[How to Record test execution using Selenium C# in .NetCore](https://stackoverflow.com/questions/57424616/how-to-record-test-execution-using-selenium-c-sharp-in-netcore)

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**1**

I'm Trying to record test execution using Selenium, C#, MSTest in .NetCore

Tried using Microsoft.Express.Encoder nuget pkg, which throws error on creating instance of ScreenCaptureJob

"System.BadImageFormatException: Could not load file or assembly 'Microsoft.Expression.Encoder, Version=4.0.0.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35'. An attempt was made to load a program with an incorrect format." To resolve this, tried running test using x86, x64 and Any CPU, but none of them works.

Also tried using Nunit.Video.Recorder, with Nunit Framework, when did this, test are not discovered, tried changing to x86, x64 and Any CPU

1>C:\Users\Sunny\source\repos\ScreenRecorder\NUnitTestProject1\NUnitTestProject1.csproj : warning NU1701: Package 'Nunit.Video.Recorder 1.0.0' was restored using '.NETFramework,Version=v4.6.1' instead of the project target framework '.NETCoreApp,Version=v2.2'. This package may not be fully compatible with your project.

1>C:\Users\Sunny\source\repos\ScreenRecorder\NUnitTestProject1\NUnitTestProject1.csproj : warning NU1701: Package 'SharpAvi 2.1.0' was restored using '.NETFramework,Version=v4.6.1' instead of the project target framework '.NETCoreApp,Version=v2.2'. This package may not be fully compatible with your project.

1>C:\Program Files (x86)\Microsoft Visual Studio\2019\Professional\MSBuild\Current\Bin\Microsoft.Common.CurrentVersion.targets(2106,5): warning MSB3270: There was a mismatch between the processor architecture of the project being built "MSIL" and the processor architecture of the reference "C:\Users\Sunny\.nuget\packages\nunit.video.recorder\1.0.0\lib\net452\NunitVideoRecorder.dll", "x86". This mismatch may cause runtime failures. Please consider changing the targeted processor architecture of your project through the Configuration Manager so as to align the processor architectures between your project and references, or take a dependency on references with a processor architecture that matches the targeted processor architecture of your project.

1>NUnitTestProject1 -> C:\Users\Sunny\source\repos\ScreenRecorder\NUnitTestProject1\bin\Debug\netcoreapp2.2\NUnitTestProject1.dll

1>Done building project "NUnitTestProject1.csproj".

========== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========

[8/9/2019 4:18:30.549 PM Informational] ---------- Run started ----------

[8/9/2019 4:18:31.686 PM Informational] NUnit Adapter 3.11.0.0: Test execution started

[8/9/2019 4:18:31.699 PM Informational] Running all tests in C:\Users\Sunny\source\repos\ScreenRecorder\NUnitTestProject1\bin\Debug\netcoreapp2.2\NUnitTestProject1.dll

[8/9/2019 4:18:31.806 PM Informational] NUnit failed to load C:\Users\Sunny\source\repos\ScreenRecorder\NUnitTestProject1\bin\Debug\netcoreapp2.2\NUnitTestProject1.dll

[8/9/2019 4:18:31.807 PM Informational] NUnit Adapter 3.11.0.0: Test execution complete

[8/9/2019 4:18:31.810 PM Warning] No test matches the given testcase filter `FullyQualifiedName=Tests.Tests.Test1` in C:\Users\Sunny\source\repos\ScreenRecorder\NUnitTestProject1\bin\Debug\netcoreapp2.2\NUnitTestProject1.dll

[8/9/2019 4:18:31.936 PM Informational] ========== Run finished: 0 tests run (0:00:01.3376823) ==========

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asked Aug 9, 2019 at 6:38

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* Do you have Microsoft.Expression.Encoder installed on the machine ?

– [GregM](https://stackoverflow.com/users/9898041/gregm" \o "178 reputation)

[Aug 9, 2019 at 11:53](https://stackoverflow.com/questions/57424616/how-to-record-test-execution-using-selenium-c-sharp-in-netcore#comment101336730_57424616)

* its installed, along with other codecs

– [Sunny](https://stackoverflow.com/users/11905634/sunny)

[Aug 10, 2019 at 8:22](https://stackoverflow.com/questions/57424616/how-to-record-test-execution-using-selenium-c-sharp-in-netcore#comment101357700_57424616)

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2 Answers

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**1**

If you are in a windows environment with Visual Studio installed you can use a datacollector in the .[runsettings](https://learn.microsoft.com/en-us/visualstudio/test/configure-unit-tests-by-using-a-dot-runsettings-file?view=vs-2019) file.

<DataCollector uri="datacollector://microsoft/VideoRecorder/1.0" assemblyQualifiedName="Microsoft.VisualStudio.TestTools.DataCollection.VideoRecorder.VideoRecorderDataCollector, Microsoft.VisualStudio.TestTools.DataCollection.VideoRecorder, Version=15.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a" friendlyName="Screen and Voice Recorder">

<!--Video data collector was introduced in Visual Studio 2017 version 15.5 -->

</DataCollector>

If you use the datacollector I suggest outputting a TRX file log from the test runner so that you can map what video goes with what test.

