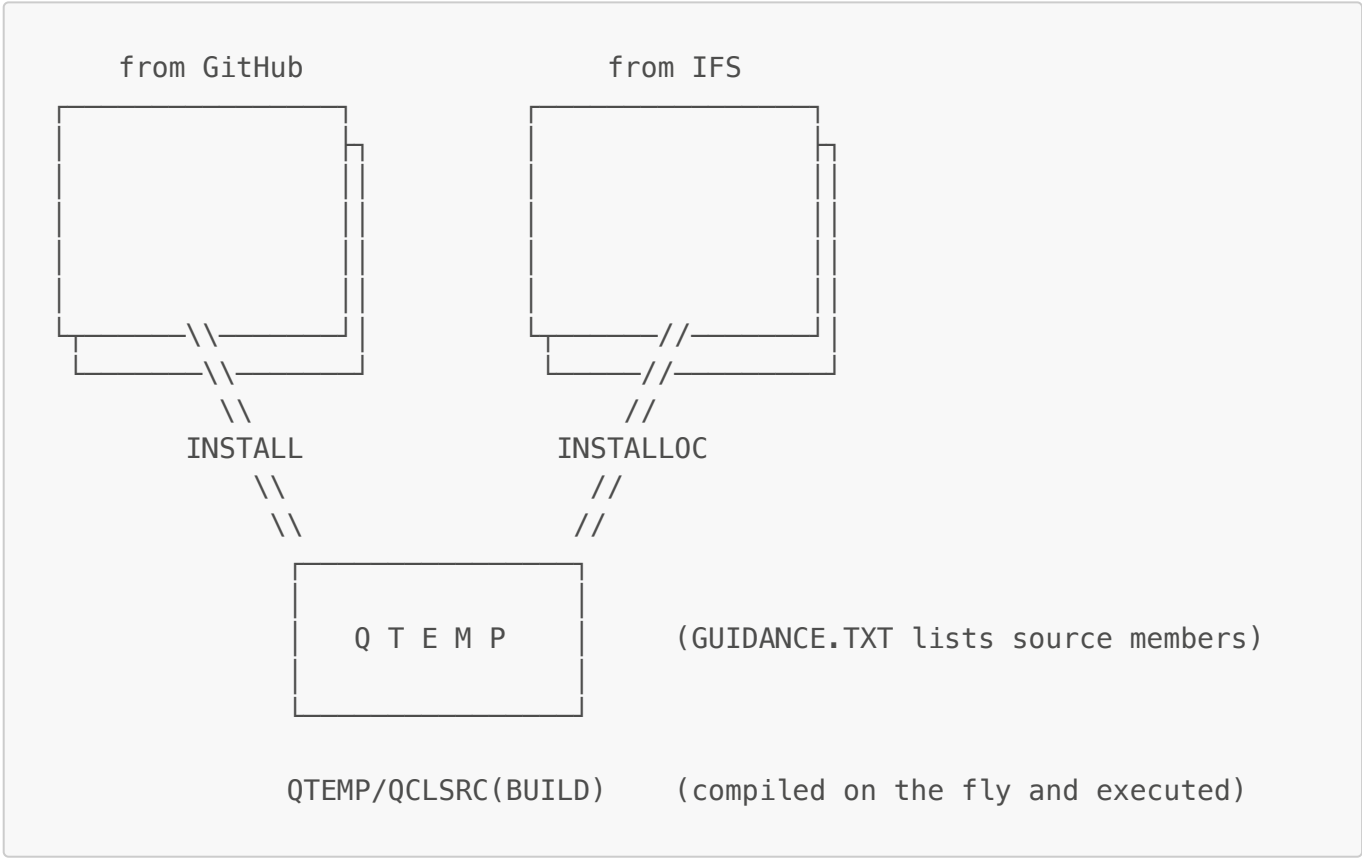
PASERIE (V1R1M2)

Utility for Source-Level Distribution in IBM i

This utility helps you maintain your IBM i source code on GitHub. Once available on a target system, the utility allows you to install your packages in a very simple way, directly accessing your repositories on GitHub or the repositories of other developers that authorized you.

The suite provides a total of three commands:

- For end users of a package:
  - **PASERIE/INSTALL** the main command focusing on the installation phase of an already developed and GitHub-released package.
- For developers:
  - **PASERIE/INSTALLOC** the command used in the development phase to test the installation of a package (planned to be released on GitHub or not) directly from a directory in the IFS.
  - **PASERIE/LIBCLONE** the command used to jump-start the packaging (consistently with PASERIE tools' conventions) from an existing native library.



INSTALLATION

I assume you have **bash**, **git** and **curl** installed in your *PASE* environment. Skip to the end of this document otherwise. From `CALL QP2TERM`, you can verify that **bash**, **git** and **curl** are installed:

```
  $
> PATH=/QOpenSys/pkgs/bin:$PATH
  $
> export PATH
  $
> which bash
  /QOpenSys/pkgs/bin/bash
  $
> which curl
  /QOpenSys/pkgs/bin/curl
  $
> which git
  /QOpenSys/pkgs/bin/git
```

Using curl download the following archive (supporting IBM i 7.3, 7.4, 7.5 and 7.6):

```
curl -o PaseOssFloating.tar
        https://www.andrearibuoli.it/paserie/PaseOssFloating.tar
```

From *the home path of the user* that will be using *PASERIE/INSTALL* we install **PaseOss** folder by untarring *PaseOssFloating* tar file:

```
cd ~
tar xvf PaseOssFloating.tar
```

Now, still from *the home path of the user* that will be using *PASERIE/INSTALL* we perform:

```
cd ~
git clone https://github.com/AndreaRibuoli/PASERIE.git
cd PASERIE
bash ./bootstrap.sh
```

Given the limitations in PUB400.COM, to install PASERIE there -a free and public IBM i enviroment- replace the last command with a dedicated script: `bash ./bootstrap_pub400.sh`.

