Trabajo Práctico 1 - Git Básico

1- Objetivos de Aprendizaje

- Utilizar herramientas de control de configuración de software
- Familiarizarse con los comandos más utilizados
- Configurar el repositorio principal de cada alumno para la materia

2- Unidad temática que incluye este trabajo práctico

Este trabajo práctico corresponde a la unidad Nº: 1

3- Consignas a desarrollar en el trabajo práctico:

- Los ejercicios representan casos concretos y rutinarios en uso de este tipo de herramientas
- En los puntos donde corresponda, proveer los comandos de git necesarios para llevar a cabo el punto.
- Cuando se especifique alguna descripción, realizarlo de la manera más clara posible y con ejemplos cuando sea necesario.

4- Desarrollo:

1- Instalar Git

Los pasos y referencias asumen el uso del sistema operativo Windows, en caso otros SO seguir recomendaciones específicas.

- Bajar e instalar el cliente git. Por ejemplo, https://git-for-windows.github.io/
- Bajar e instalar un cliente visual. Por ejemplo, TortoiseGit para Windows o SourceTree para Windows/MAC:
  - https://tortoisegit.org/
  - https://www.sourcetreeapp.com/
  - Lista completa: https://git-scm.com/downloads/guis/

2- Crear un repositorio local y agregar archivos

- Crear un repositorio local en un nuevo directorio.

```
Microsoft Windows [Version 10.0.19045.4291]
(c) Microsoft Corporation. All rights reserved.

C:\Users\franc>cd Desktop

C:\Users\franc\Desktop>mkdir MiNuevoRepo

C:\Users\franc\Desktop>cd MiNuevoRepo

C:\Users\franc\Desktop\MiNuevoRepo>git init
Initialized empty Git repository in C:/Users/franc/Desktop/MiNuevoRepo/.git/
```

- Agregar un archivo Readme.md, agregar algunas líneas con texto a dicho archivo.

```
C:\Users\franc\Desktop\MiNuevoRepo>echo "# Mi Nuevo Repositorio" > README.md

C:\Users\franc\Desktop\MiNuevoRepo>echo "pruebaaa." >> README.md

C:\Users\franc\Desktop\MiNuevoRepo>_
```

- Crear un commit y proveer un mensaje descriptivo.

```
C:\Users\franc\Desktop\MiNuevoRepo>git add README.md

C:\Users\franc\Desktop\MiNuevoRepo>git commit -m "Add README.md with initial content"
[master (root-commit) fe72da1] Add README.md with initial content
 1 file changed, 2 insertions(+)
 create mode 100644 README.md
```
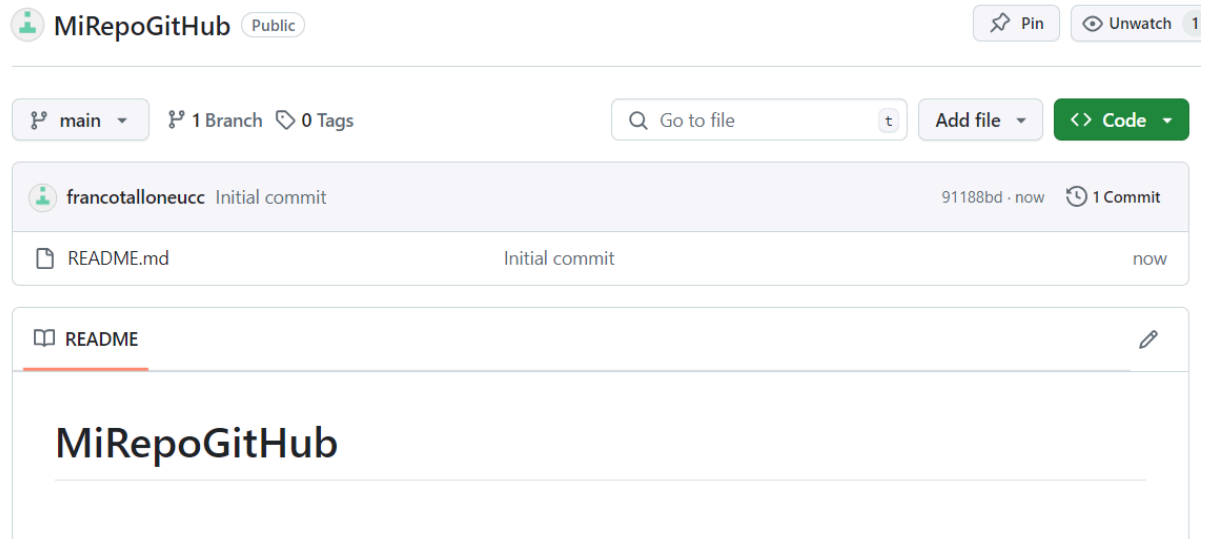
3- Configuración del Editor Predeterminado

