the Food interface. In the constructor, it is passed the name of the food. The warm function is passed a heater object, in which it calls the heater.heat() method.

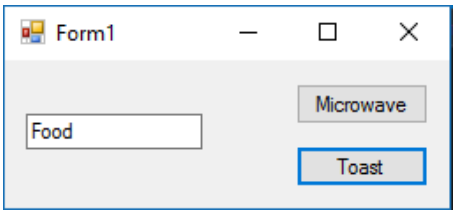
```
public partial class Form1 : Form
{
    Food food;
    public Form1()
    {
        InitializeComponent();
    }

    private void toastBtn_Click(object sender, EventArgs e)
    {
        food = new ConcreteFood(tbFood.Text);
        food.warm(new Toaster());
    }
```

This is the Form. It contains a Food object.

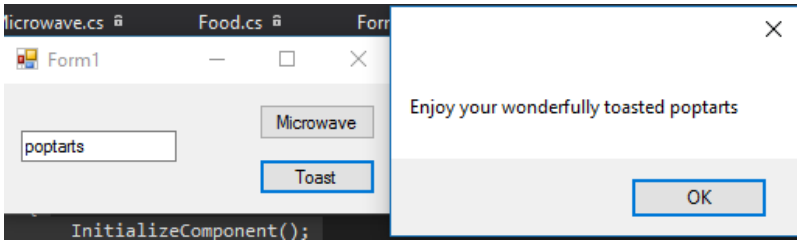
When the toaster button is clicked, it creates a new Concrete food with the textbox's text, and then calls the food.warm() method with a new Toaster object.

```
    private void microwaveBtn_Click(object sender, EventArgs
    {
        food = new ConcreteFood(tbFood.Text);
        food.warm(new Microwave());
    }
}
```

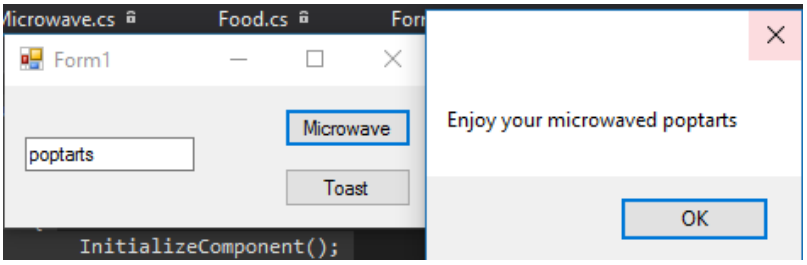
When the microwave button is clicked, it creates a new Concrete food with the textbox's text, and then calls the food.warm() method with a new Microwave object.



Initial setup



Poptarts entered into the textbox, and toast is pressed.



Poptarts entered into microwave, and microwave is pressed.

Conclusion

I did not see how this pattern is useful. I ended up doing a very simple program because I could not think of an application for it. It took me a while to understand how the pattern worked, but I think that I figured it out.