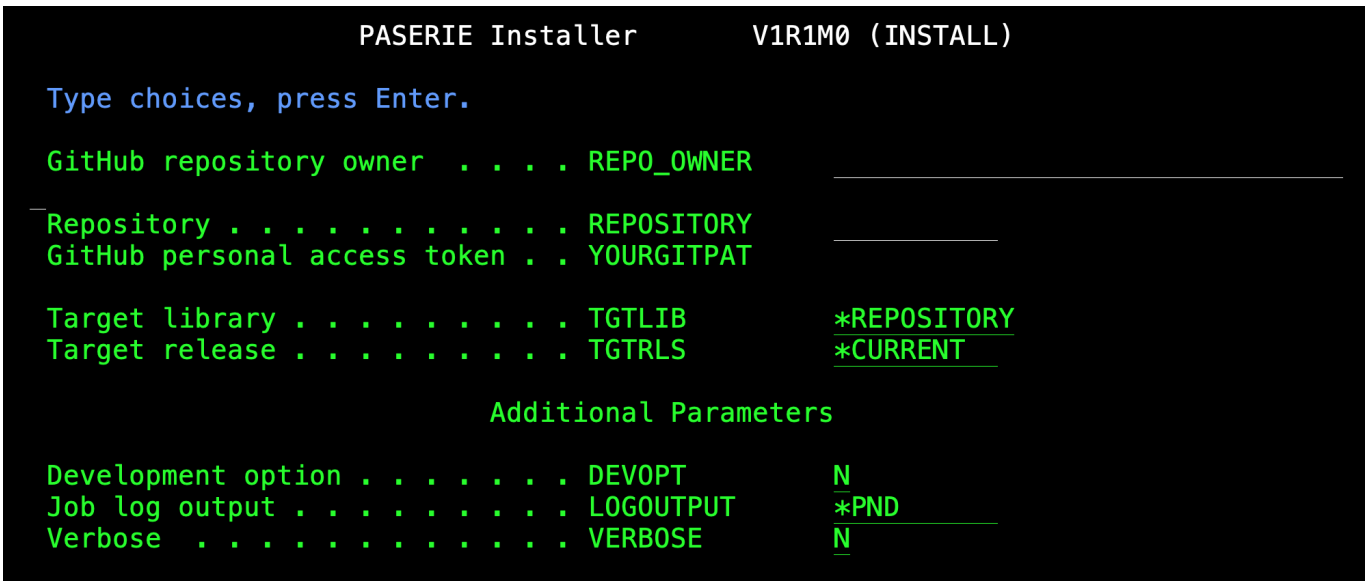
After exiting from the QP2TERM session you should have **PASERIE** utilities available.

