

Nama: Pradana Argo Pangestu
Nim : 2311104079
Kelas: SE0702

https://github.com/Pradana123/KPL_PradanaAP_2311104079/tree/main/06_Design_by_Contract_dan_Defensive_Programing/JURNALMODUL6_2311104079

Hasilrun:

```
Video 1 judul: Review Film Your Name
Video 2 judul: Review Film Spirited Away
Video 3 judul: Review Film A Silent Voice
Video 4 judul: Review Film Weathering With You
Video 5 judul: Review Film Howl's Moving Castle
Video 6 judul: Review Film Grave of the Fireflies
Video 7 judul: Review Film My Neighbor Totoro
Video 8 judul: Review Film One Piece Film: Red
Video 9 judul: Review Film The Wind Rises
Video 10 judul: Review Film Jujutsu Kaisen
```

Hasil run setelah MENAMBAHKAN IMPLEMENTASI DESIGN BY CONTRACT:

```
ID: 92918
Title: Review Film Your Name
Play Count: 5000000
ID: 74603
Title: Review Film Spirited Away
Play Count: 7200000
ID: 15537
Title: Review Film A Silent Voice
Play Count: 4300000
ID: 56113
Title: Review Film Weathering With You
Play Count: 6100000
ID: 63647
Title: Review Film Howl's Moving Castle
Play Count: 5500000
ID: 48290
Title: Review Film Grave of the Fireflies
Play Count: 3800000
ID: 13188
Title: Review Film My Neighbor Totoro
Play Count: 5900000
ID: 99460
Title: Review Film One Piece Film: Red
Play Count: 8200000

Testing IncreasePlayCount...
ID: 30917
Title: Test Video
Play Count: 10000000

Testing Overflow...
Exception caught: Play count harus antara 1 - 25.000.000
```

MENAMBAHKAN KODE AWAL:

```
1  using System;
2
3  public class SayaTubeVideo
4  {
5      private int id;
6      private string title;
7      private int playCount;
8
9      public SayaTubeVideo(string title)
10     {
11         Random rand = new Random();
12         this.id = rand.Next(10000, 99999);
13         this.title = title;
14         this.playCount = 0;
15     }
16
17     public void IncreasePlayCount(int count)
18     {
19         this.playCount += count;
20     }
21
22     public void PrintVideoDetails()
23     {
24         Console.WriteLine($"ID: {id}");
25         Console.WriteLine($"Title: {title}");
26         Console.WriteLine($"Play Count: {playCount}");
27     }
28
29     // Tambahkan getter agar bisa diakses dari SayaTubeUser
30     public string GetTitle()
31     {
32         return title;
33     }
34
35     public int GetPlayCount()
36     {
37         return playCount;
38     }
39 }
40
```

```
1 using System;
2 using System.Collections.Generic;
3
4 public class SayaTubeUser
5 {
6     private int id;
7     private string username;
8     private List<SayaTubeVideo> uploadedVideos;
9
10    public SayaTubeUser(string username)
11    {
12        Random rand = new Random();
13        this.id = rand.Next(10000, 99999);
14        this.username = username;
15        this.uploadedVideos = new List<SayaTubeVideo>();
16    }
17
18    public void AddVideo(SayaTubeVideo video)
19    {
20        uploadedVideos.Add(video);
21    }
22
23    public int GetTotalVideoPlayCount()
24    {
25        int total = 0;
26        foreach (var video in uploadedVideos)
27        {
28            total += video.GetPlayCount(); // Perbaikan: gunakan getter
29        }
30        return total;
31    }
32
33    public void PrintAllVideoPlaycount()
34    {
35        Console.WriteLine($"User: {username}");
36        for (int i = 0; i < uploadedVideos.Count; i++)
37        {
38            Console.WriteLine($"Video {i + 1} judul: {uploadedVideos[i].GetTitle()}"); // Perbaikan: gunakan getter
39        }
40    }
41 }
42
```

```

1  using System;
2
3  class Program
4  {
5      static void Main()
6      {
7          SayaTubeUser user = new SayaTubeUser("Pradana Argo P");
8
9          string[] judulFilm = {
10             "Review Film Your Name",
11             "Review Film Spirited Away",
12             "Review Film A Silent Voice",
13             "Review Film Weathering With You",
14             "Review Film Howl's Moving Castle",
15             "Review Film Grave of the Fireflies",
16             "Review Film My Neighbor Totoro",
17             "Review Film One Piece Film: Red",
18             "Review Film The Wind Rises",
19             "Review Film Jujutsu Kaisen"
20         };
21
22         foreach (string judul in judulFilm)
23         {
24             SayaTubeVideo video = new SayaTubeVideo(judul);
25             user.AddVideo(video);
26         }
27
28         user.PrintAllVideoPlaycount();
29     }
30 }
31

```

Program ini terdiri dari dua kelas utama:

1. SayaTubeVideo

- Mewakili video dengan atribut: id, title, dan playCount.
- id dibuat acak, title diisi dari parameter, dan playCount mulai dari 0.
- IncreasePlayCount() menambah jumlah tayangan.
- PrintVideoDetails() menampilkan info video.
- Disediakan getter untuk title dan playCount.

2. SayaTubeUser

- Mewakili pengguna dengan id, username, dan daftar video (uploadedVideos).
- AddVideo() menambahkan video ke daftar.
- GetTotalVideoPlayCount() menghitung total tayangan semua video.
- PrintAllVideoPlaycount() menampilkan judul semua video yang diunggah.

3. Main Program

- Membuat objek pengguna bernama **"Pradana Argo P"**.
- Menambahkan beberapa judul film animasi ke daftar videonya.
- Semua video ditampilkan menggunakan PrintAllVideoPlaycount().

