

Задача: проанализировать IL-код метода, возвращающего анонимный тип.

The screenshot displays the Visual Studio IDE with three main panes. The left pane shows the 'Assembly Explorer' with a project tree. The middle pane shows the 'Program.cs' file with C# code for a 'Song' class and a 'GetSongData' method. The right pane shows the 'IL Viewer' for the 'GetSongData' method, displaying the Intermediate Language (IL) code generated by the compiler.

C# Code (Program.cs):

```
48 public Song(string title, uint duration, string author, uint yearMade, MusicGenres genre)
49 {
50     Title = title;
51     Duration = duration;
52     Author = author;
53     YearMade = yearMade;
54     Genre = genre;
55 }
56
57 public static Song GetSongInstance()
58 {
59     Console.WriteLine("Input song's title: ");
60     string title = Console.ReadLine();
61     Console.WriteLine("Input song's duration: ");
62     uint duration = GetUintValue();
63     Console.WriteLine("Input song's author: ");
64     string author = Console.ReadLine();
65     Console.WriteLine("Input song's Year Made: ");
66     uint yearMade = GetUintValue();
67     Console.WriteLine("Input song's Genre: ");
68     string inputGenre;
69     inputGenre = Console.ReadLine();
70     if (!Enum.TryParse(inputGenre, true, out MusicGenres genre) && Enum.IsDefined(typeof(MusicGenres), inputGenre))
71     {
72         Console.WriteLine("Program cannot parse inputted data. Try again: ");
73     }
74     return new Song(title, duration, author, yearMade, genre);
75 }
76
77 public static uint GetUintValue()
78 {
79     for (; )
80     {
81         string inputUintValue = Console.ReadLine();
82         if (uint.TryParse(inputUintValue, out uint intValue)) return intValue;
83         Console.WriteLine("Program cannot parse inputted data. Try again: ");
84     }
85 }
86
87 public static dynamic GetSongData(Song song)
88 {
89     string songGenre = song.Genre.ToString();
90     return new { song.Title, song.Duration, song.Author, song.YearMade, song.Genre };
91 }
```

IL Code (IL Viewer):

```
// end of method Song::GetUintValue
.method public hidebysig static object
GetSongData(
    class Task1.Song song
) cil managed
{
    .param [0]
    .custom instance void [System.Linq.Expressions]System.Runtime.CompilerServices.DynamicAttribute::ctor(
        = (01 00 00 00 )
    ) maxstack 5
    .locals init (
        [0] string songGenre,
        [1] valuetype Task1.MusicGenres V_1,
        [2] object V_2
    )
    // [85 9 - 85 10]
    IL_0000: nop

    // [86 13 - 86 54]
    IL_0001: ldarg.0 // song
    IL_0002: callvirt instance valuetype Task1.MusicGenres Task1.Song::get_Genre()
    IL_0003: stloc.1 // V_1
    IL_0004: ldloc.s V_1
    IL_0005: constrained. Task1.MusicGenres
    IL_0006: callvirt instance string [System.Runtime]System.Object::ToString()
    IL_0007: stloc.0 // songGenre

    // [87 13 - 87 91]
    IL_0008: ldarg.0 // song
    IL_0009: callvirt instance string Task1.Song::get_Title()
    IL_000A: ldarg.0 // song
    IL_000B: callvirt instance unsigned int32 Task1.Song::get_Duration()
    IL_000C: ldarg.0 // song
    IL_000D: callvirt instance string Task1.Song::get_Author()
    IL_000E: ldarg.0 // song
    IL_000F: callvirt instance unsigned int32 Task1.Song::get_YearMade()
    IL_0010: ldloc.0 // songGenre
    IL_0011: newobj instance void class '<>f__AnonymousType0'5'<string, unsigned int32, string, unsigned int32, string>
    IL_0012: stloc.2 // V_2
    IL_0013: br.s IL_0037

    // [88 9 - 88 10]
    IL_0014: ldloc.2 // V_2
    IL_0015: ret

} // end of method Song::GetSongData
.property instance string Title()
{
    .get instance string Task1.Song::get_Title()
    .set instance void Task1.Song::set_Title(string)
} // end of property Song::Title
```

Решение: проанализировав метод `GetSongData`(84 строка) в IL-коде можно сделать вывод, что будет возвращён объект типа `Object`.