

Marvel Sanjaya Setiawan

2311104053

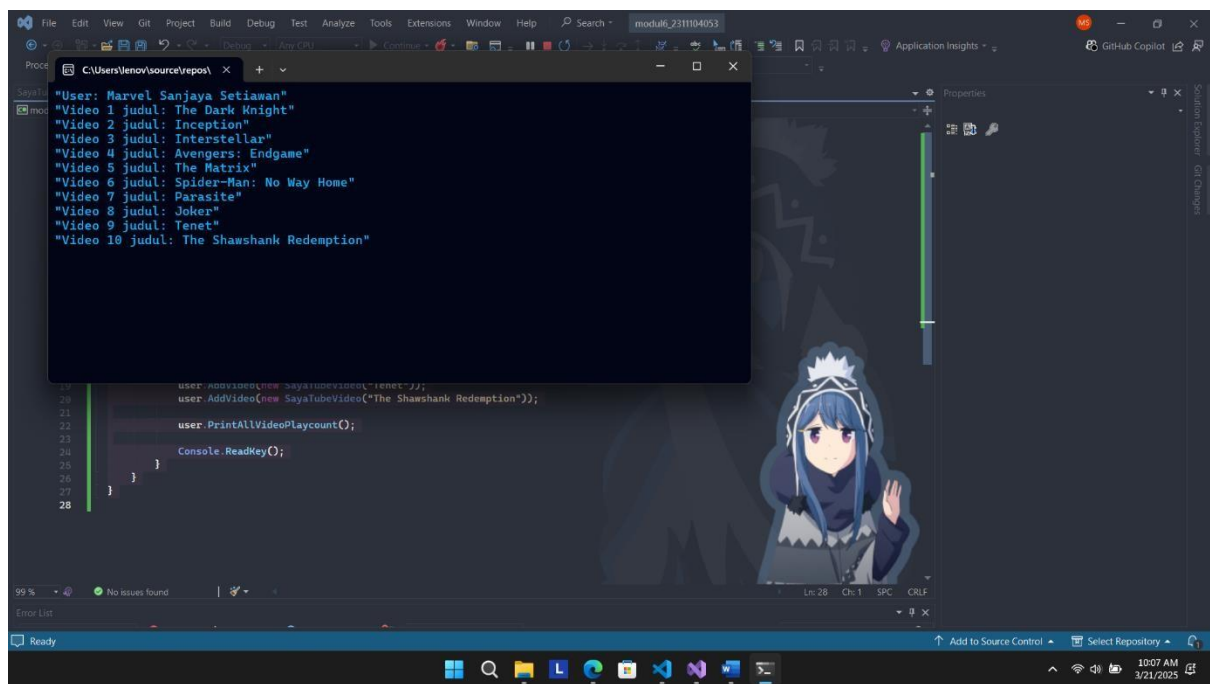
SE07-02

## JURNAL MODUL 6

Link github:

[https://github.com/Meph1sto14/KPL\\_Marvel\\_Sanjaya\\_Setiawan\\_2311104053\\_SE0702/tree/9ec612b06561ce6981edb84c83d343ad73a569f1/06\\_Design\\_by\\_Contract\\_dan\\_Defensive\\_Programming](https://github.com/Meph1sto14/KPL_Marvel_Sanjaya_Setiawan_2311104053_SE0702/tree/9ec612b06561ce6981edb84c83d343ad73a569f1/06_Design_by_Contract_dan_Defensive_Programming)

Hasil Run:



