

Tutorial

How to create PDF files in .NET Core PDF Generator

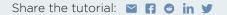
Render URL to PDF

```
    static void Main(string[] args)
    {
    Console.WriteLine("Hello World!");
    var render = new IronPdf.HtmlToPdf();
    var doc = render.RenderUrlAsPdf("https://www.wikipedia.org/");
    doc.SaveAs($@"{AppDomain.CurrentDomain.BaseDirectory}\wiki.pdf");
    }
```



.NET Core PDF Generator

by Ahmed Aboelmagd



Interact with the tutorial: https://ironpdf.com/tutorials/dotnet-core-pdf-generating/

Creating .NET Core PDF files is a cumbersome task. Working with PDFs in ASP.NET MVC projects, as well as converting MVC views, HTML files, and online web pages to PDF can be challenging. This tutorial works with the IronPDF tool to tackle these problems, providing instructional guidelines for many of your PDF .NET Core needs.

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After this tutorial, you'll be able to:

- Convert to PDF from different sources like URL, HTML, MVC views
- Engage with advanced options used for different output PDF settings
- Deploy your project to Linux and Windows
- Work with PDF document manipulation capabilities
- Add headers and footers, merge files, add stamps
- Work with Dockers

This wide range of .NET Core HTML to PDF capabilities will help with a whole range of project needs.

Step 1

1. Install the IronPDF Library Free



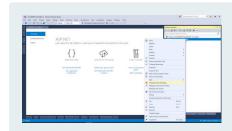
IronPDF can be installed and used on all of the .NET project types like Windows applications, ASP.NET MVC, and .NET Core applications.

To add the IronPDF library to our project we have two ways, either from the Visual Studio editor install using NuGet, or with a command line using package console manager.

Install using NuGet

To add the IronPDF library to our project using NuGet, we can use the visualized interface (NuGet Package Manager) or by command using Package Manager Console:

- 1.1.1 Using NuGet Package Manager
 - 1- Right click on project name -> Select Manage NuGet Package



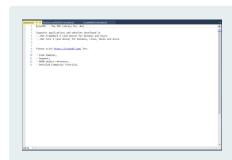
2- From browser tab -> search for IronPdf -> Install



3- Click Ok

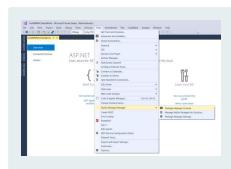


4- Done!



1.1.2 Using NuGet Package Console manager

1- From Tools -> NuGet Package Manager -> Package Manager Console



2- Run command -> Install-Package IronPdf



How to Tutorials

2. Convert Website to PDF

Sample: ConvertUrlToPdf console application

Follow these steps to create a new Asp.NET MVC Project

1- Open Visual Studio



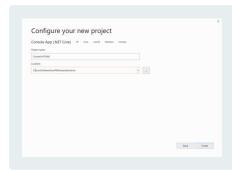
2- Choose Create a new project



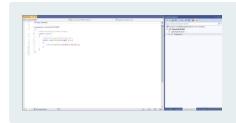
3- Choose Console App (.NET Core)



4- Give our sample name "ConvertUrlToPdf" and click create



5- Now we have a console application created



6- Add IronPdf => click install



7- Add our first few lines that render a Wikipedia website main page to PDF

```
    static void Main(string[] args)
    {
        Console.WriteLine("Hello World!");
        var render = new IronPdf.HtmlToPdf();
        var doc = render.RenderUrlAsPdf("https://www.wikipedia.org/");
        doc.SaveAs($@"{AppDomain.CurrentDomain.BaseDirectory}\wiki.pdf");
    }
```

8- Run and check created file wiki.pdf



3. Convert .NET Core HTML to PDF

Sample: ConvertHTMLToPdf Console application

To render HTML to PDF we have two ways:

- 1. Write HTML into string then render it
- 2. Write HTML into file and pass it path to IronPDF to render it

Rendering the HTML string sample code will look like this.

And the Resulting PDF will look like this.



4. Convert MVC View to PDF

Sample: TicketsApps .NET Core MVC Application

Let's implement this real life example. I chose an online ticketing site. You open the site, and navigate to book ticket, then fill in the required information, and then you get your copy as a downloadable PDF file.

We will go through these steps: -

- 1. Create client object model
- 2. Create client services (add, view)
- 3. Add pages (register, view)
- 4. Download PDF ticket

So now, I will start by creating the client object model.

