https://www.halvorsen.blog

Azure DevOps

Azure DevOps
with Git and Visual Studio

Hans-Petter Halvorsen

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Introduction

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Azure DevOps

- Azure DevOps is tool for Software Engineering
  - Planning, Collaboration, Source Code Control, Bug Tracking, Agile and Scrum, etc.
- Developed by Microsoft
- https://dev.azure.com
- Free for 5 Developers + Stakeholders
- You use it in your web browser, and it also has integration with Visual Studio for Source Code Control

Git

- Git is a distributed revision control system. Git maintains a local copy of the entire repository.
- Git was created for use in the development of the Linux kernel by Linus Torvalds and others developing the kernel.
- Git has now become the most used revision control system or source code control system today.
- Git is a free and open-source software.
- Visual Studio has integrated support for Git.
- Azure DevOps use Git as their source code control system.
- Another system/provider that uses Git is GitHub.
- Azure DevOps and GitHub are Microsoft owned proprietary products that uses Git as the repository. Other similar systems are SourceForge, BitBucket and GitLab.

Getting Started with Azure DevOps

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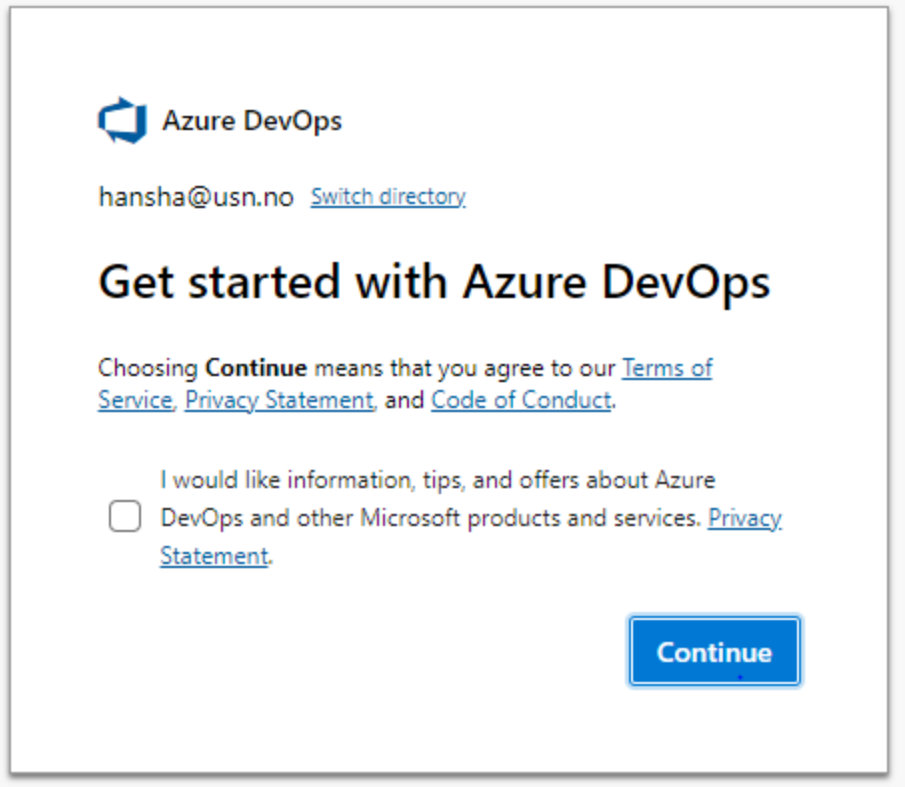
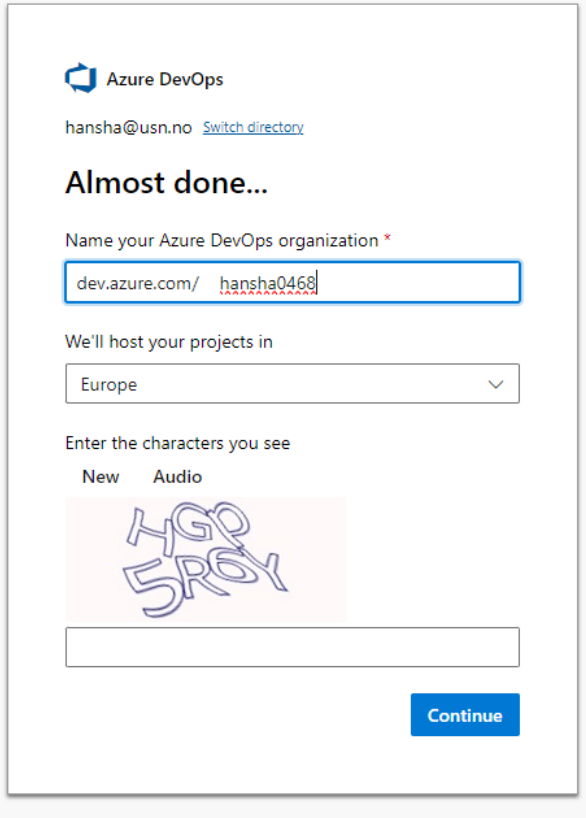
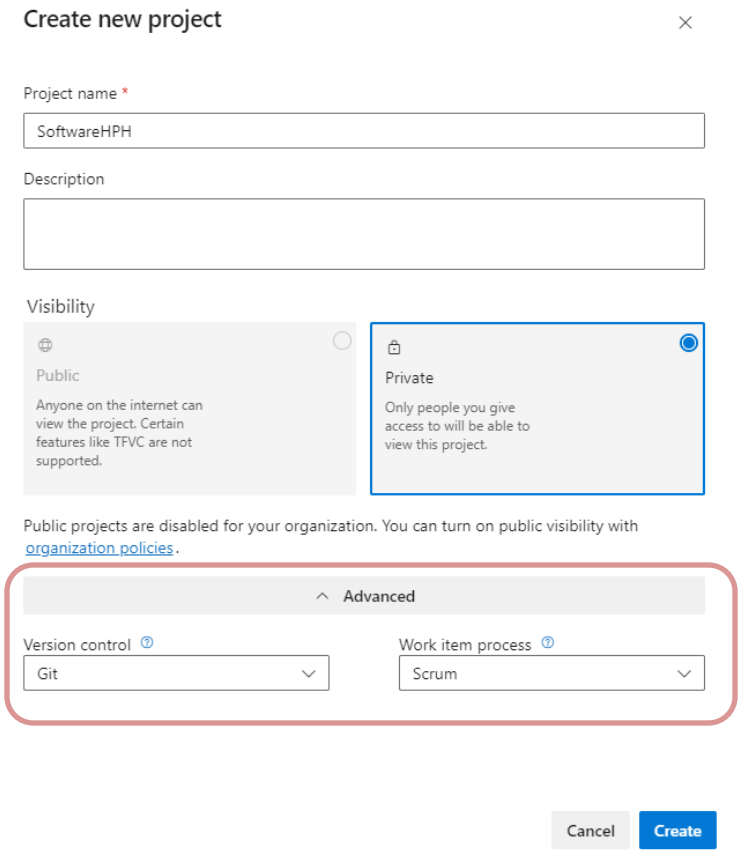
Getting Started with Azure DevOps