SayaTubeVideo.cs

```
1. using System;
2.
3.     namespace modul6_2311104053
4.     {
5.         class SayaTubeVideo
6.         {
7.             private int id;
8.             private string title;
9.             private int playCount; 10.
11.             public SayaTubeVideo(string title) 12.
12.         {
```

```

13.     if (string.IsNullOrEmpty(title) || title.Length > 200)
14.     throw new ArgumentException("Judul video tidak boleh kosong dan maksimal 200
15. karakter."); 15.
16.     Random random = new Random();
17.     this.id = random.Next(10000, 99999);
18.     this.title = title;
19.     this.playCount = 0; 20.         } 21.
22.     public void IncreasePlayCount(int count)
23.     {
24.         if (count < 0 || count > 25000000)
25.         throw new ArgumentException("Play count harus antara 0 dan 25.000.000."); 26.
27.         checked
28.         {
29.             if (playCount + count > int.MaxValue)
30.             throw new OverflowException("Jumlah play count melebihi batas maksimum integer.");
31.             playCount += count;
32.         } 33.         } 34.
35.     public void PrintVideoDetails()
36.     {
37.         Console.WriteLine($"ID: {id}");
38.         Console.WriteLine($"Title: {title}");
39.         Console.WriteLine($"Play Count: {playCount}");
40.     } 41.
42.     public int GetPlayCount()
43.     {
44.         return playCount; 45.         } 46.
47.         public string GetTitle()
48.         {
49.             return title;
50.         }
51.     }
52.     }
53.

```

Penjelasan kodingan:

Kelas SayaTubeVideo merepresentasikan video dengan id, title, dan playCount.

1. **Atribut:** id (acak), title (validasi 200 karakter), playCount (dimulai dari 0).
2. **Metode:** IncreasePlayCount (tambah play count dengan validasi), PrintVideoDetails (tampilkan detail video), GetPlayCount dan GetTitle (ambil data).

SayaTubeUser.cs

```

1. using System;
2. using System.Collections.Generic; 3.
4.     namespace modul6_2311104053
5.     {
6.         class SayaTubeUser
7.         {
8.             private int id;

```

```

9.     private string username;
10.    private List<SayaTubeVideo> uploadedVideos; 11.
12.    public SayaTubeUser(string username)
13.    {
14.        if (string.IsNullOrEmpty(username) || username.Length > 100)
15.            throw new ArgumentException("Username tidak boleh kosong dan maksimal 100 karakter.");
16.
17.        Random random = new Random();
18.        this.id = random.Next(10000, 99999);
19.        this.username = username;
20.        this.uploadedVideos = new List<SayaTubeVideo>();
21.    } 22.
23.    public void AddVideo(SayaTubeVideo video)
24.    {
25.        if (video == null)
26.            throw new ArgumentNullException("Video tidak boleh null."); 27.
28.        uploadedVideos.Add(video);
29.    } 30.
31.    public int GetTotalVideoPlayCount()
32.    {
33.        int total = 0;
34.        foreach (var video in uploadedVideos)
35.        {
36.            total += video.GetPlayCount();
37.        }
38.        return total; 39.    } 40.
41.    public void PrintAllVideoPlaycount()
42.    {
43.        Console.WriteLine($"\"User: {username}\"");
44.        for (int i = 0; i < Math.Min(uploadedVideos.Count, 10); i++) 45.            {
46.            Console.WriteLine($"\"Video {i + 1} judul:
47.            {uploadedVideos[i].GetTitle()}\"");
48.        } 48.    } 49.
49.    }
50.    }
51.    }
52.

```

Penjelasan kodingan:

Kelas SayaTubeUser merepresentasikan pengguna dengan id, username, dan daftar video.

1. **Atribut:** id (acak), username (validasi 100 karakter), uploadedVideos (list video).
2. **Metode:** AddVideo (tambah video), GetTotalVideoPlayCount (total play count), PrintAllVideoPlaycount (tampilkan 10 video pertama).

