FIT5032 Suzhou Studio 7

Chief Examiner: ABM Russel

TOPICS

- Optimize your project
- Introduction to ASP.NET Core

INSTRUCTIONS

- Please finish the task below individually

EFOLIO TASK 7.1 (PASS AND CREDIT LEVEL)

DESCRIPTION:

- Optimize your project

WHAT TO SUBMIT (INDIVIDUAL):

- A screenshot of demonstration of using Responsive Images (in PDF document)
- A document explains the difference between .woff and .woff2 font using your own word (in PDF document)

EFOLIO TASK 7.2 (DISTINCTION AND HIGH DISTINCTION LEVEL)

DESCRIPTION:

- Introduction to ASP.NET Core

WHAT TO SUBMIT (INDIVIDUAL):

- A document explains new feature of ASP.NET Core and share 3 differences with ASP.NET Framework web application

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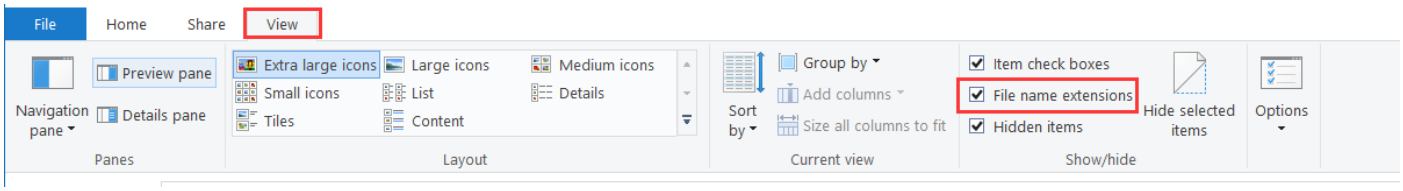
STUDIO ACTIVITIES

In this tutorial, we are mainly focused on optimise your project (assignment) through some of the common method used in the industry that is applicable to the context of this unit.

1. Image/Video compression

Firstly, have a look at your image folder for file extensions. If you are only able to see the file name (There is no .XXX behind the name of the file), please enable files name extensions options inside your folder options.



If you are using high quality image (For example .bmp, .nef files) or high-quality video (For example 4k resolution video) for your web pages for design/artistic purpose. It will unnecessarily increase the data bandwidth usage (Some of the hosting service charge by the amount of data bandwidth you use) and put pressure on server.

The most common image file format for online hosting is .jpeg, .gif and .png file format.

The quality settings of images and resolution will still influence the file size. Normally the resolution of images shall not be more than 1280 pixels wide.

The most common video file format is .mp4 files format, alternatively, some of the websites use .webm file format. Resolution can be varied from 480p to 1080p (Meaning resolution range from 480x320 to 1920x1080).

*If you are interested to compare the mp4 format and webm format, have a look at Josh's answer here (https://www.quora.com/Which-is-better-WebM-or-MP4)

To compress video/ images, the most common way is to decrease the image/ video quality and reduce its resolution, for video, you can also decrease its bitrate to reduce the size of the video.

You can try to convert your files through some ways given below:

1.1 Online Image converter

There are a lot of image converting service online that could do this job for free, for example https://www.aconvert.com/image/, one thing to keep in mind is the files you uploaded will be stored at their server for several hours before deletion, be careful about uploading sensitive data.

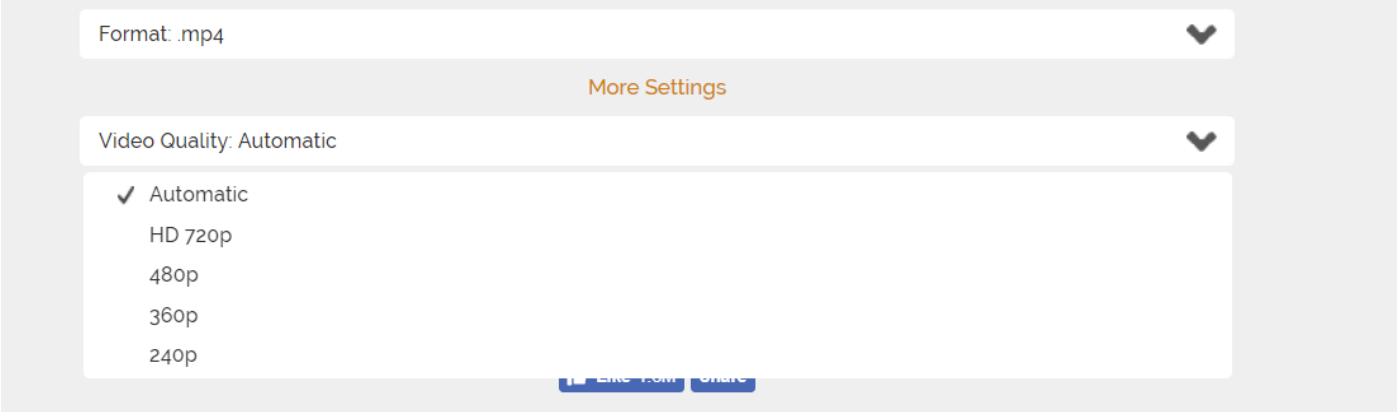
If you wish to change more attribute of your image, you could use the following website instead (Suggestion for this website is to use "Good" quality option, if you wish to maintain the aspect ratio of the image but reduce the resolution overall, you can either specify the width of the image only and leave the height field empty, vice versa):

