

SQL Server Development with GIT

Ray Barley

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What is GIT?

Wikipedia: <https://en.wikipedia.org/wiki/Git>

Git ([/git/](#))^[7] is a [distributed version-control](#) system for tracking changes in [source code](#) during [software development](#).^[8] It is designed for coordinating work among [programmers](#), but it can be used to track changes in any set of [files](#). Its goals include speed,^[9] [data integrity](#),^[10] and support for distributed, non-linear workflows.^[11]

Git was created by [Linus Torvalds](#) in 2005 for development of the [Linux kernel](#) ...

More GIT

- Extremely popular among developers
- Hosted in the cloud by default
- Use web-based interface, GUI clients, or command line tools
- Free accounts available for individuals; pay for your company to use
- Excellent for team development
- Collaborate on open-source projects
- Share your code (beef up your resume with your open-source contributions!)

Well-Know GIT Providers

- GitHub (bought by Microsoft for 7.5 billion in stock; that's right B as in BILLION\$)
- Azure Dev Ops (Microsoft)
- Bitbucket (owned by Atlassian who owns Jira; nice integration w/Jira)
- GitLab

GIT Terms

- Repository – where we store our code
 - Local – on your local machine (.git folder)
 - Remote – cloud or on-prem server
- Clone – copy remote repository to local
- Branch – code for a feature or bug fix
- Checkout – indicate the Branch we're working on
- Stage – put code in ready-to-commit state
- Commit – save our code changes in local Repository; creates history
- Push – copy code changes from local Repository to remote Repository
- Pull Request – request to merge code from Branch
- Fork – copy one Repository to another

GitKraken

- GIT client – run on your local machine
- Built-in integration with popular GIT providers GitHub, Azure Dev Ops, Bitbucket, and GitLab
- Can work with just about any GIT provider
- Use for just about all of your GIT interaction for SQL Server development (this is what I do)

GIT Demo Scenarios

- GitHub web access
- Azure DevOps web access
- SQL Server Management Studio (SSMS)
- SQL Server Project (Visual Studio)
- Contribute to an open source project

GIT Workflow for SSMS – Create Repository

- Create GIT Repository on Azure DevOps
- Clone GIT Repository on local machine
- Create T-SQL scripts in SSMS; save to local Repository folder
- Commit scripts to GIT local Repository
- Push from local Repository to remote Repository

GIT Workflow for SSMS – Clone Repository

- Find repository on GitHub
- Clone GIT Repository on local machine
- Review code
- Review issues on GitHub
- Select issue / create branch
- Write code for issue / commit
- Push from local Repository to remote Repository
- Pull request

SQL Server Project

- Project type in Visual Studio 2019 (latest version)
- Formerly a project type in SQL Server Data Tools
- Create and store SQL objects (tables, views, stored procedures, etc.)
- Create deployment scripts for target database servers
- Provides error checking on database objects
- Integrated w/GIT

My GIT Workflow for SQL Server Project

- Create remote Repository and clone to local Repository
- Create Solution w/SQL Server Project using Visual Studio 2019 - community (i.e. FREE) edition works fine
- Add folders to project for tables, views, stored procedures, etc.
- Commit to local Repository
- Push to Remote repository
- Create Develop branch
- Create Branch for features, bug fixes, etc. from Develop

My GIT Workflow for SQL Server Project

- Add SQL objects to project; e.g. tables, views, stored procedures, etc.
- Commit SQL objects to Branch in local Repository
- Push Branch to remote Repository
- Create Pull Request to merge feature/bug fix Branch w/Develop Branch
- Merge Pull Request w/Develop
- Deploy
- Create Pull Request to Merge Develop Branch w/master Branch
- Merge Pull Request w/master Branch

Contribute to Open Source Project

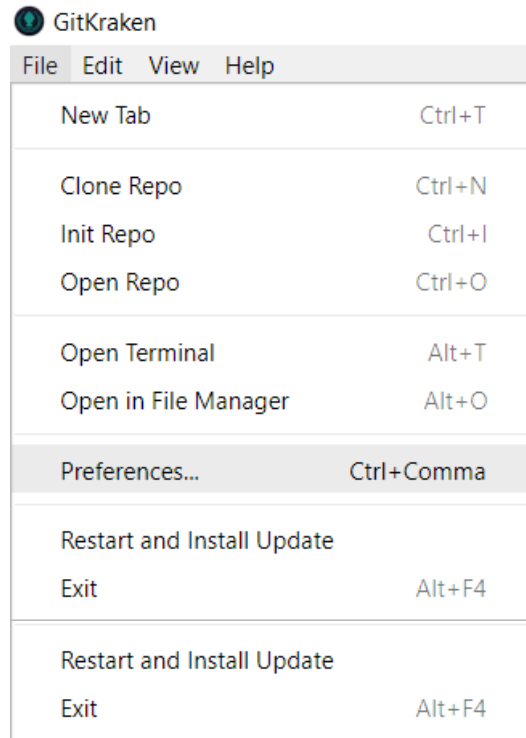
- Example: <https://github.com/BrentOzarULTD/SQL-Server-First-Responder-Kit>
- Fork project to your GitHub account
- Clone to local Repository
- Create Branch for fix or enhancement
- Push to Remote Repository
- Create Pull Request to Repository (the one you forked)
- Good reference: <https://sqldbawithabeard.com/2019/11/29/how-to-fork-a-github-repository-and-contribute-to-an-open-source-project/>

Demos

References

- GIT Command-Line-Interface (CLI), GUI clients: <https://git-scm.com/downloads>
- GitKraken: <https://www.gitkraken.com/>
- GitKraken on YouTube:
https://www.youtube.com/results?search_query=%23gitkraken

Connect GIT Provider



Profiles


📁 USER_GROUP

📄 Release Notes

New Tab ×

+

↩ Exit Preferences



Azure
Raymond Barley
raymondbarley@itresourcepartner...

▼

General

Profiles

Authentication

UI Preferences

GPG Preferences

Editor Preferences

Profiles


GitKraken uses profiles to store your application preferences as well as git config information. The preferences you set after installing are set as your default profile. As a GitKraken Pro user, you can create additional profiles and quickly switch between for your different projects, work environments, etc.

My Profiles

Keep my .gitconfig updated with my GitKraken Profile preferences ☒


When checked, GitKraken will update your global .gitconfig to match GitKraken Preferences, including commit author name and email, and any GPG settings.

Add A Profile



Azure
Raymond Barley
raymondbarley@itresourcepartners.com

Edit Profile



Github
Raymond Barley
raymondbarley@itresourcepartners.com

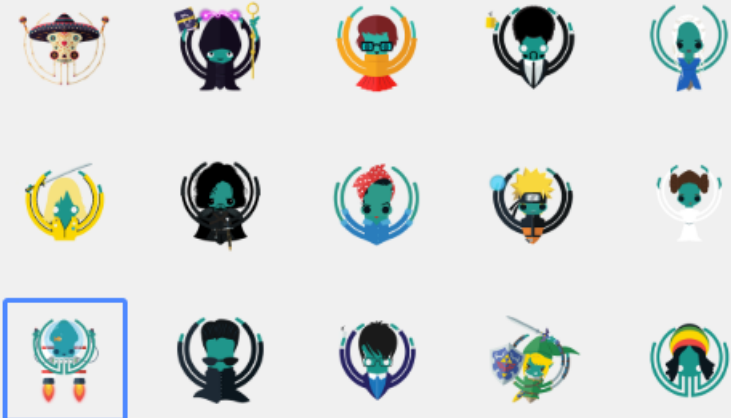
Edit Profile

Delete

Add a Profile

Add A Profile

Select an avatar

A grid of 15 circular avatars. The first avatar in the first row is highlighted with a blue border. The avatars feature various colorful characters and symbols.