Other options include using Selenium Grid or implementing your own recorder call via something like ffmpeg using ffmpeg.net see this [issue](https://github.com/cmxl/FFmpeg.NET/issues/7).

Here is a direct way to start and stop ffmpeg

var si = new ProcessStartInfo

{

Arguments = "-y -f gdigrab -framerate 10 -video\_size 1920x1080 -i desktop output.mp4",

FileName = \_fixture.FFmpegPath,

RedirectStandardInput = true,

};

var ffmpegProcess = Process.Start(si);

await Task.Delay(15000);

ffmpegProcess.StandardInput.Write("q");

ffmpegProcess.WaitForExit();

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answered Aug 9, 2019 at 17:42

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* Thanks Cain, it did worked with DataCollector. However, its not capturing entire screen, are there any params which to specify screen resolutions?

– [Sunny](https://stackoverflow.com/users/11905634/sunny)

[Aug 10, 2019 at 10:57](https://stackoverflow.com/questions/57424616/how-to-record-test-execution-using-selenium-c-sharp-in-netcore#comment101359385_57434905)

* @Sunny It can only capture the main display. It should capture the whole thing though. I've never seen it do partial.

– [J.D. Cain](https://stackoverflow.com/users/4540638/j-d-cain)

[Aug 10, 2019 at 11:19](https://stackoverflow.com/questions/57424616/how-to-record-test-execution-using-selenium-c-sharp-in-netcore#comment101359655_57434905)

* @cain, it works correctly after clean up. Thanks again!!

– [Sunny](https://stackoverflow.com/users/11905634/sunny)

[Aug 12, 2019 at 0:02](https://stackoverflow.com/questions/57424616/how-to-record-test-execution-using-selenium-c-sharp-in-netcore#comment101383245_57434905)

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**0**

So I was going through the same trouble and manage to create a simple solution for .netcore selenium Nunit(mstest in your case) test. Microsoft encoder is deprecated, so i went for using a local screen recorder ffmpeg. just download the ffmpeg and start recording by calling this exe from your selenium C# test. Please know that this approach is good for only local execution. you may modify this to fit your other needs like selenium grid or remote executions.

Step 1:- Download ffmpeg in your local machine (<https://ffmpeg.org/download.html>) Follow this article to download (<https://www.wikihow.com/Install-FFmpeg-on-Windows>), please manually check once if your ffmpeg is working or not.

Step 2:- Create a bat file to start your ffmpeg (you will be calling this batfile from your c# code) Contents of Bat file

@echo off

mkdir "C:\ffmpeg\ffmpeg"

set outputpath="path to your recording output folder"\\record\_20%date:~-2,2%\_%date:~-10,2%\_%date:~-7,2%\_%time:~-11,2%%time:~-8,2%.mp4

ffmpeg -f gdigrab -framerate 30 -i desktop "%outputpath%"

Step 3:- In you selenium test , create a recording class and 2 methods to start and stop the recording(in my case I was starting the bat file before all test as in calling the executeScreenRecordingBatFile method in onetimesetup attribute to start the recording and calling the StopScreenRecording method in onetimeteardown ) Sample code below.

using System.Diagnostics;

using System.IO;

namespace FunctionalTests

{

public class Recording

{

public static Process process;

public static void executeScreenRecordingBatFile()

{

try

{

process = new Process();

process.StartInfo.FileName = @"C:\Program Files (x86)\StartScreenRecording.bat";

process.StartInfo.CreateNoWindow = true;

process.StartInfo.RedirectStandardInput = true;// this required to send input to the current process window.

bool started = process.Start();

if (started==true)

{

Console.WriteLine("Bat file started");

}

}

catch (Exception ex)

{

Console.WriteLine(ex.StackTrace.ToString());

throw;

}

}

public static void StopScreenRecording()

{

StreamWriter myStreamWriter = process.StandardInput; // this required to send StandardInput stream, nothing fancy

myStreamWriter.WriteLine("q"); //this will send q as an input to the ffmpeg process window making it stop , please cross check in task manager once if the ffmpeg is still running or closed.

}

}

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answered Feb 3, 2022 at 11:58

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## Convert HTML to PDF Report in .NET

Authors - [Abdul Rahman (Content Writer)](https://ilovedotnet.org/authors/abdul-rahman), [Regina Sharon (Graphic Designer)](https://ilovedotnet.org/authors/regina-sharon)

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In this article, let's learn about how to do Convert HTML to PDF in .NET.

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### Introduction

Converting HTML to PDF is a common requirement in many software applications. The need arises to create PDF versions of HTML documents for archiving or printing purposes, or to generate reports, invoices, and other types of documents. In this article, we will explore different approaches to convert HTML to PDF using .NET.