- Instalar Notepad ++ para Windows o TextMate para Mac OS, colocarle un alias y configurarlo como editor predeterminado

4- Creación de Repos 01 -> Crearlo en GitHub, clonarlo localmente y subir cambios

- Crear una cuenta en https://github.com
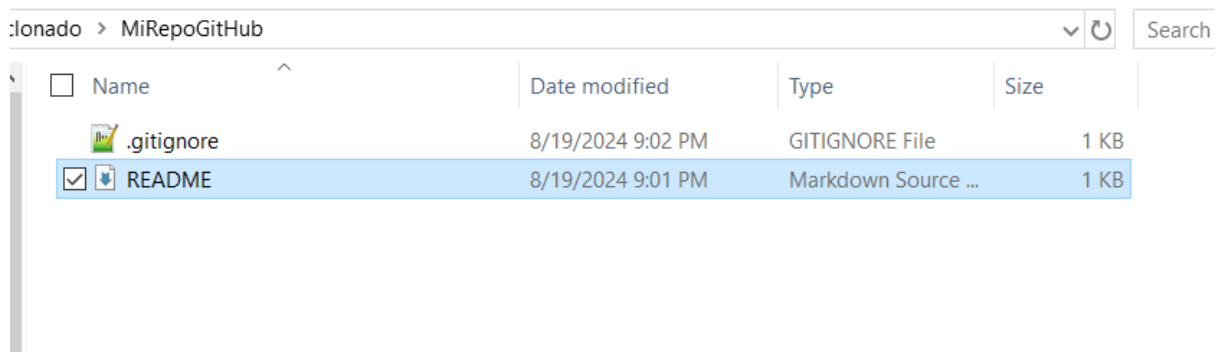- Crear un nuevo repositorio en dicha página con el Readme.md por defecto

- Clonar el repo remoto en un nuevo directorio local

```
C:\Users\franc\Desktop\clonado>git clone https://github.com/francotalloneucc/MiRepoGitHub.git
Cloning into 'MiRepoGitHub'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.

C:\Users\franc\Desktop\clonado>_
```

- Editar archivo Readme.md agregando algunas lineas de texto
- Editar (o crear si no existe) el archivo .gitignore agregando los archivos *.bak

- Crear un commit y porveer un mensaje descriptivo

```
C:\Users\franc\Desktop\clonado\MiRepoGitHub>git add .

C:\Users\franc\Desktop\clonado\MiRepoGitHub>git commit -m "Edit README.md and add .gitignore to ignore .bak files"
[main 5b448e8] Edit README.md and add .gitignore to ignore .bak files
 2 files changed, 5 insertions(+), 1 deletion(-)
 create mode 100644 .gitignore
```

- Intentar un push al repo remoto

```
C:\Users\franc\Desktop\clonado\MiRepoGitHub>git push origin main
info: please complete authentication in your browser...
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (4/4), 359 bytes | 359.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/francotalloneucc/MiRepoGitHub.git
   91188bd..5b448e8  main -> main
```

- En caso de ser necesario configurar las claves SSH requeridas y reintentar el push.