Profile Name

BSSUG

Name

Raymond Barley

Email

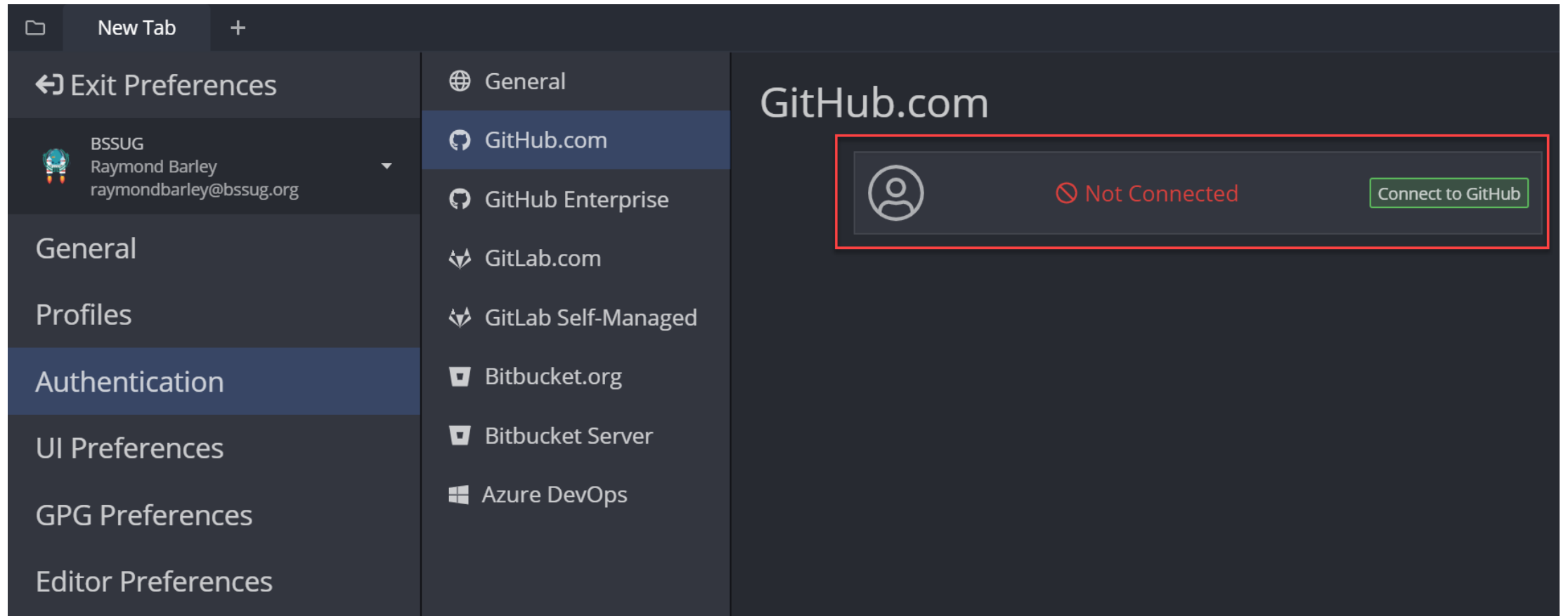
raymondbarley@bssug.org

☐ Copy settings from current profile

Save changes

Cancel

Authentication





Authorize GitKraken



GitKraken by **Axosoft**

wants to access your payasyougo account



Public SSH keys

Admin access



Repositories

Public and private



Workflow

Update GitHub Action Workflow files.



Authorize Axosoft

Authorizing will redirect to
<https://api.gitkraken.com>

New Tab +

Exit Preferences

pay-as-you-go
Raymond Barley
raymondbarley@payasyougobacko...

General

Profiles

Authentication

UI Preferences

GPG Preferences

Editor Preferences

General

GitHub.com

GitHub Enterprise

GitLab.com

GitLab Self-Managed

Bitbucket.org

Bitbucket Server

Azure DevOps

Connected to GitHub

GitKraken will help you find stuff on GitHub when cloning or adding remotes. We'll also use your SSH Config to fetch and push; or you can set up a GitHub-specific SSH key right here in the Services menu.

GitHub.com

payasyougo

Connected

Disconnect

SSH Key

No SSH settings detected. You can add an SSH Key to GitHub below.

