PV239 - 01 INTRODUCTION

INTRODUCTION

Roman

Ondřej

And what about you?

EXERCISES

Introduction

Design – XAML

Architecture – MVVM

Architecture – IoC/DI

Storage

Networking – API

GOALS

Course organization

Get in touch with .NET MAUI

Go through environment setup

Get to know available layouts and controls

COURSE ORGANIZATION

Interactive syllabi – IS

Materials

- Materials repository: https://github.com/jasho/pv239-maui
- Sample app repository: https://github.com/jasho/cookbook-maui

Stream/recordings – Youtube

https://www.youtube.com/playlist?list=PLMD3_JXajX1iWN-KFRie7esaE9NP7eBIf

Excercises

Homework

Project

SAMPLE APPLICATION

CookBook

Android, iOS, Windows

Communication with API

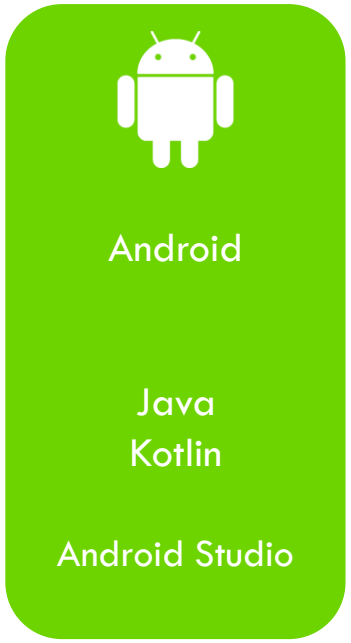
Basic CRUD operations

Saving of settings

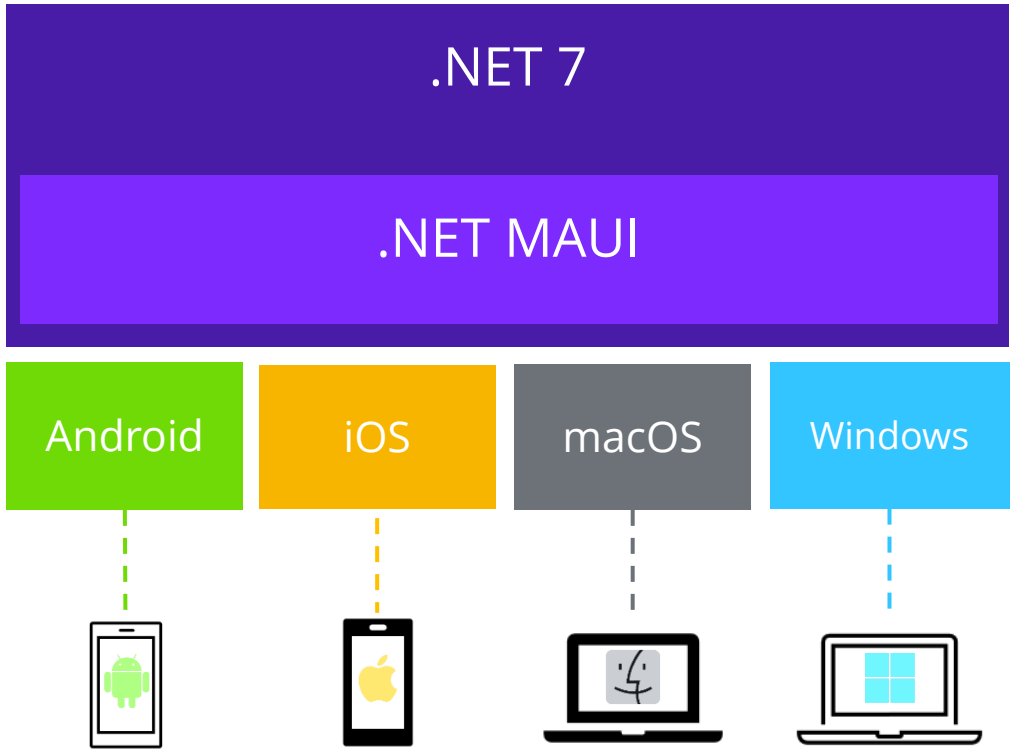
MVVM architecture

Shell navigation

"STANDARD" APPLICATION DEVELOPMENT



.NET MULTI-PLATFORM APP UI



Cross-platform, native UI

Single project system, single codebase

Deploy to multiple devices, mobile & desktop

HOW IT WORKS - STRUCTURE

Platform specific frameworks

- .NET for Android
- .NET for iOS
- .NET for MacOS
- Windows UI (WinUI) library

Common BCL - .NET

.NET Runtimes

- Mono – Android, iOS, MacOS
- WinRT/Win32 – Windows

HOW IT WORKS - UI

Platform specific UI

- Different platforms - different ways of defining UI
- Can be defined separately using platform specific APIs
- .NET for Android, .NET for iOS, .NET for MacOs, WinUI

