

Adapter Design Pattern

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Content

- Issue
- Usage
- Example
- Exercise
- Sources

Issue

- reuse an already existing component which has a different „view of world“
- translate an interface into another one

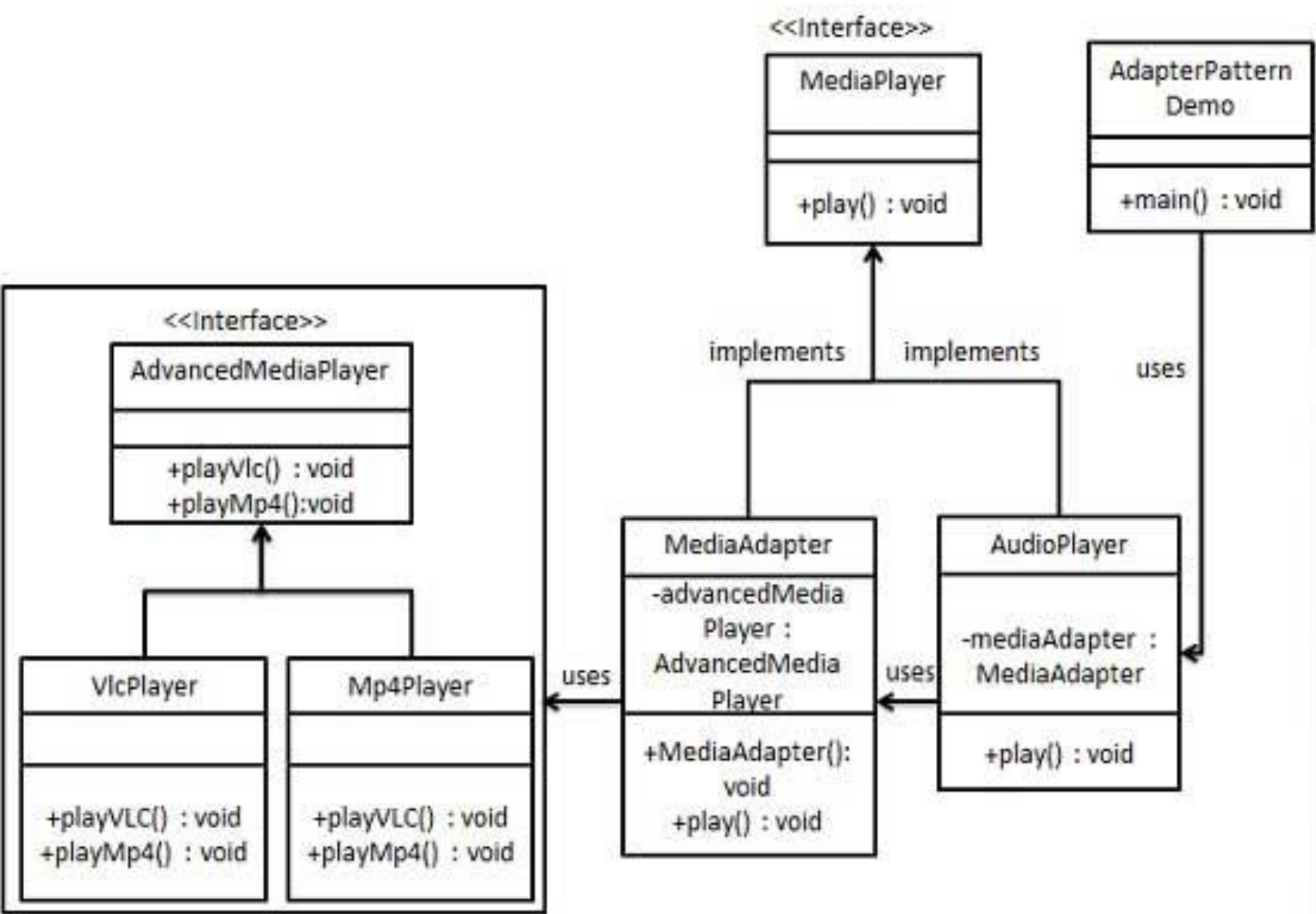
Usage

- Like a bridge between two incompatible interfaces
- The card reader translates as an adapter the card for the laptop



Example

- an Audio Player which can play mp3 files only
wants to use an advanced audio player which
can play vlc and mp4 files



```
public interface IMediaPlayer
{
    void Play(string audioType, string fileName);
}
```

```
public interface IAdvancedMediaPlayer
{
    void PlayVlc(string fileName);
    void PlayMp4(string fileName);
}
```



```
public class VlcPlayer : IAdvancedMediaPlayer
{
    public void PlayVlc(string fileName)
    {
        Console.WriteLine("Playing vlc file. Name: " + fileName);
    }

    public void PlayMp4(string fileName)
    {
        //do nothing
    }
}

public class Mp4Player : IAdvancedMediaPlayer
{
    public void PlayVlc(string fileName)
    {
        //do nothing
    }

    public void PlayMp4(string fileName)
    {
        Console.WriteLine("Playing mp4 file. Name: " + fileName);
    }
}
```

```
public class MediaAdapter : IMediaPlayer
{
    IAdvancedMediaPlayer advancedMusicPlayer;

    public MediaAdapter(string audioType)
    {
        if (audioType=="vlc")
        {
            advancedMusicPlayer = new VlcPlayer();
        }
        else if (audioType=="mp4")
        {
            advancedMusicPlayer =new Mp4Player();
        }
    }
    public void Play(string audioType, string fileName)
    {
        if (audioType=="vlc")
        {
            advancedMusicPlayer.PlayVlc(fileName);
        }
        else if (audioType=="mp4")
        {
            advancedMusicPlayer.PlayMp4(fileName);
        }
    }
}
```

```
public class AudioPlayer : IMediaPlayer
{
    MediaAdapter mediaAdapter;

    public void Play(string audioType, string fileName)
    {
        //inbuilt support to play mp3 music files
        if (audioType=="mp3")
        {
            Console.WriteLine("Playing mp3 file. Name: " + fileName);
        }

        //mediaAdapter is providing support to play other file formats
        else if (audioType=="vlc" || audioType=="mp4")
        {
            mediaAdapter = new MediaAdapter(audioType);
            mediaAdapter.Play(audioType, fileName);
        }

        else
        {
            Console.WriteLine("Invalid media. " + audioType + " format not supported");
        }
    }
}
```

Test

```
class Program
{
    static void Main(string[] args)
    {
        AudioPlayer audioPlayer = new AudioPlayer();

        audioPlayer.Play("mp3", "beyond the horizon.mp3");
        audioPlayer.Play("mp4", "alone.mp4");
        audioPlayer.Play("vlc", "far far away.vlc");
        audioPlayer.Play("avi", "mind me.avi");
    }
}
```



C:\WINDOWS\system32\cmd.exe

```
Playing mp3 file. Name: beyond the horizon.mp3
Playing mp4 file. Name: alone.mp4
Playing vlc file. Name: far far away.vlc
Invalid media. avi format not supported
```

Excercise

- Create an even more advanced media player which can play mp5 and vlx format files
- Use a new Adapter called AdvancedMediaAdapter
- Let the already existing audio player play mp5 and vlx format files

Sources

https://sourcemaking.com/design_patterns/adapter

https://www.tutorialspoint.com/design_pattern/adapter_pattern.htm

[https://de.wikipedia.org/wiki/Adapter_\(Entwurfsmuster\)](https://de.wikipedia.org/wiki/Adapter_(Entwurfsmuster))