Generate SSH Key

(optional) Enter a title for your new SSH key

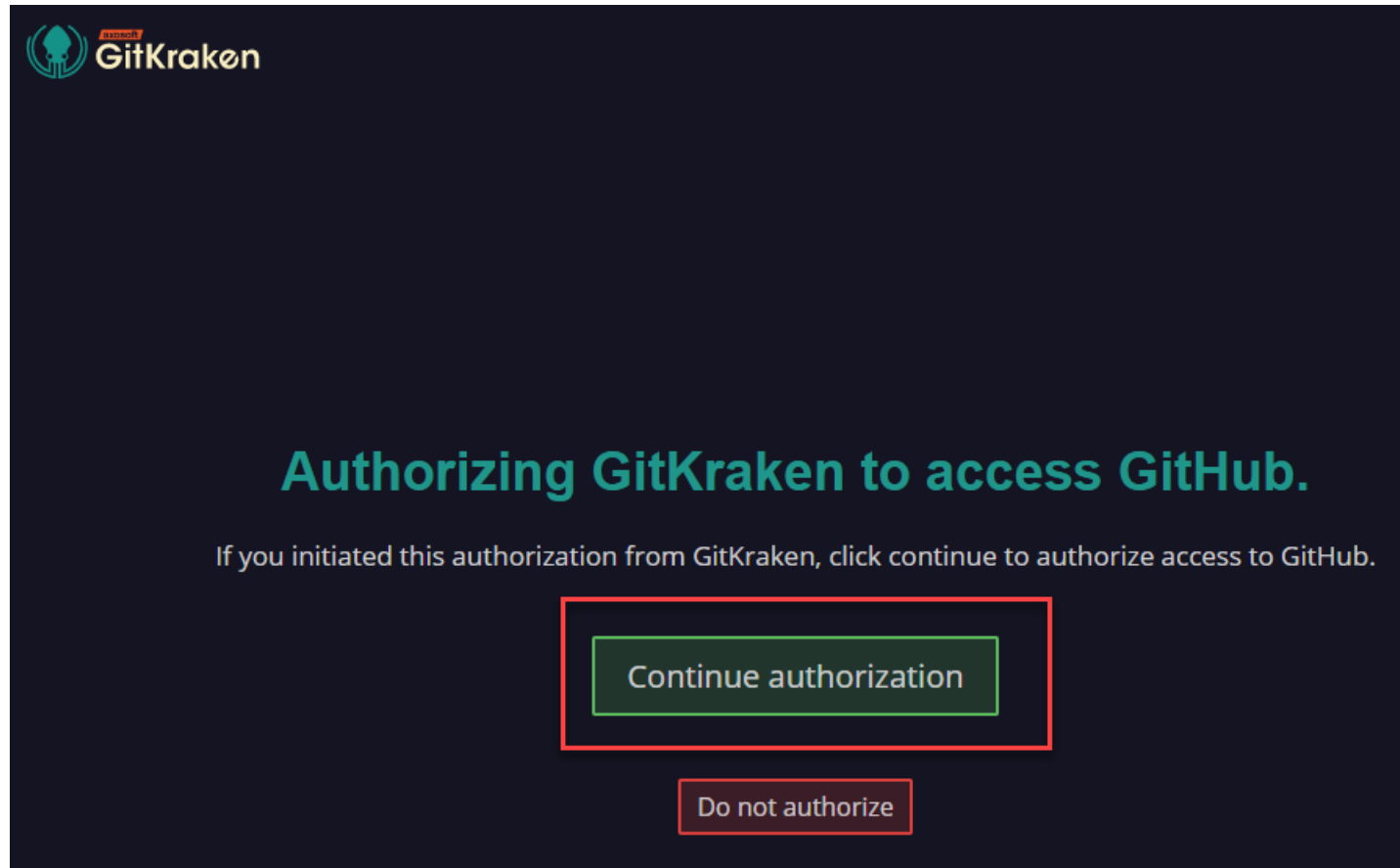
Generate SSH key and add to GitHub

Add existing SSH key

Browse for Private SSH Key

Browse for Public SSH Key

GitHub Authorization



Authorization – Connected!

The screenshot displays the GitKraken application window. On the left, a sidebar contains a menu with options: Exit Preferences, General, Profiles, Authentication (highlighted), UI Preferences, GPG Preferences, and Editor Preferences. Below the menu, the user profile for BSSUG Raymond Barley is shown. The main panel is titled 'GitHub.com' and shows the user 'agent86ray' with a green checkmark and the word 'Connected'. A 'Disconnect' button is visible. Below this, a message states 'No SSH settings detected. You can add an SSH Key to GitHub below.' There are three buttons: 'Generate SSH Key' (with a text input field for an optional title), 'Generate SSH key and add to GitHub' (highlighted with a red box), 'Add existing SSH key' (with sub-buttons for 'Browse for Private SSH Key' and 'Browse for Public SSH Key'). A green notification box at the bottom left reads: 'Connected to GitHub. GitKraken will help you find stuff on GitHub when cloning or adding remotes. We'll also use your SSH Config to fetch and push; or you can set up a GitHub-specific SSH key right here in the Services menu.'

SSH Added to GitHub

New Tab +

Exit Preferences

BSSUG

Raymond Barley

raymondbarley@bssug.org

General

Profiles

Authentication

UI Preferences

GPG Preferences

Editor Preferences

General

GitHub.com

GitHub Enterprise

GitLab.com


GitLab Self-Managed

Bitbucket.org

Bitbucket Server

Azure DevOps

GitHub.com

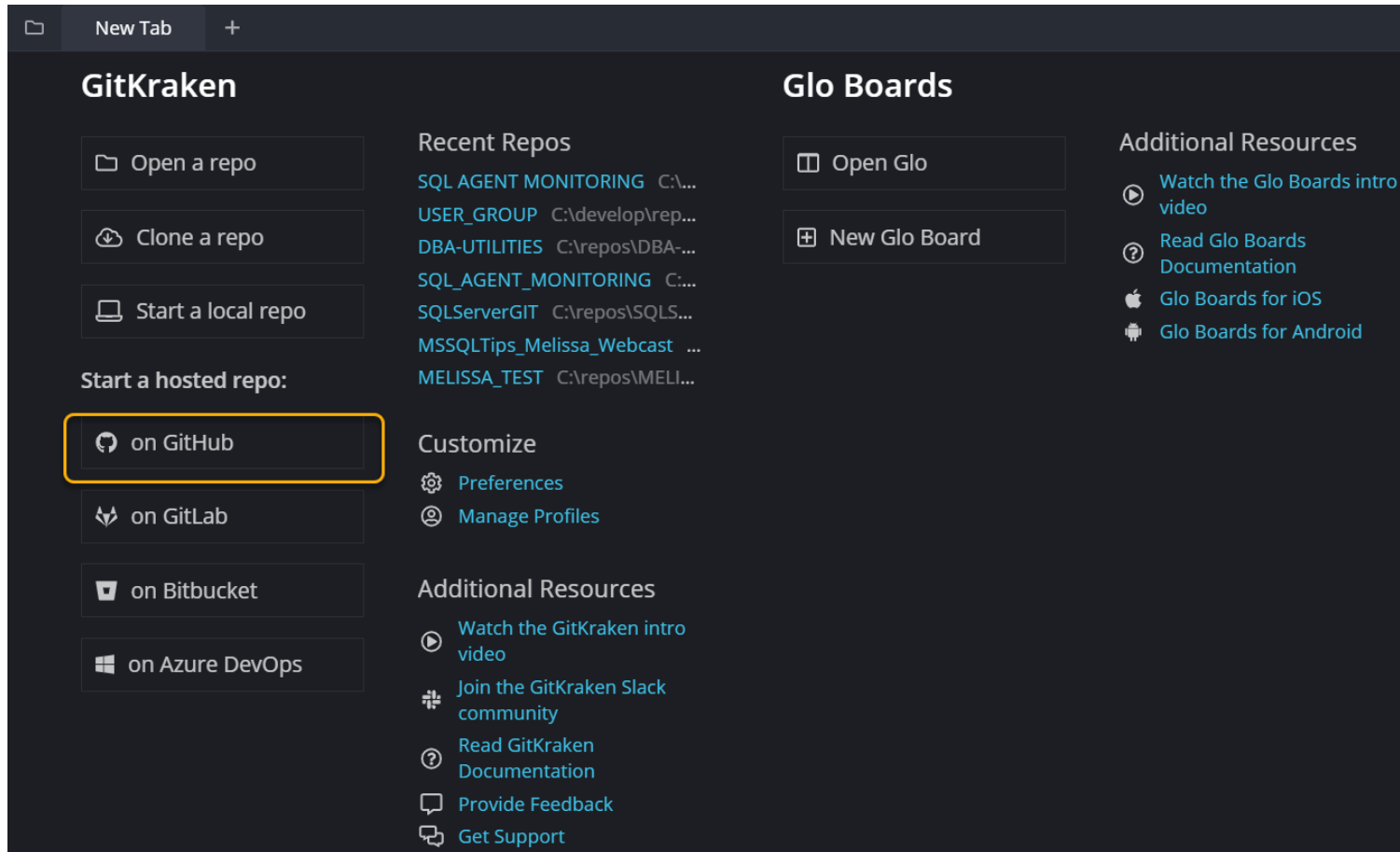
 agent86ray Connected Disconnect

SSH Key

GitKraken DESKTOP-U8PAEJC added 12/14/2019

2c:9f:42:d1:9c:51:07:27:49:3f:f8:a0:fb:82:74:ec

Remove and Delete



Initialize a Repository (remote + local)

Repository Management

Open

Clone

Init

Local Only

GitHub.com

GitHub Enterprise

GitLab.com

GitLab (Self-Managed)

Bitbucket.org

Bitbucket Server

Azure DevOps

Initialize a Repo

Account

payasyougo

Name

User-Group-Database

Description

Access

Public

Clone after init ☒

Where to clone to

C:\repos\payasyougo

Browse

Full path

C:\repos\payasyougo\

User-Group-Database

.gitignore Template (optional)

VisualStudio

License (optional)

Select...