1- Choose ASP.NET core web applications



2- Name the project "TicketsApps"



3- Choose ".NET Core", "ASP.NET core 3.1", "Web Application (Model-View-Controller)", check enable Docker, and choose Linux Image



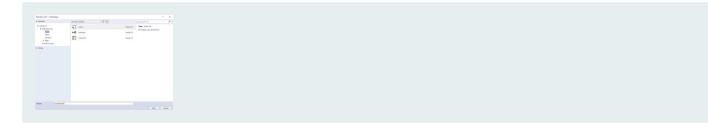
4- Now it's ready,



5- Right click on models' folders, choose to add class



6- Name the model "ClientModel" then click add



7- Add to ClientModel the attributes name, phone, and email, and make them all required by adding required an attribute over them as follows

```
1. public class ClientModel
2. {
3. [Required]
4. public string Name { get; set; }
5. [Required]
6. public string Phone { get; set; }
7. [Required]
8. public string Email { get; set; }
9. }
```

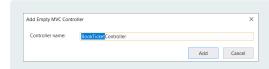
- 8- Step 2, add services
- a. Create folder and with the name "services"
- b. Then add class with the name "ClientServices"
- c. Add static object of type "ClientModel" to use it as a repository
- d. Add two functions, one for saving client to repository, and the second to get saved clients

```
1. public class ClientServices
2. {
3.    private static ClientModel _clientModel;
4.    public static void AddClient(ClientModel clientModel)
5.    {
6.        _clientModel = clientModel;
7.    }
8.    public static ClientModel GetClient()
9.    {
10.        return _clientModel;
11.    }
12. }
```

- 9- Step three, the book your ticket page
- 10- From solution explorer, right click over controller folder, choose add, then choose controller



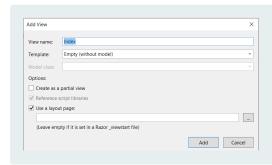
11- Name it BookTicketController



12- Right click on index function (or as we called it action) and choose add view to add html



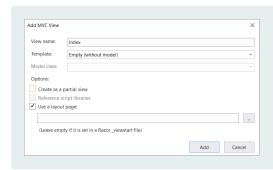
13- Set view name "index," then click add



14- Using the mouse right click over folder views -> Home, and select home



15- Add index view



```
1. @model IronPdfMVCHelloWorld.Models.ClientModel
3. ViewBag.Title = "Book Ticket";
5. <h2>Index</h2>
6. @using (Html.BeginForm())
     <div class="form-horizontal">
       @Html.ValidationSummary(true, "", new { @class = "text-danger" })
       <div class="form-group">
         @Html.LabelFor(model => model.Name, htmlAttributes: new { @class = "control-label col-md-2" })
         <div class="col-md-10">
           @Html.EditorFor(model => model.Name, new { htmlAttributes = new { @class = "form-control" } })
           @Html.ValidationMessageFor(model => model.Name, "", new { @class = "text-danger" })
         </div>
       </div>
       <div class="form-group">
        @Html.LabelFor(model => model.Phone, htmlAttributes: new { @class = "control-label col-md-2" })
         <div class="col-md-10">
           @Html.EditorFor(model => model.Phone, new { htmlAttributes = new { @class = "form-control" } })
           @Html.ValidationMessageFor(model => model.Phone, "", new { @class = "text-danger" })
         </div>
       </div>
       <div class="form-group">
        @Html.LabelFor(model => model.Email, htmlAttributes: new { @class = "control-label col-md-2" })
         <div class="col-md-10">
           @Html.EditorFor(model => model.Email, new { htmlAttributes = new { @class = "form-control" } })
           @Html.ValidationMessageFor(model => model.Email, "", new { @class = "text-danger" })
         </div>
       </div>
       <div class="form-group">
         <div class="col-md-10 pull-right">
           <button type="submit" value="Save" class="btn btn-sm">
             <i class="fa fa-plus"></i>
             </span>
           </button>
         </div>
       </div>
     </div>
```

17- Add a link to BookTicket Page to enable our website visitors to navigate to our new booking page by updating layout in existing path (view-> shared-> layout.chtml)

```
    <a class="nav-link text-dark" asp-area="" asp-controller="BookTicket" aspaction="Index">Book
    Ticket</a>
```

18- The result should look like this.