https://image.online-convert.com/convert-to-jpg

1.2 Online Video converter

Same as online image converter, you need upload your video and change the file types, you can choose [More settings] to decide the resolution of the final video

https://www.onlinevideoconverter.com/



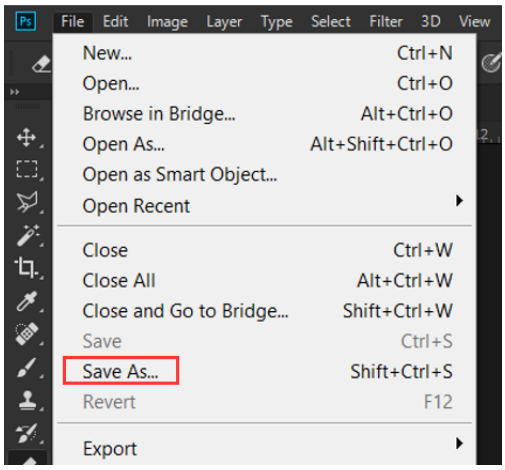
1.3 Adobe Photoshop/ Windows Paint/ Microsoft PowerPoint to convert

If you wish to convert your files locally, you could try with the following options:

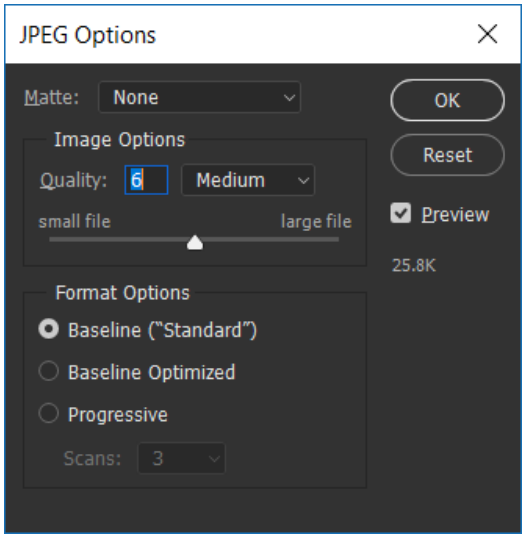
- Adobe Photoshop

Adobe Photoshop provide the most detailed options to save the file into different format.

Open the image you want to convert into Photoshop, choose “Save as” option:

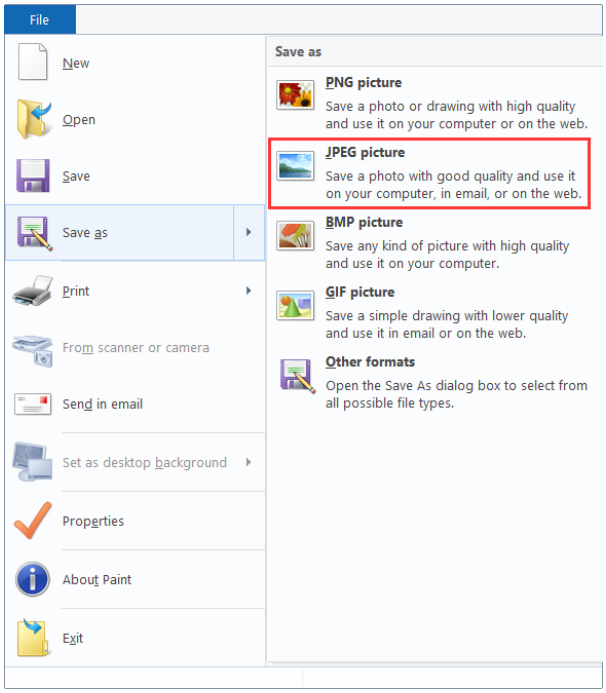


The choose the file format as JPEG. For photoshop, it is recommended to use medium quality. (Quality level 6-7)