Create Repository and Clone

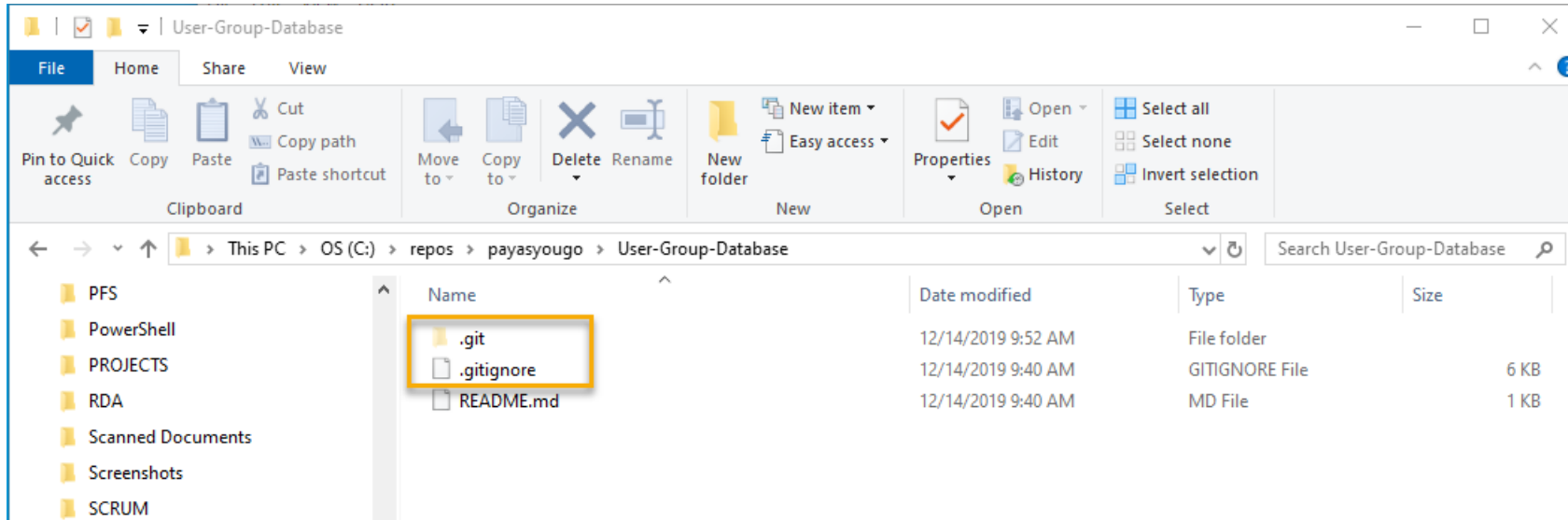
New Repository on GitHub

The screenshot shows the GitHub interface for a newly created repository. At the top, there's a dark navigation bar with the GitHub logo, a search bar, and links to Pull requests, Issues, Marketplace, and Explore. Below this is a large light blue and green banner with the text "Learn Git and GitHub without any code!" and a green button labeled "Read the guide".

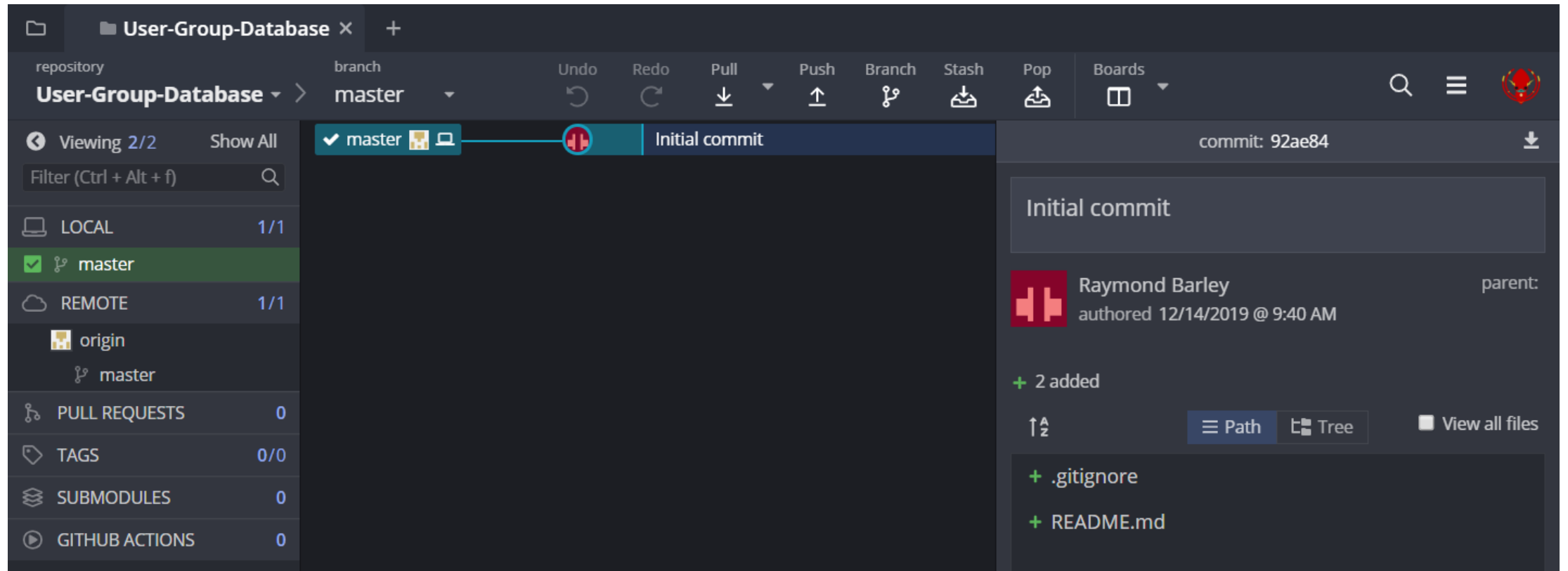
The repository name "payasyougo / User-Group-Database" is displayed, along with statistics: 1 Unwatch, 1 Star, and 0 Forks. Below the repository name is a tabbed interface with "Code" selected. The "Code" tab shows a "No description, website, or topics provided." message and a "Manage topics" link. Below this, there's a summary bar showing 1 commit, 1 branch, 0 packages, 0 releases, and 1 contributor.

Below the summary bar, there's a section for the "master" branch. It includes buttons for "Create new file", "Upload files", "Find file", and "Clone or download". Below this, there's a list of files: ".gitignore" and "README.md", both showing "Initial commit" and "4 minutes ago". At the bottom, there's a "README.md" file with an edit icon.