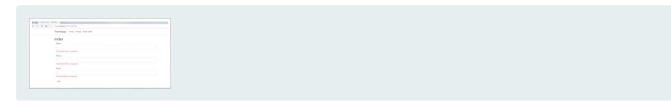
19- Navigate to the book ticket page by clicking on its link. You should find that it looks like this



- 20- Now let's add the action that will validate and save the booking information
- 21- Add another index action with the attribute [HttpPost] to inform the MVC engine that this action is for submitting data. I validate the sent model, and if it's valid the code will redirect the visitor to TicketView Page. If it's not valid, the visitor will receive error validation messages on screen.

```
1. [HttpPost]
2. public ActionResult Index(ClientModel model)
3. {
4.    if (ModelState.IsValid)
5.    {
6.        ClientServices.AddClient(model);
7.        Return RedirectToAction("TicketView");
8.    }
9.    return View(model);
10. }
```

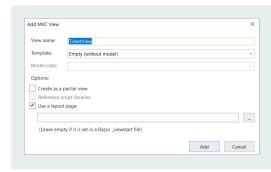
Sample of error messages



22- Add TicketView to display our ticket

```
1. public ActionResult TicketView()
2. {
3.   var ticket = ClientServices.GetClient();
4.   return View(ticket);
5. }
```

23- Add its view



- 24- This view will host a Ticket partial view that is responsible to display the ticket and will be used later to print Ticket
- 25- Add ticket model



26- Use the Ticket model code as follows

```
    public class TicketModel : ClientModel
    {
    public int TicketNumber { get; set; }
    public DateTime TicketDate { get; set; }
    }
```

27- Add IronPDF to project



28- Click OK



29- Add the TicketView post method that will handle the download button

```
1. [HttpPost]
2. public ActionResult TicketView(TicketModel model)
3. {
4.    IronPdf.Installation.TempFolderPath = $@"{_host.ContentRootPath}/irontemp/";
5.    IronPdf.Installation.LinuxAndDockerDependenciesAutoConfig = true;
6.    var html = this.RenderViewAsync("_TicketPdf", model);
7.    var ironPdfRender = new IronPdf.HtmlToPdf();
8.    var pdfDoc = ironPdfRender.RenderHtmlAsPdf(html.Result);
9.    return File(pdfDoc.Stream.ToArray(), "application/pdf");
10. }
```

30- Add the controller extension that will render partial view to string



31- Use the Extension code as follows

```
public static async Task<string> RenderViewAsync<TModel>(this Controller controller, string viewName,
TModel model, bool partial = false)
    if (string.IsNullOrEmpty(viewName))
      viewName = controller.ControllerContext.ActionDescriptor.ActionName;
    controller.ViewData.Model = model;
    using (var writer = new StringWriter())
      IViewEngine viewEngine =
\textbf{controller}. \textbf{HttpContext}. \textbf{RequestServices}. \textbf{GetService(typeof(ICompositeViewEngine))} \  \  \textbf{as}
      ViewEngineResult viewResult = viewEngine.FindView(controller.ControllerContext, viewName,
!partial);
      if (viewResult.Success == false)
        return $"A view with the name {viewName} could not be found";
      ViewContext viewContext = new ViewContext(controller.ControllerContext, viewResult.View,
controller.ViewData, controller.TempData, writer, new HtmlHelperOptions());
      await viewResult.View.RenderAsync(viewContext);
      return writer.GetStringBuilder().ToString();
    }
```

32- Run and file ticket information, then click save



33- View ticket



34- To download the ticket as PDF, click download. You will get a PDF containing the ticket.

5. .NET PDF Render Options Chart

We have some advanced options that define PDF-rendering options like adjusting margins, paper orientation, paper size, and more.

Below is a table to illustrate the many different options.

Class	PdfPrintOptions	
Description	Used to define PDF print out options, like paper size, DPI, headers and footers	
Properties / functions	Туре	Description
CreatePdfFormsFromHtml	Boolean	Turns all HTML form elements into editable PDF form
CssMediaType	Enum PdfCssMediaType { Print=0, Screen=1	Enable media="Screen",Css Styles and stylsheets. Note: By setting Allow ScreenCss=false; IronPDF prints using CSS for media="print" only.
CustomCssUrl	Uri	Allow Custom CSS Style sheets to be applied on HTML before rendering. You may set it to remote URL or local file path.

