Uno Platform

Development

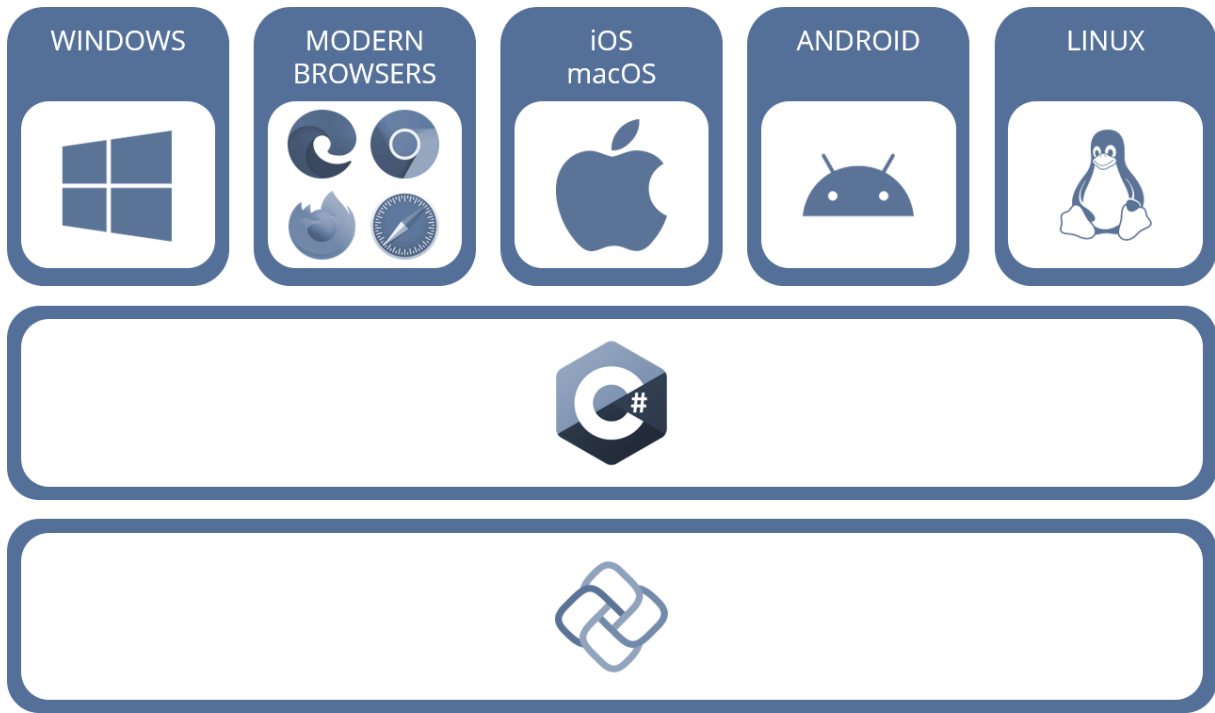| WINDOWS	MODERN BROWSERS	iOS macOS	ANDROID	LINUX
	JS			
	HTML5 CSS3			

Native Development can be done for Windows using C# and XAML with the Universal Windows Platform. Native development can be done with modern browsers such as Edge, Chrome, Firefox and Safari using JavaScript with HTML and CSS. iOS and macOS can use Swift and Swift UI for native development. Native development on Android can be done using Kotlin with Google Material Design and on Linux using Python with GTK.

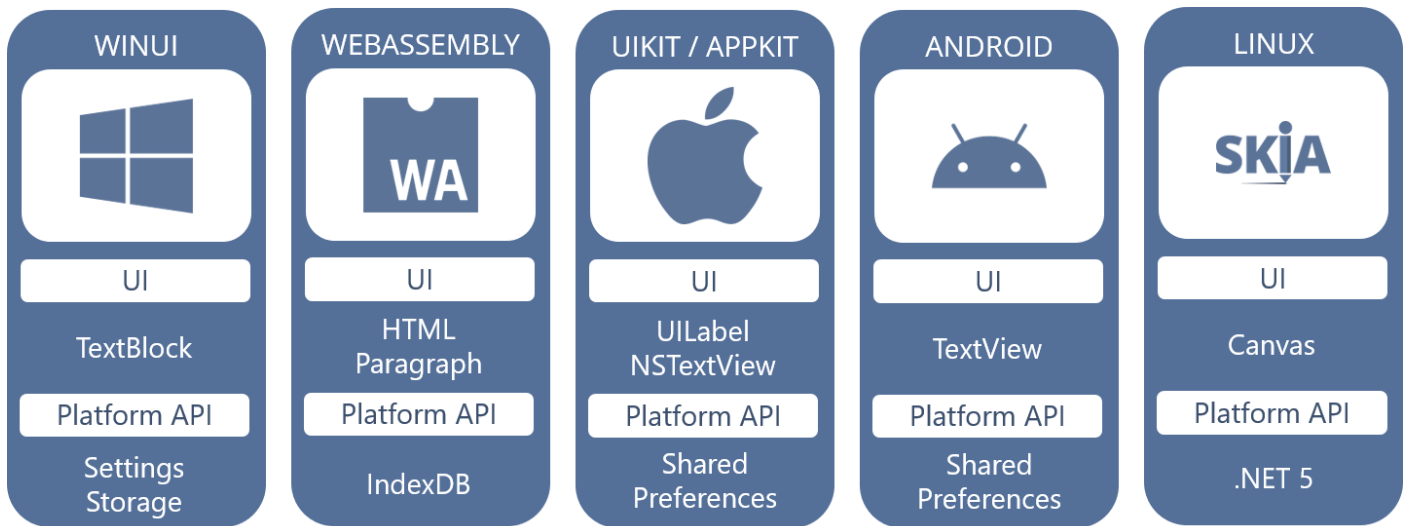| WINDOWS	MODERN BROWSERS	iOS macOS	ANDROID	LINUX