- Windows Paint

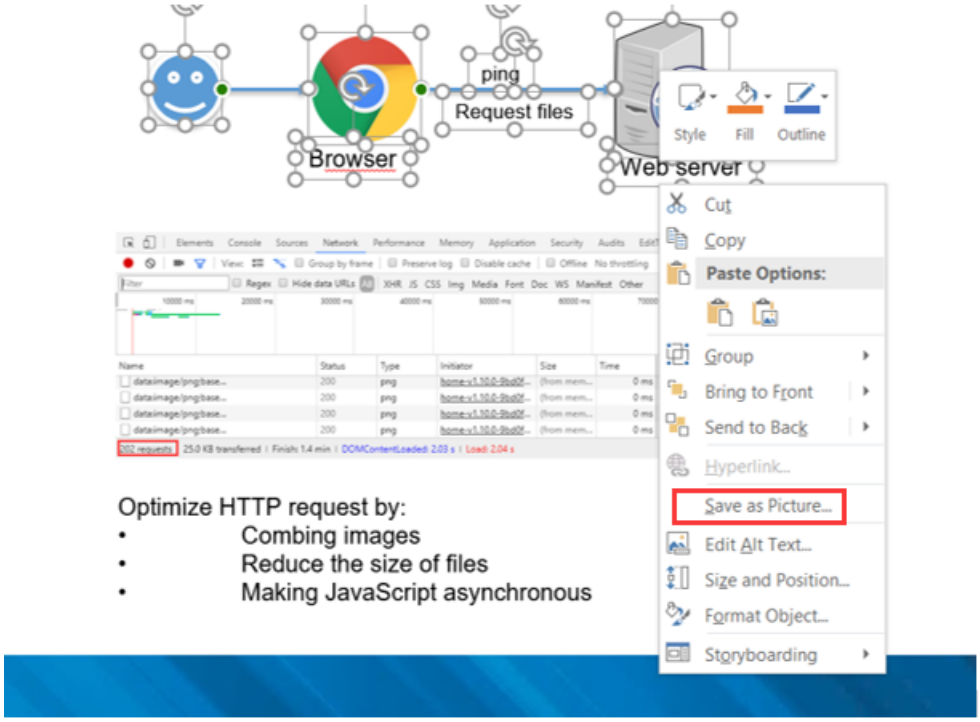
If you do not have sophistic tool such as Adobe Photoshop, you could use the Microsoft Paint, although you could not choose the image quality, it will usually still reduce the size of the images you use:



- Microsoft PowerPoint:

Another quick way to merge and edit your images is using Microsoft PowerPoint.

You could select all the images that you wish to merge together, right click on one of the selection and choose "Save as Picture", then choose the file type you wish to save. The selection will be saved as a single file of the type you chose in the earlier options.



Alternatively, you could use ACDsee software to batch process your images.

2. Responsive Images

Make use of the responsive images to dynamically load your images according to the resolution of your screen.

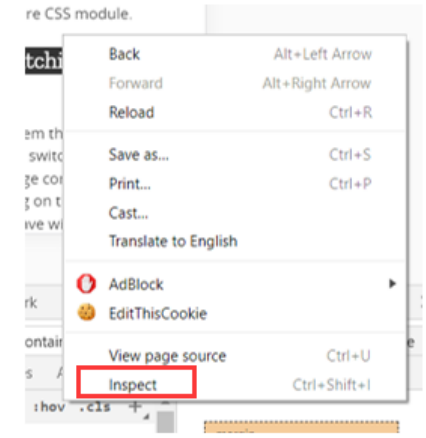
Firstly, please convert at least two of your full-sized images (Maximum width 1280px) in your image folder into the following image resolution:

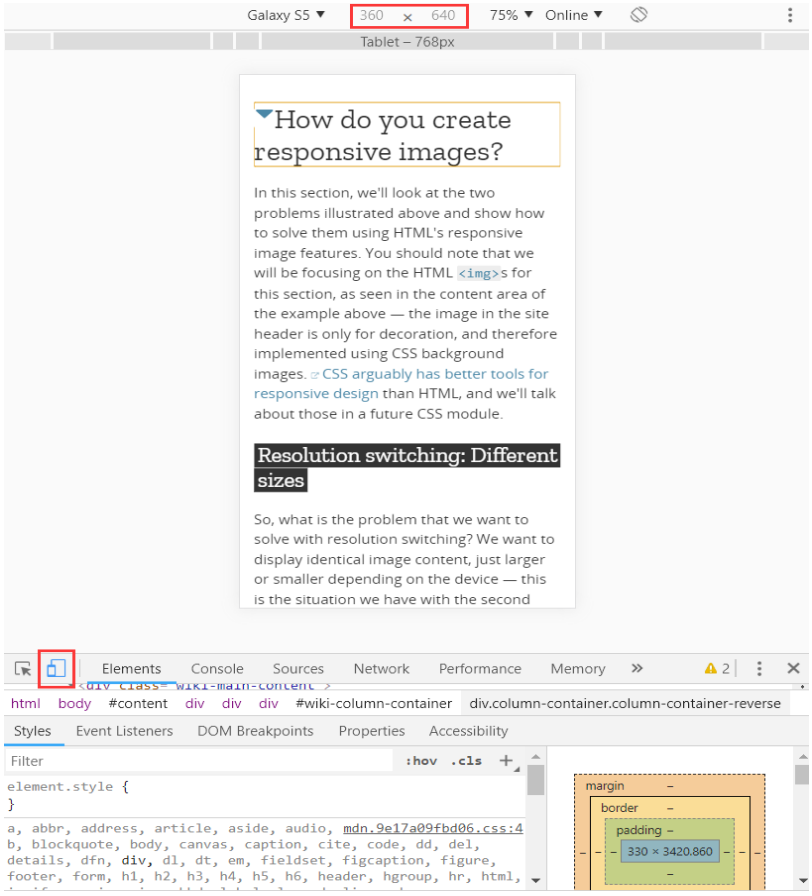
- Maximum width 640px
- Maximum width 320px