Properties / functions	Туре	Description
DPI	int	Define the number of print out DPI (Dot Per Inch). The standard value is 300 DPI. Increasing DPI value make images and text output more clear but increases PDF file size.
EnableJavaScript	Boolean	By default its value = false. It enables\disables JavaScript and JSON execution for 100ms before page is rendered. Great option for printing from client scripting frameworks that use JavaScript for its operations, like Ajax or angular or equivalent frameworks.
FirstPageNumber	int	Used with page header or footer to set the first page start number.
FitToPaperWidth	Boolean	SetToPaperWidth=true will force IronPDF to fit rendered content into one page, only if it's possible
FitToPaperWidth	PdfHeaderFooter	Set the footer content see Header PdfHeaderFooter Class
Header GrayScale	Boolean	Output PDF in black and white scale
InputEncoding	System.Text.Encoding	Define input character encoding
jpegQuality	int	Quality of images, take values from 0 to 100
LicenseKey	String	Set license key and remove watermark
MarginBottom	int	Bottom paper margin in millimeter, set to zero for borderless

Properties / functions	Туре	Description
MarginLeft	int	Left paper margin in millimeter , set to zero for borderless
MarginLeft	int	Right paper margin in millimeter , set to zero for borderless
MarginLeft	int	Top paper margin in millimeter , set to zero for borderless
PaperOrientation	Enum PdfPaperOrientation { Portrait, Landscape }	Set output PDF orientation
PaperSize	Enum PdfPaperSize	Set output PDF page size (A4, A3, etc.)
PrintHtmlBackgrounds	Boolean	Print background color and images from HTML
RenderDelay	int	Set waiting milliseconds before rendering html, this option useful when used to render pages contain animation or Ajax.
Title	string	Can set PDF title and metadata title
Zoom	string	Set enlarge zoom level (%) for rendering HTML
SetCustomPaperSize (int width, int height)	Function	Used to set custom paper size

6. .NET PDF Header Footer Options Chart

Class	PdfHeaderFooter	
Description	Used to define PDF print out header and footer display options	

Properties / functions	Туре	Description
CenterText	string	Set the text in centered/left/right of PDF
LeftText	string	header or footer. Can also merge metadata using strings placeholders : {page} {totalpages}{url}{date}{time}{ html-title}{pdf title}
RightText	string	
DrawDividerLine	Boolean	Adds a horizontal line divider between the header (text or HTML) and the page content on every page of the PDF document
DrawDividerLine	Boolean	Font used to render PDF
FontSize	int	Font size in px.
Spacing	int	Set the space between header/footer and page content in millimeters

7. Apply PDFPrintOption

Let us try to use PdfPrintOption

```
1. var Renderer = new HtmlToPdf();
2. Renderer.PrintOptions= new PdfPrintOptions()
3. {
4.    DPI = 500,
5.    PaperSize = PdfPrintOptions.PdfPaperSize.A4,
6.    PaperOrientation = PdfPrintOptions.PdfPaperOrientation.Portrait,
7.    InputEncoding = System.Text.Encoding.UTF8
8. };
9. pdf.RenderHTMLFileAsPdf(@"testFile.html").SaveAs("GeneratedFile.pdf");
```

8. Docker .NET Core Applications

8.1. What is Docker?

Docker is a set of platform as service products that uses OS-level virtualization to deliver software in packages called containers. Containers are isolated from one another and bundle their own software, libraries and configuration files; they can communicate with each other through well-defined channels.

You can learn more about Docker and ASP.NET Core application here.

We'll skip ahead to working with Docker, but if you want to learn more, there's a great introduction to .NET and Docker here. and even more about how to build containers for .NET core app.

Let's get started with Docker together.

8.2. Install Docker

Visit to the Docker website here to install Docker.



Click get started.



Click download for Mac and Windows.



Signup for free, then login.



Download Docker for Windows.



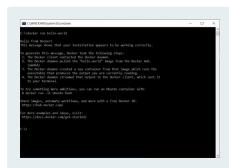
Start installing Docker.



It will require a restart. After your machine restartrs, login to Docker.



Now you can run Docker "hello world" by opening the Windows command line or PowerShell script and write:



Here is a list of the most important command lines to help you:

- Docker images => To list all available images on this machine
- Docker ps => to list all running containers
- Docker ps -a => to list all containers

8.3. Run into Linux container



9. Work with Existing PDF Documents

9.1. Open Existing PDF

As you can create a PDF from URL and HTML (text or file), you can also work with existing PDF documents.