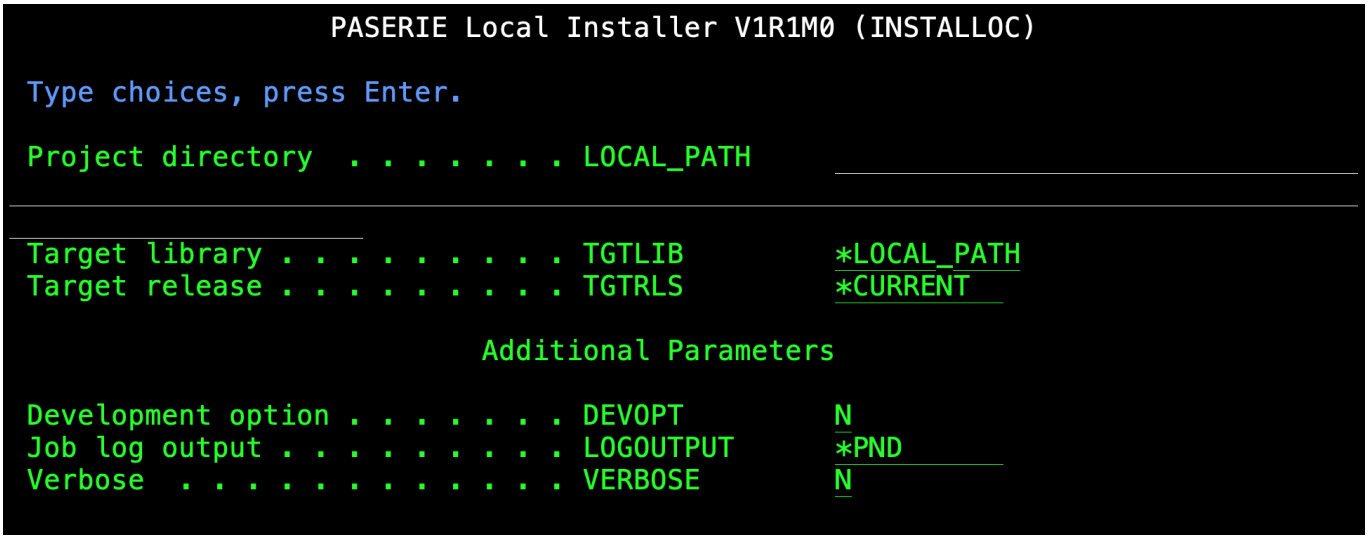
THE NAME

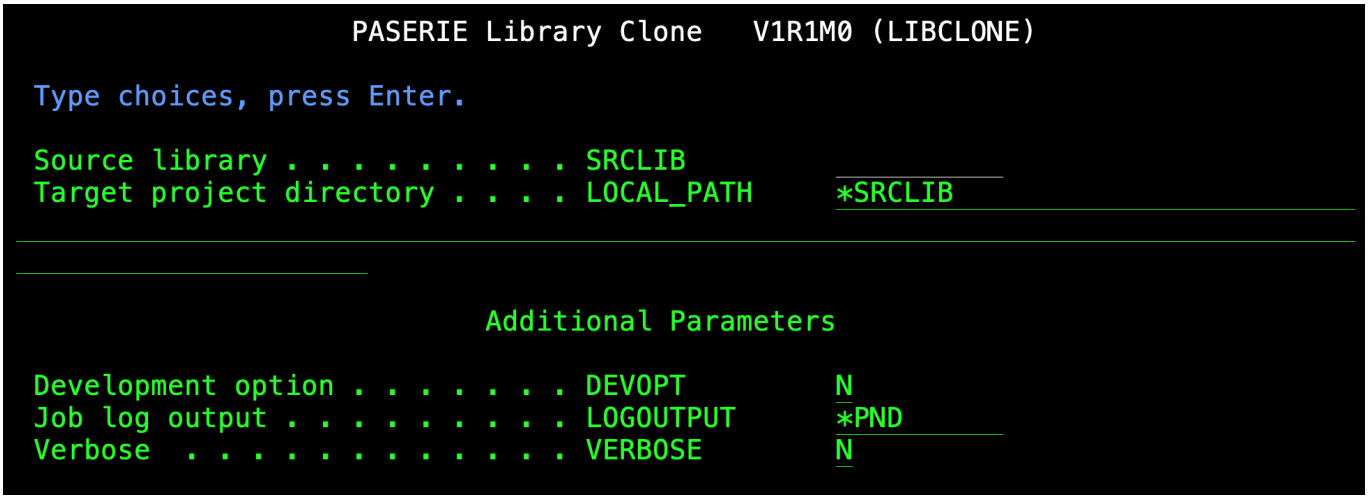
pastry ==> *pâ-tis-se-rie* ==> **PASERIE**

PARAMETERS FOR THE THREE COMMANDS WITH SCREEN SHOTS

KWD	INSTALL	INSTALLOC	LIBCLONE
REPO_OWNER	yes		
REPOSITORY	yes		
YOURGITPAT	yes		
SRCLIB			yes
LOCALPATH		yes	yes
TGTLIB	yes	yes	
TGTRLS	yes	yes	
DEVOPT	yes	yes	yes
LOGOUTPUT	yes	yes	yes
VERBOSE	yes	yes	yes


PASERIE Installer V1R1M0 (INSTALL)
Type choices, press Enter.
GitHub repository owner . . . . REPO_OWNER
Repository . . . . . REPOSITORY
GitHub personal access token . . YOURGITPAT
Target library . . . . . TGTLIB *REPOSITORY
Target release . . . . . TGTRLS *CURRENT
Additional Parameters
Development option . . . . . DEVOPT N
Job log output . . . . . LOGOUTPUT *PND
Verbose . . . . . VERBOSE N


PASERIE Local Installer V1R1M0 (INSTALLOC)
Type choices, press Enter.
Project directory . . . . . LOCAL_PATH
Target library . . . . . TGTLIB *LOCAL_PATH
Target release . . . . . TGTRLS *CURRENT
Additional Parameters
Development option . . . . . DEVOPT N
Job log output . . . . . LOGOUTPUT *PND
Verbose . . . . . VERBOSE N


PASERIE Library Clone V1R1M0 (LIBCLONE)
Type choices, press Enter.
Source library . . . . . SRCLIB
Target project directory . . . . LOCAL_PATH *SRCLIB
Additional Parameters
Development option . . . . . DEVOPT N
Job log output . . . . . LOGOUTPUT *PND
Verbose . . . . . VERBOSE N