First, you need to Create a New **Organization**





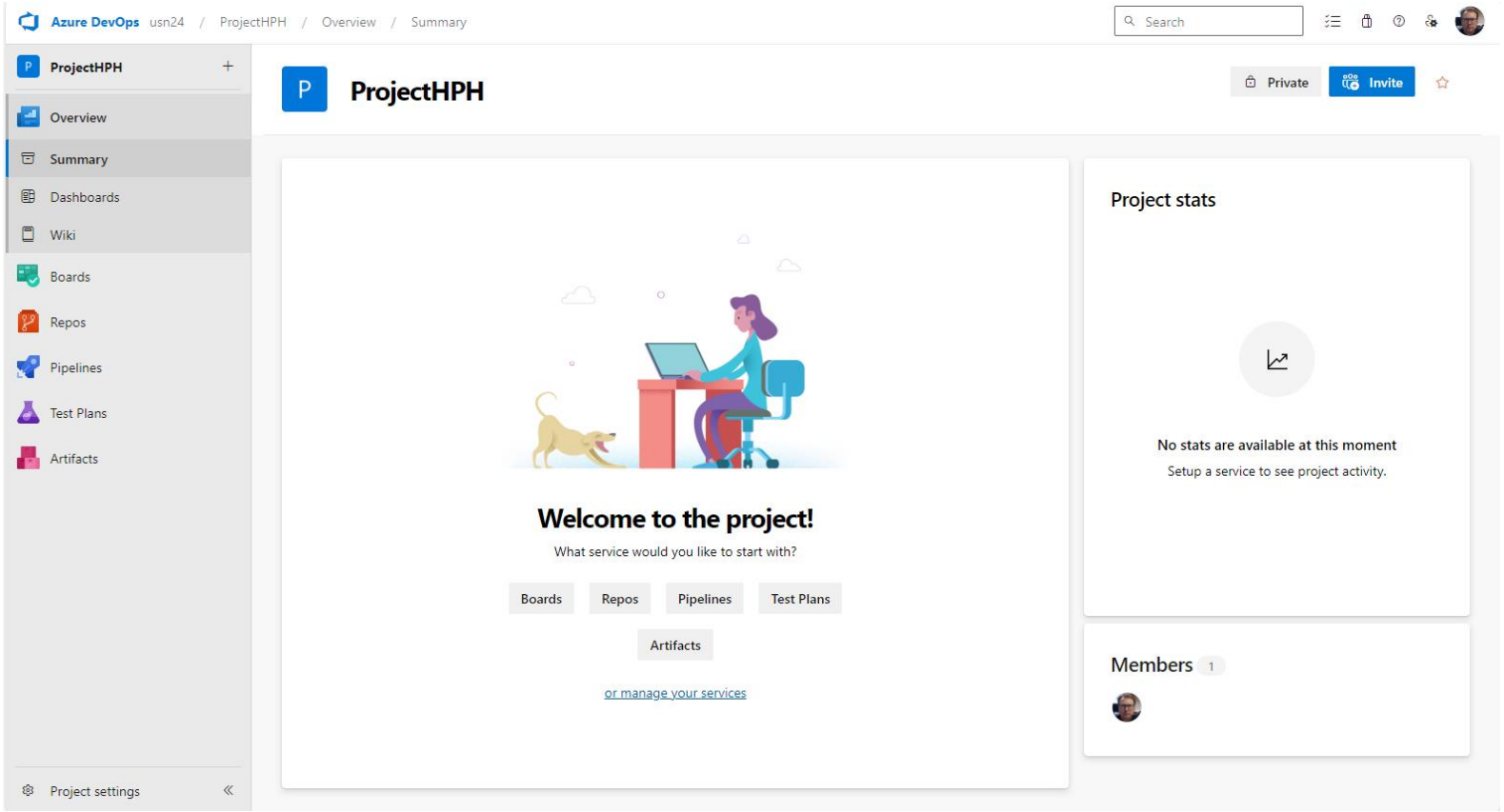
Create New Project



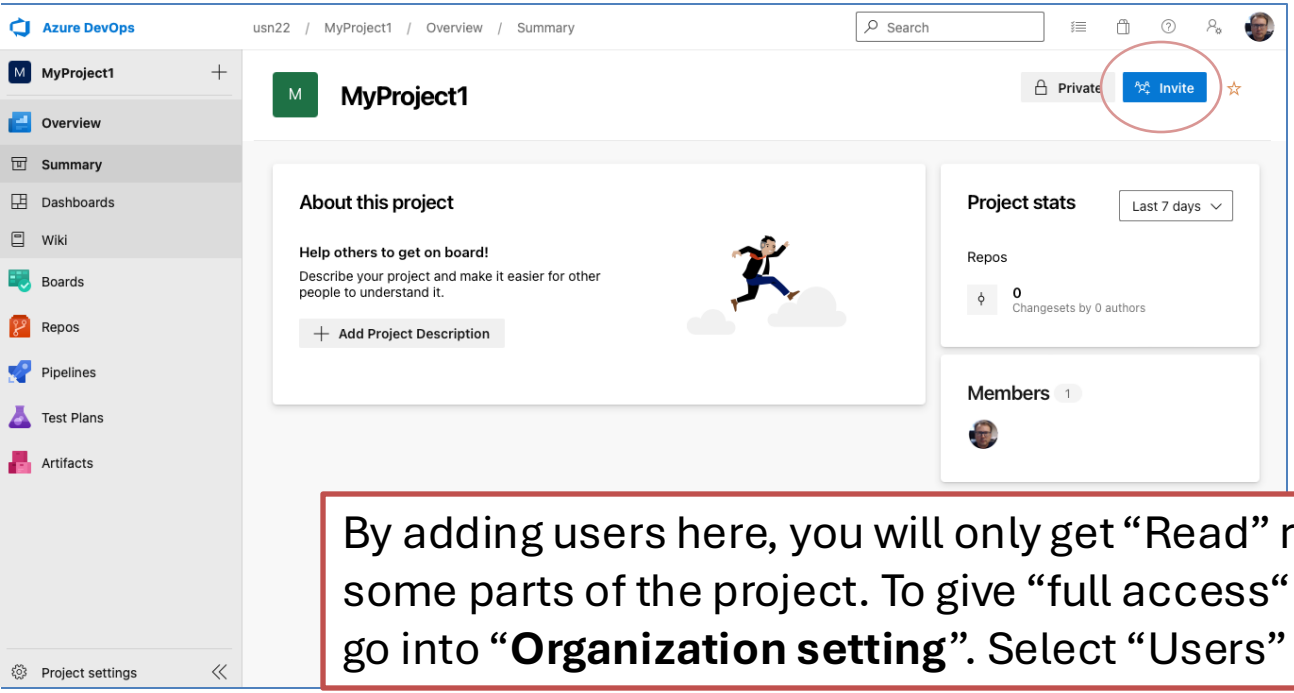
Select a meaningful Project name

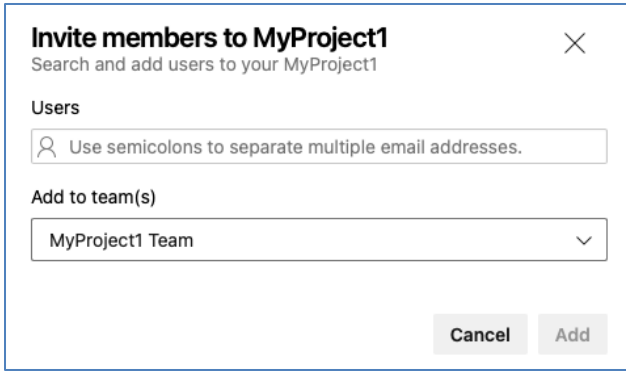
Make sure to select “Advanced”:
Version control = Git
Work item process: Scrum

Project Start Page



Invite/Add Members



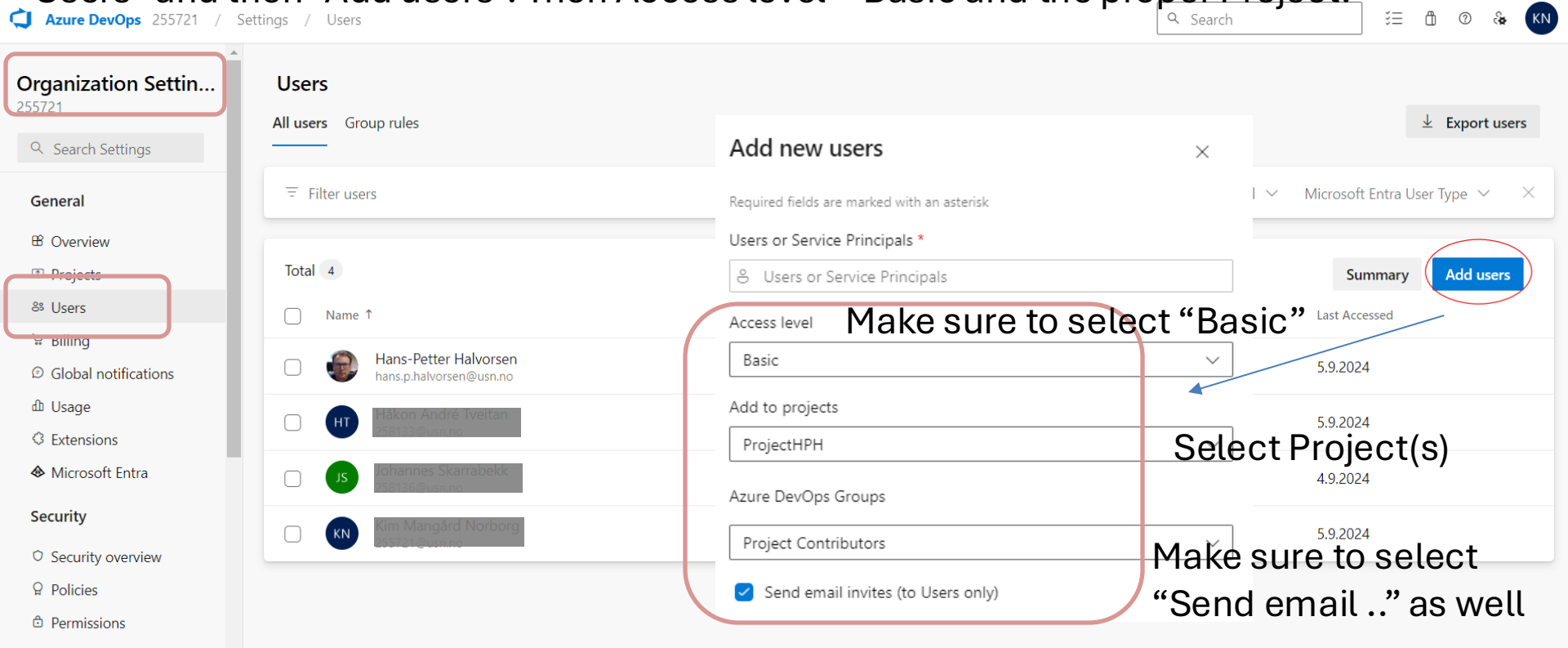


By adding users here, you will only get “Read” rights (“Stakeholder”) to some parts of the project. To give “full access“ (“Administrator” access) go into “**Organization setting**”. Select “Users” and then “Add users”.

https://learn.microsoft.com/en-us/azure/devops/organizations/security/add-users-team-project

Give Users “Full Access” in Organization Settings

To get full access (“Administrator” access) go into “**Organization setting**”. Select “Users” and then “Add users”. Then Access level = Basic and the proper Project.



Start using Git with Azure DevOps and Visual Studio

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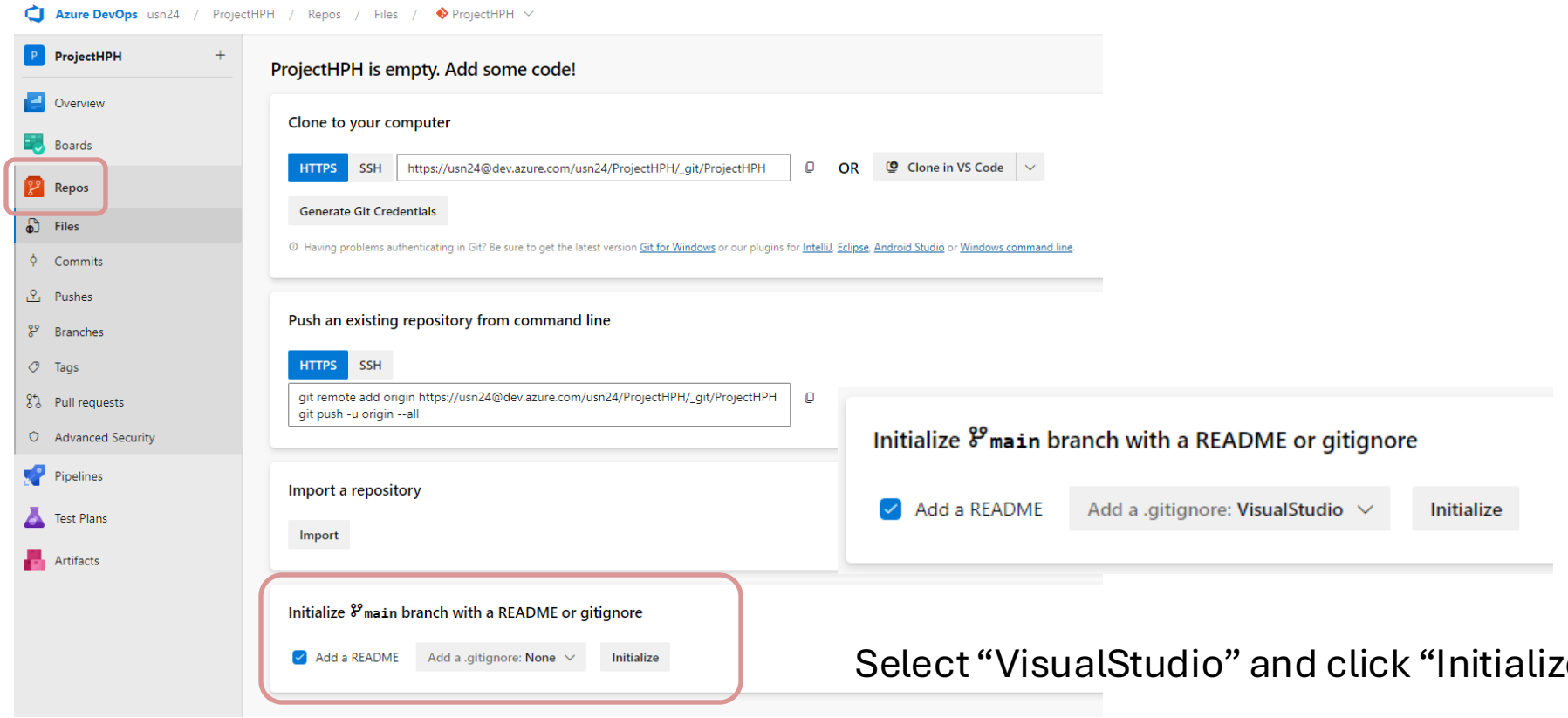
Hans-Petter Halvorsen