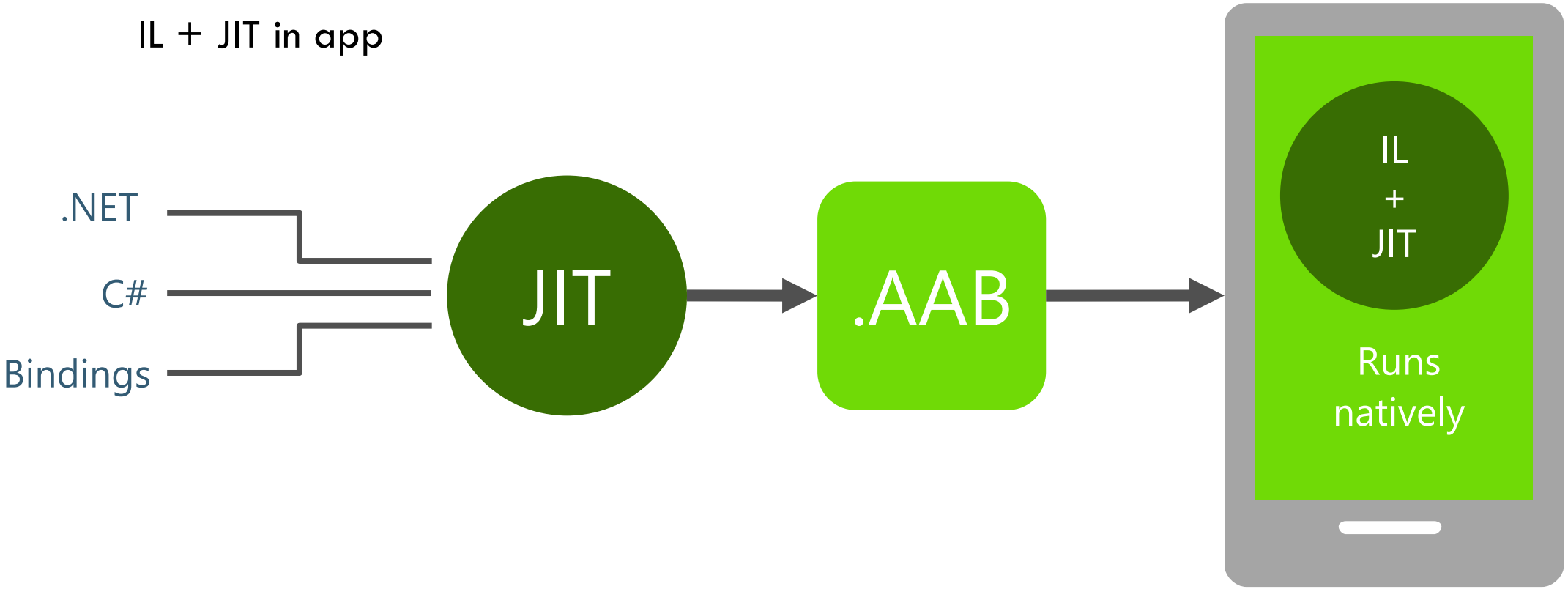
Common UI

- Single framework for defining UI – mobile & desktop
- XAML

HOW IT WORKS - ANDROID

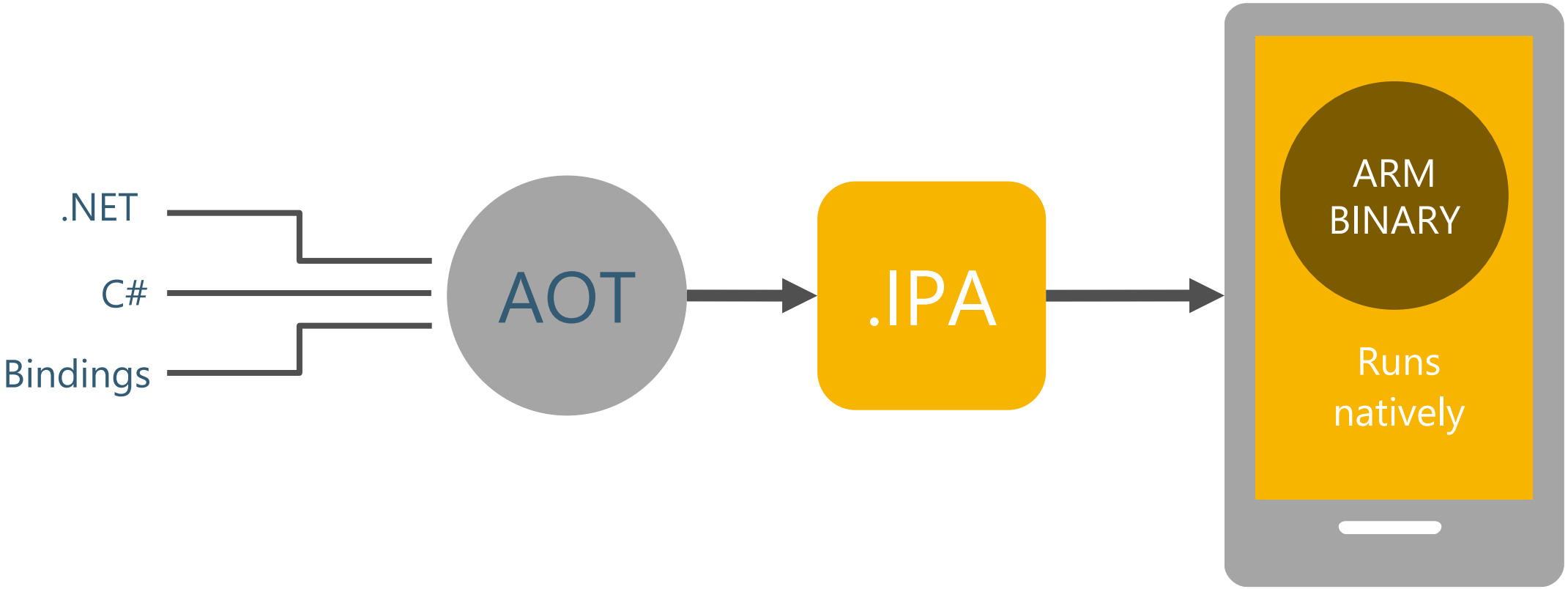
C# compiles to intermediate language (IL)