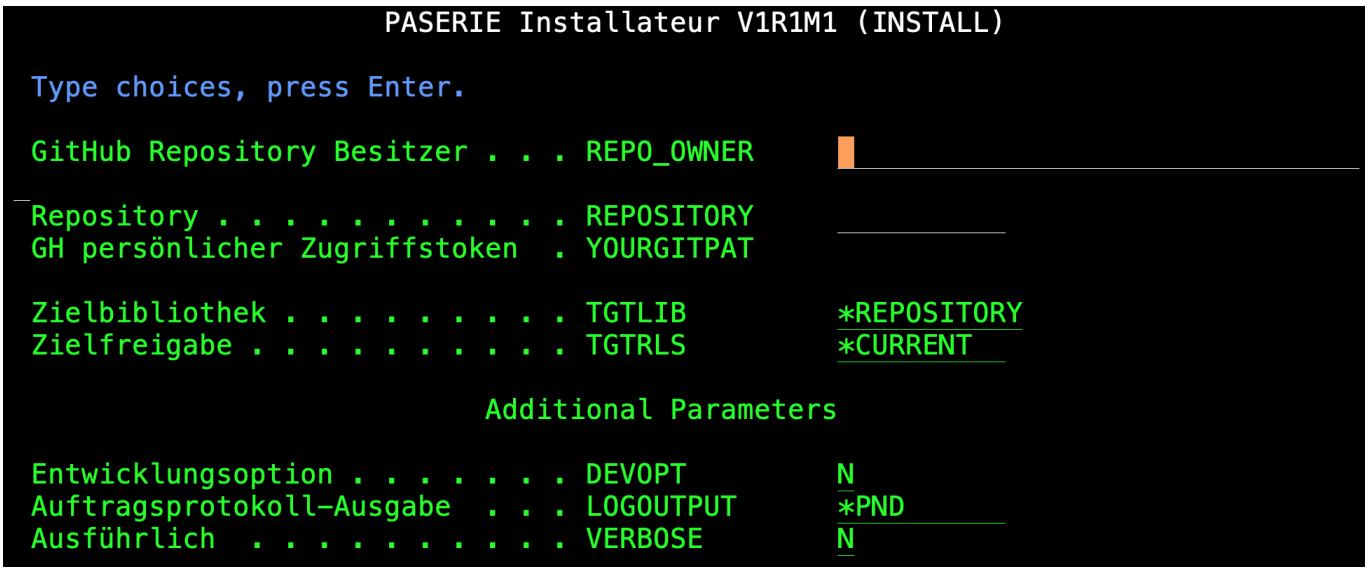
On a system based in Italy the commands will be compiled from localized source files:

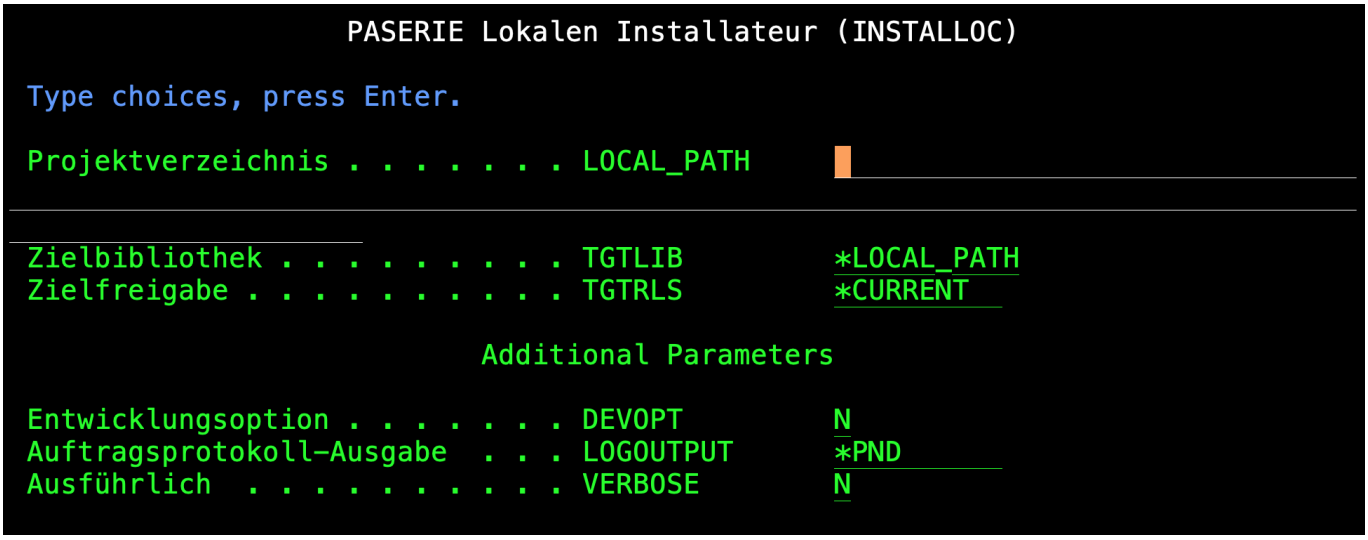
```
                  PASERIE Installatore    V1R1M0 (INSTALL)

 Immettere le scelte e premere Invio.

 Proprietario repo su GitHub  . . REPO_OWNER

 Repository . . . . . . . . . . . REPOSITORY
 Token di accesso a GitHub  . . . YOURGITPAT

 Caricamento nella libreria . . . TGTLIB         *REPOSITORY
 Rilascio di destinazione . . . . TGTRLS         *CURRENT

                          Parametri aggiuntivi

 Opzione di sviluppo  . . . . . . DEVOPT         N
 Emissione registrazione lavoro   LOGOUTPUT      *PND
 Verboso  . . . . . . . . . . . . VERBOSE        N
```

```
                PASERIE Installa locale V1R1M0 (INSTALLOC)

 Immettere le scelte e premere Invio.

 Directory del progetto . . . . . LOCAL_PATH

 Caricamento nella libreria . . . TGTLIB         *LOCAL_PATH
 Rilascio di destinazione . . . . TGTRLS         *CURRENT

                          Parametri aggiuntivi

 Opzione di sviluppo  . . . . . . DEVOPT         N
 Emissione registrazione lavoro   LOGOUTPUT      *PND
 Verboso  . . . . . . . . . . . . VERBOSE        N
```

```
                PASERIE Clona Libreria  V1R1M0 (LIBCLONE)

 Immettere le scelte e premere Invio.

 Libreria di sorgenti . . . . . . SRCLIB
 Directory del progetto . . . . . LOCAL_PATH     *SRCLIB

                          Parametri aggiuntivi

 Opzione di sviluppo  . . . . . . DEVOPT         N
 Emissione registrazione lavoro   LOGOUTPUT      *PND
 Verboso  . . . . . . . . . . . . VERBOSE        N
```