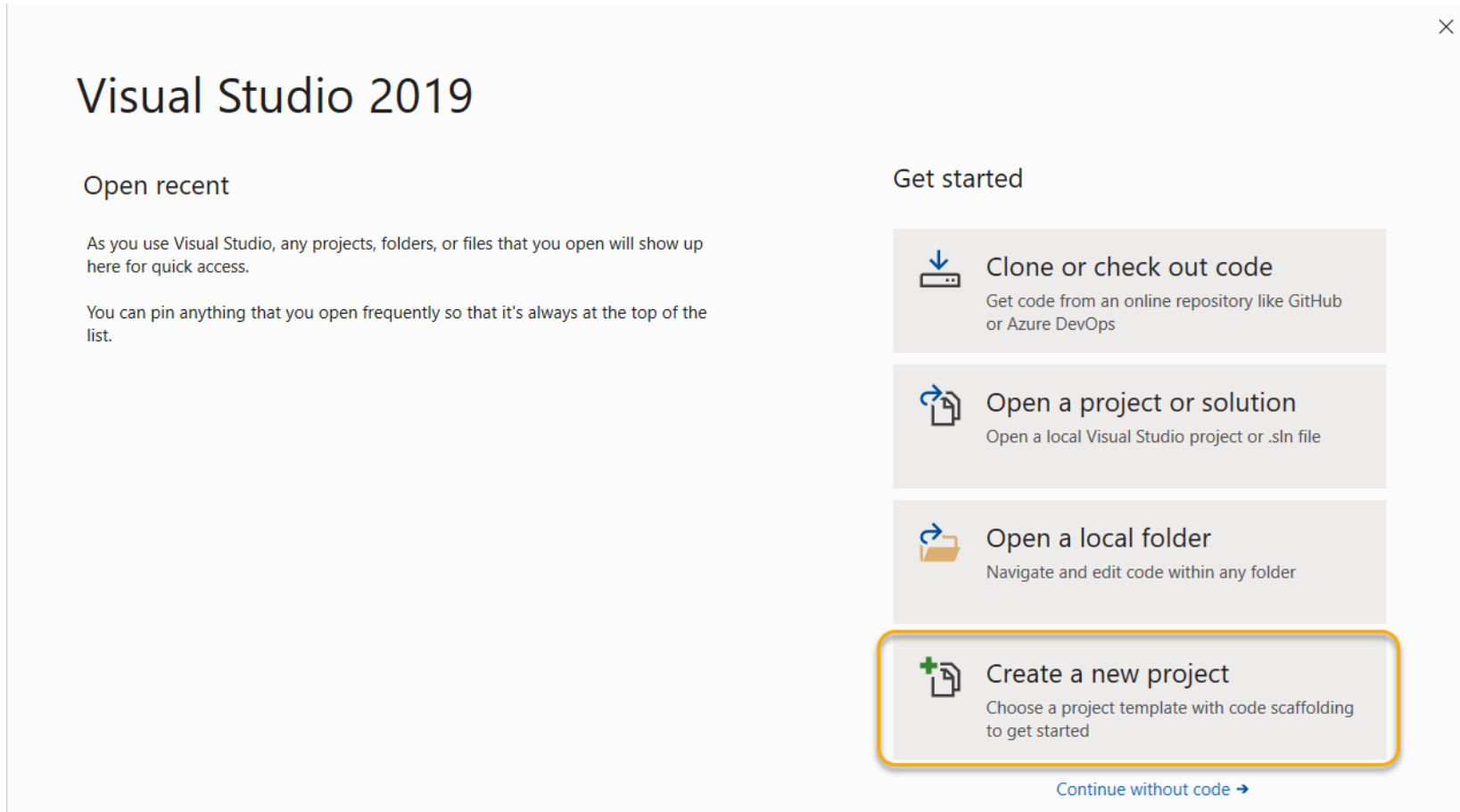
New Local GIT Repository



New Repository



Create Project



Create a new project

Recent project templates

 SQL Server Database Project

Query Language

[Clear](#)

All Languages

All Platforms

All Project Types



U-SQL Script Unit Test Project

A project that contains unit tests for U-SQL scripts.



SQL Server Database Project

A project for creating a SQL Server database.

Query Language

Windows

Web



Storm Azure SQL Writer Sample

A sample storm project for azure sql writer, it is available for hdinsight cluster which version >= 3.2

C#

Azure

Cloud



U-SQL C# UDO Unit Test Sample Project

A project that contains unit tests and UDO samples for U-SQL C# UDO



U-SQL Sample Application

A project for creating a U-SQL Sample Project.

Not finding what you're looking for?
[Install more tools and features](#)

Back

Next



Configure your new project

SQL Server Database Project

Query Language

Windows

Web


Project name

User-Group-SQL

Location

C:\repos\payasyougo\User-Group-Database\

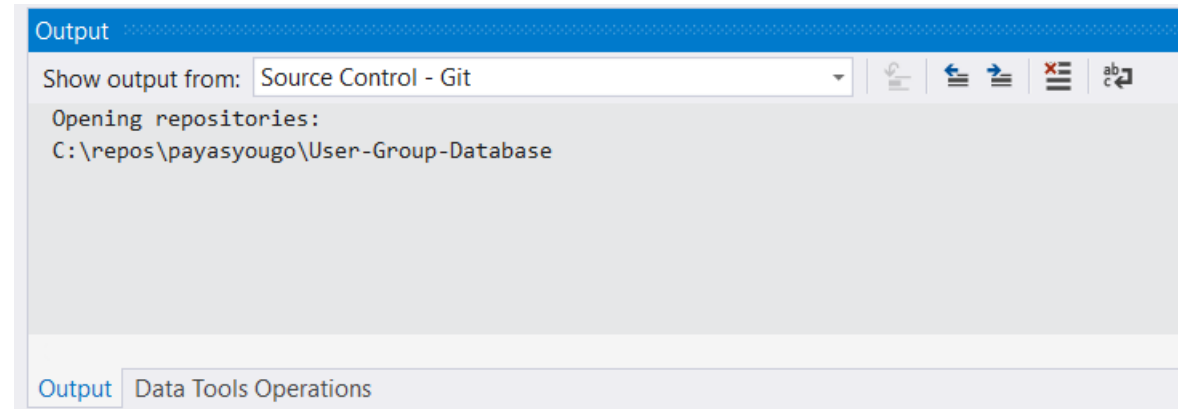
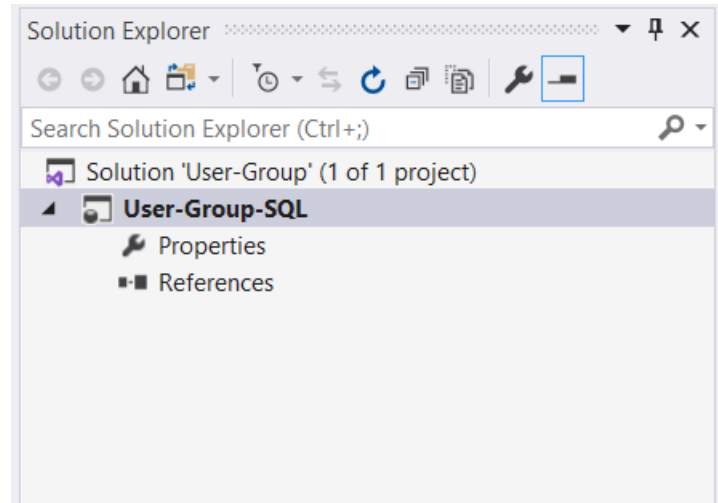
...