MENAMBAHKAN IMPLEMENTASI DESIGN BY CONTRACT:

```
1 using System;
2 using System.Diagnostics;
3
4 public class SayaTubeVideo
5 {
6     private int id;
7     private string title;
8     private int playCount;
9
10    public SayaTubeVideo(string title)
11    {
12        Debug.Assert(title != null && title.Length <= 200, "Judul video tidak boleh null atau lebih dari 200 karakter");
13
14        Random rand = new Random();
15        this.id = rand.Next(10000, 99999);
16        this.title = title;
17        this.playCount = 0;
18    }
19
20    public void IncreasePlayCount(int count)
21    {
22        if (count <= 0 || count > 25000000)
23        {
24            throw new ArgumentException("Play count harus antara 1 - 25.000.000");
25        }
26
27        try
28        {
29            checked
30            {
31                playCount += count;
32            }
33        }
34        catch (OverflowException)
35        {
36            Console.WriteLine("Error: Play count melebihi batas integer!");
37        }
38    }
39
40
41    public void PrintVideoDetails()
42    {
43        Console.WriteLine($"ID: {id}");
44        Console.WriteLine($"Title: {title}");
45        Console.WriteLine($"Play Count: {playCount}");
46    }
47
48    // Getter untuk mengakses title dan playCount
49    public string GetTitle()
50    {
51        return title;
52    }
53
54    public int GetPlayCount()
55    {
56        return playCount;
57    }
58 }
59
```

```
1 using System;
2 using System.Collections.Generic;
3 using System.Diagnostics;
4
5 public class SayaTubeUser
6 {
7     private int id;
8     private string username;
9     private List<SayaTubeVideo> uploadedVideos;
10
11     public SayaTubeUser(string username)
12     {
13         Debug.Assert(username != null && username.Length <= 100, "Username tidak boleh null atau lebih dari 100 karakter");
14
15         Random rand = new Random();
16         this.id = rand.Next(10000, 99999);
17         this.username = username;
18         this.uploadedVideos = new List<SayaTubeVideo>();
19     }
20
21     public void AddVideo(SayaTubeVideo video)
22     {
23         Debug.Assert(video != null, "Video tidak boleh null");
24         Debug.Assert(video.GetPlayCount() < int.MaxValue, "Play count harus kurang dari batas maksimum integer");
25
26         uploadedVideos.Add(video);
27     }
28
29     public int GetTotalVideoPlayCount()
30     {
31         int total = 0;
32         foreach (var video in uploadedVideos)
33         {
34             total += video.GetPlayCount(); // Menggunakan getter
35         }
36         return total;
37     }
38
39     public void PrintAllVideoPlaycount()
40     {
41         Console.WriteLine($"User: {username}");
42         int count = 0;
43         foreach (var video in uploadedVideos)
44         {
45             if (count == 8) break; // Post-condition: Maksimal print 8 video
46             video.PrintVideoDetails();
47             count++;
48         }
49     }
50 }
51
```

```
1  using System;
2
3  class Program
4  {
5      static void Main()
6      {
7          SayaTubeUser user = new SayaTubeUser("Pradana Argo P");
8
9          (string judul, int playCount)[] daftarFilm = {
10              ("Review Film Your Name", 5000000),
11              ("Review Film Spirited Away", 7200000),
12              ("Review Film A Silent Voice", 4300000),
13              ("Review Film Weathering With You", 6100000),
14              ("Review Film Howl's Moving Castle", 5500000),
15              ("Review Film Grave of the Fireflies", 3800000),
16              ("Review Film My Neighbor Totoro", 5900000),
17              ("Review Film One Piece Film: Red", 8200000),
18              ("Review Film The Wind Rises", 4700000),
19              ("Review Film Jujutsu Kaisen", 7600000)
20          };
21
22          foreach (var film in daftarFilm)
23          {
24              SayaTubeVideo video = new SayaTubeVideo(film.judul);
25              video.IncreasePlayCount(film.playCount);
26              user.AddVideo(video);
27          }
28
29          user.PrintAllVideoPlaycount();
30
31          // Testing IncreasePlayCount
32          Console.WriteLine("\nTesting IncreasePlayCount...");
33          SayaTubeVideo testVideo = new SayaTubeVideo("Test Video");
34          testVideo.IncreasePlayCount(10000000);
35          testVideo.PrintVideoDetails();
36
37          // Testing Overflow
38          Console.WriteLine("\nTesting Overflow...");
39          try
40          {
41              testVideo.IncreasePlayCount(int.MaxValue);
42          }
43          catch (Exception ex)
44          {
45              Console.WriteLine($"Exception caught: {ex.Message}");
46          }
47      }
48  }
```


Program ini terdiri dari dua kelas utama: **SayaTubeVideo** dan **SayaTubeUser**.

- **SayaTubeVideo** menyimpan data video seperti id, title, dan playCount.
 - id dibuat acak.
 - title divalidasi agar tidak kosong dan maksimal 200 karakter.
 - IncreasePlayCount() menambah play count, maksimal 25 juta per kali, dan dicek overflow.
 - PrintVideoDetails() menampilkan info video.
 - Disediakan getter untuk title dan playCount.
- **SayaTubeUser** menyimpan data pengguna dan daftar video miliknya.
 - username divalidasi (tidak null dan maksimal 100 karakter).
 - AddVideo() menambahkan video ke daftar, dengan validasi agar video tidak null dan play count aman.
 - GetTotalVideoPlayCount() menjumlahkan semua play count.
 - PrintAllVideoPlaycount() menampilkan info maksimal 8 video.

Di **program utama**, dibuat pengguna bernama "**Pradana Argo P**", lalu ditambahkan video-video anime ke daftar. Setiap video diberi play count, lalu ditampilkan. Program juga menguji error jika play count melebihi batas aman.