Program.cs

```

1. using System;
2.
3. namespace modul6_2311104053
4. {
5.     class Program
6.     {

```

```

7.     static void Main(string[] args)
8.     {
9.         SayaTubeUser user = new SayaTubeUser("Marvel Sanjaya Setiawan"); 10.
11.        user.AddVideo(new SayaTubeVideo("The Dark Knight"));
12.        user.AddVideo(new SayaTubeVideo("Inception"));
13.        user.AddVideo(new SayaTubeVideo("Interstellar"));
14.        user.AddVideo(new SayaTubeVideo("Avengers: Endgame"));
15.        user.AddVideo(new SayaTubeVideo("The Matrix"));
16.        user.AddVideo(new SayaTubeVideo("Spider-Man: No Way Home"));
17.        user.AddVideo(new SayaTubeVideo("Parasite"));
18.        user.AddVideo(new SayaTubeVideo("Joker"));
19.        user.AddVideo(new SayaTubeVideo("Tenet"));
20.        user.AddVideo(new SayaTubeVideo("The Shawshank Redemption")); 21.
22.        user.PrintAllVideoPlaycount(); 23.
24.        Console.ReadKey();
25.    }
26. }
27. }
28.

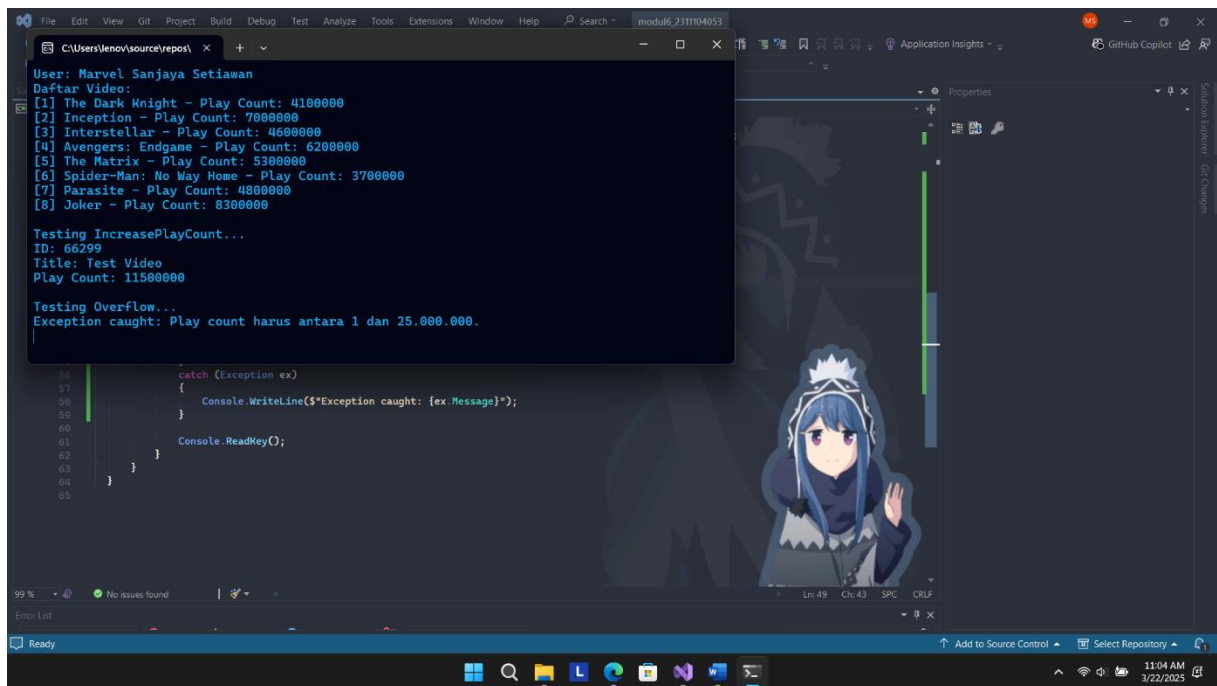
```

Penjelasan kodingan:

Program ini membuat objek SayaTubeUser dengan nama pengguna "Marvel Sanjaya Setiawan".

1. **Langkah utama:**
  - a. Menambahkan 10 video ke daftar pengguna dengan judul masing-masing.
  - b. Menampilkan hingga 10 video pertama dari daftar menggunakan PrintAllVideoPlaycount.
2. **Akhir:** Program menunggu input pengguna dengan Console.ReadKey() sebelum selesai.