			SKIA
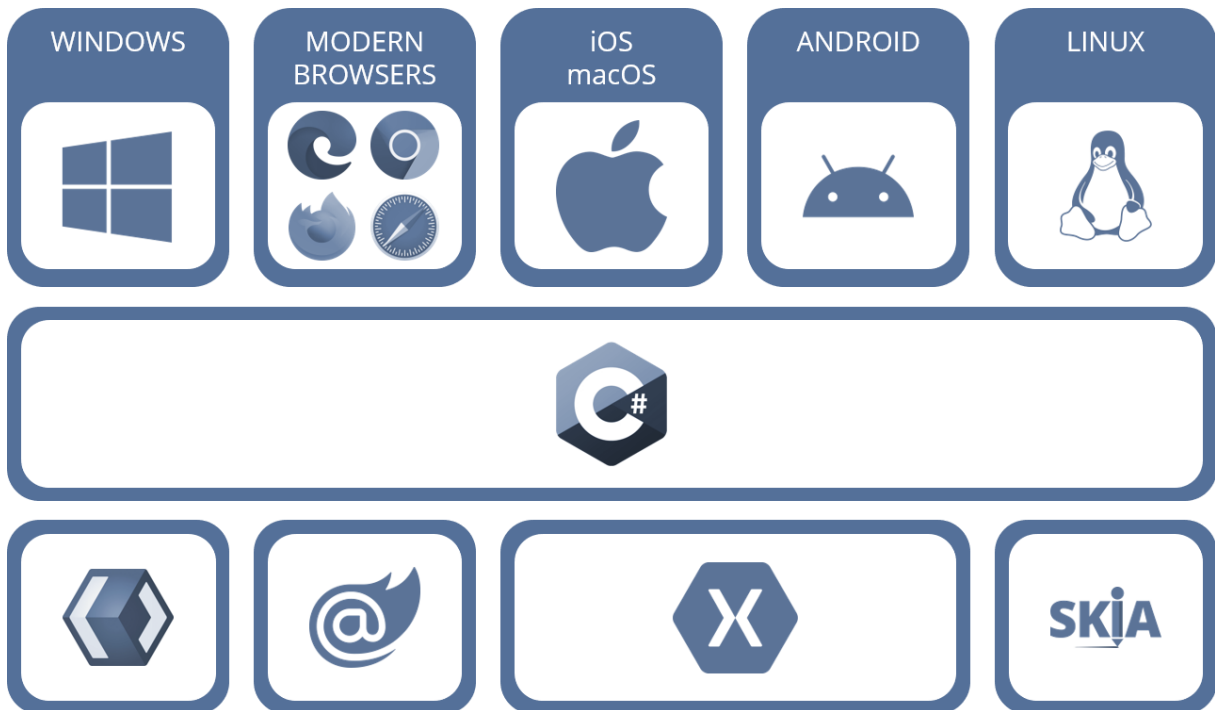
C# development can target Windows with Universal Windows Platform and WinUI. C# development can target modern browsers such as Edge, Chrome, Firefox and Safari using Blazor with WebAssembly. Xamarin can be used for C# development to target iOS, macOS and Android or use SKIA to target Linux.