Git

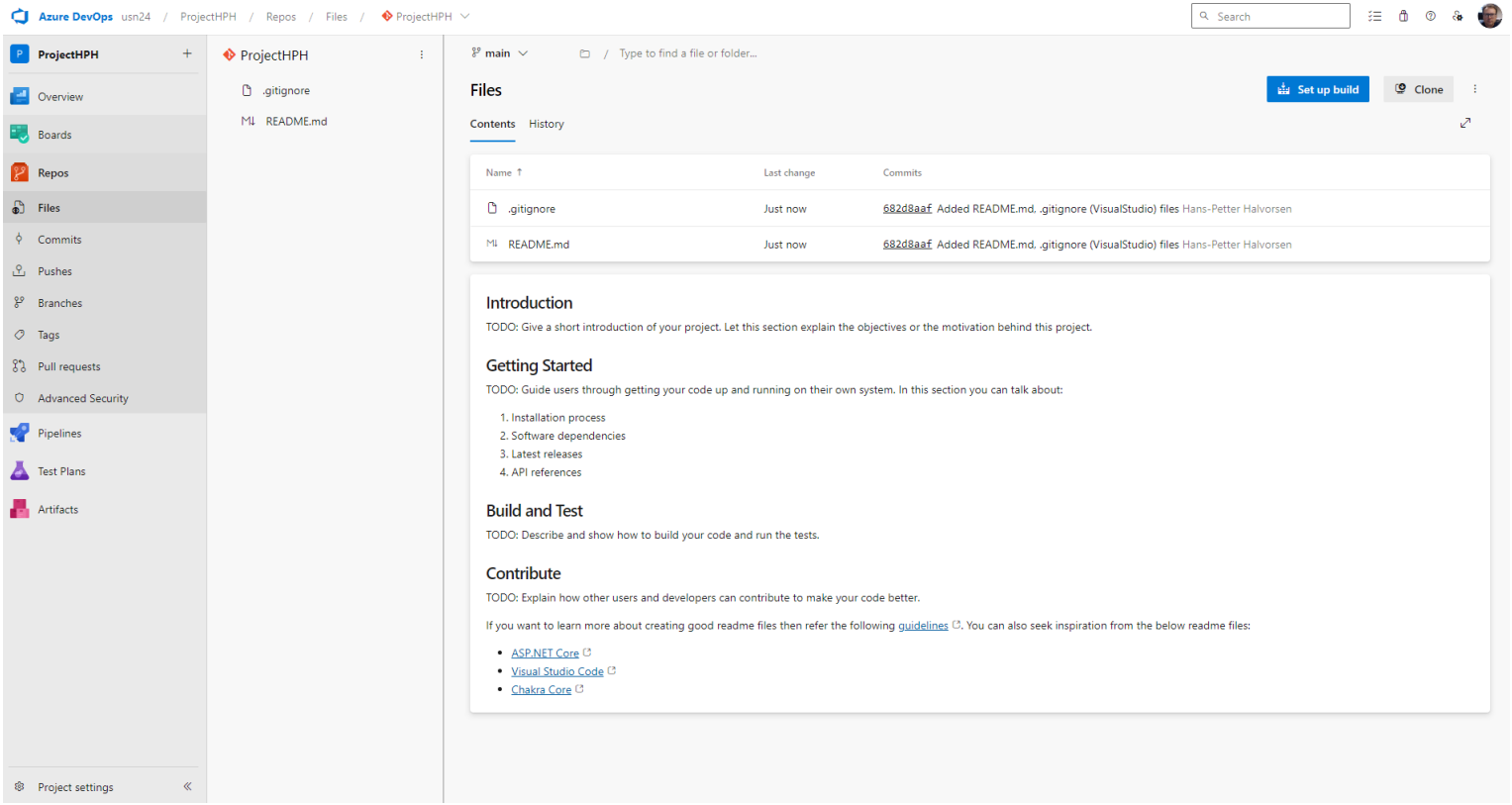
- Git is a distributed version control system, meaning that all the changes only happens locally on your computer.
- First, you need to make a local **Clone** of the remote repository.
- To contribute these changes to the remote repository, you must **push** those local commit(s) to the server.
- If you are working in a team, or if you are using different machines, you might often need to **fetch** and **pull** new changes on the remote repository

Configure **.gitignore** File



Select “VisualStudio” and click “Initialize”

.gitignore


Azure DevOps usn24 / ProjectHPH / Repos / Files / ProjectHPH
Search
ProjectHPH
Overview
Boards
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Files
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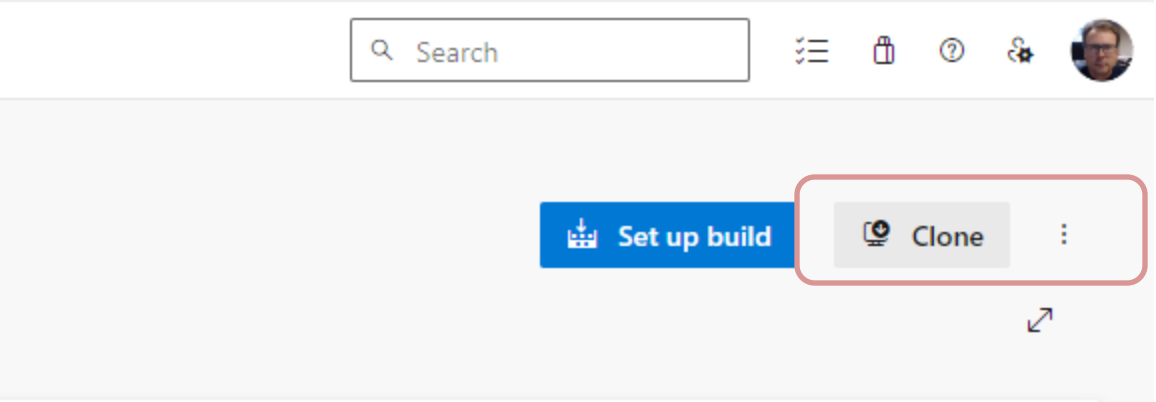
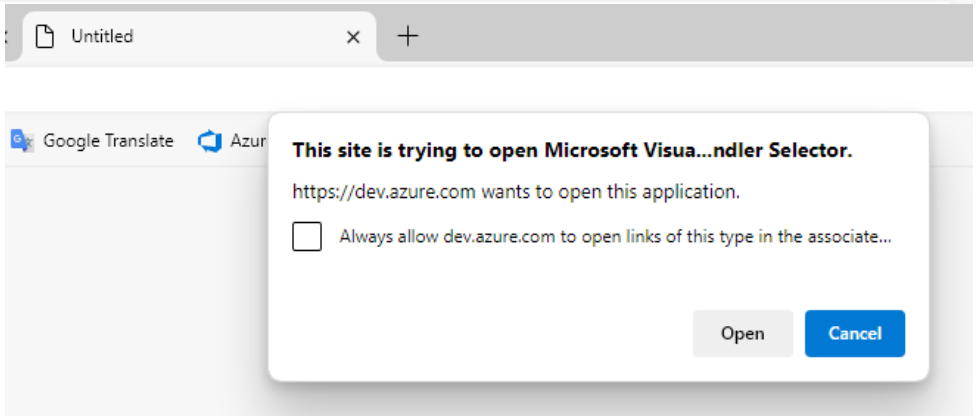
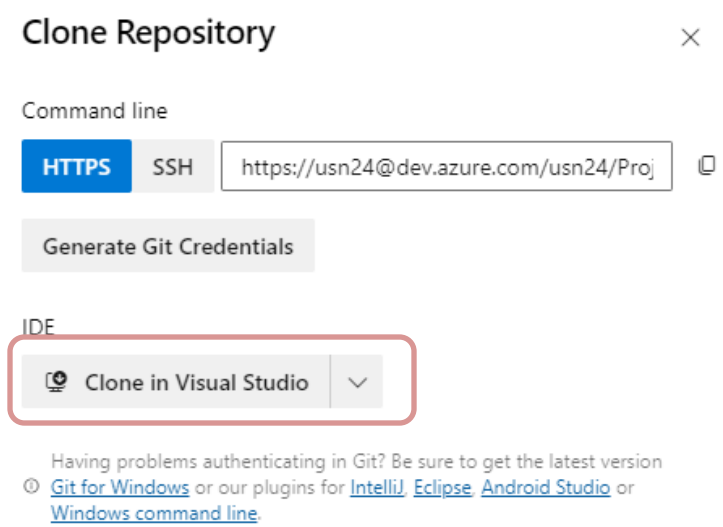
Tags
Pull requests
Advanced Security
Pipelines
Test Plans
Artifacts
Project settings
ProjectHPH
.gitignore
README.md
main
Type to find a file or folder...
Files
Set up build
Clone
Contents
History
Name
Last change
Commits
.gitignore
Just now
682d8aaf Added README.md, .gitignore (VisualStudio) files Hans-Petter Halvorsen
README.md
Just now
682d8aaf Added README.md, .gitignore (VisualStudio) files Hans-Petter Halvorsen
Introduction
TODO: Give a short introduction of your project. Let this section explain the objectives or the motivation behind this project.
Getting Started
TODO: Guide users through getting your code up and running on their own system. In this section you can talk about:
1. Installation process
2. Software dependencies
3. Latest releases
4. API references
Build and Test
TODO: Describe and show how to build your code and run the tests.
Contribute
TODO: Explain how other users and developers can contribute to make your code better.
If you want to learn more about creating good readme files then refer the following guidelines. You can also seek inspiration from the below readme files:
ASP.NET Core
Visual Studio Code
Chakra Core