Hasil run setelah menambahkan implementasi design by contract



```
File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help module6_2311104053
C:\Users\lenov\source\repos\...
User: Marvel Sanjaya Setiawan
Daftar Video:
[1] The Dark Knight - Play Count: 4100000
[2] Inception - Play Count: 7000000
[3] Interstellar - Play Count: 4600000
[4] Avengers: Endgame - Play Count: 6200000
[5] The Matrix - Play Count: 5300000
[6] Spider-Man: No Way Home - Play Count: 3700000
[7] Parasite - Play Count: 4800000
[8] Joker - Play Count: 8300000

Testing IncreasePlayCount...
ID: 66299
Title: Test Video
Play Count: 11500000

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

56         catch (Exception ex)
57         {
58             Console.WriteLine($"Exception caught: {ex.Message}");
59         }
60     }
61     Console.ReadKey();
62 }
63 }
64 }
65 }

99% No issues found
Error List
Ready
Add to Source Control Select Repository
11:04 AM 3/22/2025
```

SayaTubeVideo.cs

```
1. using System;
2.
3. namespace modul6_2311104053
4. {
5.     class SayaTubeVideo
6.     {
7.         private int id;
8.         private string title;
9.         private int playCount;
10.
11.         public SayaTubeVideo(string title)
12.         {
13.             if (string.IsNullOrEmpty(title) || title.Length > 200)
14.                 throw new ArgumentException("Judul video tidak boleh kosong dan maksimal 200 karakter.");
15.
16.             Random random = new Random();
17.             this.id = random.Next(10000, 99999);
18.             this.title = title;
19.             this.playCount = 0;
20.         }
21.
22.         public void IncreasePlayCount(int count)
23.         {
24.             if (count < 0 || count > 25000000)
25.                 throw new ArgumentException("Play count harus antara 1 dan 25.000.000.");
26.
27.             checked
28.             {
29.                 try
30.                 {
31.                     if (playCount + count > int.MaxValue)
32.                         throw new OverflowException("Jumlah play count melebihi batas maksimum integer.");
33.                     playCount += count;
34.                 }
35.                 catch (OverflowException ex)
36.                 {
37.                 }
38.             }
39.         }
40.     }
41. }
```

```

37.             Console.WriteLine($"Exception caught: {ex.Message}");
38.         }
39.     }
40. }
41.
42.     public void PrintVideoDetails()
43.     {
44.         Console.WriteLine($"ID: {id}");
45.         Console.WriteLine($"Title: {title}");
46.         Console.WriteLine($"Play Count: {playCount}");
47.     }
48.
49.     public int GetPlayCount() => playCount;
50.     public string GetTitle() => title;
51. }
52. }
53.

```

Penjelasan Kodingan:

Kelas SayaTubeVideo mendeskripsikan video dengan properti:

1. **ID:** Dibuat acak untuk setiap video.
2. **Title:** Validasi agar tidak kosong dan  $\leq 200$  karakter.
3. **Play Count:** Jumlah tayangan video.

Metode:

1. **Konstruktor:** Inisialisasi ID, judul, dan play count.
2. **IncreasePlayCount:** Menambah tayangan dengan validasi batas.
3. **PrintVideoDetails:** Cetak detail video.
4. **Getter:** Akses nilai judul dan tayangan.

SayaTubeUser.cs

```

1. using System;
2. using System.Collections.Generic;
3.
4. namespace modul6_2311104053
5. {
6.     class SayaTubeUser
7.     {
8.         private int id;
9.         private string username;
10.        private List<SayaTubeVideo> uploadedVideos;
11.
12.        public SayaTubeUser(string username)
13.        {
14.            if (string.IsNullOrEmpty(username) || username.Length > 100)
15.                throw new ArgumentException("Username tidak boleh kosong dan maksimal 100
16. karakter.");
17.
18.            Random random = new Random();
19.            this.id = random.Next(10000, 99999);
20.            this.username = username;
21.            this.uploadedVideos = new List<SayaTubeVideo>();
22.        }
23.
24.        public void AddVideo(SayaTubeVideo video)
25.        {
26.            if (video == null)
27.