Solution name 

User-Group

☐ Place solution and project in the same directory

New VS Solution



User-Group-Database x +

repository
User-Group-Database > branch
master

Undo Redo Pull Push Branch Stash Pop Boards

Viewing 2/2 Show All
Filter (Ctrl + Alt + f)

LOCAL 1/1

master

REMOTE +

origin
master

PULL REQUESTS 0

TAGS 0/0

SUBMODULES 0

GITHUB ACTIONS 0

// WIP + 2

Initial commit

2 file changes on master

Path Tree

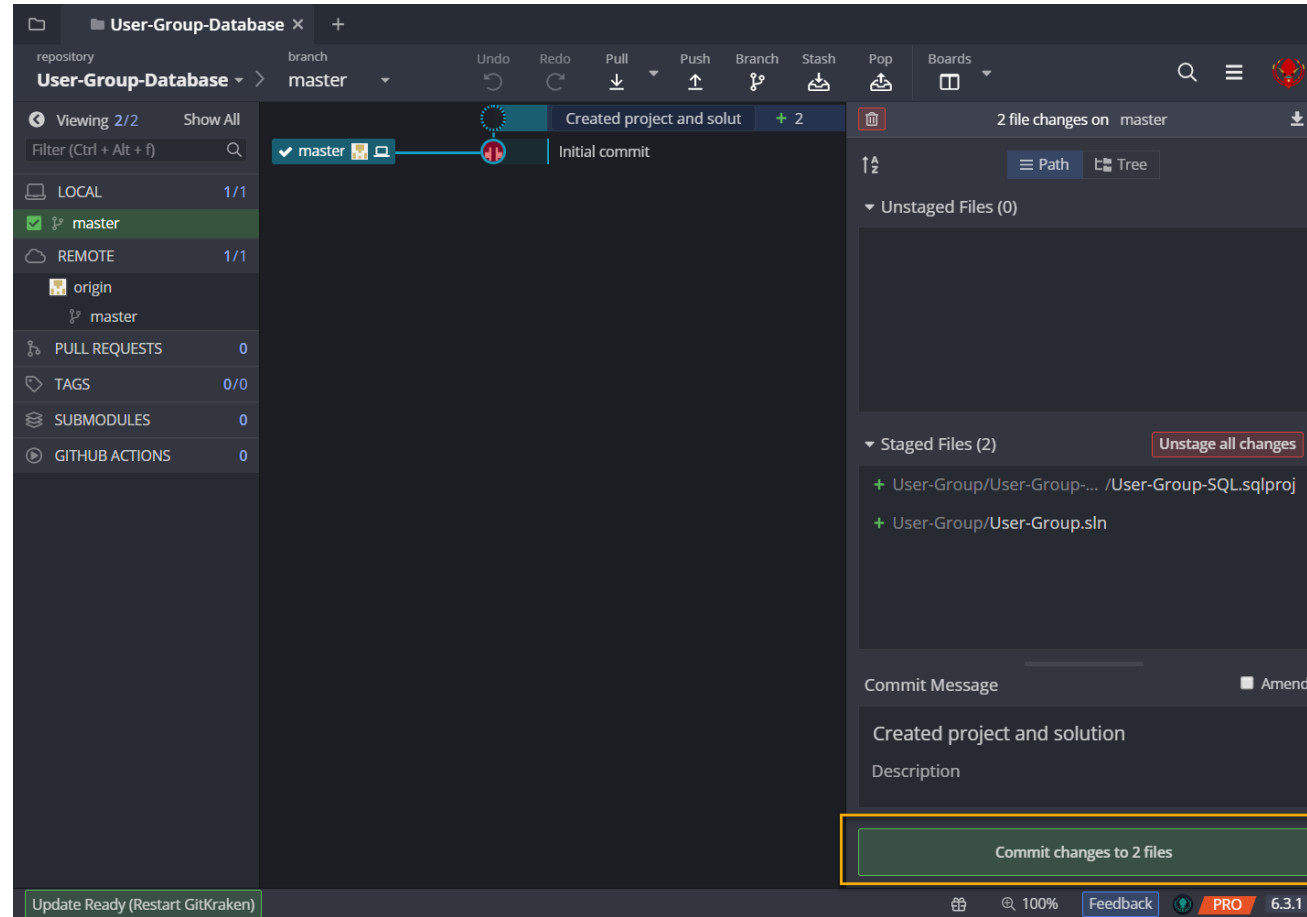
Unstaged Files (2) Stage all changes

+ User-Group/User-Group-... /User-Group-SQL.sqlproj

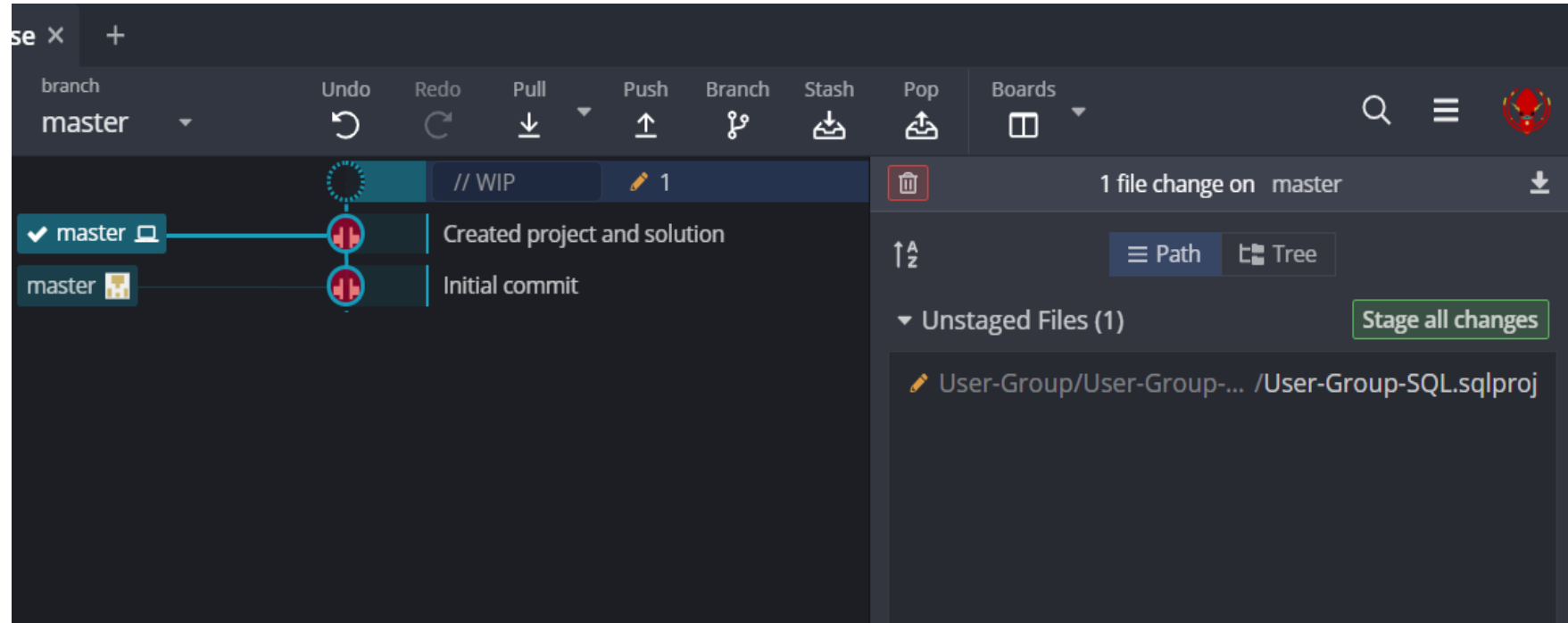
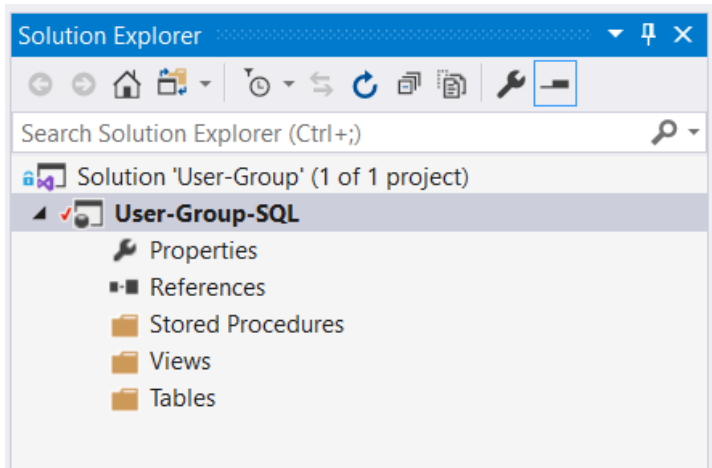
+ User-Group/User-Group.sln

