

Universal Windows Platform Development

Devendra Tewari

September 9, 2020

Universal Windows Platform Development

Objectives

- ▶ Brief history of Native Windows Development
- ▶ Universal Windows Platform programming
- ▶ Build, distribute, update, and monitor apps

Brief history of Native Windows Development

- ▶ Win32 API, C/C++, MFC/ATL, COM
- ▶ Visual Basic 6.0, ASP, J#
- ▶ .NET, C#, VB.NET, ASP.NET, F#, Windows Forms, WPF, XAML
- ▶ UWP, JavaScript, C++/WinRT
- ▶ Rust/WinRT, .NET Core 3.1, ASP.NET Core, Blazor
- ▶ .NET 5, WinUI 3, MAUI .NET

Universal Windows Platform programming

- ▶ Multiple form factors
 - ▶ Windows 10 Desktop
 - ▶ XBox
 - ▶ HoloLens
 - ▶ Mobile devices
- ▶ Sand-boxed apps distributed via Store or Side-loaded
- ▶ Modern Windows Runtime (WinRT) API

C++/WinRT and Rust/WinRT

- ▶ Author components using C++17, C#, or Rust
- ▶ WinRT IDL
- ▶ Consume C and C++ code and libraries directly in C++
- ▶ Consume authored components in .NET and Python

User interface programming with XAML

- ▶ XML based responsive design language
- ▶ Pixel-perfect layouts
- ▶ Component oriented
- ▶ Support for SVG compatible paths
- ▶ Support for localization and accessibility
- ▶ Appropriate resource sizes loaded automatically

UWP demos

- ▶ Visual Studio 2019 overview
- ▶ Generate app using Windows Template Studio
- ▶ XAML Studio
- ▶ XAML Controls Gallery
- ▶ Windows Community Toolkit Sample App

App lifecycle

- ▶ States
 - ▶ Not running
 - ▶ Running
 - ▶ In foreground
 - ▶ In background
 - ▶ Suspended
- ▶ Mechanisms to perform background tasks
 - ▶ Triggers
 - ▶ Only out-of-process, e.g. Device Servicing Trigger
 - ▶ In- or out-of-process, e.g. Time Trigger
 - ▶ App Services
 - ▶ Background transfer
 - ▶ Extended execution

Build, distribute, update, and monitor apps

- ▶ Visual Studio
 - ▶ Generating app for store and side-loading
 - ▶ Self-signing app
 - ▶ PowerShell based installer for testing
- ▶ Visual Studio App Center demo
 - ▶ Build on code commit
 - ▶ Distribute to app store
 - ▶ Crash reporting
- ▶ Partner Center demo
- ▶ Microsoft Store demo