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Cross-platform developers can target Windows, modern browsers, iOS or MacOS, Android and Linux using just one platform with C# using the Uno Platform.
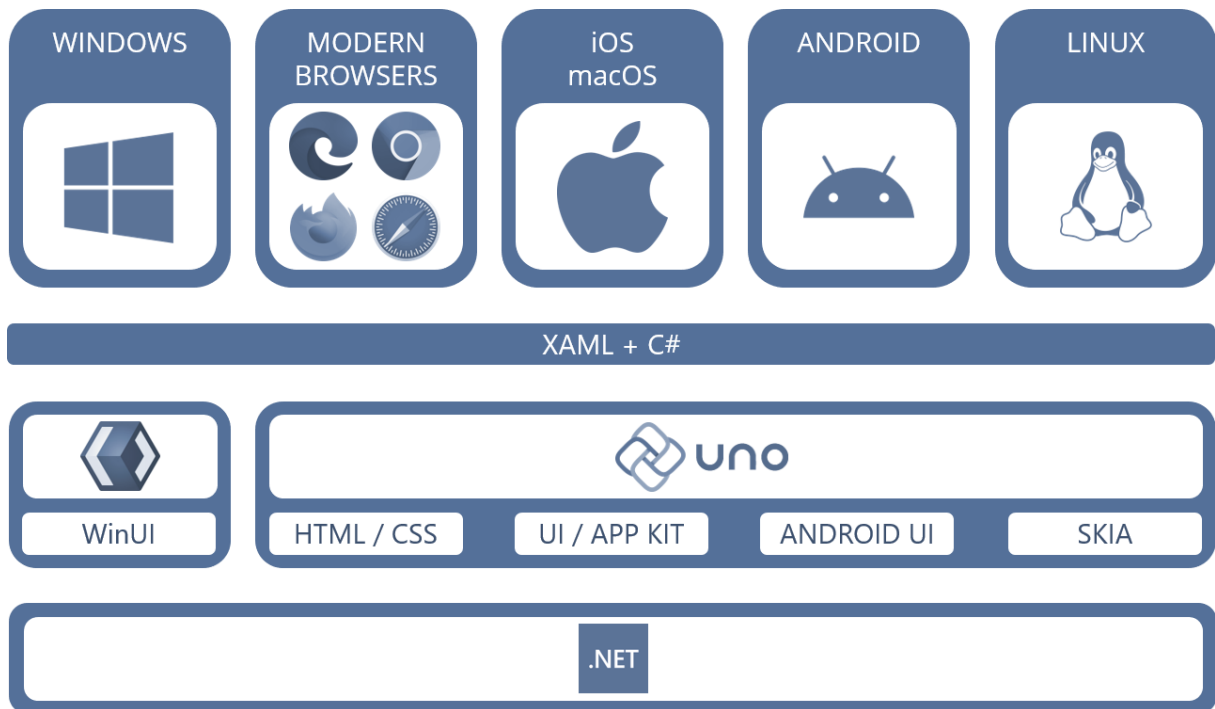
Uno Platform supports Windows rendering using WinUI and Universal Windows Platform which runs directly against the Windows API with full support for Visual Studio tooling. Modern browsers supported with WebAssembly and renders using HTML and CSS. iOS uses UI Kit, macOS uses App Kit and Android uses Android UI native UI libraries to render and the Xamarin Native stack. Linux uses SKIA to draw on canvas. Uno Platform uses .NET to provide the ability to run a single C# and XAML codebase app on all these platforms.

WINUI	WEBASSEMBLY	UIKIT / APPKIT	ANDROID	LINUX
UI	UI	UI	UI	UI
TextBlock	HTML Paragraph	UILabel NSTextView	TextView	Canvas
Platform API	Platform API	Platform API	Platform API	Platform API
Settings Storage	IndexDB	Shared Preferences	Shared Preferences	.NET 5

Uno Platform mappings allow you to use the Universal Windows Platform and APIs to map to native controls and APIs on every platform, where each platform is implemented using platform specific APIs – so you do not need to know about them as just need to use the Universal Windows Platform interface and the rest is done for you. So TextBlock on WinUI becomes HTML Paragraph on WebAssembly, UILabel on iOS, NSTextView on macOS, TextVew on Android and Canvas with SKIA on Linux.

WinUI makes it east to build modern, seamless UIs on every Windows device for intuitive, accessible, and powerful experiences using the latest user interface patterns. WinUI is an open-source user interface layer providing modern controls and styles for building Windows application and WinUI allows you to target a variety of Windows 10 based devices such as Desktop, Tablet, Xbox One, Xbox Series X or S, HoloLens and more.

WebAssembly is a binary instruction format for a stack-based virtual machine designed to be encoded in a size and load time efficient binary format and aims to execute at native speed and be supported on a wide range of platforms. WebAssembly is designed as a portable compilation target for a variety of programming, including C#, and enables deployment on the web for client applications in modern browsers such as Microsoft Edge, Google Chrome, Firefox and Apple's Safari. Uno Platform parses XAML files into C# then using WebAssembly creates the information needed to build the app's visual tree, implements a complete Databinding engine optimised for static type-checking where possible and implements the views and controls producing HTML or CSS needed for the modern browsers to display.