On a system based in Germany the commands will be compiled from localized source files:





On a system based in France the commands will be compiled from localized source files:

```
                  PASERIE Installateur    V1R1M1 (INSTALL)

 Immettere le scelte e premere Invio.

 Propriétaire du dépôt GitHub . . REPO_OWNER   >
_
 Dépôt  . . . . . . . . . . . . . REPOSITORY   >
 Token d'accès personnel GitHub   YOURGITPAT

 Bibliothèque cible . . . . . . . TGTLIB         *REPOSITORY
 Version cible  . . . . . . . . . TGTRLS         *CURRENT

                           Parametri aggiuntivi

 Option de développement  . . . . DEVOPT         N
 Sortie du journal de travail . . LOGOUTPUT      *PND
 Loquace  . . . . . . . . . . . . VERBOSE        N
```

```
                  PASERIE Installateur local (INSTALLOC)

 Immettere le scelte e premere Invio.

 Répertoire du projet . . . . . . LOCAL_PATH
_____
_____
 Bibliothèque cible . . . . . . . TGTLIB         *LOCAL_PATH
 Version cible  . . . . . . . . . TGTRLS         *CURRENT

                           Parametri aggiuntivi

 Option de développement  . . . . DEVOPT         N
 Sortie du journal de travail . . LOGOUTPUT      *PND
 Loquace  . . . . . . . . . . . . VERBOSE        N
```

```
                  PASERIE Clonage bibliothèque (LIBCLONE)

 Immettere le scelte e premere Invio.

 Bibliothèque source  . . . . . . SRCLIB
 Répertoire cible du projet . . . LOCAL_PATH     *SRCLIB
_____
_____
                           Parametri aggiuntivi

 Option de développement  . . . . DEVOPT         N
 Sortie du journal de travail . . LOGOUTPUT      *PND
 Loquace  . . . . . . . . . . . . VERBOSE        N
```

INVOKING PASERIE/INSTALL FROM SQL

```
SELECT PROGRAM_NAME, OBJECT_TYPE, TEXT_DESCRIPTION, CREATE_TIMESTAMP
 FROM QSYS2.PROGRAM_INFO WHERE PROGRAM_LIBRARY = 'PASERIE';
CALL QSYS2.QCMDEXC('PASERIE/INSTALL REPO_OWNER(AndreaRibuoli)
REPOSITORY(PASERIE)');
SELECT PROGRAM_NAME, OBJECT_TYPE, TEXT_DESCRIPTION, CREATE_TIMESTAMP
 FROM QSYS2.PROGRAM_INFO WHERE PROGRAM_LIBRARY = 'PASERIE'
```

Program Name PROGRAM_NAME	Object Type OBJECT_TYPE	Text Description TEXT_DESCRIPTION	Create Timestamp CREATE_TIMESTAMP
GETPAT	*PGM	Retrieve Personal Access Token	2025-06-20 20:01:52
GHINSTALL	*PGM	PASERIE installer (1/10)	2025-06-20 20:01:53
INSTALL	*PGM	PASERIE installer (2/10)	2025-06-20 20:01:53
INSTALL_L	*PGM	PASERIE installer (3/10)	2025-06-20 20:01:53
INSTALLOC	*PGM	PASERIE installer (4/10)	2025-06-20 20:01:54
LIBCLONE	*PGM	PASERIE installer (5/10)	2025-06-20 20:01:54
LIBCLONE_B	*PGM	PASERIE installer (6/10)	2025-06-20 20:01:54
LIBCURL	*SRVPGM	PASERIE installer (7/10)	2025-06-20 20:01:53

Program Name PROGRAM_NAME	Object Type OBJECT_TYPE	Text Description TEXT_DESCRIPTION	Create Timestamp CREATE_TIMESTAMP
GETPAT	*PGM	Retrieve Personal Access Token	2025-06-29 09:09:53
GHINSTALL	*PGM	PASERIE installer (1/10)	2025-06-29 09:09:54
INSTALL	*PGM	PASERIE installer (2/10)	2025-06-29 09:09:54
INSTALL_L	*PGM	PASERIE installer (3/10)	2025-06-29 09:09:54
INSTALLOC	*PGM	PASERIE installer (4/10)	2025-06-29 09:09:55
LIBCLONE	*PGM	PASERIE installer (5/10)	2025-06-29 09:09:55
LIBCLONE_B	*PGM	PASERIE installer (6/10)	2025-06-29 09:09:55
LIBCURL	*SRVPGM	PASERIE installer (7/10)	2025-06-29 09:09:54

HINTS FOR DEVELOPERS

The minimum provision to enable `PASERIE/INSTALL` handling your "native" IBM i GitHub repository is:

- creating a file named `GUIDANCE.TXT` in the root of the repository and
- creating a directory named `QCLSRC` and a `QCLSRC/BUILD.CLLE` ILE CL source

The installer will use the token passed with **YOURGITPDA** (*GitHub personal access token*) to access GitHub APIs and download `GUIDANCE.TXT` in memory. The content is a list of member files that will be created in the `QTEMP` of the batch job. Once all files are transfered the job will attempt the compilation of QTEMP/QCLSRC(BUILD) member file into QTEMP/BUILD *PGM. If successful, it will pass control to your build procedure.