Then make use of srcset attribute to load the image when the browser has a resolution of 640px and 320px.

https://developer.mozilla.org/en-US/docs/Learn/HTML/Multimedia_and_embedding/Responsive_images

If you wish to verify this, please use inspect element to change the resolution to mobile views:





3. CSS and JavaScript file compression

The empty spaces used in .css file and .js file increases the server loads and band with usage too. Please minify your css and javascript files through the following program

Remember you still need to keep the original source code as a backup but reference the minified version when you load your js and css.

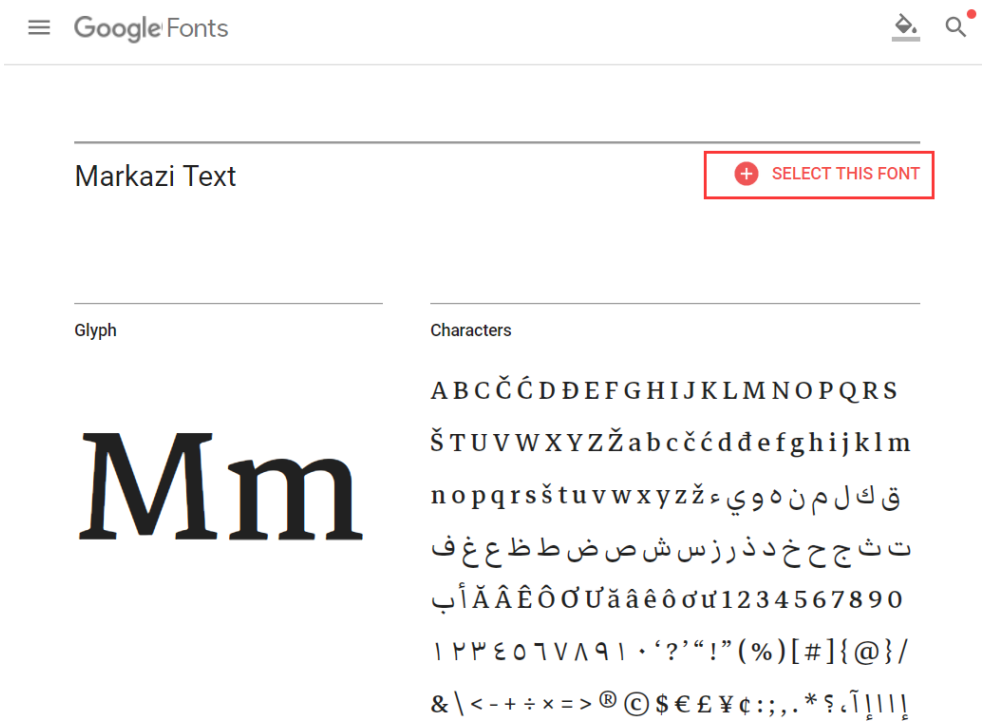
https://www.minifier.org/

4. Optimize your Font

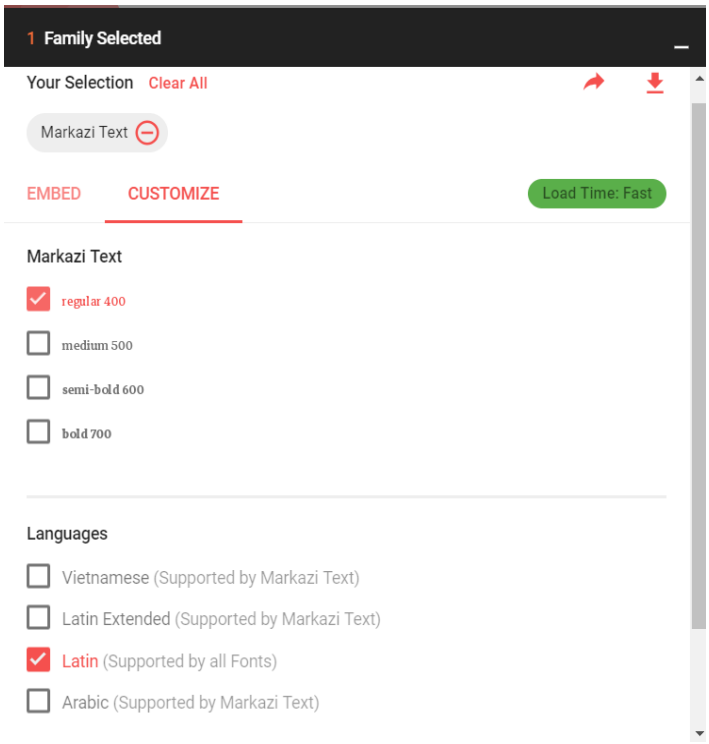
4.1 Pick only the font you need

Google Fonts (https://fonts.google.com/) provides thousands of fonts for you to use, please think about what kind of font best suits your project (Assignment) and pick only the necessary style you need, to do that, you could follow the screenshot instruction below:

Choose the Font you need:



Then choose customize to customize what need to be loaded:



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4.2 Preload your font

Using <link rel=”preload”> will give your browser a hint that the font resources you mentioned in the tag is going to be needed soon, it makes an unconditional, high-priority request for the url regardless of whether it needs to be used or not.
However, please be reminded that preload is just a hint for browser, it tells the browser to “get ready” to preload a file, it does not contain detailed instructions of how to do it, you also need to use appropriate CSS => @font-face in conjunction in order tell browser how to do it.

*Bear in mind that you only preload your custom font that is necessary. You do not preload the font that is never going to be used inside the tag.

Follow the syntax below to preload the file:

```
<head>
  <link rel="preload" href="/fonts/testing.woff" as="font">
</head>
```

Inside your css, define font-face attribute like example below and tell the browser what to do with preloading the file:

```
@font-face {
  font-family: 'Testing;
  font-style: normal;
  font-weight: 400;
  src: local('Testing'),
       url('/fonts/testing.woff') format('woff'), /* will be preloaded */
       url('/fonts/testing.woff2') format('woff2'),
       url('/fonts/testing.ttf') format('truetype'),
       url('/fonts/testing.eot') format('embedded-opentype');
}
```

If you are interested in more about optimizing the font, please read the following document:

https://developers.google.com/web/fundamentals/performance/optimizing-content-efficiency/webfont-optimization

Further references on CSS and HTML5:

https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/CSS_basics

https://html.spec.whatwg.org/dev/introduction.html#is-this-html5

CREATING FIRST ASP.NET CORE APP

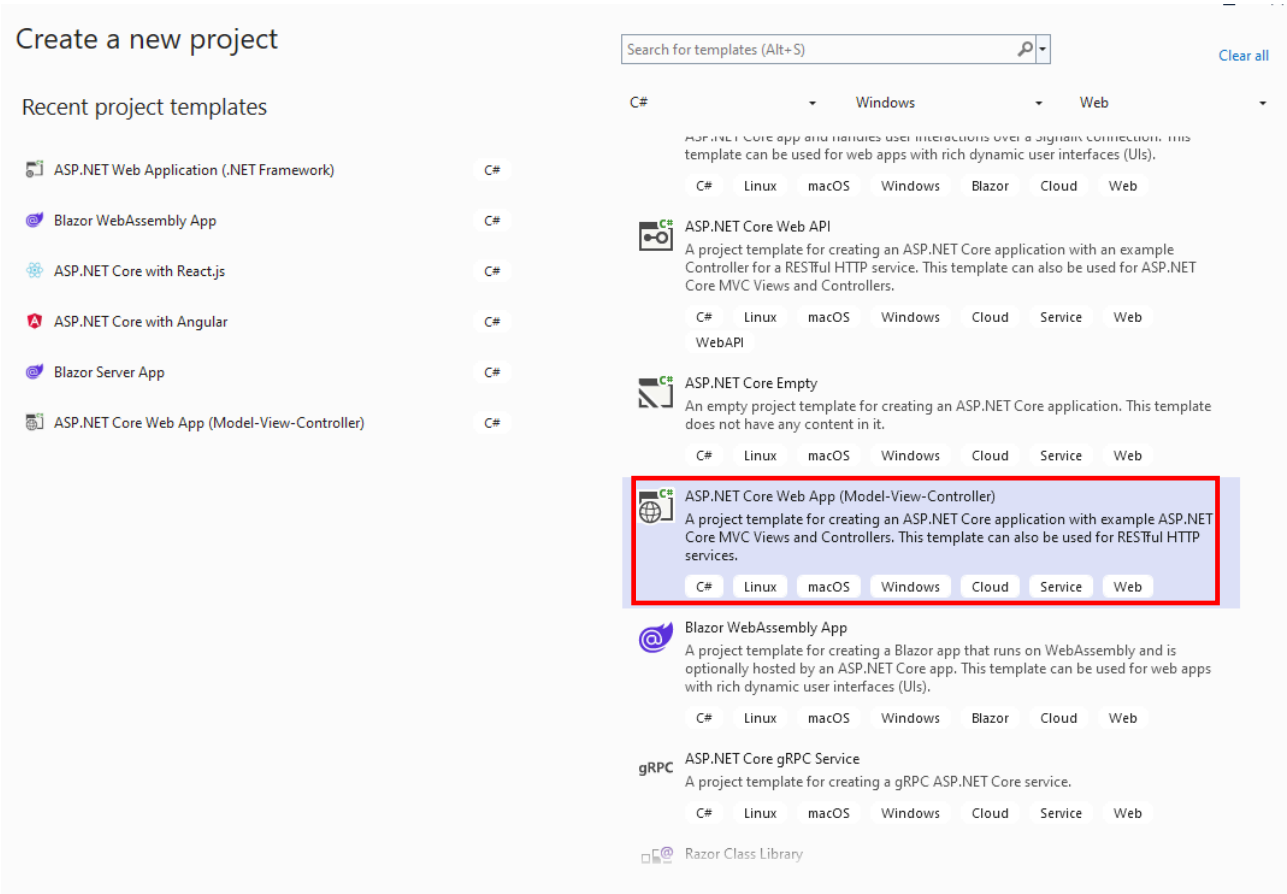
ASP.NET Core is an open-source framework allow us to create a cross-platform, high-performance, cloud-based, Internet-connected applications.