Local Clone

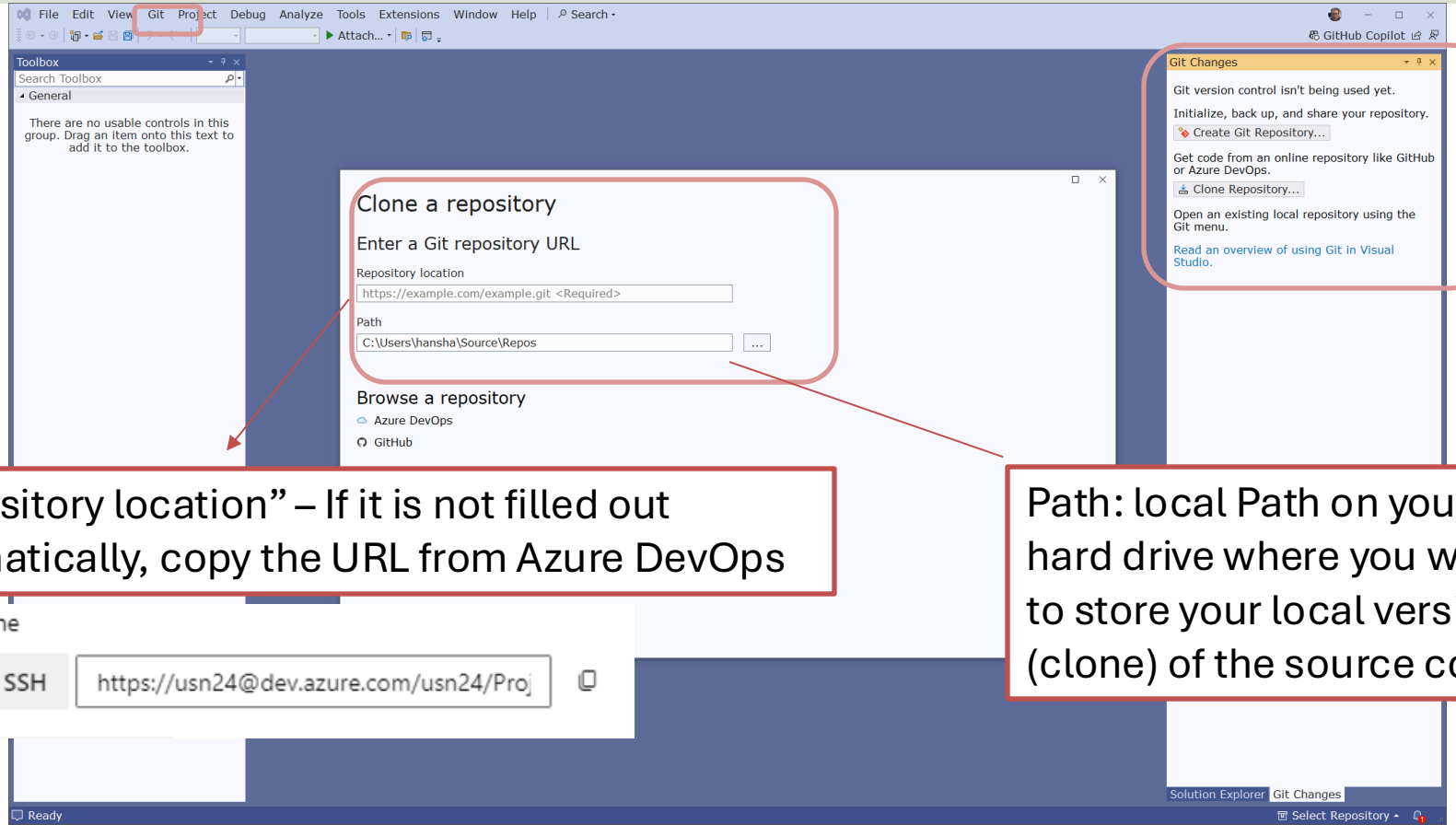
Project URL: https://usn24@dev.azure.com/usn24/ProjectHPH/_git/ProjectHPH







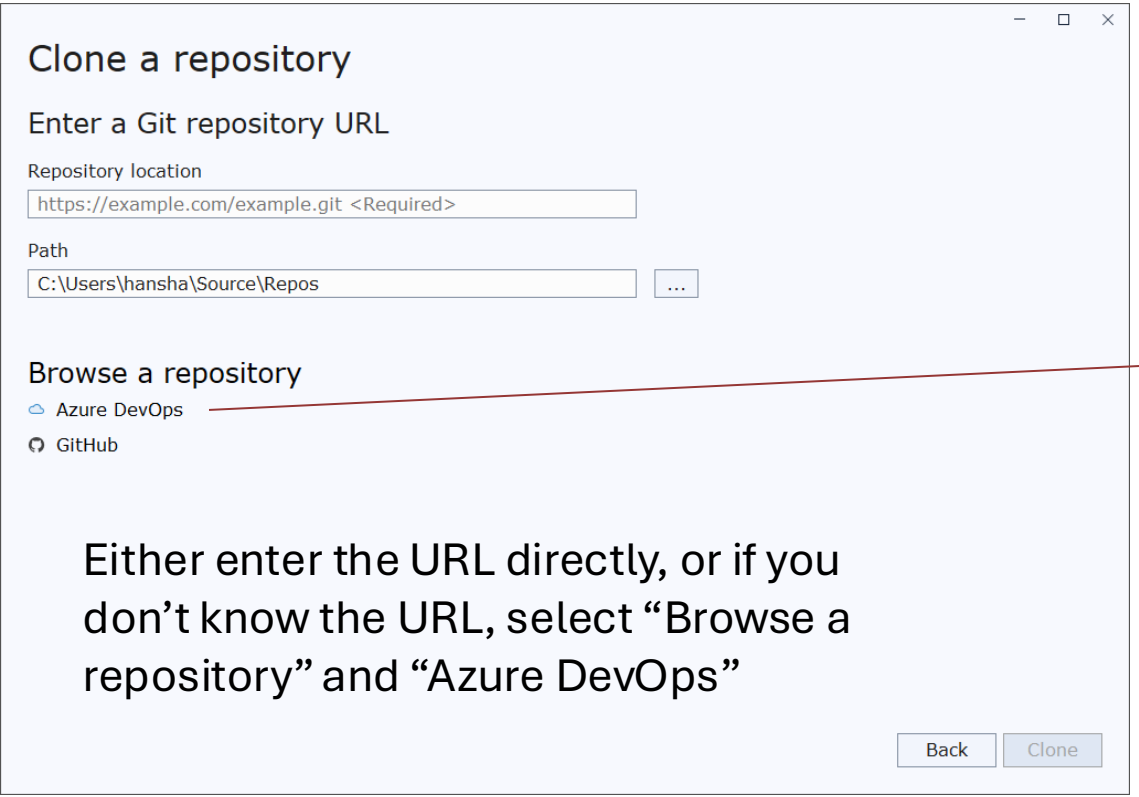
Visual Studio – Clone a repository



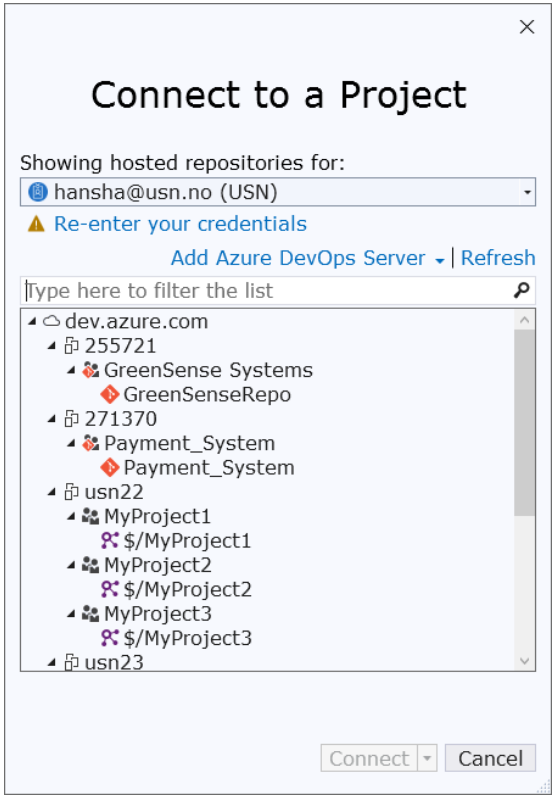
"Repository location" – If it is not filled out automatically, copy the URL from Azure DevOps

Path: local Path on your hard drive where you want to store your local version (clone) of the source code

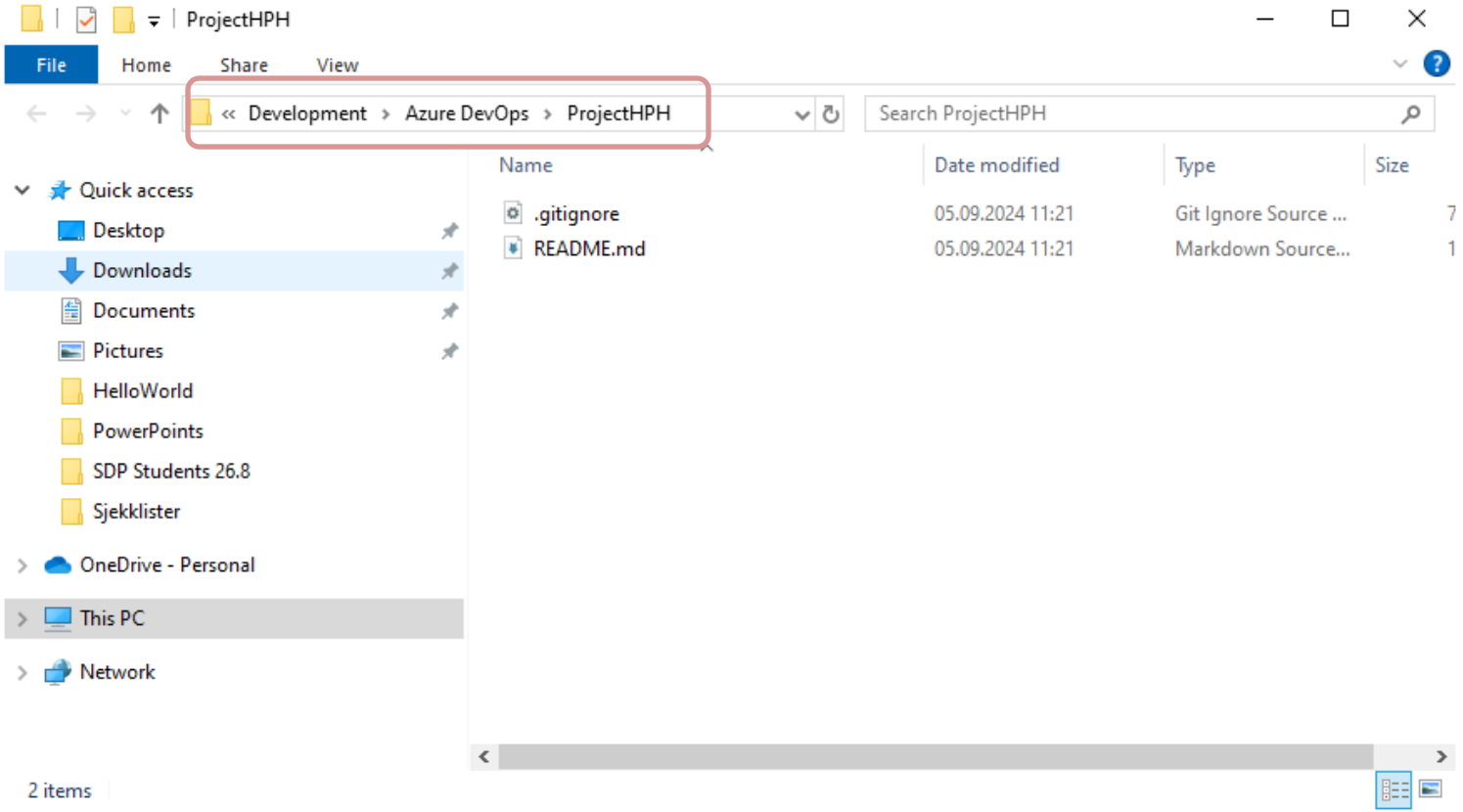
Clone a Repository



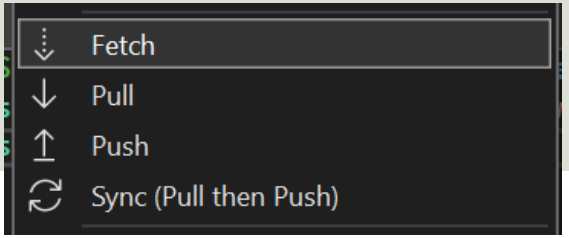
Either enter the URL directly, or if you don't know the URL, select "Browse a repository" and "Azure DevOps"



Local Clone/Development folder



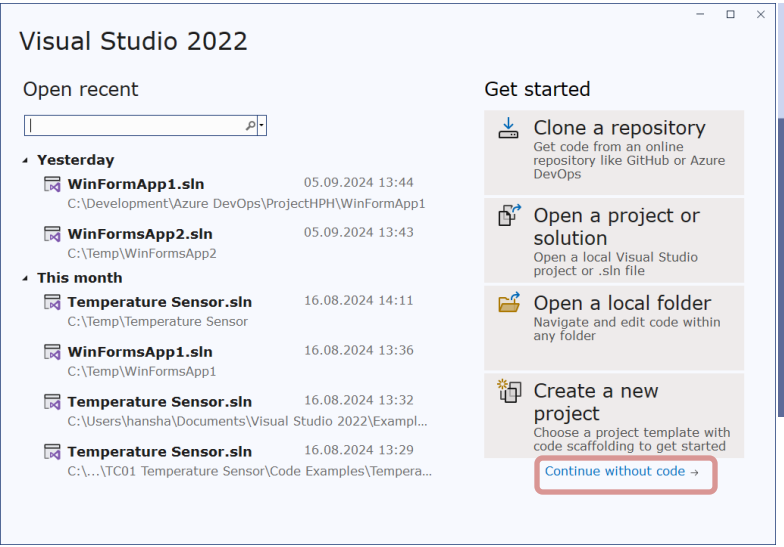
Git Terms



Git maintains a local copy of the entire repository, so you need now and then to sync your local activities with the server.