IL + JIT in app



HOW IT WORKS - IOS

Fully ahead-of-time (AOT) compiled to native ARM binary



HOW IT WORKS – MACOS & WINDOWS

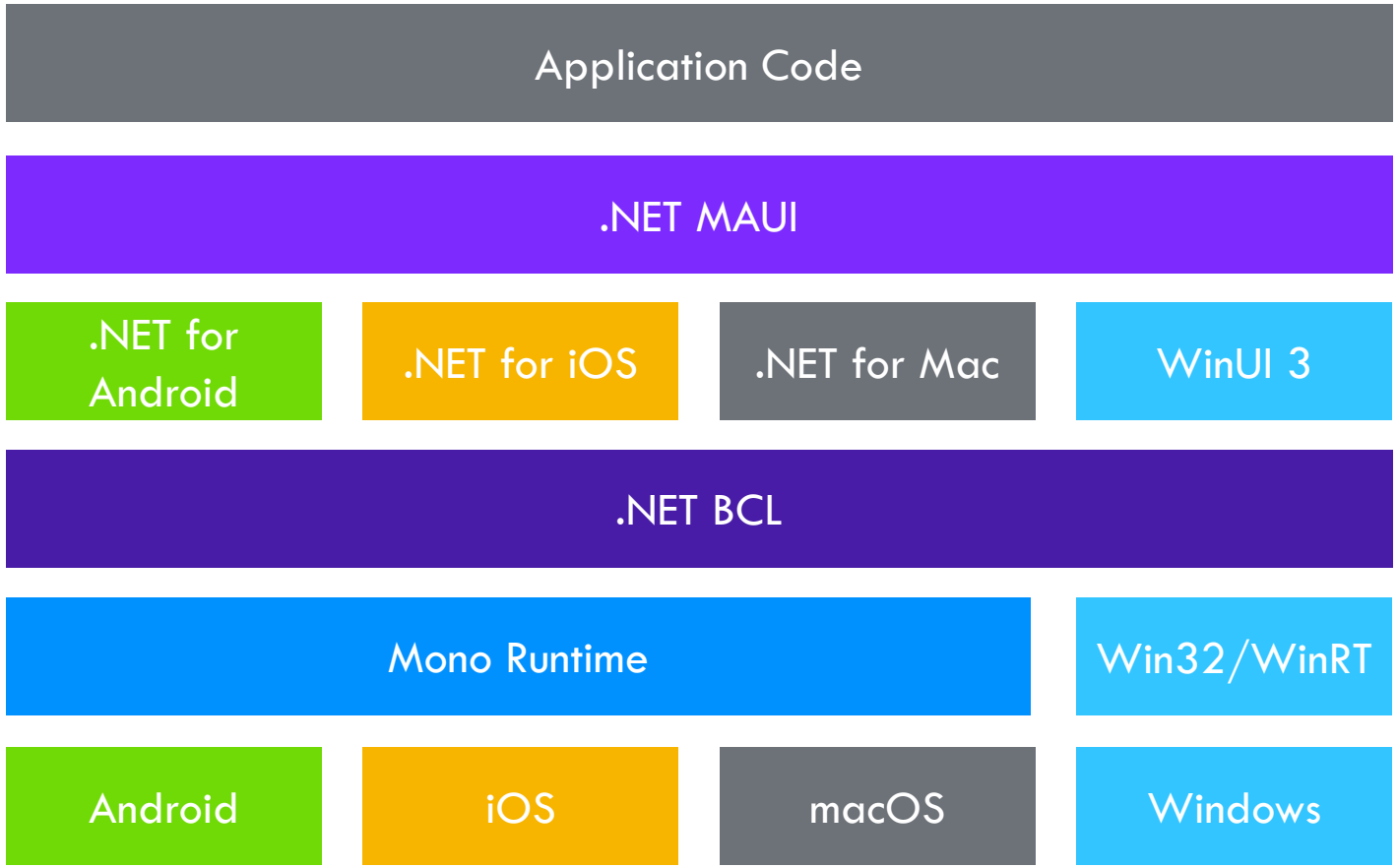
MacOS

- Using Mac Catalyst
  - Apple's solution to bring iOS Apps to desktop
  - Provides access to Mac OS APIs