The following is an example to open either a normal PDF or encrypted PDF with a password

```
    var pdf = PdfDocument.FromFile("testFile.pdf");
    // to open an encrypted pdf
    var pdf = PdfDocument.FromFile("testFile2.pdf" ,"MyPassword");
```

9.2. Merge Multiple PDFs

You can merge multiple PDFs into one single PDF as follows:

```
1. var PDFs = new List<PdfDocument>();
2. PDFs.Add(PdfDocument.FromFile("1.pdf"));
3. PDFs.Add(PdfDocument.FromFile("2.pdf"));
4. PDFs.Add(PdfDocument.FromFile("3.pdf"));
5. PdfDocument PDF = PdfDocument.Merge(PDFs);
6. PDF.SaveAs("mergedFile.pdf");
```

Append another PDF to the end of the current PDF as follows:

```
    var pdf = PdfDocument.FromFile("1.pdf");
    var pdf2 = PdfDocument.FromFile("2.pdf");
    pdf.AppendPdf(pdf2);
    pdf.SaveAs("appendedFile.pdf");
```

Insert a PDF into another PDF starting with given index

```
    var pdf = PdfDocument.FromFile("1.pdf");
    var pdf2 = PdfDocument.FromFile("2.pdf");
    pdf.InsertPdf(pdf2, 0);
    pdf.SaveAs("InsertIntoSpecificIndex.pdf");
```

9.3 Add Headers or Footers

You can add headers and footers to an existing PDF or when you render the PDF from HTML or URL.

There are two classes you can use to add header or footer to a PDF

- SimpleHeaderFooter: this class to add simple text in header or footer.
- HtmlHeaderFooter: this class to add header or footer with rich HTML content and images

Now let us see two examples of how to add header/footer to existing pdf or when it is rendered using these two classes

9.3.1 Add header to existing pdf

Below is an example to load an existing PDF, then add a header and footer using AddHeaders(), AddFooters() methods

```
1. var pdf = PdfDocument.FromFile("testFile.pdf");
2. var header = new SimpleHeaderFooter()
3. {
4. CenterText="Pdf Header",
5. LeftText= "{date} {time}",
6. RightText = "{page} of {total-pages}",
7. DrawDividerLine = true,
8. FontSize=10
9. };
10. var Footer = new HtmlHeaderFooter()
11. {
12. HtmlFragment= "<span style='text-align:right'> page {page} of {totalpages}</span>",
    DrawDividerLine=true,
13. FontSize=15,
14. Height=10
15. };
16.
17. pdf.AddHeaders(header);
18. pdf.AddFooters(Footer);
19. pdf.SaveAs("withHeaderFooter.pdf");
```

9.3.2 Add header and footer to new pdf

Here is an example to create a PDF from HTML file and add a header and footer to it using print options

```
1. var renderer = new HtmlToPdf();
2. renderer.PrintOptions.Header= new SimpleHeaderFooter()
3. {
4.    CenterText="Pdf Header",
5.    LeftText= "{date} {time}",
6.    RightText = "{page} of {total-pages}",
7.    DrawDividerLine = true,
8.    FontSize=10
9. };
10. renderer.PrintOptions.Footer = new HtmlHeaderFooter()
11. {
12.    HtmlFragment= "<span style='text-align:right'> page {page} of {totalpages}</span>",
13.    DrawDividerLine=true,
14.    FontSize=15,
15.    Height=10
16. };
17. var pdf = renderer.RenderHTMLFileAsPdf("test.html");
18. pdf.SaveAs("generatedFile.pdf");
```

10. Add PDF Password and Security

You can secure your PDF with a password and edit file security settings like prevent copying and printing.

```
    PdfDocument Pdf = PdfDocument.FromFile("testFile.pdf");
    //Edit file metadata
    Pdf.MetaData.Author = "john smith";
    Pdf.MetaData.Keywords = "SEO, Friendly";
    Pdf.MetaData.ModifiedDate = DateTime.Now;
    //Edit file security settings
    //The following code makes a PDF read only and will disallow copy & paste and printing
    Pdf.SecuritySettings.RemovePasswordsAndEncryption();
    Pdf.SecuritySettings.MakePdfDocumentReadOnly("secret-key"); //secret-key is a owner password
    Pdf.SecuritySettings.AllowUserAnnotations = false;
    Pdf.SecuritySettings.AllowUserFormData = false;
    Pdf.SecuritySettings.AllowUserFormData = false;
    Pdf.SecuritySettings.AllowUserPrinting =
    PdfDocument.PdfSecuritySettings.PdfPrintSecrity.FullPrintRights;
    //Change or set the document ecrpytion password
    Pdf.Password = "123";
    Pdf.SaveAs("secured.pdf");
```