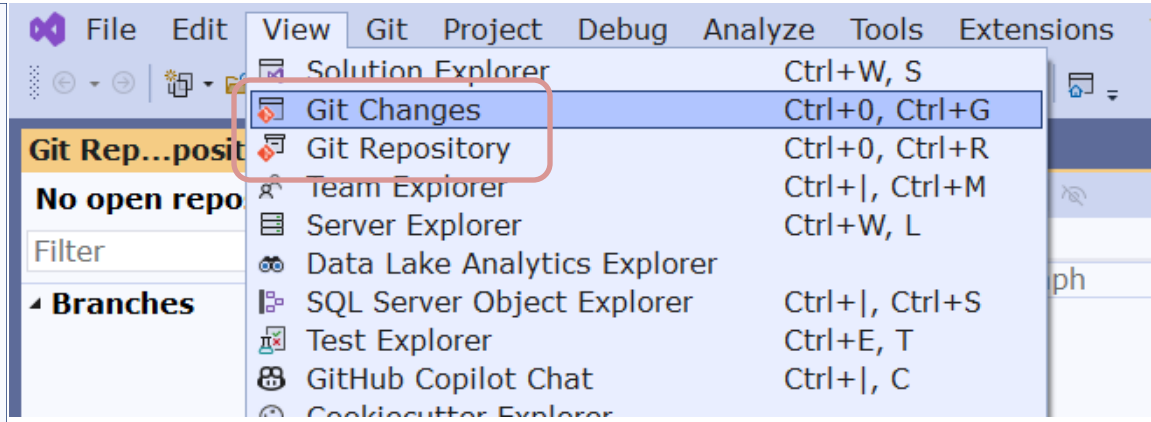
- **Fetch** - It's important to fetch and pull before you push.
  - Fetching checks if there are any remote commits that you should incorporate into your local changes. If you see any, pull first to prevent any upstream merge conflicts.
- **Pull** - Always pull before you push. When you pull first, you can prevent upstream merge conflicts.
- **Push** - When you create **commits** you save local snapshots of your code. You then need to use **Push** to push the commits to the server.
- **Sync** - Use this operation to both Pull, then Push, sequentially.