Windows

- WinUI 3 library
- Native apps and UWP

HOW .NET MAUI WORKS



.NET MAUI

Collection of Controls

Layout engine for pages

Navigation – pages, drawers

Customizable handlers – enable platform specific controls

APIs for native device features – GPS, accelerometer…

Graphics library for 2D drawing code

Single project, multi-targeting system

.NET hot reload

SETUP

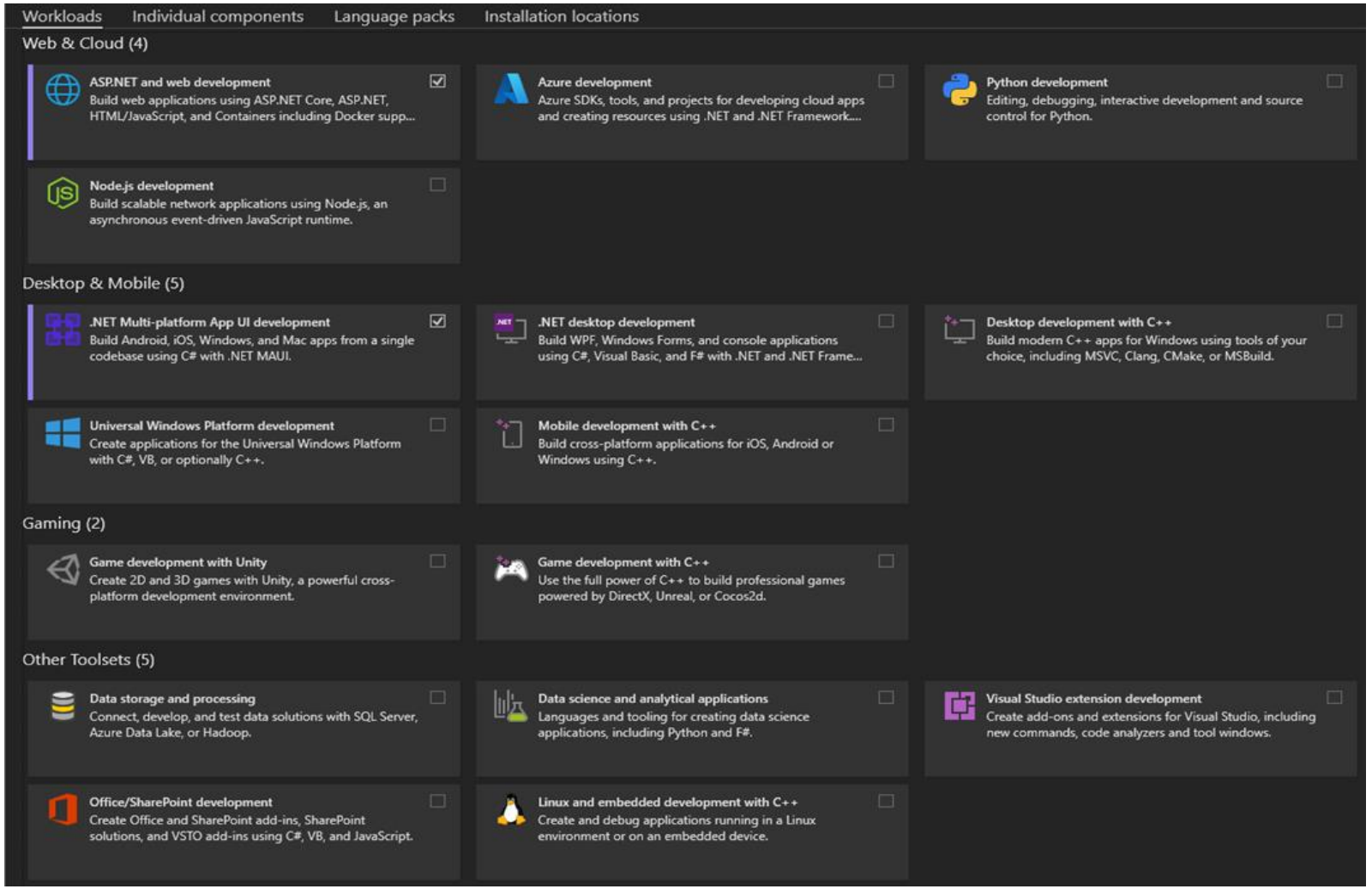
Visual Studio

for Windows

.NET MAUI

extension for VS Code

VISUAL STUDIO WORKLOADS



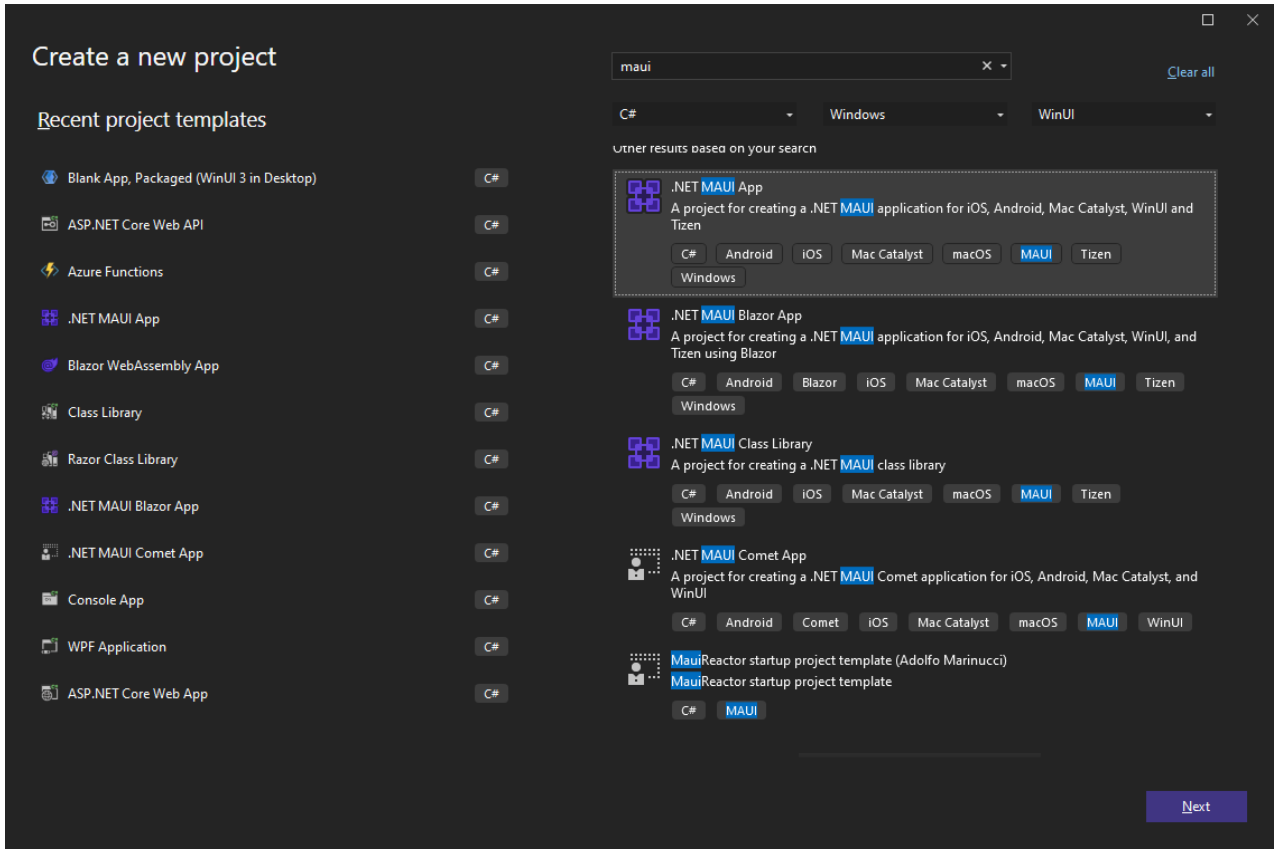
IOS DEVELOPMENT

You need Mac Agent to compile the application

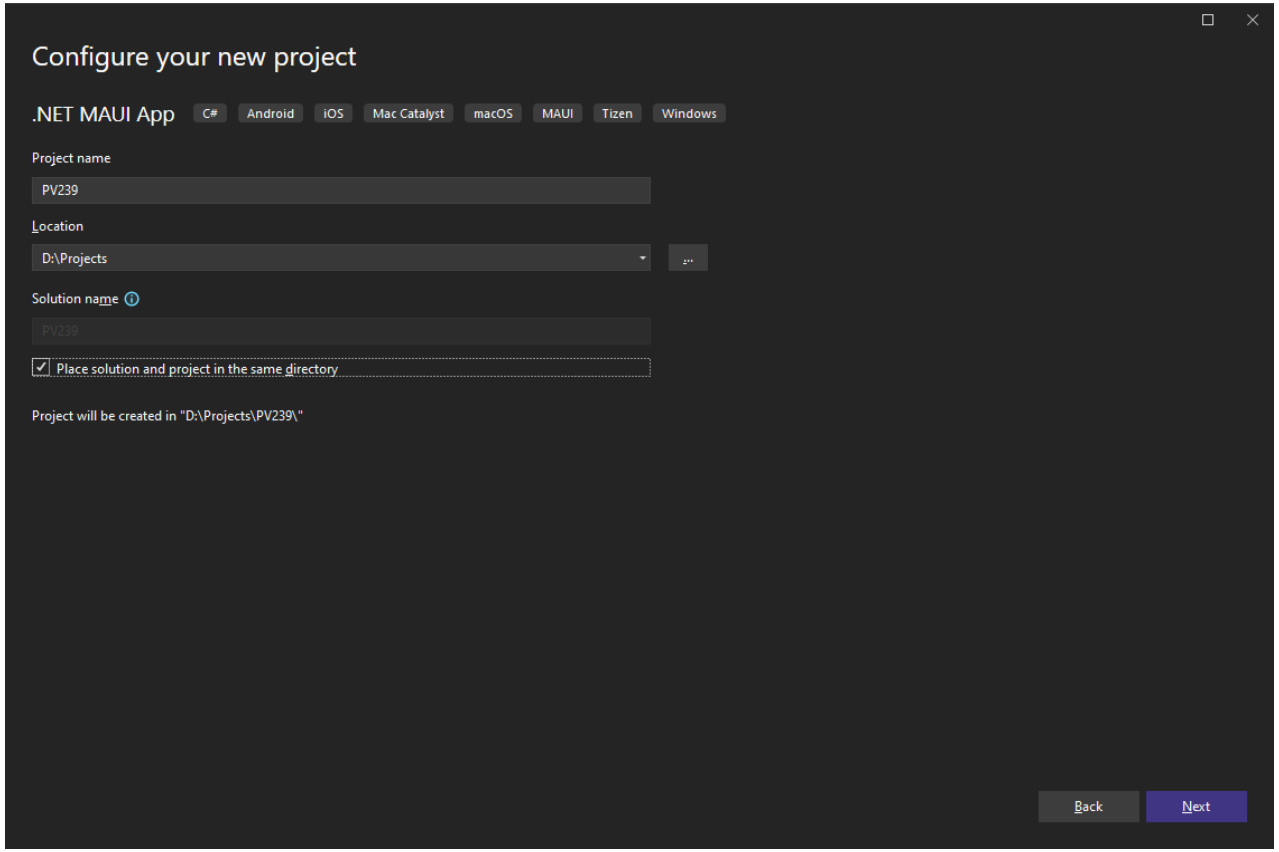