The expected input parameters of a well-behaving `QCLSRC/BUILD.CLLE` are the following (in this order):

```
DCL VAR(&DEVOPT) TYPE(*CHAR) LEN(1)
DCL VAR(&TGTRLS) TYPE(*CHAR) LEN(10)
DCL VAR(&TGTLIB) TYPE(*CHAR) LEN(10)
```

that default to `'N'`, `'*CURRENT'`, and `'*PACKAGEN'` if not set in `PASERIE/INSTALL`, or `PASERIE/INSTALLOC`, corresponding parameters.

The `PASERIE/LIBCLONE` utility generates a directory with all the required PASERIE-related objects. It also introduces a dependency on the `TMKMAKE` utility (from `QUSRTOOL` library). I have re-packaged it for a plain installation with `PASERIE/INSTALL` (please contact me if you need help in installing it: `andrea.ribuoli@yahoo.com`)

HANDS ON

JUMP-START

Let us take confidence with `PASERIE/LIBCLONE`.

First we create a new native library named **SIMPLE**:

```
CRTLIB LIB(SIMPLE)
```

Now we create a source file named **QCLSRC** with a member named **GREETINGS**:

```
CRTSRCPF FILE(SIMPLE/QCLSRC)
         MBR(GREETINGS)
         TEXT('Help me understand PASERIE tools')
```

Let us assign the `CLLE` SEU-type to our member file:

```
CHGPFM FILE(SIMPLE/QCLSRC) MBR(GREETINGS) SRCTYPE(CLLE)
```

Let us edit the source file:

```
EDTF FILE(SIMPLE/QCLSRC) MBR(GREETINGS)
```

and enter a simple CL source like:

```
Edit File: SIMPLE/QCLSRC(GREETINGS)
Record :      1   of       3 by  10
Control :

CMD ..+....2....+....3....+....4....+....5....+....6....
     **************Beginning of data***************
___  PGM
___  SNDPGMMSG MSG('Your first use of PASERIE/LIBCLONE')
___  ENDPGM
     **************End of Data*********************
```

Now we issue the following command:

```
PASERIE/LIBCLONE SRCLIB(SIMPLE)
```

We should receive:

```
 Selection or command
 ===>

 F3=Exit   F4=Prompt
 F23=Set initial menu
 LIBCLONE_B completed.
```

Now let us run `WRKLNK OBJ(SIMPLE)` and use option `5` to enter the directory. We should find:

```
Opt   Object link            Type     Attribute    Text
      GUIDANCE.TXT           STMF
      QCLSRC                 DIR
      QMAKSRC                DIR
```

The content of `GUIDANCE.TXT` will be:

```
 ************Beginning of data**************
QCLSRC    GREETINGS CLLE      Help me understand PASERIE tools
QCLSRC    BUILD     CLLE      BUILD CLLE auto-generated
QMAKSRC   BUILD     TXT       BUILD Makefile auto-generated
************End of Data*********************
```

Inside `QCLSRC` directory you will find two source members:

```
Opt   Object link            Type
      BUILD.CLLE             STMF
      GREETINGS.CLLE         STMF
```

And there is also a `QMAKSRC` with a `BUILD` member.

Assuming you have a `TMKMAKE` library with a working `TMKMAKE` command you will be able to run successfully:

`PASERIE/INSTALLOC LOCAL_PATH(SIMPLE)`

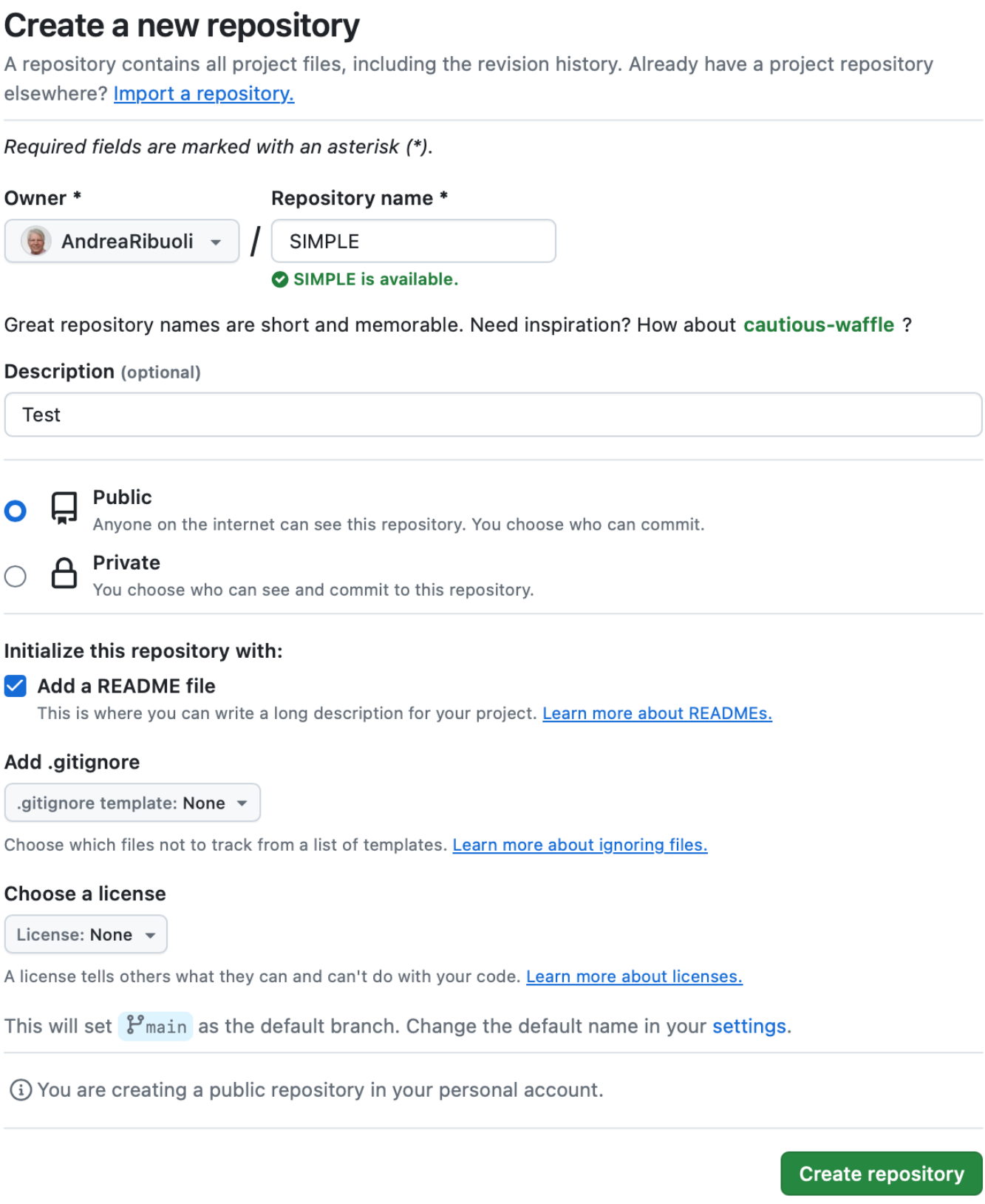
Now issuing `CALL PGM(SIMPLE/GREETINGS)` we will get:

```
Selection or command
===>

F3=Exit   F4=Prompt   F9=Retrieve
F23=Set initial menu
Your first use of PASERIE/LIBCLONE
```

RELEASE ON GitHub

Now let us suppose we want to proceed with our development tracking any future change we will operate on our source code. Also let us assume we want to adopt **git** and **GitHub**.

You should have a GitHub account and you will create an empty repository named **SIMPLE**:



Now you need to access your IBM i home directory from an SSH terminal session.

Having `git` available in our **PATH** environment variable, we will issue the following commands (you will replace *AndreaRibuoli* with your actual GitHub user profile):

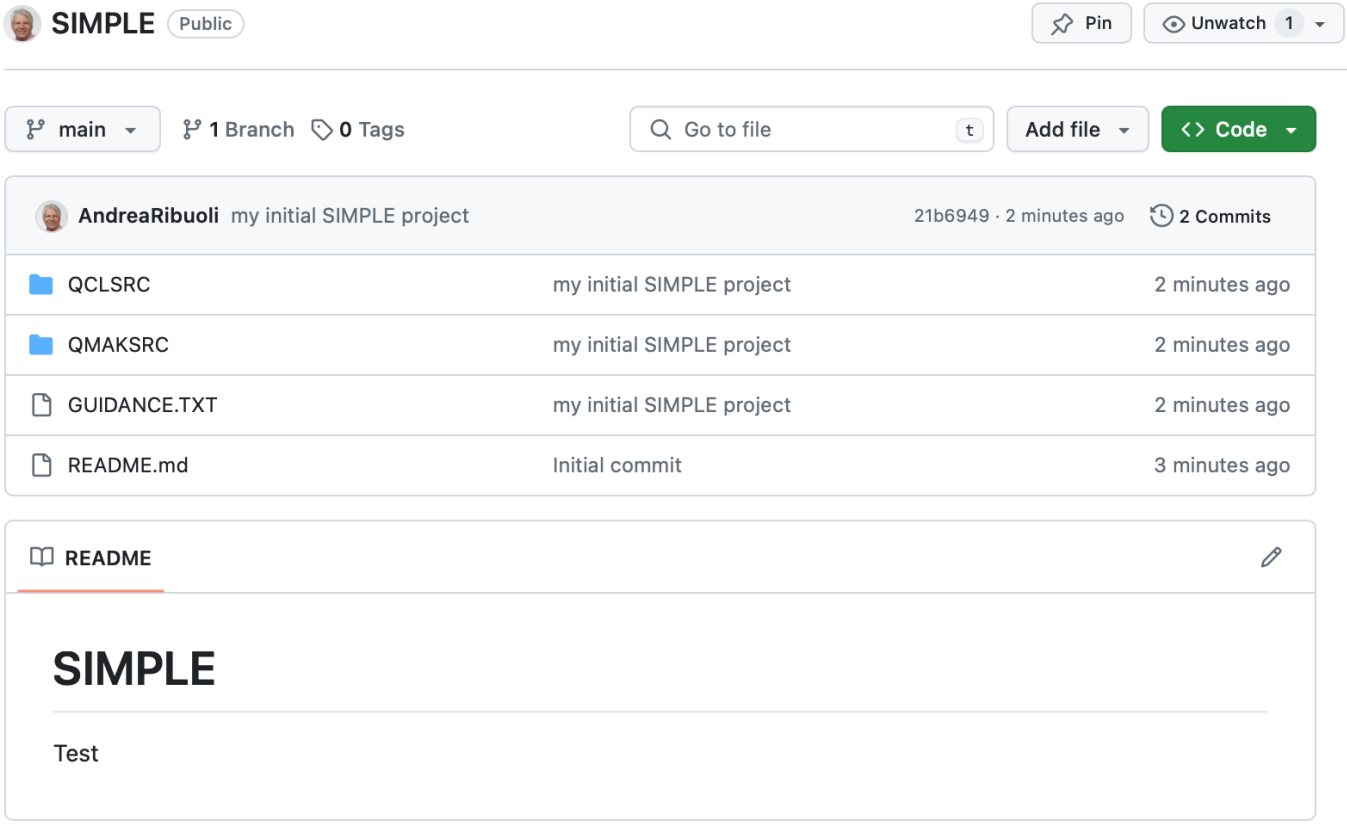
```
cd SIMPLE
git init
git branch -M main
git remote add origin https://github.com/AndreaRibuoli/SIMPLE.git
git pull origin main --allow-unrelated-histories
git add .
git commit -m 'my initial SIMPLE project'
git push --set-upstream origin main
```