ASP.NET Core has some advantage over ASP.NET Framework such as:

- .NET Core supports Cross-platform. It runs on macOS, Linux, and Windows.
- Performance improvement
- Side-by-side versioning
- Open source
- New APIs

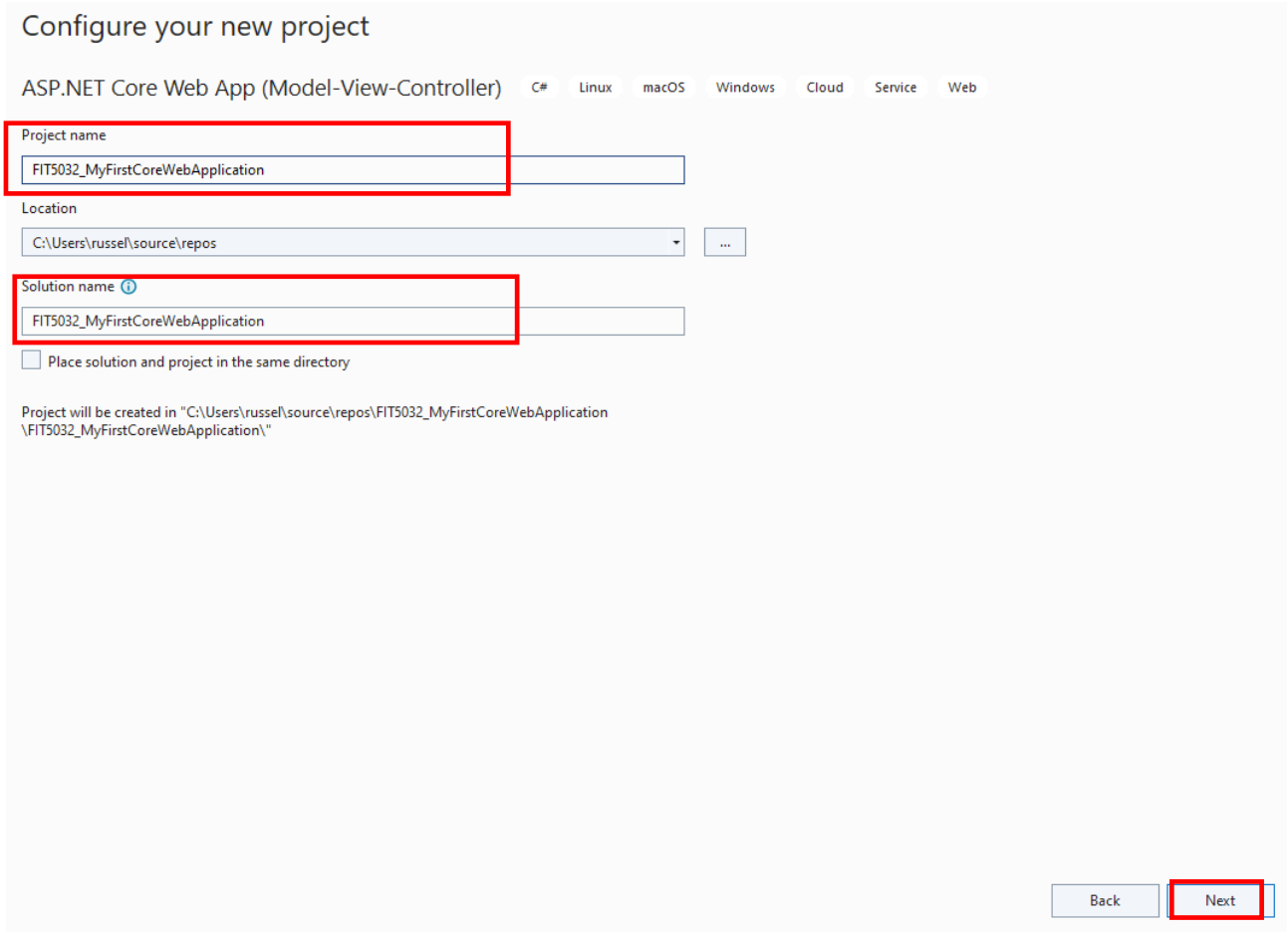
1. Creating a ASP.NET Core Web Application

