Agenda

1. Data Alternatives
2. The File System
3. Working with Relational Data

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Data Alternatives

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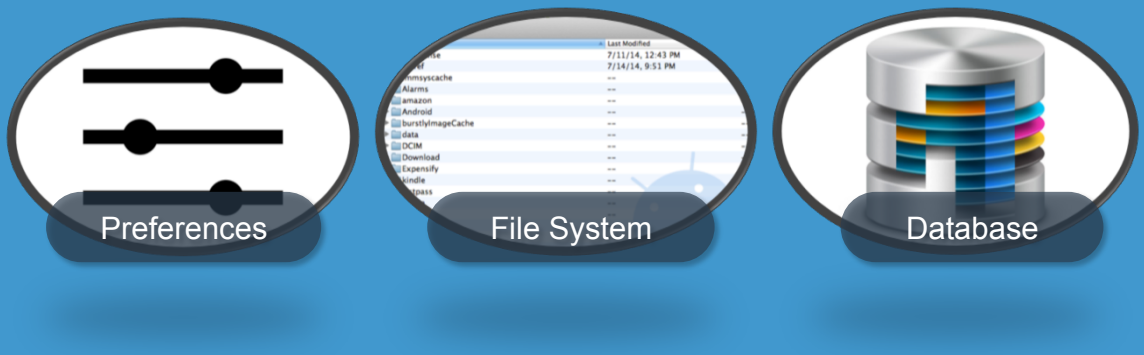
Data Storage Options

When storing local information, your app has several options to choose from



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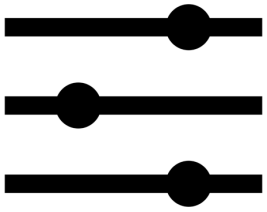
Preferences

iOS, Android and WP8 support storage of app-specific settings as simple key-value pairs

Useful to store app configuration, user preferences, and other customization tweaks



github.com/jamesmontemagno/Xam.PCL.Plugins

File System

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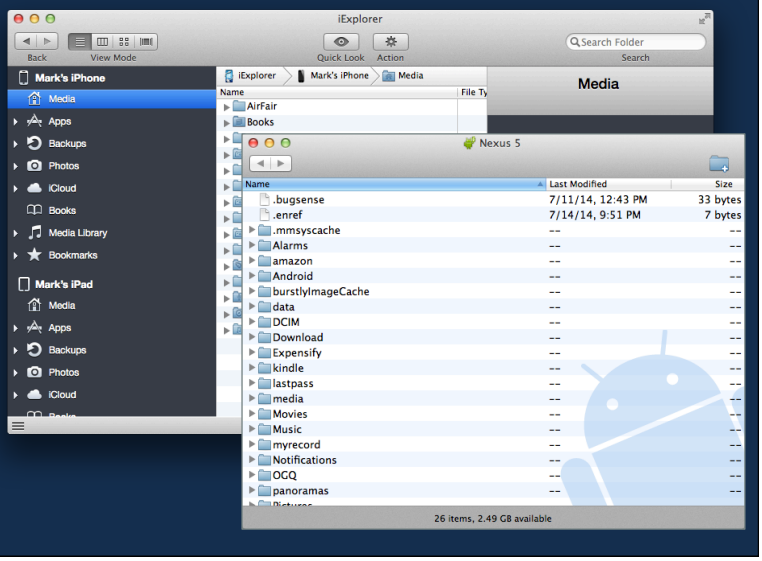
The file system

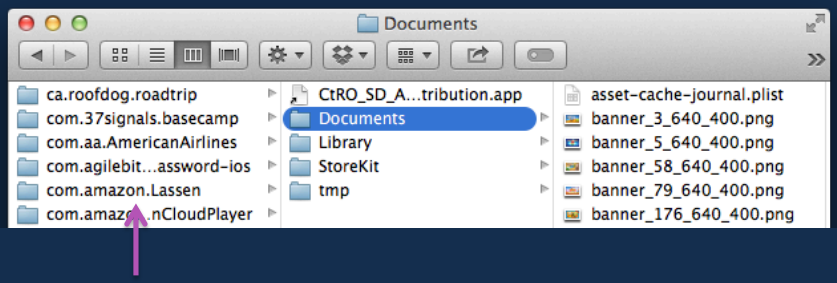
Your phone has a persistent file system to store settings, applications, data and other necessary pieces of information

The file system and it's contents vary based on the operating system



The app sandbox

Your application is given a dedicated folder, called the app folder or sandbox, on the file system which contains app-specific content



Each iOS application has a folder, which contains sub-folders, which contains your data and assets

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Working with Files and Folders

Can work directly with files and folders using classes in `System.IO` namespace

```
public IEnumerable<Task> LoadTasks(string filename)
{
    StreamReader reader = File.OpenText(filename);
    ...
}
```

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File Locations

Location you place writable files ("Documents") is platform-specific

These locations are common, but other options are available
(e.g. Android has a **database** folder, iOS has a **cache** folder, etc.)

File Locations

API to retrieve *default documents folder* is also platform-specific

```
string docFolder = Environment.GetFolderPath(
                Environment.SpecialFolder.MyDocuments);
```

```
string docFolder = ApplicationData.Current
                            .LocalFolder.Path
```

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The code that determines the location of the file and the code to read and write the file will always be in your platform-specific projects in Xamarin.Forms

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SQLite

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What is SQLite?