### Why HTML to PDF ?

HTML is a markup language that is designed to be displayed in web browsers. However, it is not designed to be printed or saved as a document. Converting HTML to PDF allows you to preserve the original layout, formatting, and graphics of the HTML document, as well as to add features such as headers, footers, and page numbers. HTML5 combined with CSS3 gives the most powerful and flexible and dynamic layout that can used easily converted to PDF using print media query.

### Using wkhtmltopdf

wkhtmltopdf is a command-line tool that converts HTML to PDF using the WebKit rendering engine. To use wkhtmltopdf in .NET,

1. Download and install wkhtmltopdf latest version from [here](https://wkhtmltopdf.org/downloads.html).
2. Use the below code.
3. And call the method as HtmlToPdf("test", new string[] { "https://www.google.com" }, new string[] { "-s A5" });
4. If you need to convert HTML string to PDF, the tweak the above method and replace the Arguments to Process StartInfo as $@"/C echo | set /p=""{htmlText}"" | ""{pdfHtmlToPdfExePath}"" {((options == null) ? "" : string.Join(" ", options))} - ""C:\Users\xxxx\Desktop\{outputFilename}""";

#### Code Sample - Convert HTML to PDF using wkhtmltopdf

#### Drawbacks using wkhtmltopdf

1. The latest build of wkhtmltopdf as of writing this article does not support latest HTML5 and CSS3. Hence if you try to export any html that as CSS GRID then the output will not be as expected.
2. You need to handle concurrency issues.

### Using Chrome Headless

Chrome headless is a feature of the Google Chrome browser that allows you to run Chrome in a headless environment, without a graphical user interface. This feature can be used to convert HTML to PDF by printing the HTML document to a PDF file. To use chrome headless in .NET,

1. Download and install Chrome headless latest version from [here](https://www.google.com/intl/en_in/chrome/).
2. Use the below code.
3. This will convert html file to pdf file.
4. If you need to convert some url to pdf then use the following as Argument to Process StartInfo @"/C --headless --disable-gpu --run-all-compositor-stages-before-draw --print-to-pdf-no-header --print-to-pdf=""C:/Users/Abdul Rahman/Desktop/test.pdf"" ""https://www.google.com"""

#### Code Sample - Convert HTML to PDF using Chrome Headless

#### Drawbacks using Chrome Headless

1. This works as expected with latest HTML5 and CSS3 features. Output will be same as you view in browser but when running this via IIS you need to run the AppliactionPool of your application under LocalSystem Identity or you need to provide read/write access to IISUSRS.

### Using Selenium Webdriver

Selenium WebDriver is a popular Nuget package used for automating web browsers. It can be used to open a webpage and interact with it programmatically, including printing the page. To use Selenium Webdriver in .NET,

1. Install Nuget Packages Selenium.WebDriver and Selenium.WebDriver.ChromeDriver.
2. Use the below code.

#### Code Sample - Convert HTML to PDF using Selenium WebDriver

#### Drawbacks using Selenium WebDriver

1. This approach needs latest chrome browser to be installed in the server where the app runs.
2. If the chrome browser version in server is updated then Selenium.WebDriver.ChromeDriver Nuget package needs to be updated. Else this will throw run time error due to version mismatch.

#### Advantages using Selenium WebDriver

1. This just needs an Nuget installation and works as expected with latest HTML5 and CSS3 features. Output will be same as you view in browser.

**Note:**The above drawbacks can be overcome if we are running app in docker. All we need to do is to install chrome when building app image using Dockerfile.

**Note:**With this approach, please make sure to add <PublishChromeDriver>true</PublishChromeDriver> in .csproj file as shown below:

#### Code Sample - Convert HTML to PDF using Selenium WebDriver Project Settings

This will publish the chrome driver when publishing the project.

### Using window.print()

If the users are using your app from browser then you can rely on JavaScript and use window.print() and necessary print media css to generate PDF from the browser. For example generating invoice from browser in an inventory app.

#### Code Sample - Convert HTML to PDF using window print

#### Demo - HTML to PDF Demo using window.print()

**Scenario - Let's try converting this page HTML to PDF from I ❤️ .NET. The examples uses staright window.print() method but the ideas are open to control and change layout & appearance using print media css.**

Trigger browser window.print()

#### Drawbacks using window.print()

1. In SPA like Blazor, we need to do some workaround with iframe to print sections of page.

#### Advantages using window.print()

1. No dependency on any tools.
2. PDF generated directly from HTML, CSS and JS in browser.
3. Faster
4. Supports all the latest CSS properties.

### Summary

In this article we learn't how to convert HTML to PDF in .NET. Converting HTML to PDF is a common requirement in many software applications. There are several ways to convert HTML to PDF using .NET. The most preferred approach is to use browser window.print() in front end apps and use Selenium Webdriver in backend API's.

* Report
* HTML
* PDF

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