Compilation runs on a Mac OS device

Simulator and development can be done on Windows

CREATE A NEW PROJECT



CREATE A NEW PROJECT



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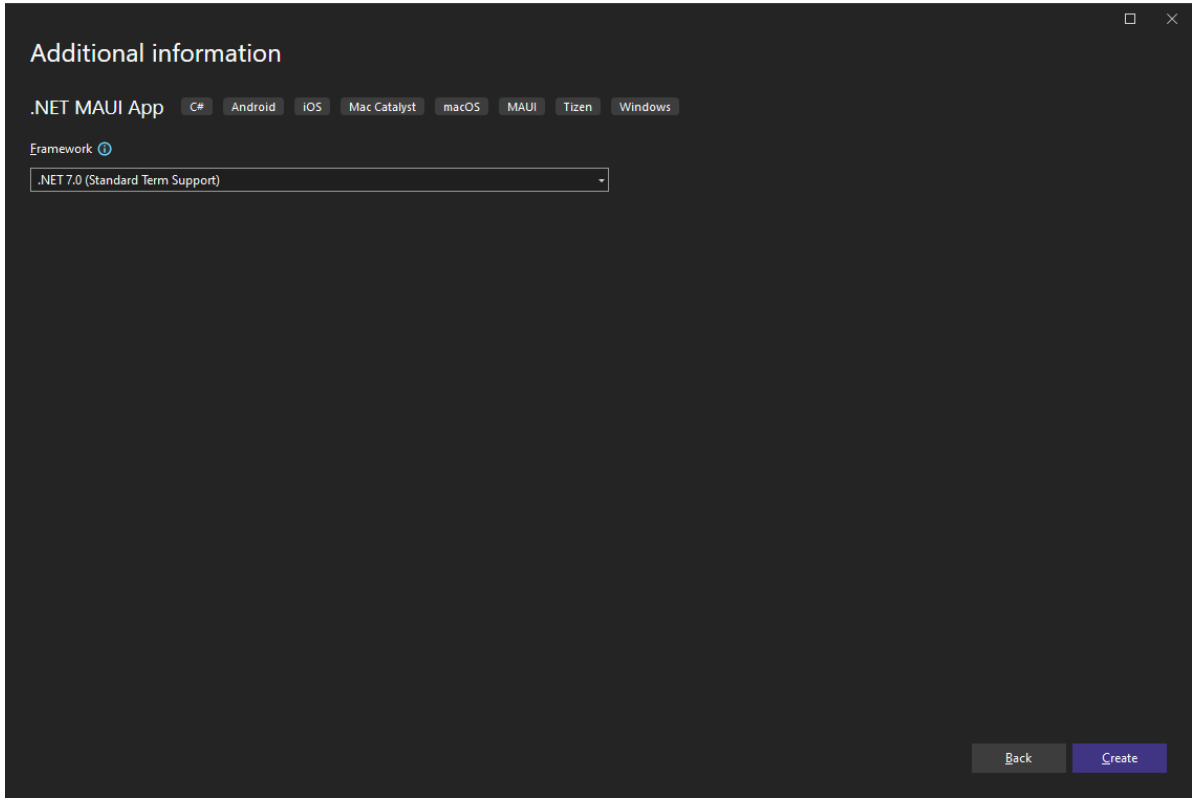


CREATE A NEW PROJECT

Demo

PROJECT STRUCTURE

One project for all platforms

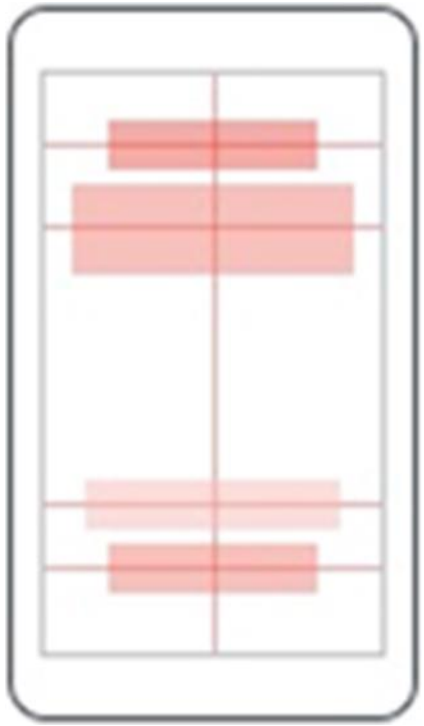
Shared code & resources (fonts, images, icons, splash screens…)

Platforms folder:

- Android – system colors, manifest
- iOS – launch screen, Info.plist
- Windows – package manifest, app manifest
- Mac OS – Info.plist
- Each platform
  - Application startup point
  - Custom handlers for application specific controls