During the final *push* you will be required to enter **Username** and corresponding **Password**.

In my case:

```
Username for 'https://github.com':
Password for 'https://AndreaRibuoli@github.com':
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 4 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (8/8), 1.49 KiB | 381.00 KiB/s, done.
Total 8 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/AndreaRibuoli/SIMPLE.git
   9c6ed28..30ed311  main -> main
branch 'main' set up to track 'origin/main'.
```

You will find your repository updated on GitHub:


SIMPLE
Public
Pin
Unwatch 1
main
1 Branch
0 Tags
Go to file
t
Add file
Code
AndreaRibuoli my initial SIMPLE project
21b6949 · 2 minutes ago
2 Commits
QCLSRC my initial SIMPLE project 2 minutes ago
QMAKSRC my initial SIMPLE project 2 minutes ago
GUIDANCE.TXT my initial SIMPLE project 2 minutes ago
README.md Initial commit 3 minutes ago
README
SIMPLE
Test

DISTRIBUTE

Everything is ready to install on a different IBM i system where PASERIE has been already installed (again, replace *AndreaRibuoli* with your GitHub username):

```
PASERIE/INSTALL REPO_OWNER(AndreaRibuoli)
                REPOSITORY(SIMPLE)
                YOURGITPAT('ghp_your__40__bytes_long__personal_token')
```

Rather than passing your GitHub token you can adopt the default `*GETPAT`. This will call PASERIE/GETPAT.

You should use `RTVCLSRC` to extract the CLLE source code:

```
     PGM PARM(&GITTOKEN)
     DCL VAR(&GITTOKEN) TYPE(*CHAR) LEN(40)
     RTVDTAARA DTAARA(GITTOKEN (1 40)) RTNVAR(&GITTOKEN)
     ENDPGM
```

If you are fine in using it **as-is** store your token in the **GITTOKEN** data area:

```
CRTDTAARA DTAARA(GITTOKEN) TYPE(*CHAR) LEN(40)
          VALUE('ghp_your__40__bytes_long__personal_token')
```

This will enable you to simply issue:

```
PASERIE/INSTALL REPO_OWNER(AndreaRibuoli) REPOSITORY(SIMPLE)
```

CURRENTLY SUPPORTED VERSIONS

PASERIE currently supports **IBM i PASE** from **6.1** to *7.6* but I am working on extending the coverage even to IBM i *5.4* to facilitate reuse of code originally developed on very old versions of the operating system.

IBM i PASE	AIX		INSTALL	INSTALLOC	LIBCLONE
7.6	7.3	TL1	yes	yes	yes
7.5	7.2	TL5	yes	yes	yes
7.4		TL2	yes	yes	yes
7.3	7.1	TL4	yes	yes	yes
7.2		TL1	yes	yes	yes
7.1	6.1	TL2	yes	yes	yes
6.1	5.3	TL6	yes	yes	yes
5.4		ML3		yes	yes

- **TR** *Technology Refresh (IBM i)*
- **TL** *Technology Level (AIX)*
- **ML** *Modification Level (AIX)*

Note: Starting in 2006, as part of the new *AIX 5L Service Strategy*, **ML**s were replaced by **TL**s

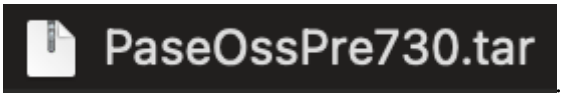
INSTALLATION WITHOUT bash OR git OR curl

If you do not have **bash**, **git** or **curl** installed in your *PASE* environment it is possible you are still using an IBM i old version.

The following steps support installing PASERIE in IBM i **6.1**, **7.1** and **7.2**.

By means of a PC connected to the Internet, select the follwing URL and download the linked item:

https://www.andrearibuoli.it

You will find the tar file in the *Download* folder 

Now access the following link and save the *zip* file of the GitHub PASERIE repository:

https://github.com

Untar and unzip the two folders and transfer them to your IBM i home directory.

Connect via a 5250 emulator using your user profile.

From `CALL QP2TERM` you will change directory into the repository copy and run the installer like this:

```
cd PASERIE
sh ./bootstrap.sh
```

After exiting from the QP2TERM session you should have **PASERIE** utilities ready for use.