Programming Microsoft Office 365

Covers Microsoft Graph, Office 365 applications, SharePoint Add-ins, Office 365 Groups, and more

Paolo Pialorsi
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Paolo Pialorsi
This book is dedicated to my family: Paola, Andrea, and Marta. I love you!

—Paolo Pialorsi
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microsoft.com/learning/booksurvey
Microsoft Office 365 is a cloud-based software solution that Microsoft offers as a service, targeting the customers who want to externalize the main services they use to run their businesses, like email, collaboration, video conferencing, file sharing, and so on. From a developer perspective, the Microsoft Office 365 offering is a great opportunity to build smart, mobile-aware, and fully integrated solutions that potentially can be sold to millions of users through the public Office Store, leveraging the Office 365 ecosystem and embracing the new add-in development model.

*Programming Microsoft Office 365* provides a clear and practical overview of the architectural aspects of Microsoft Office 365 and of the services included in the platform. Moreover, by reading this book, you can learn about the Microsoft Graph API and the Microsoft Graph SDK and about how to create and distribute Office 365 applications, SharePoint Add-ins, and Office Add-ins that fully leverage the Office 365 ecosystem.

### Who should read this book

This book is intended to help existing SharePoint and Office developers target the new Office 365 offering, upgrading their skills and knowledge related to the new cloud-based development model. Although it is not fundamental to know about SharePoint and Office 365, this book is really useful for developers who come from the old server-side or full trust code development world. Nevertheless, the book can be useful for developers working with any kind of platform, as long as they can make HTTP requests against the Microsoft Graph API.

### Assumptions

This book expects that you have at least a minimal understanding of web development, especially of HTTP, REST, and JSON. Moreover, if you are a .NET developer and you know about ASP.NET, you will find it easier to follow and understand some of the code samples shared within the book. Although the Microsoft Graph API is available to any development platform that supports HTTP and JSON, most of the samples in this book are based on ASP.NET, C#, and PowerShell.

With a heavy focus on the Microsoft Graph API, Azure Active Directory, and the architectural patterns for creating real business-level solutions, this book assumes that you have a basic understanding of the most common collaboration needs.
This book might not be for you if . . .

This book might not be for you if you are not developing solutions for Office 365 or for SharePoint. Moreover, if you don’t know anything about C# and ASP.NET, you could find it difficult to understand some of the code samples related to the book.

In contrast, if you are an experienced Office 365 developer using the latest tools and techniques like those illustrated in the Office 365 Developer Patterns & Practices community project, you may already know some of the information shared through this book.

Organization of this book

This book is divided into four sections, each of which focuses on a different aspect or technology related to developing Office 365 solutions. Part I, “Getting started,” provides a quick overview of Microsoft Office 365 and the offered services as well as an overview of the extensibility points available and suitable for creating real business-level solutions built on top of Office 365. Part II, “Office 365 programming model,” gives you fundamental knowledge about the Microsoft Graph API, from a REST and JSON viewpoint. Moreover, there is a solid introduction to Azure Active Directory (Azure AD) and how to configure authentication and authorization in custom developed solutions that leverage Azure AD. Part III, “Consuming Office 365,” provides concrete and practical examples of how to use the Microsoft Graph API in .NET, leveraging Mail, Calendar, Contacts, Users and Groups, and File services. Furthermore, in Part III you can learn about the Microsoft Graph SDK for .NET and about the SharePoint REST API. Finally, Part IV, “SharePoint & Office Add-ins,” provides you information about how to architect and create real business-level Office 365 applications and gives some overview information about how to create Office Add-ins. The last chapter of the book gives instructions on how to publish your custom development solutions, whether you are releasing an Office 365 application, a SharePoint Add-in, or an Office Add-in.

Finding your best starting point in this book

The sections of Programming Microsoft Office 365 cover a wide range of technologies associated with the services Office 365 offers. Depending on your needs and your existing understanding of Office 365, you may wish to focus on specific areas of the book. Use the following table to determine how best to proceed through the book.
If you are | Follow these steps
--- | ---
New to Office 365 in general | Start from Chapter 1 and read the entire book in sequence.
New to Office 365 development or an existing SharePoint 2013 (or earlier) developer, but aware of Office 365 architecture and services | Briefly skim Part I if you need a refresh on the core concepts. Read from Part II through Part IV.
New to the Microsoft Graph API | Read Part II and Part III. Read Part IV if you need to create Office 365 applications or Office Add-ins.
Experienced Microsoft Graph API developer | Briefly skim Part II if you need a refresh on the main topics. Read Part IV to understand how to create real solutions that leverage the Microsoft Graph API.

Most of the book’s chapters include code samples that let you try out the concepts you just learned. No matter which sections you choose to focus on, be sure to download and install the sample applications on your system.

**Conventions and features in this book**

This book presents information using conventions designed to make the information readable and easy to follow.

- In most cases, the book provides step-by-step code samples that you can follow on your own development machine. It is suggested that you download the code samples related to the book to follow the samples more easily.

- Boxed elements with labels such as “Note” provide additional information or alternative methods for completing a step.

- Text that you type (apart from code blocks) appears in bold.

- A vertical bar between two or more menu items (for example, File | Close), means that you should select the first menu or menu item, then the next, and so on.