LAYOUTS

AbsoluteLayout

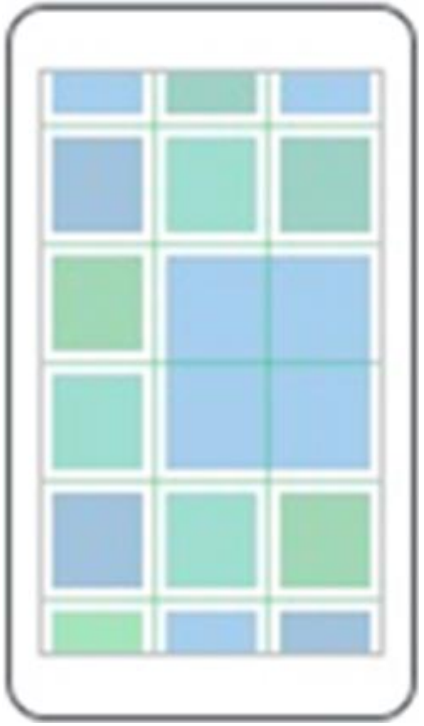


RelativeLayout

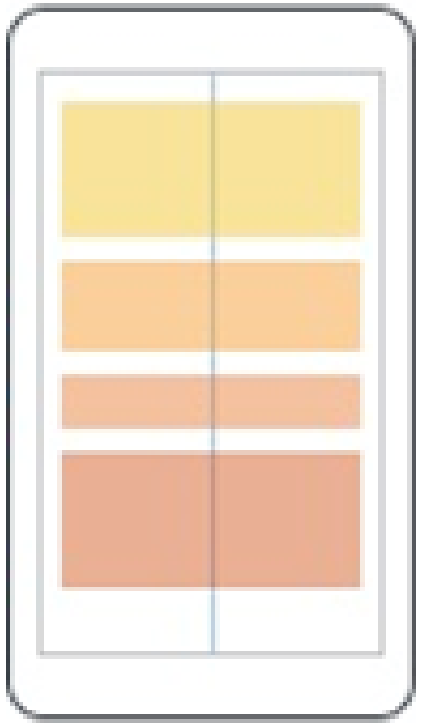
FlexLayout

LAYOUTS

Grid

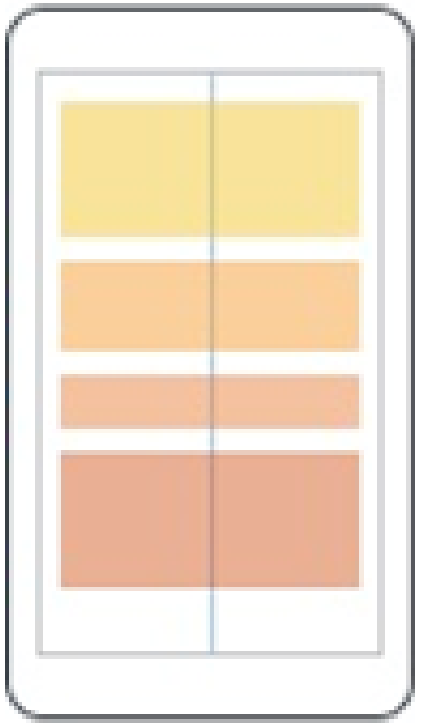


StackLayout



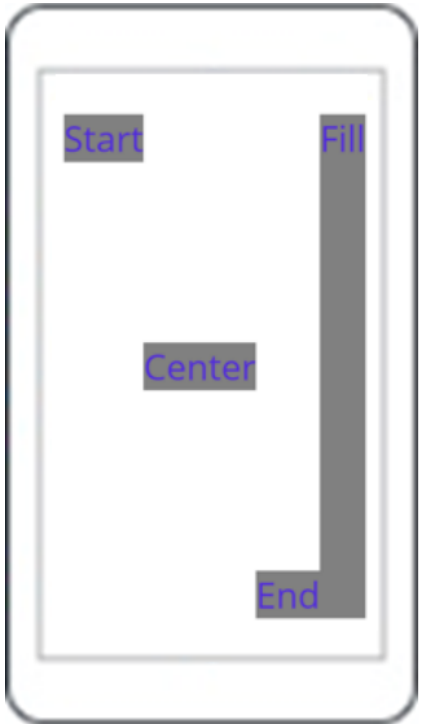
LAYOUTS – STACKLAYOUT

StackLayout



VerticalStackLayout

HorizontalStackLayout



GRID

Table-style layout

RowDefinitions, ColumnDefinitions

- Width / Height = 150 | * | Auto

Grid.Row, Grid.Column – placement of control in the Grid

Grid.RowSpan, Grid.ColumnSpan – control can span over multiple “cells”

HorizontalSpacing, VerticalSpacing – empty space between “cells”

STACKLAYOUT...

HorizontalStackLayout, VerticalStackLayout

- Individual layouts for single direction
- Separate LayoutManagers with Measure methods
- Recommended

StackLayout

- Wraps **HorizontalStackLayout** and **VerticalStackLayout**
- Has Orientation
- Useful for adaptive layouts

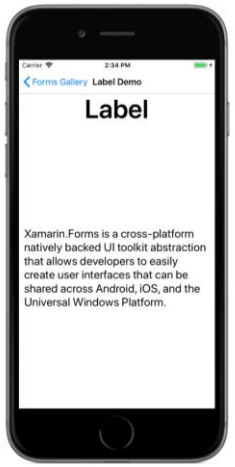
LAYOUTS

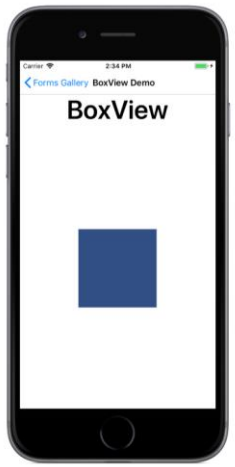
Demo

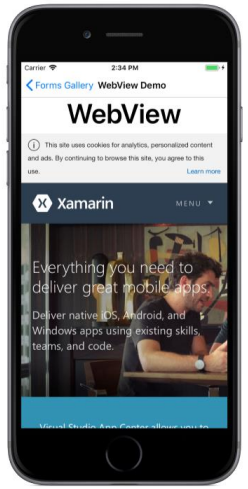
CONTROLS

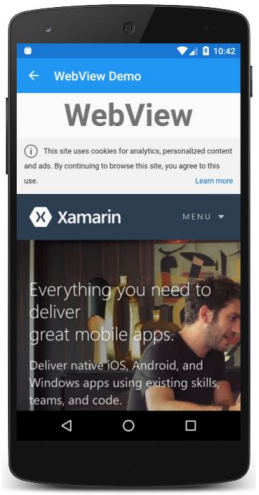
ActivityIndicator	BoxView	Button	DatePicker	Editor
Entry	Image	Label	TimePicker	Slider
OpenGLView	Picker	ProgressBar	SearchBar	Stepper
WebView	TableView	ListView	TextCell	EntryCell
ImageCell	SwitchCell	ViewCell	Map	…