Select ASP.NET Core Web App (Model-View-Controller) and then click Next.



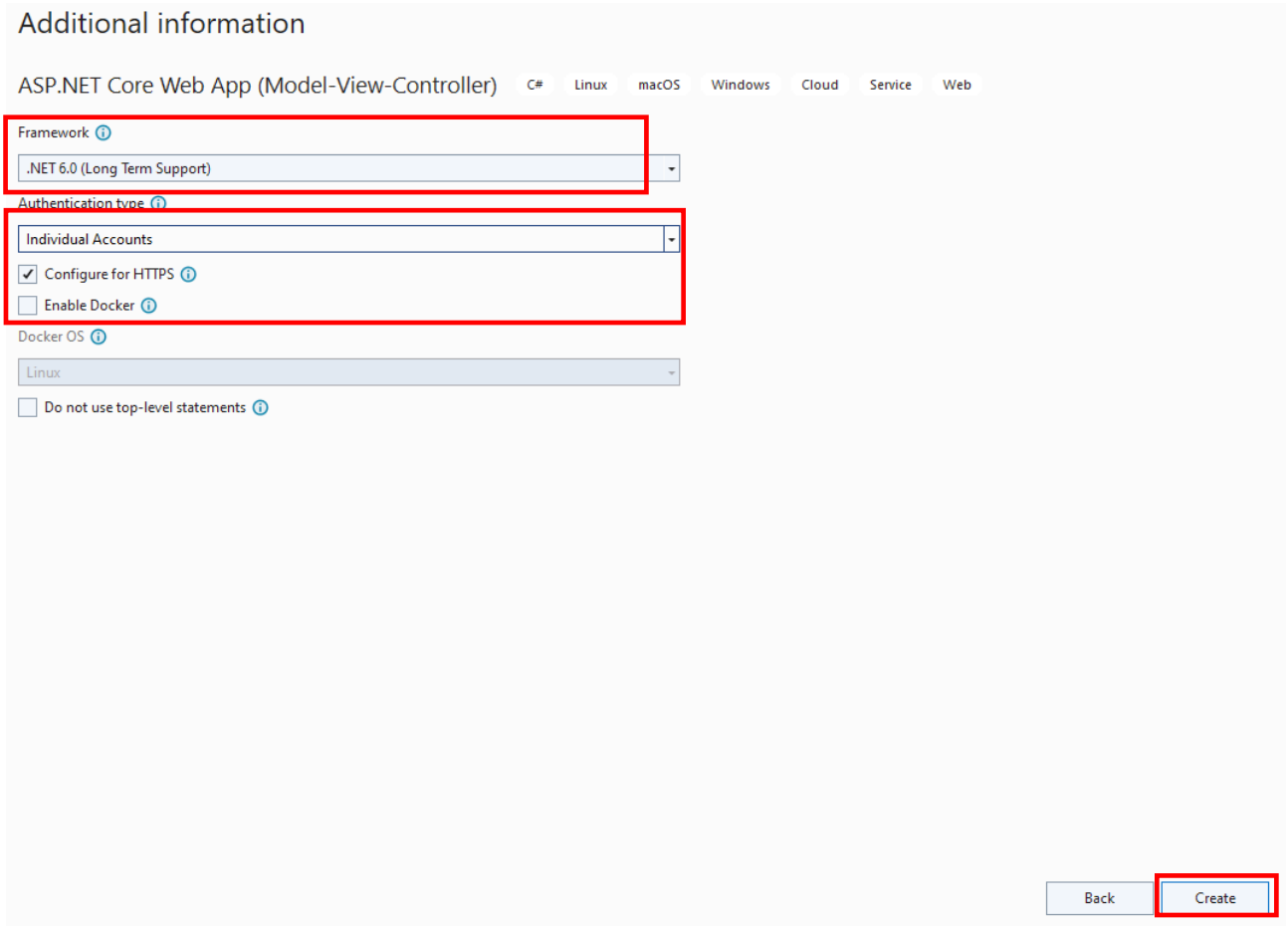
2. Configuration

Here we will key in the Project name and Location. And then click Create.



3. Create a new ASP.NET Core Web Application

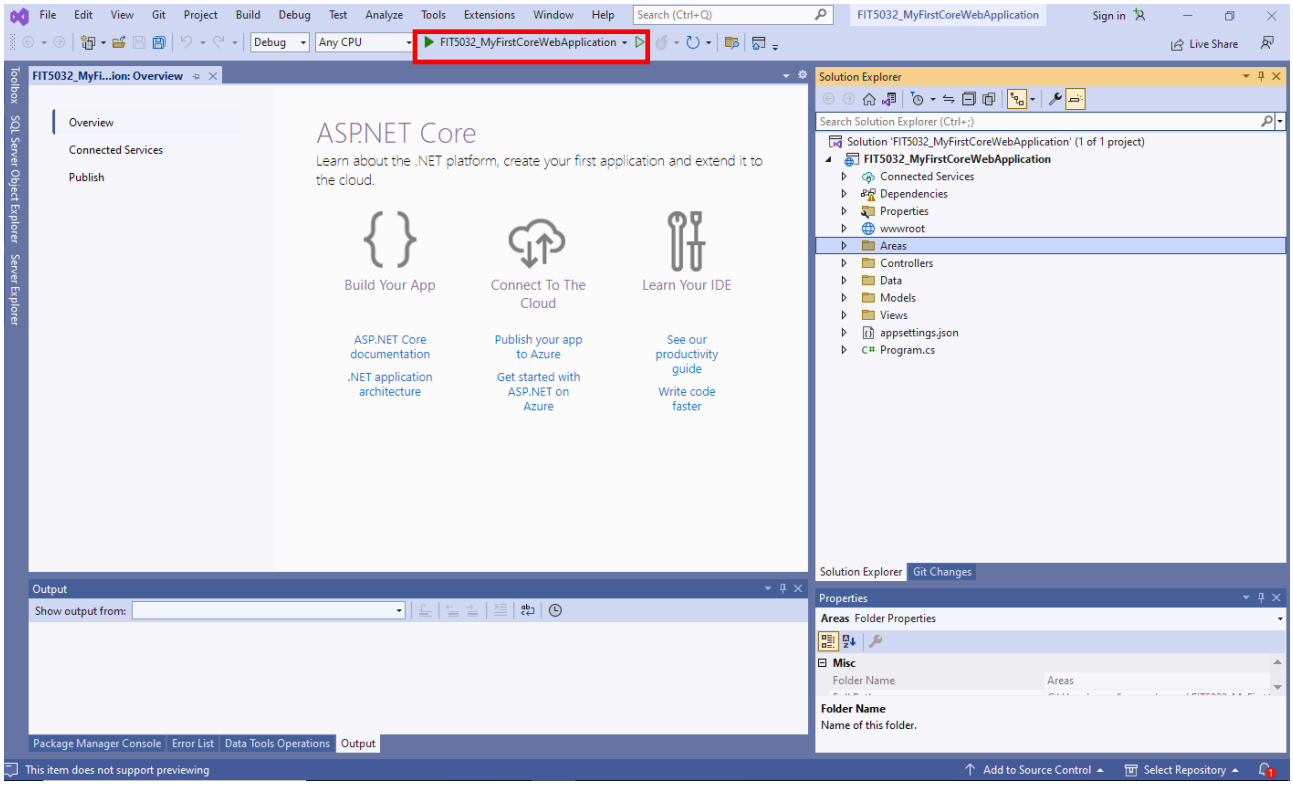
We will use .NET 6.0 as target framework. We will also select Individual Identity along with HTTPS. Since we don't need Docker Support, leave it unchecked.



4. Run our First .NET Core Web Application

Click IIS Express to run the web application.

IIS Express is an version of IIS (Internet Information Services) which is lightweight and self-contained.



Here is our first .NET Core Web Application running on Google Chrome.