**System requirements**

You will need the following hardware and software to complete the practice exercises in this book:

- Any Windows version that can run Microsoft Visual Studio 2015 Update 2 or later or any Mac operating system that can run Visual Studio Code
- Microsoft Visual Studio 2015 Update 2 or Visual Studio Code
- Computer that has a 1.6 GHz or faster processor (2 GHz recommended)
- 1 GB (32-bit) or 2 GB (64-bit) RAM
- 10 GB of available hard disk space
- 5400 RPM hard disk drive
- DirectX 9 capable video card running at 1024 × 768 or higher resolution display
- DVD-ROM drive (if installing Visual Studio from DVD)
- Internet connection to download software or chapter examples and to connect to Microsoft Office 365 and Microsoft Azure
- A Microsoft Office 365 subscription and access to the Office 365 admin portal
- A Microsoft Azure subscription and access to the Azure portal
- Telerik Fiddler 4 (http://www.telerik.com/fiddler)

Depending on your Windows configuration, you might require local administrator rights to install or configure Visual Studio 2015.

If you don’t have an Office 365 subscription, you can sign up to join the Office 365 Developer Program, and you will get a one-year FREE Office 365 Developer subscription at the following URL: http://dev.office.com/.

Downloads

Most of the chapters in this book include exercises that let you interactively try out new material learned in the main text. All sample projects can be downloaded from the following page:

https://aka.ms/ProgOffice365/downloads

Follow the instructions on the target page to download the code sample files.

Note In addition to the code samples, your system should have Visual Studio 2015 or Visual Studio Code installed. If available, install the latest service packs for each product.
Installing the code samples

Follow these steps to install the code samples on your computer so that you can use them with the exercises in this book.

1. Unzip the ProgOffice365.ZIP file that you downloaded from the book’s website.
2. If prompted, review the displayed end user license agreement. If you accept the terms, select the Accept option, and then click Next.

Using the code samples

All the code samples are stored within a unique .ZIP file, which can be downloaded and installed following the instructions provided in the previous paragraphs.

- Samples of Chapter 3, “Microsoft Graph API reference,” are made of a .SAZ file for Fiddler 4 (http://www.telerik.com/fiddler). Install Fiddler 4 and open the file, which is included in the .ZIP file related to the book. Browse the HTTP requests and responses and inspect the related JSON messages, following the flow of the chapter.

- Samples of Part III, “Consuming Office 365” are included in folder MicrosoftGraph.Office365.Generic of the .ZIP file.

- Samples of Chapter 8, “Microsoft Graph SDK for .NET,” are included in folder MicrosoftGraph.Office365.DotNetSDK of the .ZIP file.

- Samples of Chapter 9, “SharePoint REST API,” are included in folder SharePoint.RESTAPI of the .ZIP file.

- Samples of Chapter 10, “Creating Office 365 applications,” are included in folder BusinessApps.O365ProjectsApp of the .ZIP file.

- Samples of Chapter 11, “Overview of Office Add-ins,” are included in folder Outlook.ConsumeGraphAPI of the .ZIP file.

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This book is part of our new Current Book Service, which provides content updates for major technology changes and improvements related to programming Office 365. As significant updates are made, sections of this book will be updated or new sections will be added to address the changes. The updates will be delivered to you via a
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Acknowledgments

This book has been the most complex and challenging manuscript I ever wrote. Usually, writing a book is a well-defined and time-scoped process, which can be accomplished following a clear schedule.

However, this book covers a topic (Microsoft Office 365) that is continuously changing and growing, almost on a monthly basis, and what you write now should be slightly different within the next few months. Luckily, and thanks to Microsoft Press, I had the opportunity to embrace the Current Book Service model, which allows me to keep the book updated in electronic format and allows you—the reader—to read a continuously updated book that will follow the evolution of the target product. In fact, we will ship three updates within the next 18 months after the first release of the book, and you will be able to stay on track, refreshing and updating your knowledge according to the growth of Microsoft Office 365.

First of all, I would like to thank Microsoft Press and all the publishing people who contributed to this book project. Mainly, I’d like to thank Devon Musgrave, who trusted me and allowed me to write this book and made it possible for this book to be part of the Current Book Service model. Devon helped me during the production process of this book, and without him and his contribution this book wouldn’t be possible.

In addition, my colleagues in the Core Team of the Office 365 Dev and SharePoint Patterns & Practices (PnP: http://aka.ms/OfficeDevPnP) deserve special thanks because they greatly helped me create the content of this book, helping me find the right ideas and samples and sharing with me their vision, their time, and their minds. In particular, I would like to thank Vesa Juvonen, Bert Jansen, Erwin van Hunen, and Patrick Rodgers. PnP really rocks, and you guys rock even more! “Sharing is caring,” and this book is clear proof of that.

Furthermore, I’d like to thank the people from Microsoft who helped me during the definition of the outline of this book. In particular, I want to thank Jeremy Thake, Luca Bandinelli, Yina Arenas, and Vittorio Bertocci.

Last but not least, there are special people who deserve a huge thank you. They are my wife, Paola, my son, Andrea, and my daughter, Marta. I need to thank them for their support, patience, and understanding during the last 12 months. We know that whenever daddy writes a book, it will be a very busy time. However, having you guys counting with me the chapters and the pages lasting to the end of the book and having your unconditioned support to achieve my goals helps me a lot. We are a team, and I’m really thankful for your fundamental and unique contribution.
Errata, updates, & book support

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https://aka.ms/ProgOffice365/errata

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