MODULE 04

INTRODUCTION TO WPF

MODULE TOPICS

Advantages of WPF
Resolution Independence
Planning for a Flexible UI
Designer Improvements in VS 2017

ADVANTAGES OF WPF

- Graphics performance
- UI based on vectors not bitmaps
- Resolution Independence
- Flow layout over grid based
- XAML vs code behind
- Dependency / Attached Properties

ADVANTAGES OF WPF

- Routed Events
- Improved Data Binding
- Commands - Separate UI that invokes command vs logic / code that implements command
- Reusable Styles
- Control Templates - Change control look and feel
- Separation of UI / XAML from Code leads to MVVM pattern

USER32 / GDI

- Pre-WPF applications relied on 2 parts of the Windows OS to create a UI
  - User32 - Provides Windows look and feel for elements such as windows, buttons, etc
  - GDI / GDI+ - Provides drawing support for rendering shapes, text, and images
- These were used by Visual Basic, .NET and WinForms, C++ with MFC, etc
- Been around since Windows was first created

DIRECTX

- A workaround for the limitations of User32 and GDI
- Used to create games on Windows Platform
- Speed was its main feature
  - Microsoft worked with video card vendors to apply hardware acceleration
- Could create complex textures, special effects, partial transparencies, and 3D graphics
- Introduced shortly after Win95
- Due to its complexity, rarely used directly in Windows apps

