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Building Mobile Applications Using Kendo UI Mobile and ASP.NET Web API

Get started with Kendo UI Mobile and learn how to integrate it with HTTP-based services built using ASP.NET Web API

Nishanth Nair
Ragini Kumbhat Bhandari

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Nishanth Nair

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I would like to thank my wife and children for putting up with me.

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Preface

The sudden explosion of mobile devices has made mobile apps development one of the hottest career fields for programmers. The global smartphone/tablet market shared by multiple platforms posed a serious question to mobile application developers and companies, as every mobile platform has different development frameworks and programming languages to develop native applications.

How can we achieve **WORA (Write Once, Run Anywhere)**?

The obvious solution was HTML5, which is supported by all the latest browsers and has great support for developing rich user interfaces. With the introduction of platforms such as PhoneGap, which exposes the native OS APIs to apps developed in HTML5/JavaScript and CSS3, HTML5-based applications became a double-edged sword. They can be developed using one code base and deployed as a mobile website as well as mobile apps which can be installed on different platforms, as opposed to developing native apps which will result in multiple code bases if multiple platforms are targeted. The availability of a large number of web developers in the industry who understand HTML, JavaScript, and CSS added a boost to the shifting direction of mobile apps development towards HTML5. As the demand increased for more and more mobile applications, both in enterprise and consumer areas, different types of HTML5-based development frameworks surfaced and are still surfacing!

Kendo UI Mobile from Telerik is one of the fastest growing HTML5- and jQuery-based cross-browser mobile applications development frameworks. Kendo UI Mobile distinguishes itself from other frameworks by providing adaptive native UI rendering out of the box, without any extra coding, and supporting the Kendo base application development framework. While other mobile development frameworks concentrate on the UI part only, Kendo UI provides support for end-to-end, client-side development.

As the world is getting closer to the HTTP protocol, Web APIs (services which are exposed over plain HTTP) are gaining momentum. ASP.NET Web API helps to build powerful Web APIs, which can be consumed by a rich set of clients and is now the number one choice for .NET developers to build RESTful applications.

This book will introduce you to Kendo UI Mobile and will show you how to build an end-to-end mobile app using ASP.NET Web API as the service backend.

What this book covers

Chapter 1, Building a Mobile Application Using HTML5, helps a programmer, who is relatively new to the mobile applications development world, pick up on this journey to build an end-to-end app using Kendo UI Mobile. The chapter details different types of mobile applications such as native, hybrid and mobile websites, an introduction to Kendo UI Mobile, and wraps up with mobile applications design guidelines.

Chapter 2, Building Your First Mobile Application, introduces you to Kendo UI Mobile code in detail, and some screens for the Movie Tickets app will be developed explaining views, layouts, navigation, and more. From this chapter we get our hands dirty and write some really cool code.

Chapter 3, Service Layer with ASP.NET Web API, introduces you to one of the latest additions to Microsoft .NET stack, ASP.NET Web API. We will see routing, parameter binding, content negotiation, token-based authentication, authorization, and write some API methods which will be used for the sample Movie Tickets application. Readers not from the Microsoft background can skip this chapter as well as writing your own services with the same functionality on a platform of your choice or use the service hosted by us on the Internet. The frontend Kendo UI Mobile client application is independent of the backend API technology and will work with any service platform as long as it accepts and returns the same JSON data.

Chapter 4, Integration Using Framework Elements, discusses the common Kendo Framework elements such as DataSource, Templates, and MVVM, which are used in both mobile and web application development. Then we will start backend integration with the Movie Tickets app by building the User Account screen, discussing the Revealing Module Pattern and the application architecture.

Chapter 5, Exploring Mobile Widgets, introduces you to the core of the Kendo UI Mobile Framework, the Mobile widgets. We will dive deep into widgets such as ListView, Button, ButtonGroup, and so on. Using the provided jsFiddle examples, users can play around with the sample code.

Chapter 6, ActionSheet, ModalView, and More Widgets, continues on from the previous chapter, and we will explore more Kendo UI Mobile widgets hands-on.

Chapter 7, Movie Tickets Application – Complete Integration, completes our Movie Tickets sample application by integrating with Kendo UI Mobile widgets, framework elements, and the ASP.NET Web API service.

Who this book is for

This book is intended for novice and expert programmers with a web development background who want to build mobile applications or mobile websites for enterprise as well as consumer domains. A basic understanding of HTML, CSS, and jQuery is required to make good use of this book.

What you need for this book

The following software are required to make full use of this book:

- **Kendo UI Mobile:** Free trial or commercial licensed version (\$199 per developer)
- **jQuery 1.8.1:** Free
- **Ripple Emulator:** Free
- **MS Visual Studio 2010/2012 Express edition, ASP.NET MVC4:** These are available as free downloads and are required only if you are a .NET programmer and are interested in exploring ASP.NET Web API.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles are shown as follows: "Now let's create an action method in `MoviesController.cs`, which calls the `GetMovieList` BLL method."

