



OBSERVER

Design Pattern





INTERNATIONAL ISLAMIC UNIVERSITY ISLAMABAD

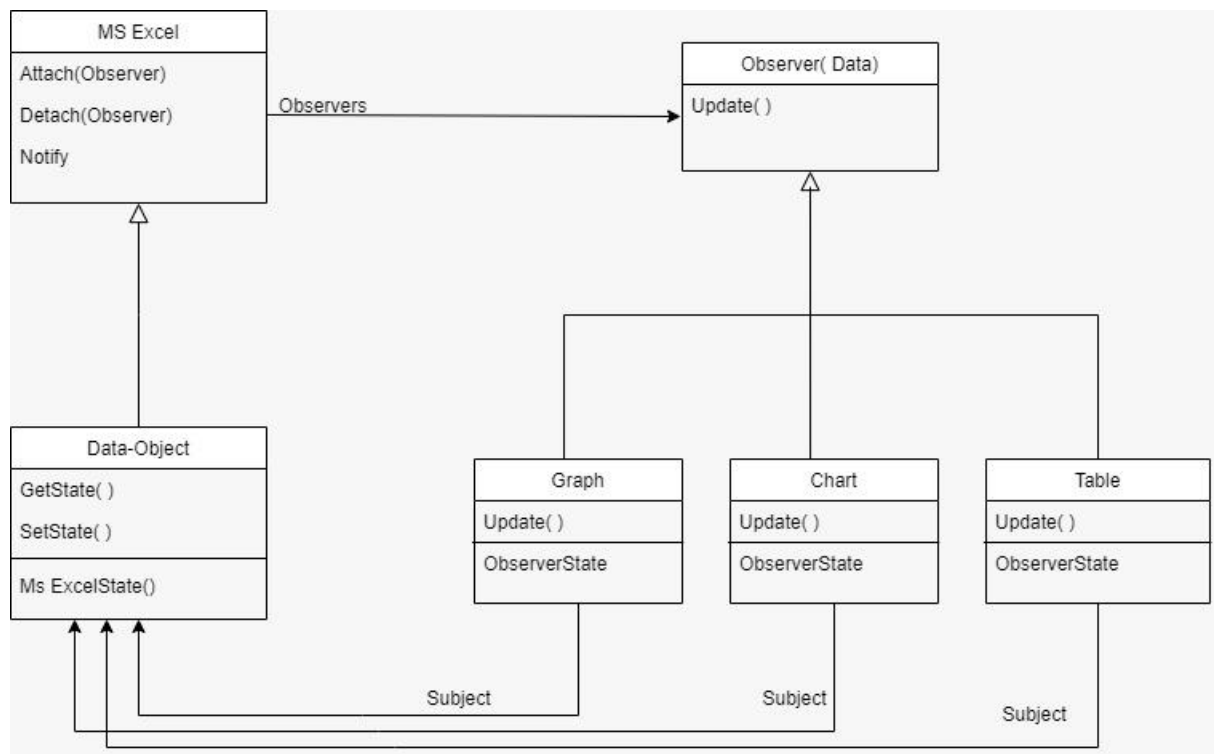
Report

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Course Title: Software Design and Architecture

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Consider the example of an MS Excel sheet that has different data objects, Graph, Pie-Chart, Tables. When a change is made in excel sheet, all the data objects that are subscribed with MS Excel sheet are notified to update themselves.

Class Diagram:



Source Code:

```

using System;
using System.Collections.Generic;
namespace Observer.Structural
{
    public class Program
    {
        public static void Main(string[] args)
        {
            Dataobj obj = new Dataobj();
            obj.Attach(new ConcreteData(obj, "Graph"));
            obj.Attach(new ConcreteData(obj, "Table"));
            obj.Attach(new ConcreteData(obj, "PieChart"));

            obj.SubjectState = "My World";
            obj.Notify();
        }
    }
}
  
```

```

        Console.ReadKey();
    }
}

public abstract class MS_Excel
{
    private List<Data> datas = new List<Data>();
    public void Attach(Data data)
    {
        datas.Add(data);
    }
    public void Detach(Data data)
    {
        datas.Remove(data);
    }
    public void Notify()
    {
        foreach (Data d in datas)
        {
            d.Update();
        }
    }
}

public class Dataobj : MS_Excel
{
    private string MS_ExcelState;

    public string SubjectState
    {
        get { return MS_ExcelState; }
        set { MS_ExcelState = value; }
    }
}

public abstract class Data
{
    public abstract void Update();
}

public class ConcreteData : Data
{
    private string name;
    private string dataState;
    private Dataobj MExcel;

    public ConcreteData(
        Dataobj subject, string name)
    {
        this.MExcel = subject;
        this.name = name;
    }
    public override void Update()
    {
        dataState = MExcel.SubjectState;
        Console.WriteLine("Excel sheet {0}'s data new state is {1}",
            name, dataState);
    }

    public Dataobj MS_Excel
    {

```

```
        get { return MExcel; }  
        set { MExcel = value; }  
    }  
}
```

Output:

Select C:\Users\ITS\source\repos\Observer\Observer\bin\Debug\Observer.exe

```
Excel sheet  Graph's data new state is My World  
Excel sheet  Table's data new state is My World  
Excel sheet  PieChart's data new state is My World
```