11. Digitally Sign PDFs

You can also digitally sign a PDF as follows:

```
    PdfDocument Pdf = PdfDocument.FromFile("testFile.pdf");
    Pdf.QuickSignPdfWithDigitalSignatureFile("cert123.pfx", "123");
    Pdf.SaveAs("signed.pdf");
```

You can also digitally sign a PDF as follows:

```
    PdfDocument Pdf = PdfDocument.FromFile("testFile.pdf");
    var signature = new IronPdf.PdfSignature("cert123.pfx", "123");
    //Optional signing options and a handwritten signature graphic
    signature.SigningContact = "support@ironsoftware.com";
    signature.SigningLocation = "Chicago, USA";
    signature.SigningReason = "To show how to sign a PDF";
    signature.LoadSignatureImageFromFile("handwriting.jpg");
    //Sign the PDF with the PdfSignature. Multiple signing certificates may be used
    Pdf.SignPdfWithDigitalSignature(
```

12. Extract Text and Images from PDF

Extract text and images

Using IronPdf you can extract text and images from a PDF as follows:

```
    PdfDocument Pdf = PdfDocument.FromFile("testFile.pdf");
    Pdf.ExtractAllText(); //to extract all text in the pdf
    Pdf.ExtractTextFromPage(0); //to read text from specific page
    //to extract all images in the pdf
    IEnumerable<System.Drawing.Image> AllImages = Pdf.ExtractAllImages();
    //to extract images from specific page
    IEnumerable<System.Drawing.Image> ImagesOfAPage= Pdf.ExtractImagesFromPage(0);
```

12.1. Rasterize PDF to Image

You can also convert pdf pages to images as follows

```
    PdfDocument Pdf = PdfDocument.FromFile("testFile.pdf");
    List<int> pageList = new List<int>() { 1,2};
    Pdf.RasterizeToImageFiles("*.png", pageList);
```

13. Add PDF Watermark

The following is an example of how to watermark PDF pages using the watermarkAllPages() method

```
    IronPdf.HtmlToPdf Renderer = new IronPdf.HtmlToPdf();
    var pdf = Renderer.RenderUrlAsPdf("https://www.nuget.org/packages/IronPdf");
    pdf.WatermarkAllPages("<h2 style='color:red'>SAMPLE</h2>",
    PdfDocument.WaterMarkLocation.MiddleCenter, 50, -45, "https://www.nuget.org/packages/IronPdf");
    pdf.SaveAs("Watermarked.pdf");
```

Watermark is restricted to basic position and a 100mm by 100mm as a maximum size. For more control you can use StampHTML method:

```
    IronPdf.HtmlToPdf Renderer = new IronPdf.HtmlToPdf();
    var pdf = Renderer.RenderHtmlAsPdf("<div>test text </div>");
    var backgroundStamp = new HtmlStamp() { Html = "<h2 style='color:red'>copyright 2018 ironpdf.com", Width = 100, Height = 100, Opacity = 50, Rotation = -45, ZIndex = HtmlStamp.StampLayer.BehindExistingPDFContent Location=PdfDocument.WaterMarkLocation.MiddleCenter
    };
    pdf.StampHTML(backgroundStamp);
    pdf.SaveAs("stamped.pdf");
```

Tutorial Quick Access



Download this Tutorial as C# Source Code

Access all the source code found in this tutorial as a Visual Studio project ZIP file, easy to use and share for your project.

⚠ Get the code

GitHub Tutorial Access

Explore this tutorial and many more via GitHub. Using the projects and source code is the best way to learn and apply it to your own PDF .NET Core needs and use cases.





Keep the PDF CSharp Cheat Sheet



Develop PDFS in your .NET applications using our handy reference document. Providing quick access to common functions and examples for generating and editing PDFs in C# and VB.Net, this shareable tool helps you save time and effort getting started with IronPDF and common PDF requirements in your project.

△ Keep the Cheat Sheet

More Documentation

Read the IronPDF Object Reference, which thoroughly presents the details of all the features in IronPDF plus namespaces, classes, methods fields and enums.

Object Reference Documentation >



The C# PDF solution you've been looking for.