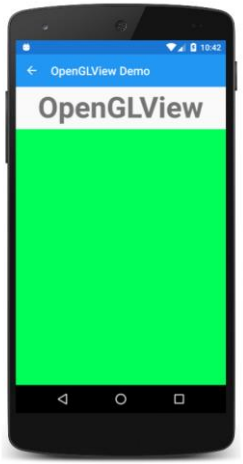
CONTENT PRESENTATION

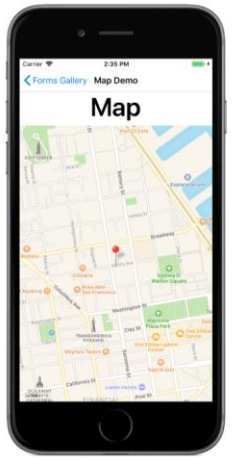


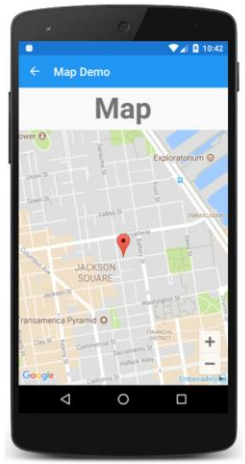




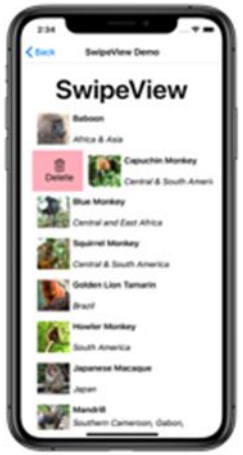


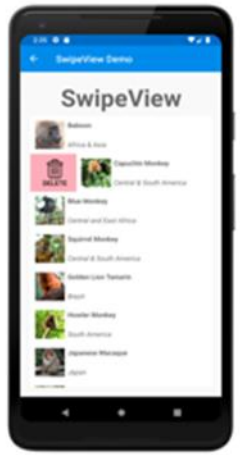




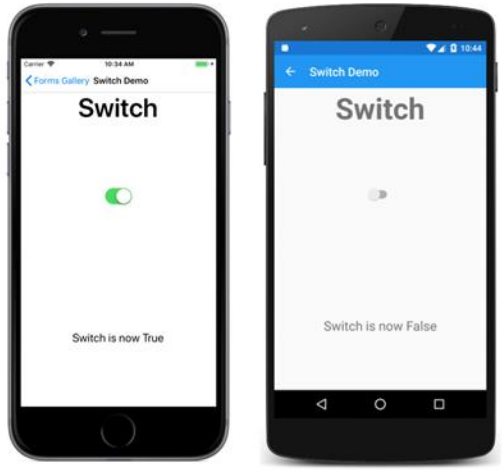


ACTIONABLE CONTROLS

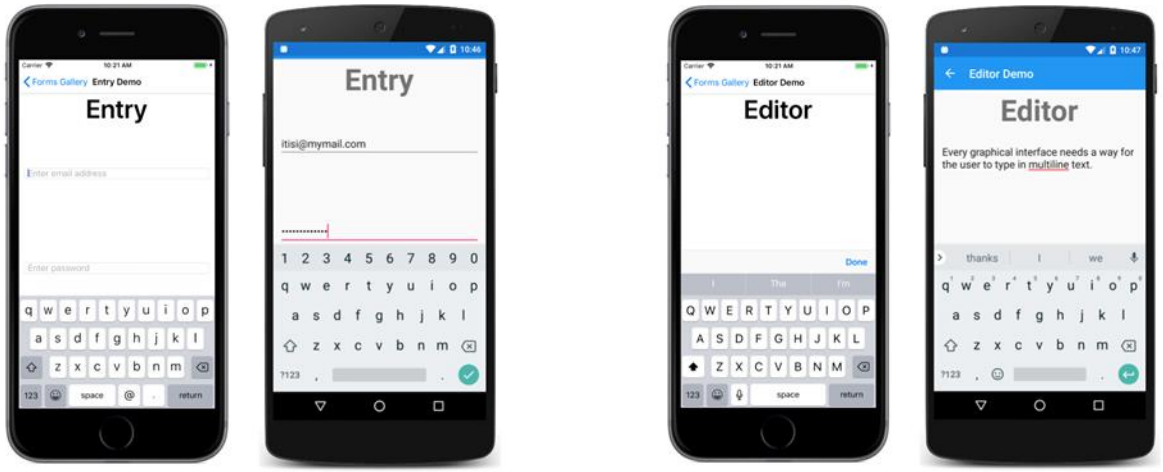




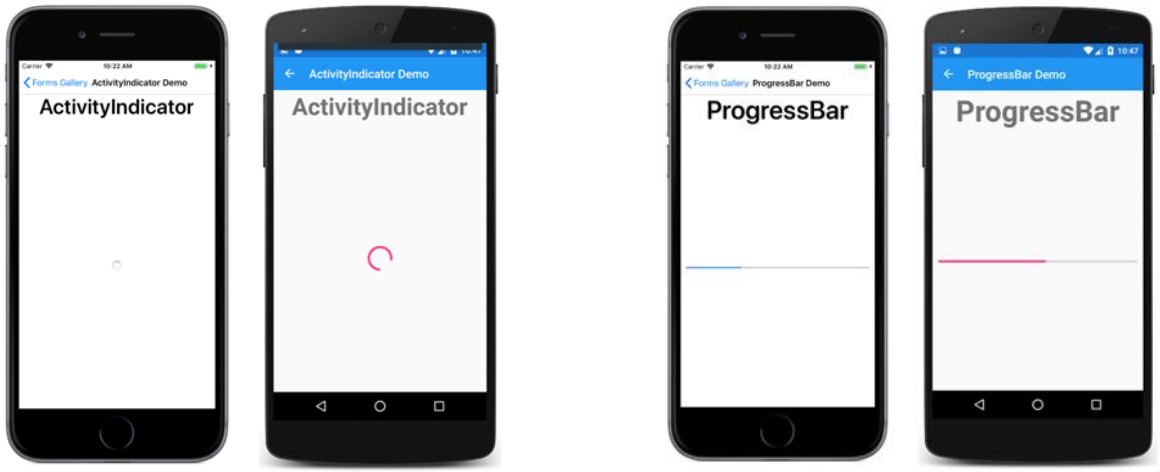
SETTING VALUES



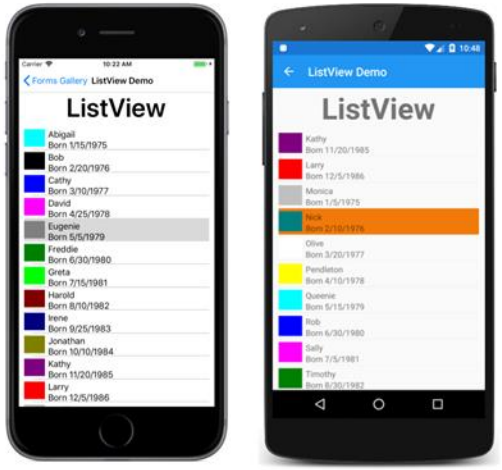
EDITING TEXT

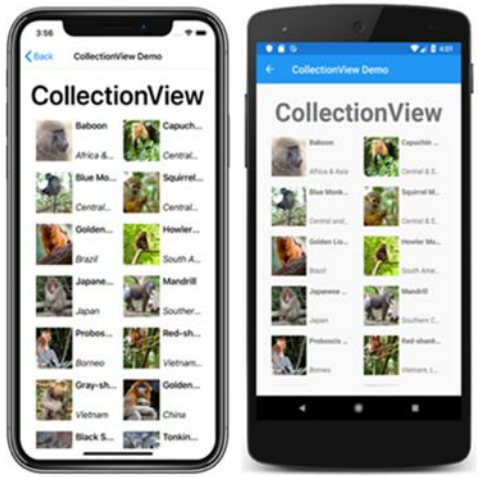


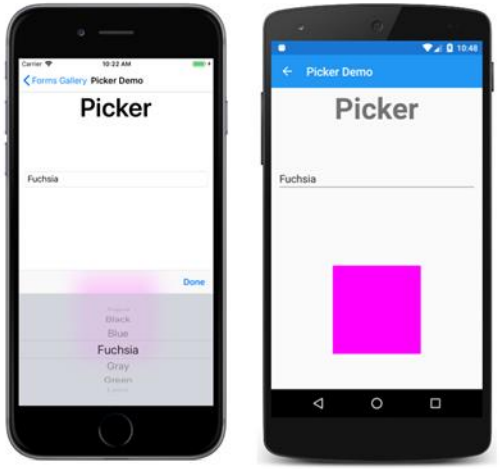
ACTIVITY INDICATION

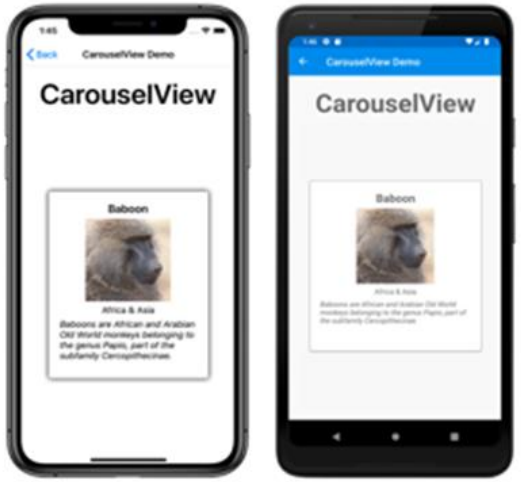


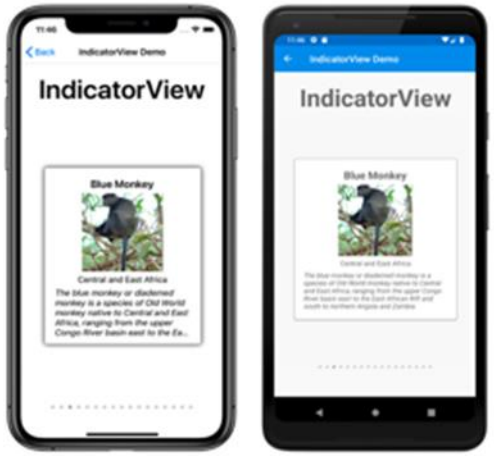