Xamarin is an open-source platform to build iOS, macOS and Android apps with .NET and C#. Xamarin adds to the .NET platform providing a base framework for accessing native features, support for platform specific libraries to add rich capabilities and for common patterns such as MVVM. Uno Platform parses XAML files into C#, then using Xamarin combines with Android.View for Android, UIKit for iOS and AppKit for macOS it creates the information needed to build the app's visual tree, implements complete Databinding engine and implements the WinUI framework views and controls using each platform's native UI framework.

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SKIA is an open source 2D graphics library providing common APIs that work across a variety of hardware and software platforms. SkiaSharp is a cross-platform 2D graphics API for .NET platforms based on the SKIA library that can be used to render images. Uno Platform parses XAML files into C# to build the app's visual tree then renders this completely using SkiaSharp, implements a complete Databinding engine and implements the views and controls using native UI framework with shell support with GTK.

Uno Platform has support for many popular third-party open-source .NET libraries such as:

- ReactiveUI – advanced, composable and functional reactive model-view-viewmodel framework for .NET platforms.
- ReactiveX – asynchronous programming with observable streams.
- Windows Community Toolkit – fork of library for Universal Platform apps by Uno Platform team, which is a collection of helper functions, custom controls and app services.
- Prism – for building XAML-based applications using proven patterns and development practices is supported thanks to work by the Uno Platform team.

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platform.uno

platform.uno is where you can find out more about Uno Platform, the open-source project developed by nventive in Montreal Canada, that enables modern .NET developers to build applications using a single codebase using XAML and C# and target Windows, WebAssembly, iOS, macOS, Android and Linux.

Discover	
How it works	Build pixel-perfect, single-codebase, multi-platform web, mobile and desktop apps with .NET
Uno Gallery	Collection of ready-to-use Fluent and Material code snippets to speed up multi-platform development
Code Samples	Full apps & code samples running C# and XAML on WebAssembly, Desktop and Mobile natively
Showcases	Thousands of developers use Uno Platform to build cross-platform web, mobile and desktop apps
Docs	Getting started, using Uno Platform features, controls, implemented views and more
Developers	Target platforms include iOS, Android, Web, Surface Neo / Duo, Windows 7, macOS and Linux
Blog	Read articles about Uno Platform. Learn how it generates code and other useful insights

Uno Playground is a convient way to experiment with the Uno Platform using a WebAssembly compatible browser with Snippets that allow you to easily use various XAML-based controls, XAML editor allows you to try out any new or existing XAML, data context allows you to try out data binding with any XAML and then see what your XAML will look like using Uno Platform on desktop, mobile and web at playground.platform.uno

Uno Gallery is a collection of ready-to-use code snippets to speed up multi-platform development supporting Light or Dark and Colour Palette Themes. It supports Components such as Button or Navigation View with Features shown such as Acrylic and Path. Uno Gallery allows you to compare and try out themes, components and features on desktop, mobile and web at gallery.platform.uno

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Getting Started

Uno Platform can be developed on Windows using Visual Studio 2019 for Universal Windows Platform, WebAssembly, iOS, macOS, Android and Linux. Develop on mac using Visual Studio for mac or Visual Studio Code for Windows, Mac or Linux for WebAssembly projects and use JetBrains Rider on Windows, Mac and Linux.

Setup Uno Platform on Windows by installing Visual Studio 2019 with Universal Windows Platform development, Mobile development with .NET and ASP.NET and web development workloads installed. Then just need to install the Uno Platform Solution Templates Visual Studio Extension from the Visual Studio Marketplace, you will also need macOS if you want to target iOS and macOS.

Start using Uno Platform on Windows after Setup by launching Visual Studio 2019 and then select "Create a new Project" from Get Started, then choose the "Cross-Platform App" project template and finally set the project name, choose a location and then choose "Create".

Solution created for Uno Platform contains projects for each target platform including Android, iOS, macOS, Windows using Universal Windows Platform and Web using WebAssembly (WASM). The shared project is where you put your shared XAML, C# code and assets. Set as Startup Project which one you want to launch such as Universal Windows Platform (Universal Windows) then run the example to see the output "Hello, world!".

Summary

Uno platform enables modern .NET developers to build applications using a single codebase using XAML and C# and target Windows, modern browsers supporting WebAssembly, iOS, macOS, Android and Linux.

platform.uno is where you can get started with Uno Platform, check out the gallery, code samples, documentation and more.

Uno Platform can be developed on Windows, Mac and Linux. You can create a cross-platform app in Visual Studio 2019 using Uno Platform targeting Windows with WinUI. You can also target iOS, macOS and Android with Xamarin and Linux with SKIA.