A block of code is set as follows:

```
public class TrailerBO
{
    public string MovieName { get; set; }
    public string VideoUrl { get; set; }
}
```

When we wish to draw your attention to a particular part of a code block, the relevant lines or items are set in bold:


```
<!-- Movies main view --->
<div data-role="view" id="mt-home-main-view" data-title="Movies"
    data-init="MovieTickets.movieList.initialize"
    data-model="MovieTickets.movieList.viewModel"
    data-layout="mt-main-layout" class="no-backbutton">
```

Any command-line input or output is written as follows:

```
customEvent fired
customEvent fired with data: Kendo UI is cool!
```

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes for example, appear in the text like this: Two buttons, **Open Left** and **Open Right**, are placed on the NavBar widget in the layout of the views, which can be clicked to open the Drawer widgets as shown in the following code:

 Warnings or important notes appear in a box like this.

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1

Building a Mobile Application Using HTML5

The world is going mobile and millions of smart phones are activated daily. As a result, more and more mobile applications are developed for consumers, and enterprise software products are also slowly but steadily joining the revolution. More and more businesses are convinced that in order to sustain, they need to be in the mobile space. You are a web developer and one fine morning your manager tells you, "We now need to focus on the mobile platforms. Get ready!" or you want to develop a mobile app which needs to be deployed to one or more mobile app stores. There are many factors that play a part in choosing the appropriate mobile development platform, such as your development skills, native functionalities, security, offline capability, and support for multiple platforms. In this chapter, we will see different approaches for developing mobile applications and understand why HTML5 is a popular choice for cross-platform development. Then we will have an introduction to Kendo UI Mobile and will go over some design principles for mobile applications.

In this chapter we will cover:

- Native versus hybrid versus mobile websites
- HTML5 and CSS3
- Kendo UI - building cross-browser apps made easy
- Kendo UI Mobile
- HTML5 mobile web application design guidelines

Native versus hybrid versus mobile websites

As you may already be aware, there are three ways to develop a mobile device compatible application: native, hybrid, or mobile website.

Native apps are coded in a programming language specific to a platform, namely, Objective C for iOS, Java for Android, and so on. Native applications run faster, have access to all device APIs and features, and provide a better user experience. Since native apps are built for a particular platform, the entire application needs to be rewritten if a native application needs to run on another platform. This will create code duplication, maintenance headache, budget increase, and the need to have multiple development teams (specializing in a certain platform) working on the same business rules. Typically, games and applications which require high performance are developed as pure native apps.

Hybrid apps are written using pure web technologies (such as CSS, HTML, and JavaScript) and they run on the device in a native container using the device's browser engine. Hybrid apps are usually packaged using tools such as PhoneGap, which helps the app to access device-specific APIs and hardware features. WebKit rendering engine is used in platforms such as iOS, Android, and Blackberry to render the web-based script/code to be displayed in a web view control of the native platform. Since Hybrid apps are created using a native app shell, they can be distributed using app stores too. Icenium by Telerik is a cloud-based, all-in-one development environment to package, test, and deploy hybrid applications. PhoneGap is another commonly used tool for packaging web apps for deployment on multiple mobile platforms.

Mobile websites are accessed using a URL and run in the mobile device's browser. They can be developed using server-side technologies, such as ASP.NET and PHP, and can be deployed and updated without any approval process from an app store. If the mobile website is written using pure web technologies (HTML, CSS, and JavaScript) or using frameworks based on them, such as jQuery, Kendo UI, and jQuery Mobile, mobile websites can be packaged to be installed as a hybrid application without much effort. A major drawback of mobile websites is that only device features that are exposed through the browser can be accessed, and this makes a mobile website suitable for content-based applications. There is no single solution which is suitable for all the scenarios. Selection of a methodology will depend on a number of factors, such as the skill sets you have, budget, time lines, and update frequency.

Kendo UI Mobile is an ideal platform for developing hybrid apps and mobile websites. During the course of this book, we will create a Movie Tickets application using Kendo UI Mobile which will be treated as a mobile website initially and then, towards the end of the book, it will be packaged using PhoneGap as a mobile app and deployed to Android as well as the iOS devices.

HTML5 and CSS3

HTML5, jQuery, and CSS3 are the new mantra for developing cutting-edge web applications. When we say web, it includes the standard websites/applications, mobile websites/applications, as well as hybrid applications. Even though this book is about Kendo UI Mobile, it's important to have an idea about the underlying technologies behind the Kendo UI Mobile framework, namely, HTML5, CSS3, and jQuery. Let's take a high-level view at HTML5 and CSS3 technologies briefly before we take a deep dive into Kendo UI Mobile. Since we expect the readers of this book to have knowledge in jQuery, we won't be discussing the basics of jQuery here.

HTML5 – Steve Jobs made me famous

HTML5 shot to fame among the Internet public when Steve Jobs famously announced the death of Flash on the iOS devices and endorsed HTML5 as the future, as it helps to build advanced graphics, typography, animations, and transitions without relying on third-party browser plugins.

HTML5 is a markup language specification that is comprised of a significant number of features, technologies, and APIs that allow content developers to create a rich and interactive experience. HTML5 is still in the recommendation stage, but many browsers already implement a significant portion of the specification. This poses a challenge for developers as they need to figure out which browsers support which features before kick starting an HTML5 project.