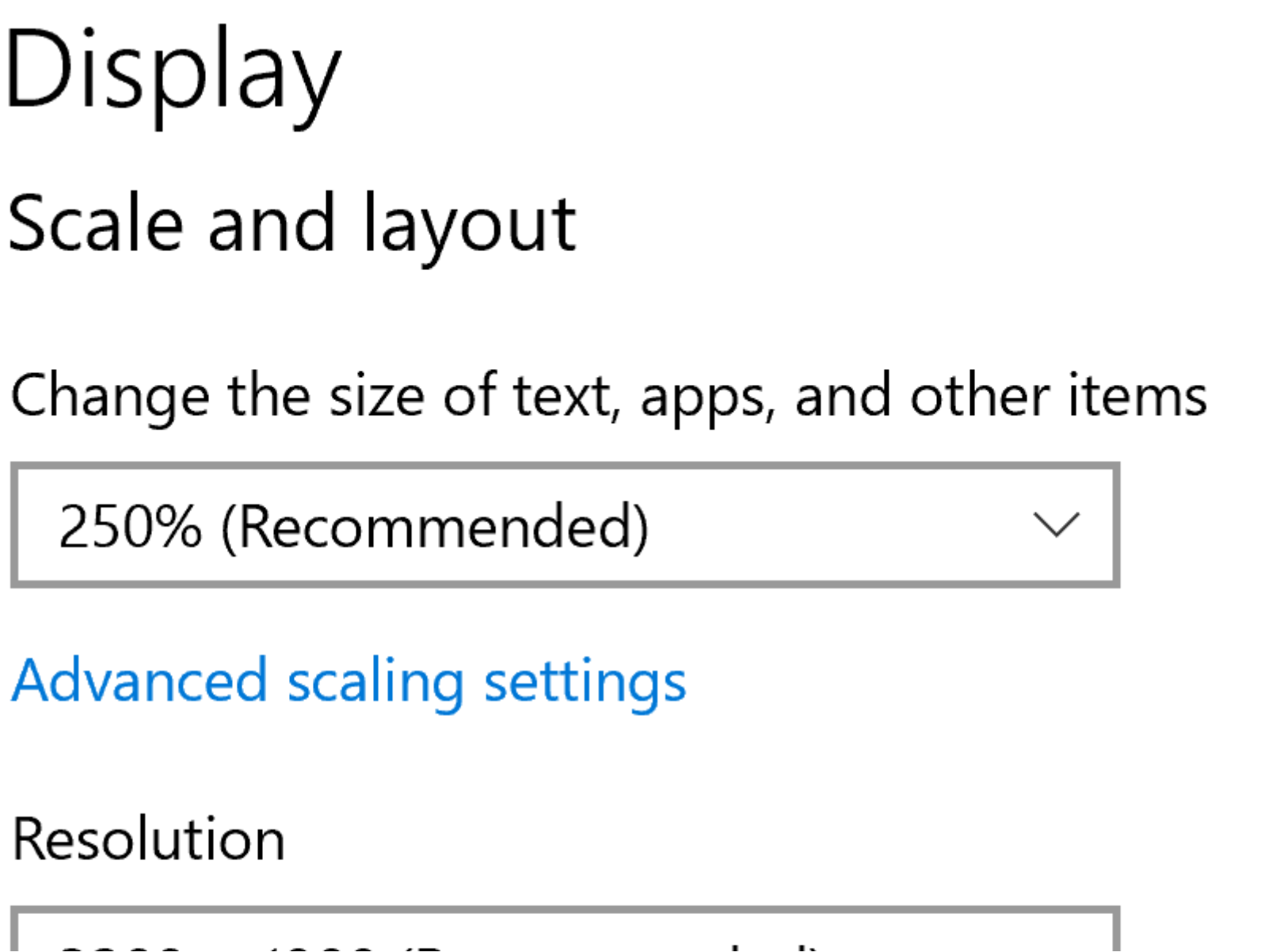
WPF

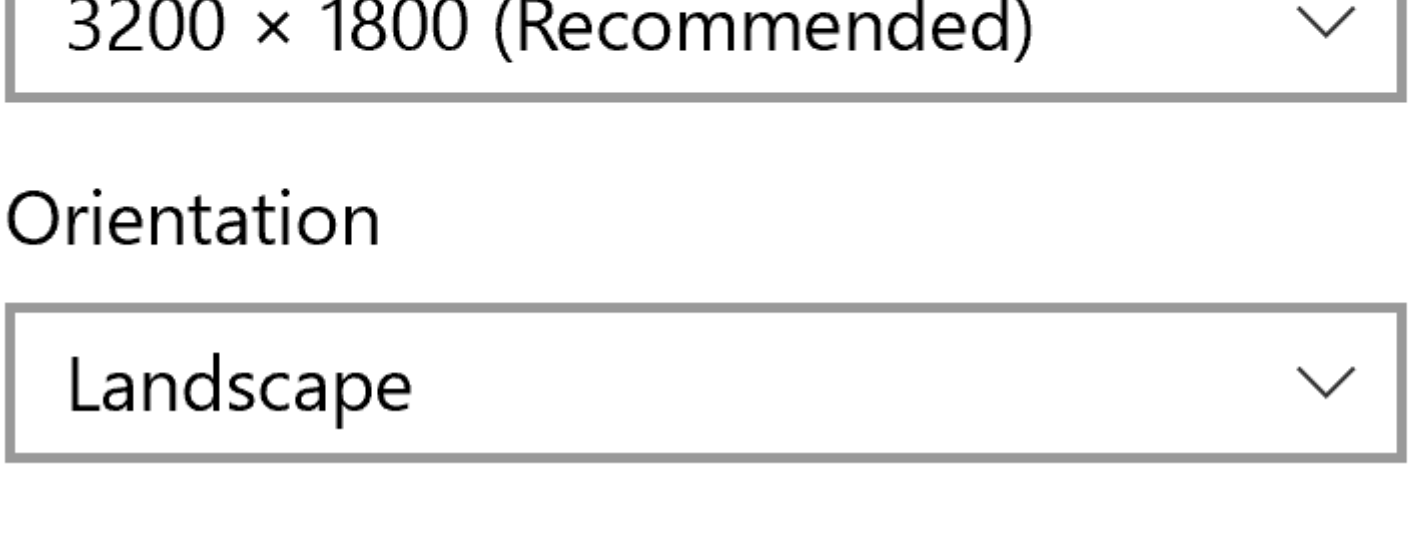
- WPF uses DirectX instead of User32 / GDI for drawing
- User32 is still used for input routing and figuring out which app owns which portion of screen real estate

RESOLUTION INDEPENDENCE

- Traditional Windows apps had a specific monitor resolution used for the default UI, with larger or smaller displays having reasonable output
- High density displays (greater than the traditional 96 dpi) get smaller instead of showing more detail
- User32 does not support true scaling
- WPF renders all UI elements itself, so does not suffer from this issue
- WPF uses the System DPI setting, not the DPI of the physical display

RESOLUTION INDEPENDENCE




3200 × 1800 (Recommended)
Orientation
Landscape

BITMAP AND VECTOR GRAPHICS

- WPF uses vector graphics to display UI elements instead of bitmap for better scaling

PLANNING FOR A FLEXIBLE UI

- WPF gets away from using a grid based layout system in favor of a flow based system
- This allows for more flexibility on different sized devices and different resolutions
- WPF can also be viewed in a browser and supports page based applications

XAML DESIGNER IMPROVEMENTS IN VS 2017

- Rebuild from the ground up
- Better performance
- Uses .NET framework that the app uses
- Supports Fluent UI
- More Reliable
- XAML Edit and Continue

WALKTHRU - WPF PROJECT

ANY QUESTIONS?