Staged Files (0)

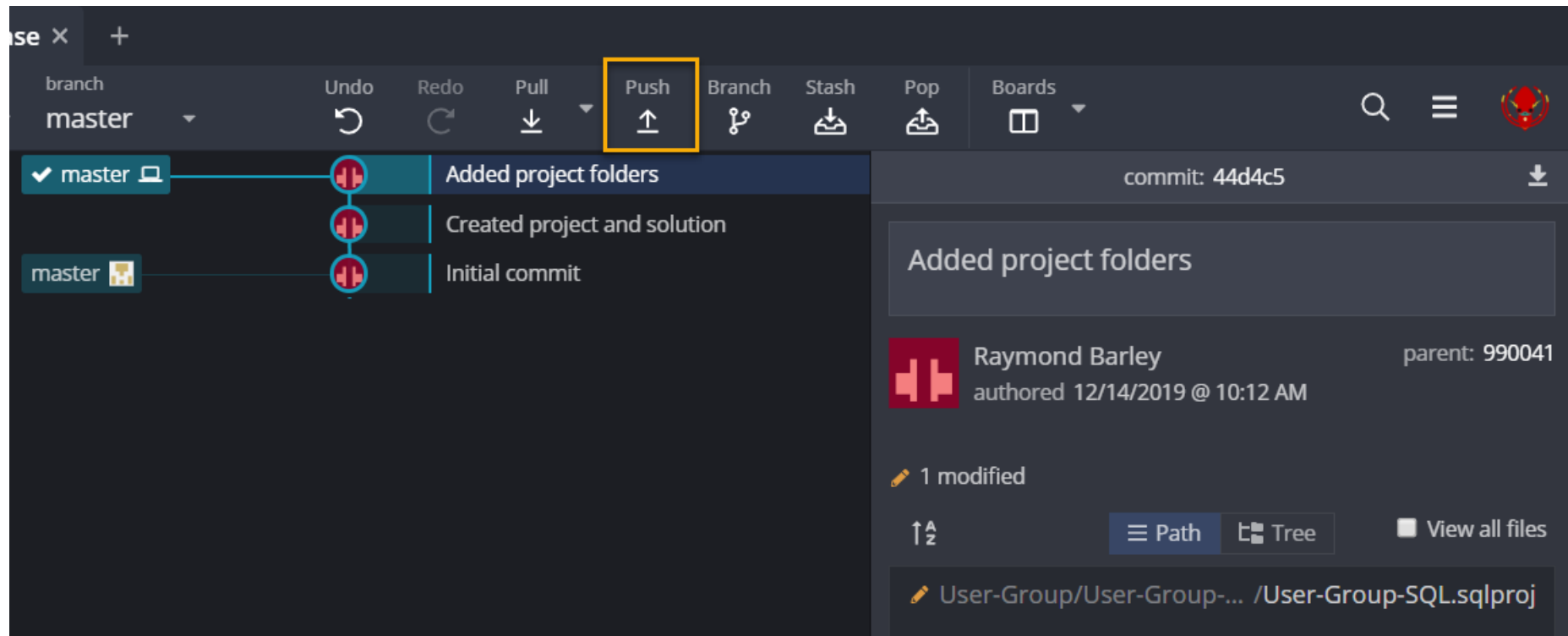
Stage all changes and Commit



Add Folders to Project



Commit and Push



GitHub Repository (remote)

Learn Git and GitHub without any code!

Using the Hello World guide, you'll start a branch, write comments, and open a pull request.

Read the guide

payasyougo / User-Group-Database

Unwatch 1 Star 0 Fork 0

<> Code

Issues 0

Pull requests 0

Actions

Projects 0

Wiki

Security

Insights

Settings

Branch: master

User-Group-Database / User-Group /

Create new file Upload files Find file History

payasyougo Added project folders

Latest commit 44d4c54 2 minutes ago

..