COLLECTIONS



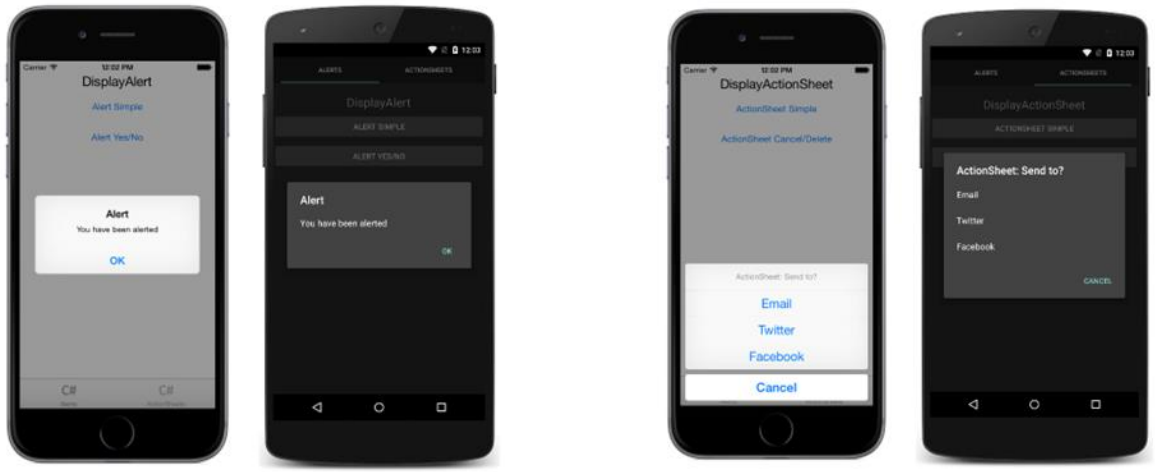








POP-UPS


DisplayAlert
Alert Simple
Alert Yes/No
Alert
You have been alerted
OK
DisplayActionSheet
ActionSheet Simple
ActionSheet Cancel/Delete
Email
Twitter
Facebook
Cancel
ActionSheet: Send to?
Email
Twitter
Facebook
CANCEL

COMMERCIAL COMPONENTS

PAGES

ContentPage

Single content

FlyoutPage

Items + detail

PAGES

TabbedPage

Tabs

NavigationPage

Enables navigation

PAGES

First displayed page is in App.xaml.cs

- Default - MainPage

TODAY'S GOALS

People introduction

Get in touch with .NET MAUI

Go through environment setup

Get to know available layouts and controls