```

```

26.         throw new ArgumentNullException("Video tidak boleh null.");
27.
28.         uploadedVideos.Add(video);
29.     }
30.
31.     public int GetTotalVideoPlayCount()
32.     {
33.         int total = 0;
34.         foreach (var video in uploadedVideos)
35.         {
36.             total += video.GetPlayCount();
37.         }
38.         return total;
39.     }
40.
41.     public void PrintAllVideoPlaycount()
42.     {
43.         Console.WriteLine($"User: {username}");
44.         Console.WriteLine("Daftar Video:");
45.
46.         for (int i = 0; i < Math.Min(uploadedVideos.Count, 8); i++)
47.         {
48.             Console.WriteLine($"[{i + 1}] {uploadedVideos[i].GetTitle()} - Play Count: {uploadedVideos[i].GetPlayCount()}");
49.         }
50.     }
51. }
52. }
53.

```

Penjelasan kodingan:

Kelas SayaTubeUser merepresentasikan pengguna yang dapat:

1. Menyimpan ID, username (validasi  $\leq 100$  karakter), dan daftar video.
2. Menambah video dengan validasi.
3. Menghitung total tayangan semua video.
4. Menampilkan hingga 8 video dengan jumlah tayangannya.

Program.cs

```

1. using System;
2. using System.Collections.Generic;
3.
4. namespace modul6_2311104053
5. {
6.     class Program
7.     {
8.         static void Main(string[] args)
9.         {
10.             SayaTubeUser user = new SayaTubeUser("Marvel Sanjaya Setiawan");
11.
12.             List<string> videoTitles = new List<string>
13.             {
14.                 "The Dark Knight",
15.                 "Inception",
16.                 "Interstellar",
17.                 "Avengers: Endgame",
18.                 "The Matrix",
19.                 "Spider-Man: No Way Home",
20.                 "Parasite",
21.                 "Joker",

```

```

22.         "Tenet",
23.         "The Shawshank Redemption"
24.     };
25.
26.
27.     List<SayaTubeVideo> videos = new List<SayaTubeVideo>();
28.     foreach (var title in videoTitles)
29.     {
30.         videos.Add(new SayaTubeVideo(title));
31.     }
32.
33.     for (int i = 0; i < 10; i++)
34.     {
35.         user.AddVideo(videos[i]);
36.     }
37.
38.     int[] playCounts = { 4100000, 7000000, 4600000, 6200000, 5300000, 3700000,
4800000, 8300000 };
39.     for (int i = 0; i < playCounts.Length; i++)
40.     {
41.         videos[i].IncreasePlayCount(playCounts[i]);
42.     }
43.
44.     user.PrintAllVideoPlaycount();
45.
46.     Console.WriteLine("\nTesting IncreasePlayCount...");
47.     SayaTubeVideo testVideo = new SayaTubeVideo("Test Video");
48.     testVideo.IncreasePlayCount(11500000);
49.     testVideo.PrintVideoDetails();
50.
51.     Console.WriteLine("\nTesting Overflow...");
52.     try
53.     {
54.         testVideo.IncreasePlayCount(26000000);
55.     }
56.     catch (Exception ex)
57.     {
58.         Console.WriteLine($"Exception caught: {ex.Message}");
59.     }
60.
61.     Console.ReadKey();
62. }
63. }
64. }
65.

```

#### Penjelasan Kodingan:

Kelas Program merepresentasikan alur program yang dapat:

1. Membuat objek user dan video dengan validasi.
2. Menambahkan video ke daftar milik user.
3. Mengatur jumlah tayangan video dengan batas tertentu.
4. Menampilkan hingga 8 video dan jumlah tayangannya.
5. Menguji validasi error seperti overflow pada play count.