User-Group-SQL

Added project folders

2 minutes ago

User-Group.sln

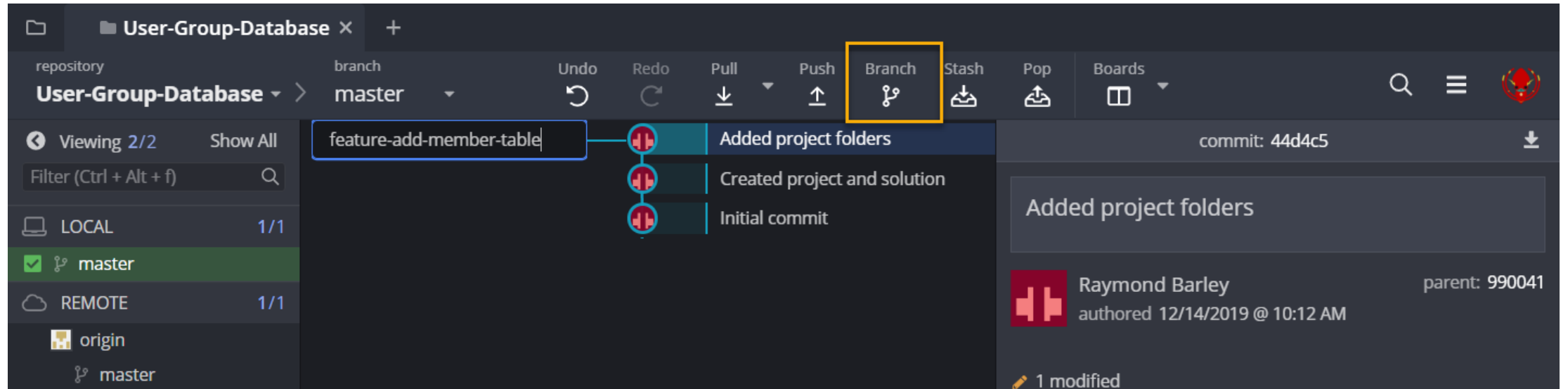
Created project and solution

8 minutes ago

© 2019 GitHub, Inc. Terms Privacy Security Status Help

Contact GitHub Pricing API Training Blog About

Create Branch



Add MEMBER Table

MEMBER.sql [Design] ✕

Script File: MEMBER.sql

Name	Data Type	Allow Nulls	Default
MEMBER_ID	int	<input type="checkbox"/>	
FIRST_NAME	varchar(50)	<input type="checkbox"/>	
LAST_NAME	varchar(50)	<input type="checkbox"/>	
		<input type="checkbox"/>	

Keys (1)
MEMBER_PK (Primary Key, Clustered: MEMBER_ID)

Check Constraints (0)

Indexes (0)

Foreign Keys (0)

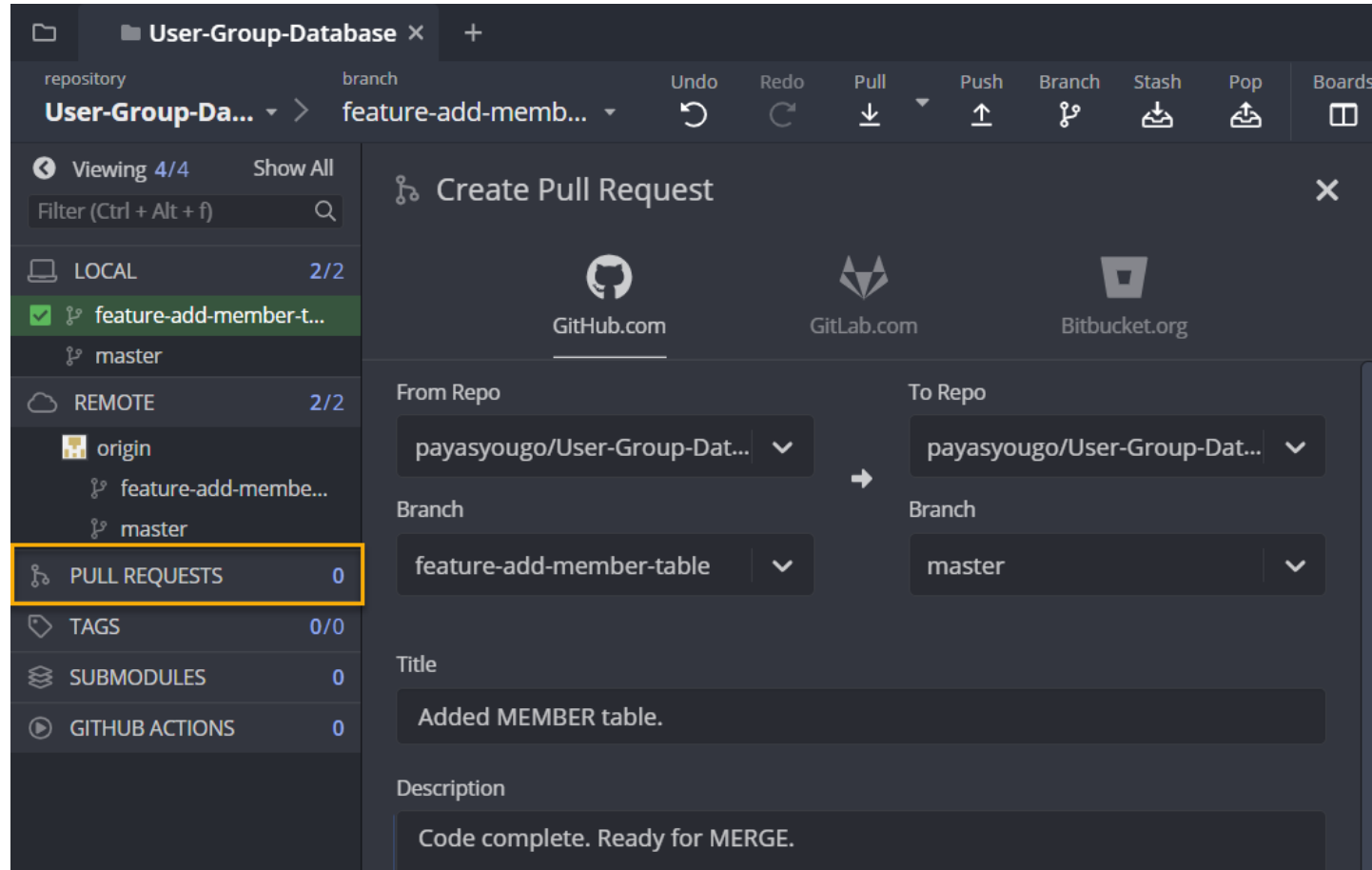
Triggers (0)

Design T-SQL

```
1 CREATE TABLE [dbo].[MEMBER]
2 (
3     [MEMBER_ID] INT IDENTITY NOT NULL
4     CONSTRAINT MEMBER_PK PRIMARY KEY CLUSTERED
5     , [FIRST_NAME] VARCHAR(50) NOT NULL
6     , [LAST_NAME] VARCHAR(50) NOT NULL
7 )
8
```

100 % No issues found

Create PULL Request



PULL Request on GitHub

payasyougo / User-Group-Database

Unwatch 1

Star 0

Fork 0

<> Code

! Issues 0

🔗 Pull requests 1

▶ Actions

📁 Projects 0

📖 Wiki

🛡 Security

📊 Insights

⚙ Settings

Label issues and pull requests for new contributors

Dismiss

Now, GitHub will help potential first-time contributors [discover issues](#) labeled with **good first issue**

Filters ▾

🔍 is:pr is:open

🏷 Labels 9

📅 Milestones 0

New pull request

☐ 🔗 1 Open ✓ 0 Closed

Author ▾

Label ▾

Projects ▾

Milestones ▾

Reviews ▾

Assignee ▾



Sort ▾

☐ 🦋 Added MEMBER table.

#1 opened 16 seconds ago by payasyougo

MERGE PULL Request

Added MEMBER table. #1

 **Open** payasyougo wants to merge 1 commit into `master` from `feature-add-member-table` 

 Conversation **0**  Commits **1**  Checks **0**  Files changed **1**



payasyougo commented 2 minutes ago

Owner +  ...

Code complete. Ready for MERGE.

  Added MEMBER table.

eea563f

Add more commits by pushing to the `feature-add-member-table` branch on `payasyougo/User-Group-Database`.



Continuous integration has not been set up

[GitHub Actions](#) and [several other apps](#) can be used to automatically catch bugs and enforce style.



This branch has no conflicts with the base branch

Merging can be performed automatically.

Merge pull request



You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Update master w/PULL