SQLite is an open-source, lightweight database that has become the de-facto industry standard for mobile apps

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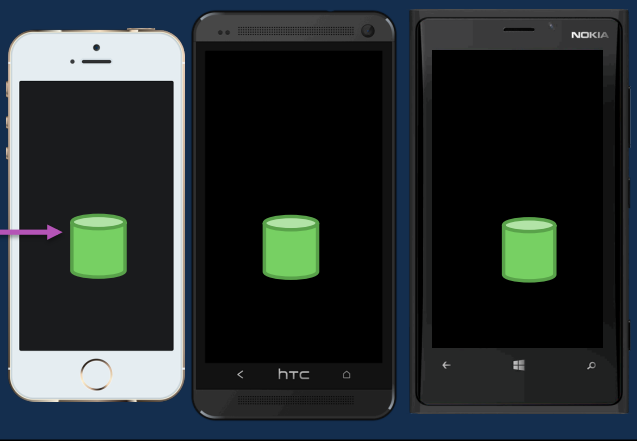
Local execution

SQLite provides a local database for a single mobile application

runs in-process (no server) and uses local file system for storage



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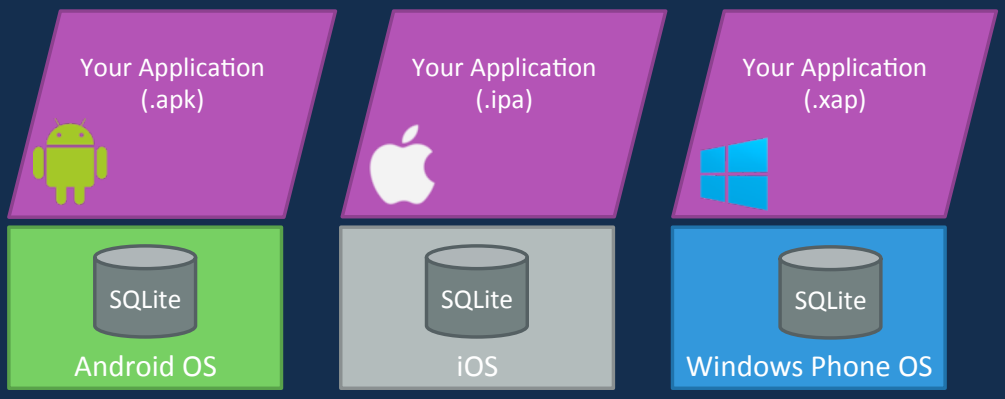
Packaging

- SQLite is built-in to Android and iOS, but *not* Windows Phone



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Install SQLite for Windows Phone

- Windows Phone requires you to install the database engine on your dev machine once

Accessing SQLite data

There are multiple C# APIs available from different vendors, most work with Xamarin so you can choose based on features or coding style

Microsoft .net ADO.NET

Microsoft Open Technologies
PCL for SQLite
sqlitepcl.codeplex.com

SQLite-net Object Relational Mapper

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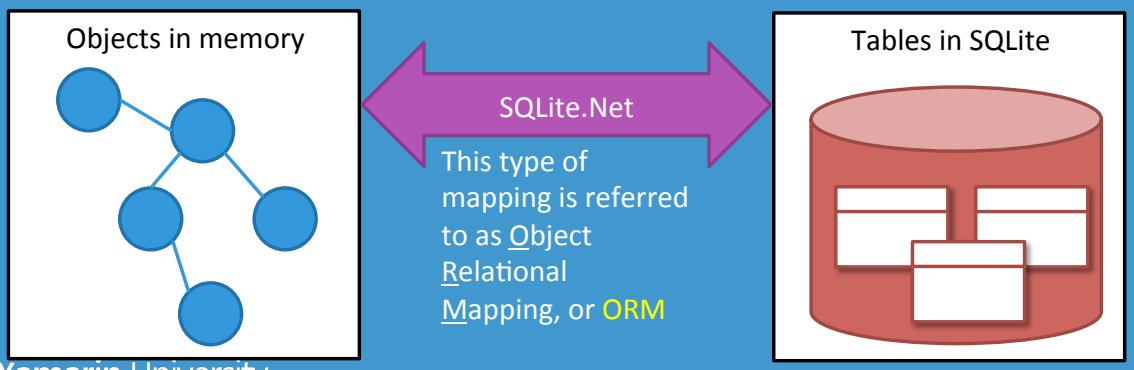
SQLite.Net PCL

SQLite.Net provides a mechanism to map classes to tables



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Mapping classes to tables

- Database schema is defined through attributes

```
[Table("checks")]
public class Check
{
   [PrimaryKey, AutoIncrement]
   public int Id { get; set; };

   public int CheckNumber { get; set; }
   ...
}
```

SQLite.Net uses the attributes to identify which table the class represents and how to map columns to properties

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Working with a database

Typical database steps involved in working with the database

① Create a SQLite connection

② Create the database tables (*optional*)

③ Execute queries and CRUD statements

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Questions?

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Working with Data in Mobile Apps

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