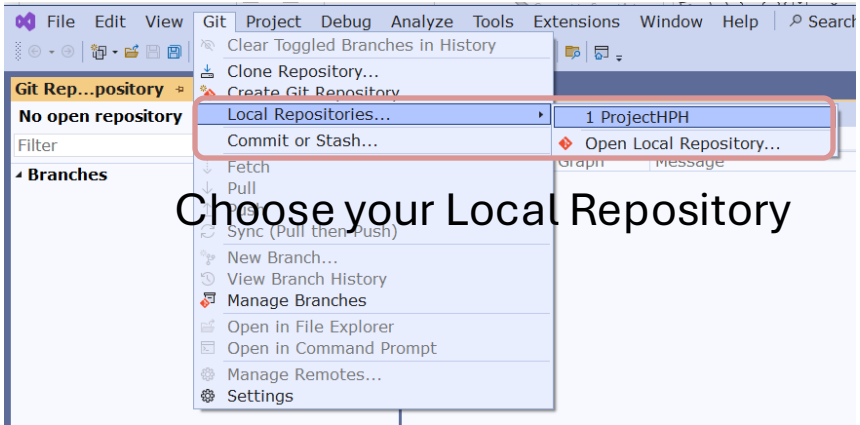
Open Git Tools in Visual Studio



Just open Visual Studio without creating or opening a Project

Select **Git Changes** and **Git Repository**

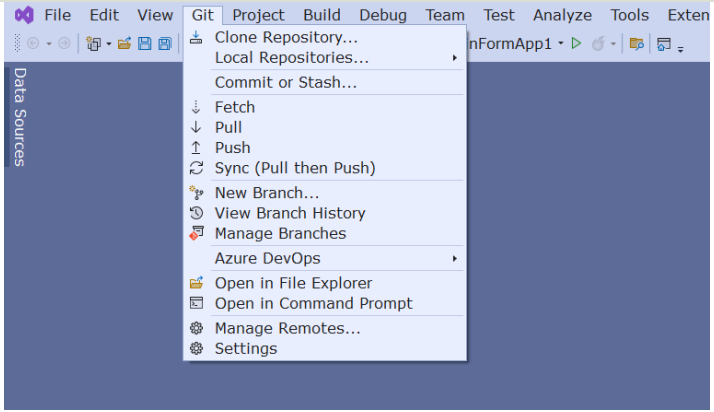




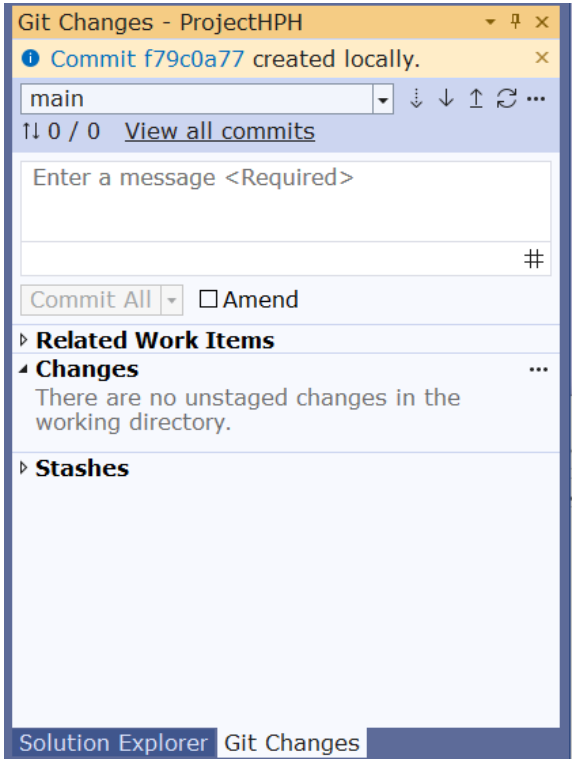
Choose your Local Repository

Git Tools in Visual Studio

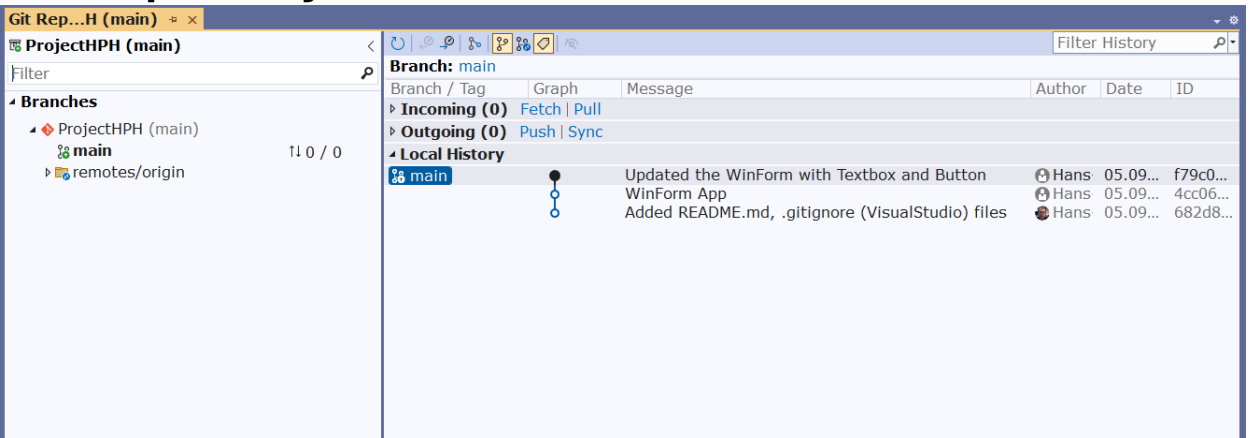
Git menu



Git Changes window

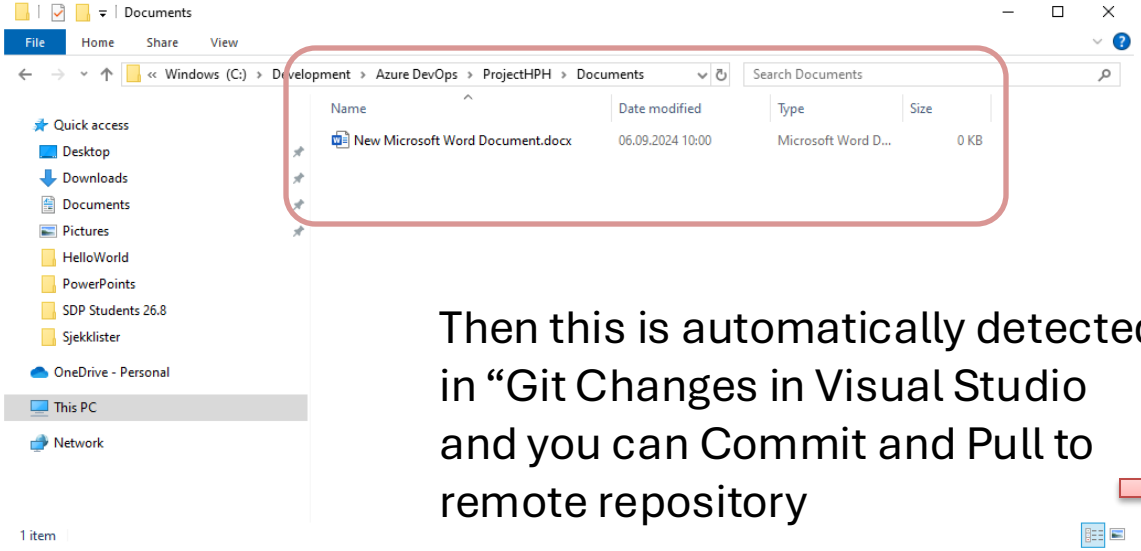


Git Repository window

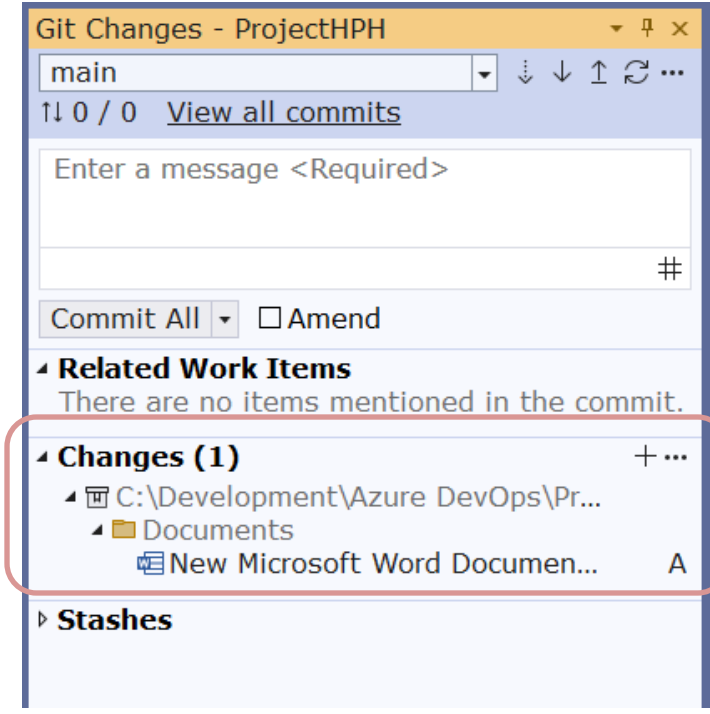


Adding Folders and Files

You can Add Folder and Files directly in Windows File Explorer.
Here I have added a Folder “Documents” and added a Word document inside.



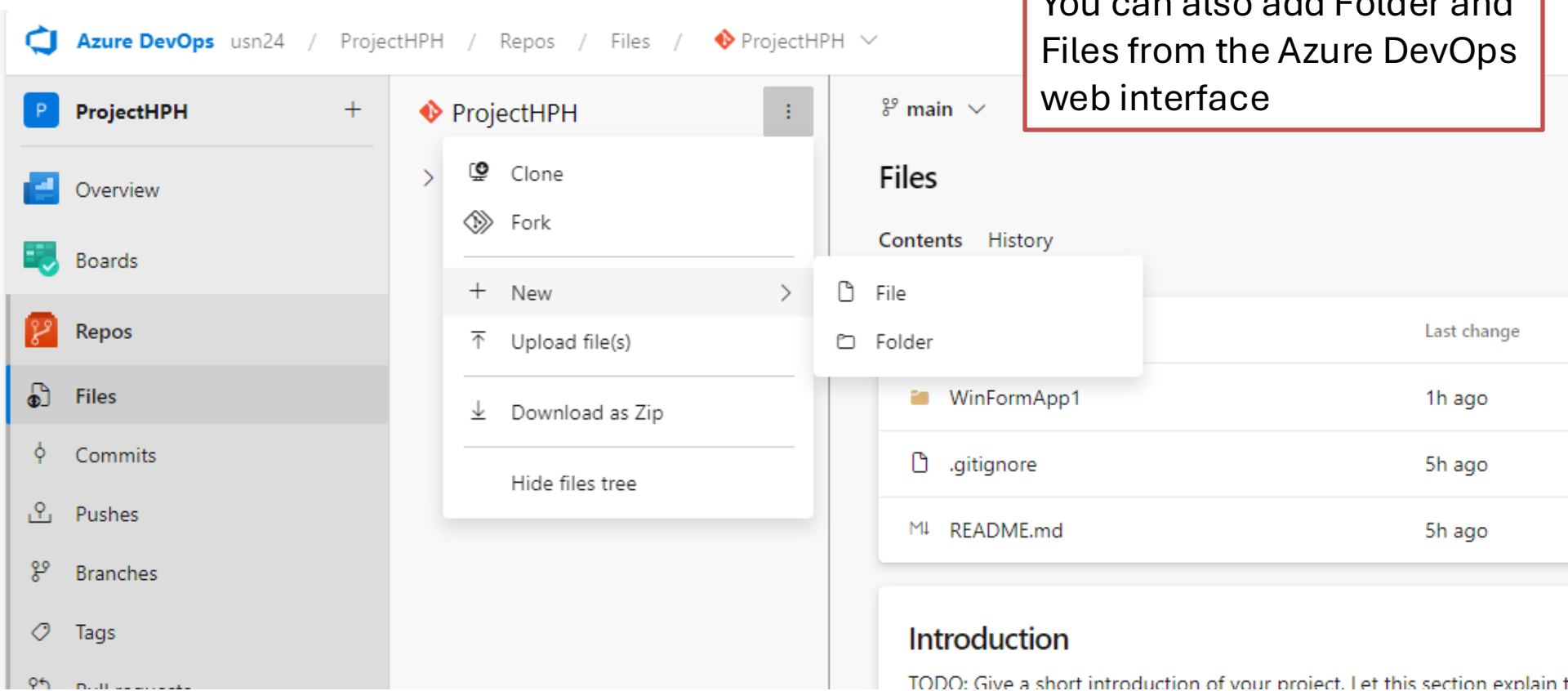
Then this is automatically detected in “Git Changes in Visual Studio and you can Commit and Pull to remote repository



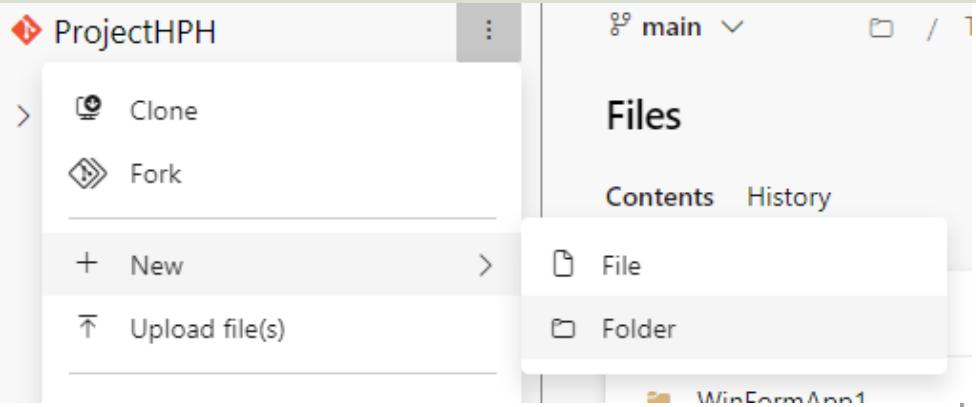
Note! To detect a Folder, you also need to create a File inside the Folder because a Git folders cannot be

Azure DevOps –Folders and Files

You can also add Folder and Files from the Azure DevOps web interface

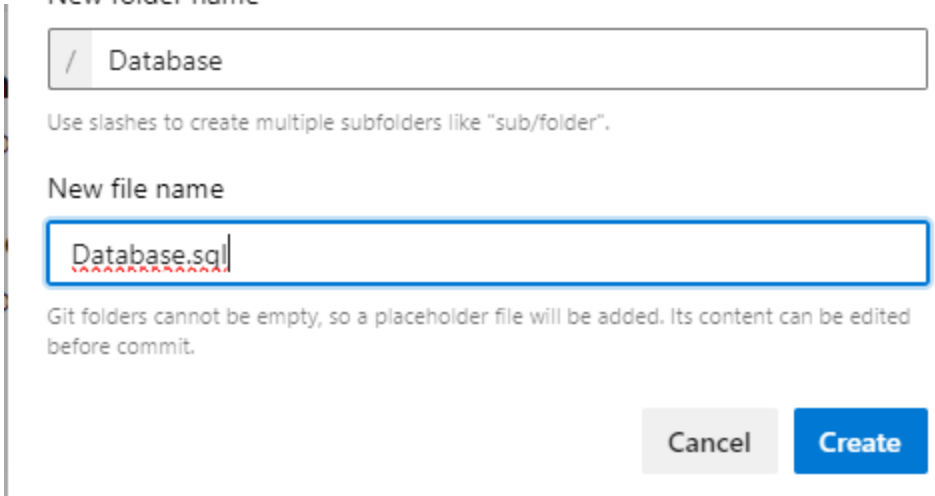


Create New Folder



Here we show how to create a new Folder from the Azure DevOps web interface.

Git folders cannot be empty, so you need to create a File as well inside the Folder



Start Creating Code in Visual Studio

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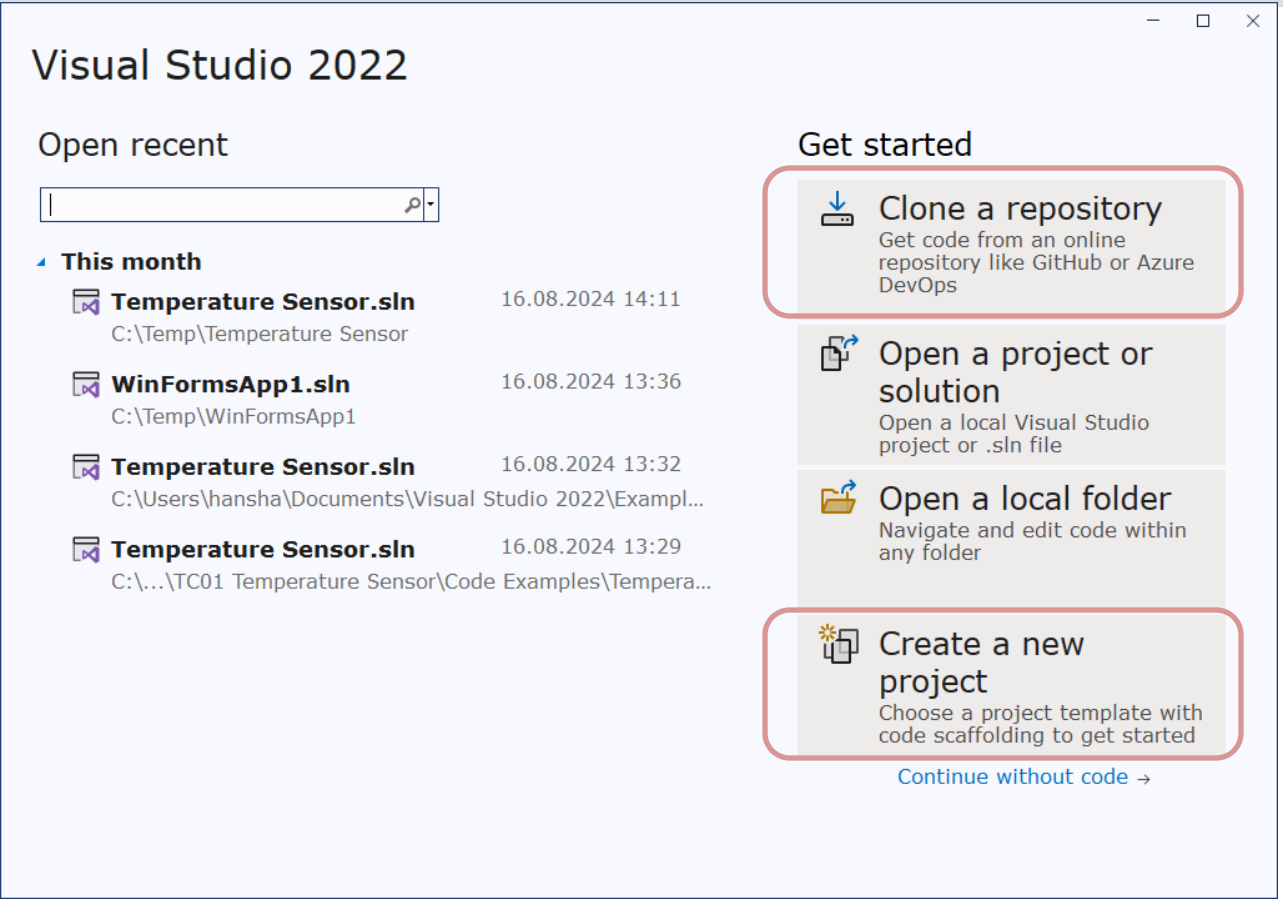
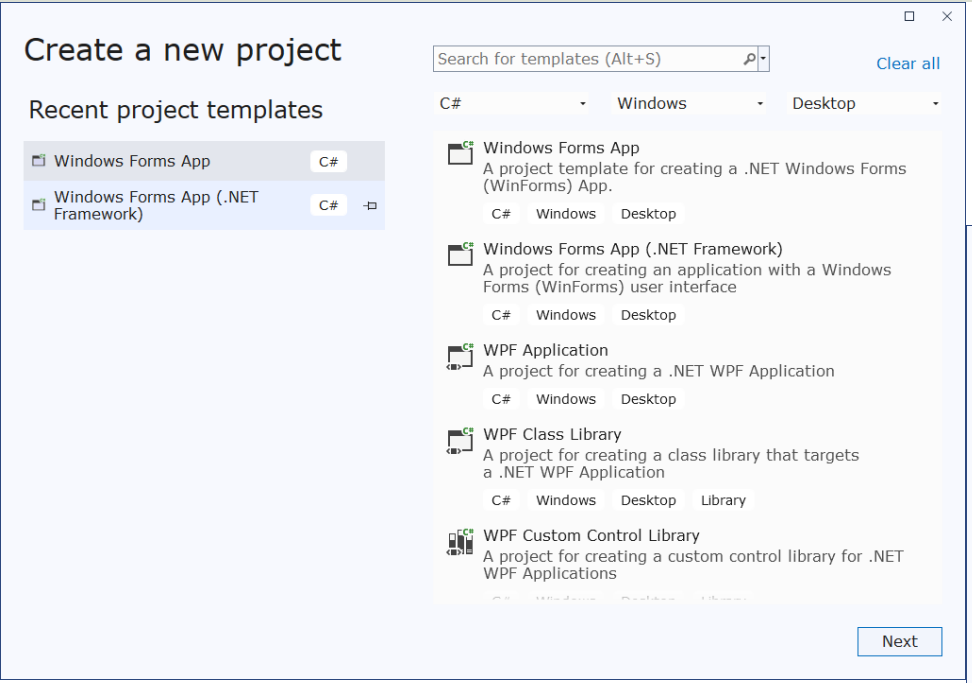
Visual Studio

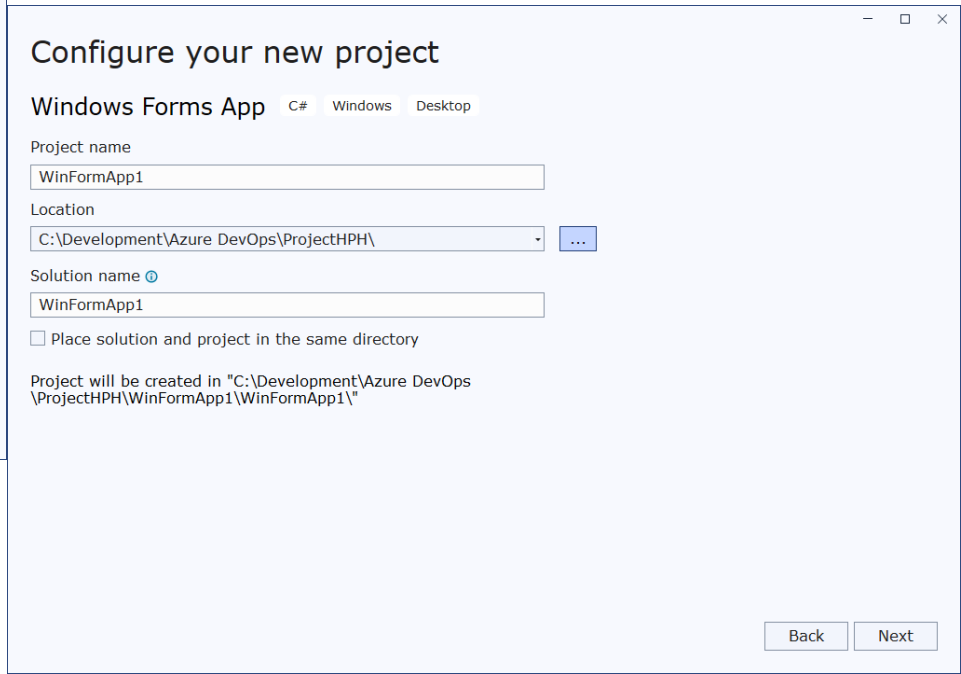


In the Startup window in Visual Studio, you can Clone a Git Repository from Azure DevOps if you haven't already done that.

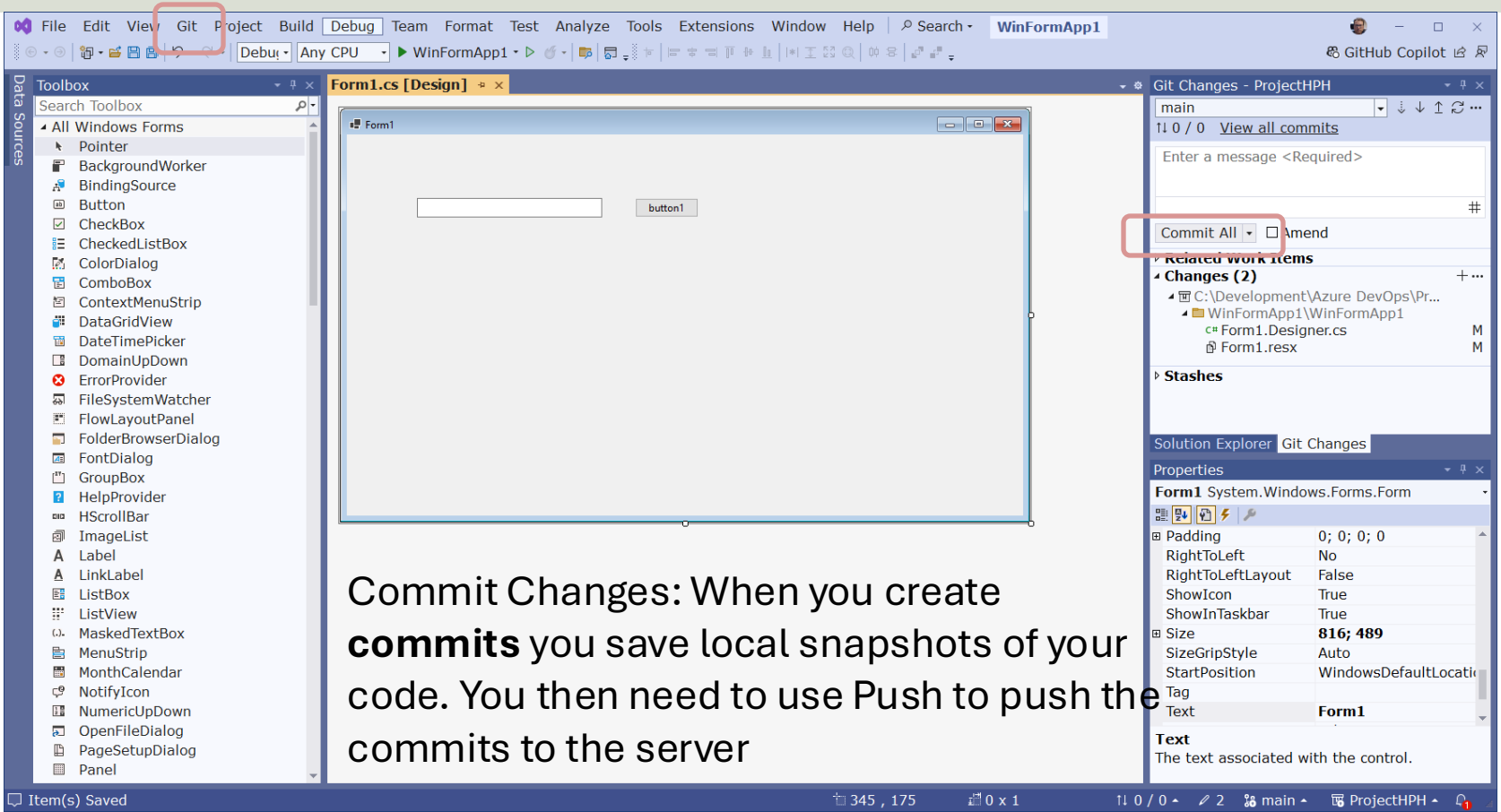
And you can start creating a new WinForm App or an ASP.NET Web App, etc.

Create New Project



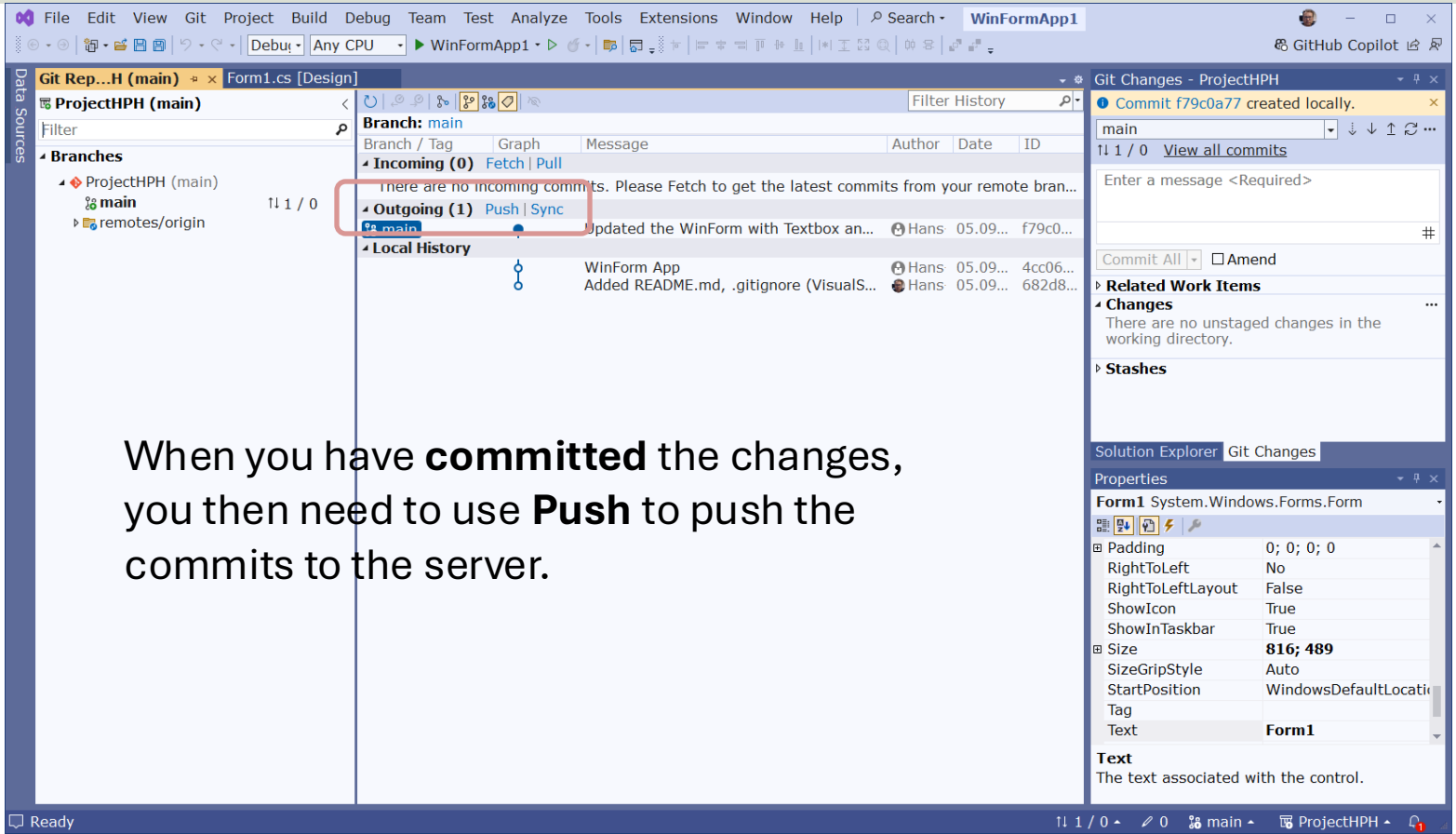


Commit Changes



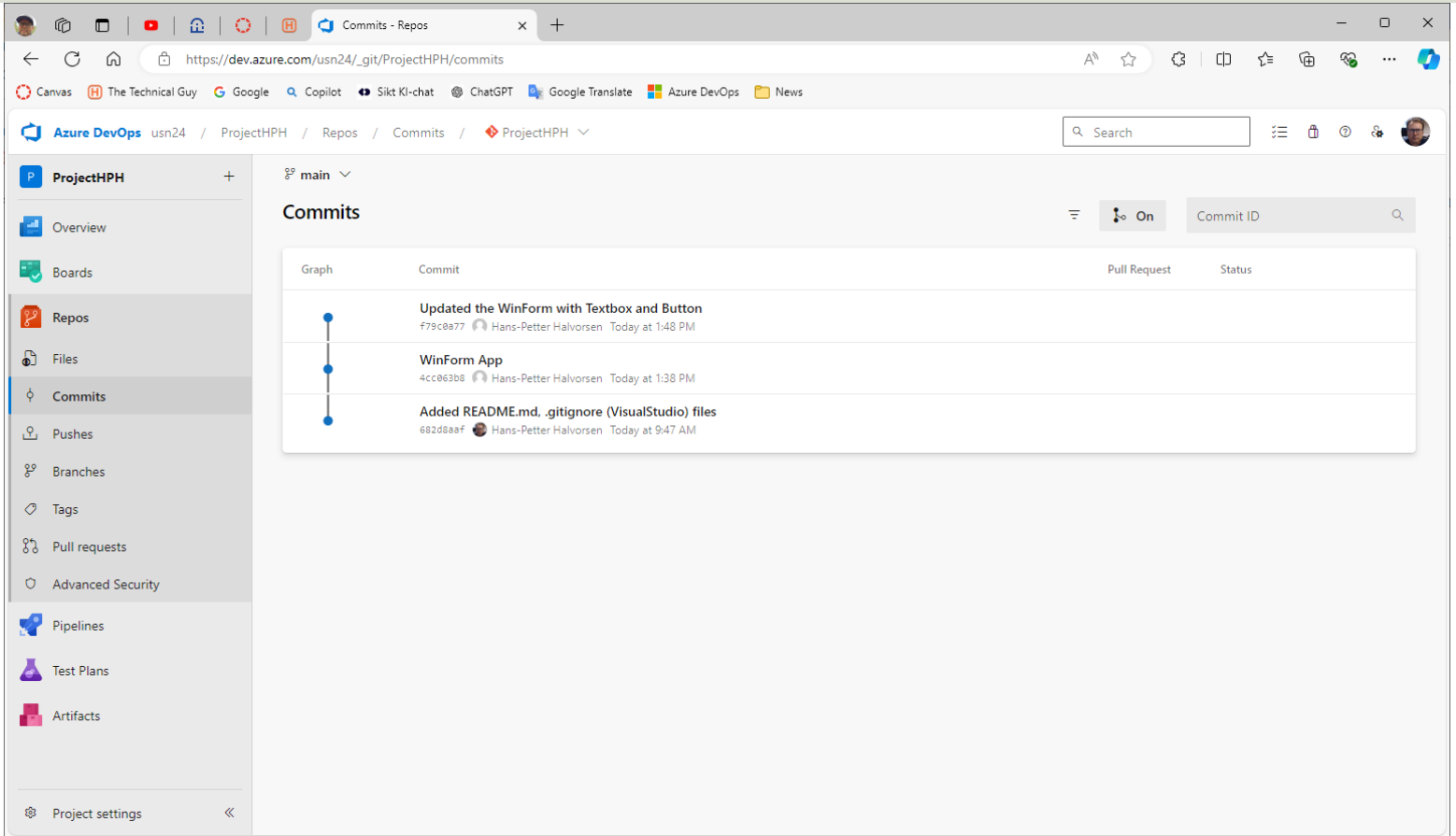
Commit Changes: When you create **commits** you save local snapshots of your code. You then need to use Push to push the commits to the server

Push Changes



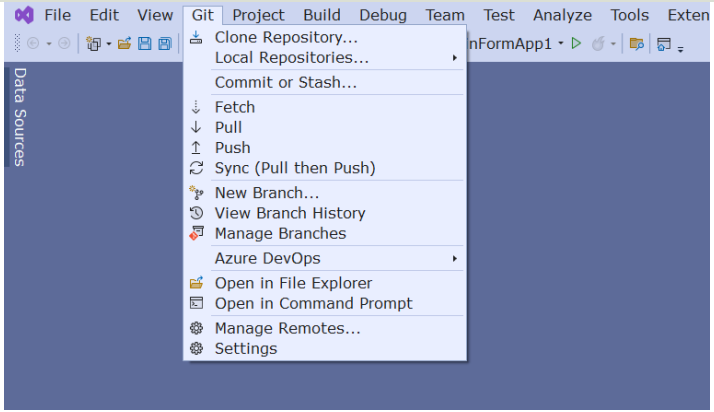
When you have **committed** the changes, you then need to use **Push** to push the commits to the server.

How it looks in Azure DevOps

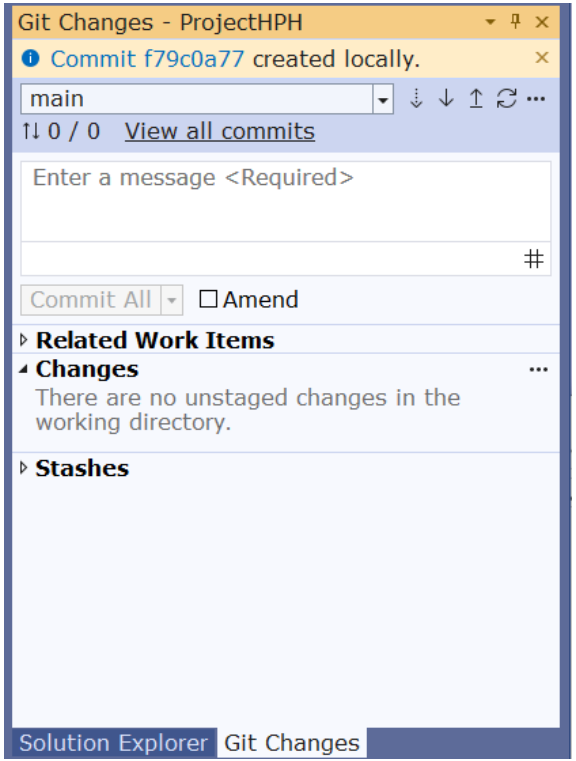


Git Tools in Visual Studio - Summary

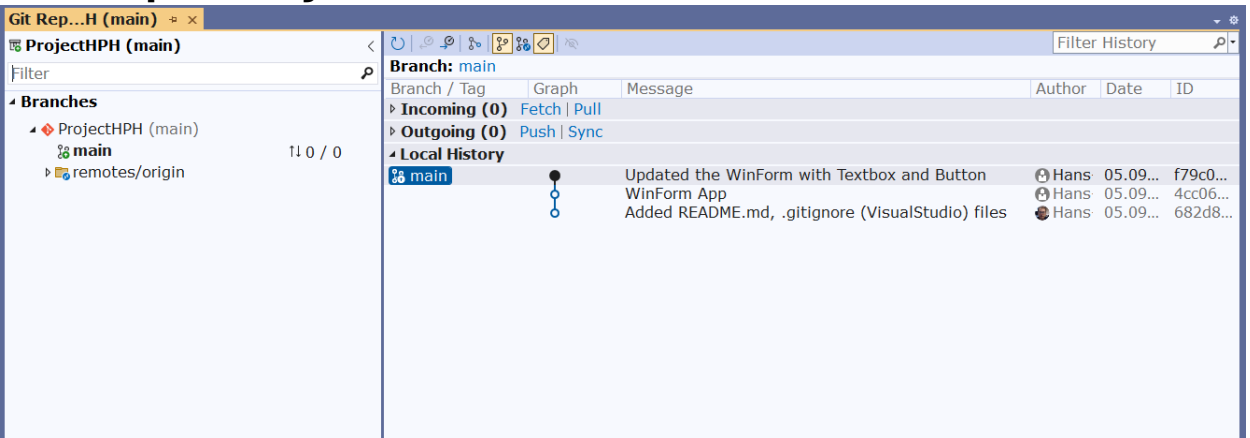
Git menu



Git Changes window



Git Repository window



Resources

- About Git in Visual Studio: https://learn.microsoft.com/en-us/visualstudio/version-control/git-with-visual-studio
- Tutorial: Open a project from a repo: https://learn.microsoft.com/en-us/visualstudio/get-started/tutorial-open-project-from-repo
- Use git fetch, pull, push and sync for version control in Visual Studio: https://learn.microsoft.com/en-us/visualstudio/version-control/git-fetch-pull-sync

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