5- Creación de Repos 02-> Crearlo localmente y subirlo a GitHub
- Crear un repo local
- Agregar archivo Readme.md con algunas lineas de texto

```
C:\Users\franc>cd Desktop

C:\Users\franc\Desktop>mkdir MiRepoLocal

C:\Users\franc\Desktop>cd MiRepoLocal

C:\Users\franc\Desktop\MiRepoLocal>git init
Initialized empty Git repository in C:/Users/franc/Desktop/MiRepoLocal/.git/

C:\Users\franc\Desktop\MiRepoLocal>echo "# Mi Repositorio Local" > README.md

C:\Users\franc\Desktop\MiRepoLocal>echo "local." >> README.md

C:\Users\franc\Desktop\MiRepoLocal>_
```
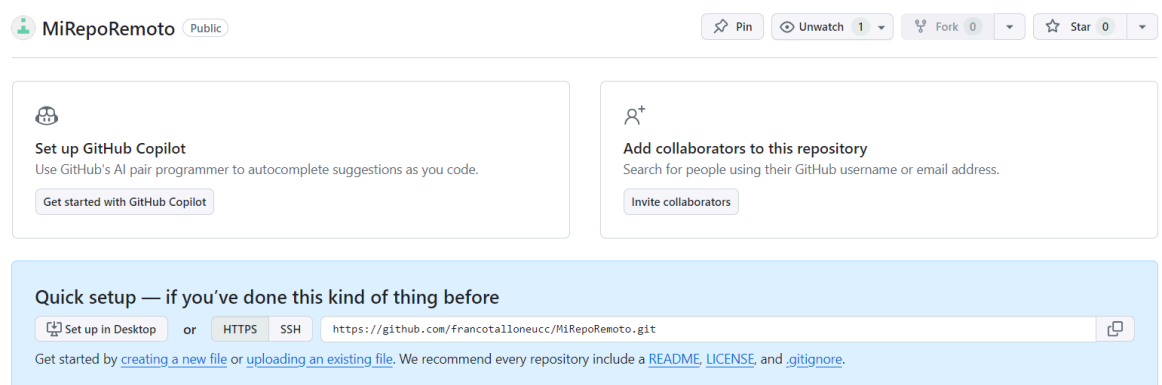
- Crear repo remoto en GitHub

- Asociar repo local con remoto

```
C:\Users\franc\Desktop\MiRepoLocal>git remote add origin https://github.com/francotalloneucc/MiRepoRemoto.git

C:\Users\franc\Desktop\MiRepoLocal>
```

- Crear archivo .gitignore

```
C:\Users\franc\Desktop\MiRepoLocal>echo "*.bak" > .gitignore

C:\Users\franc\Desktop\MiRepoLocal>
```

- Crear un commit y proveer un mensaje descriptivo
- Subir cambios.

```
C:\Users\franc\Desktop\MiRepoLocal>git add .

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Initial commit with README.md and .gitignore"
[master (root-commit) 6711f14] Initial commit with README.md and .gitignore
 2 files changed, 3 insertions(+)
 create mode 100644 .gitignore
 create mode 100644 README.md

C:\Users\franc\Desktop\MiRepoLocal>git push -u origin master
info: please complete authentication in your browser...
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (4/4), 319 bytes | 319.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/francotalloneucc/MiRepoRemoto.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

6- Ramas

- Crear una nueva rama
- Cambiarse a esa rama

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout -b feature-branch
Switched to a new branch 'feature-branch'
```

- Hacer un cambio en el archivo Readme.md y hacer commit

```
C: > Users > franc > Desktop > MiRepoLocal > ⓘ README.md
  1    "# Mi Repositorio Local"
  2    "local."
  3
  4    CAMBIO REALIZADO EN BRANCH
  5
```

```
C:\Users\franc\Desktop\MiRepoLocal>git add README.md

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Add a new section to README.md in feature-branch"
[feature-branch 68d7e1f] Add a new section to README.md in feature-branch
 1 file changed, 2 insertions(+)
```

-

- Revisar la diferencia entre ramas

```
C:\Users\franc\Desktop\MiRepoLocal>git diff master..feature-branch
diff --git a/README.md b/README.md
index c39ec66..2cb89df 100644
--- a/README.md
+++ b/README.md
@@ -1,2 +1,4 @@
 "# Mi Repositorio Local"
 "local."
+
+CAMBIO REALIZADO EN BRANCH
```

7- Merges

- Hacer un merge FF

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.

C:\Users\franc\Desktop\MiRepoLocal>git merge feature-branch
Updating 6711f14..68d7e1f
Fast-forward
 README.md | 2 ++
 1 file changed, 2 insertions(+)
```

- Borrar la rama creada

```
C:\Users\franc\Desktop\MiRepoLocal>git branch -d feature-branch
Deleted branch feature-branch (was 68d7e1f).
```

- Ver el log de commits

```
C:\Users\franc\Desktop\MiRepoLocal>git log --oneline --graph --all
* 68d7e1f (HEAD -> master) Add a new section to README.md in feature-branch
* 6711f14 (origin/master) Initial commit with README.md and .gitignore
```

- Repetir el ejercicio 6 para poder hacer un merge con No-FF

```
C:\Users\franc\Desktop\MiRepoLocal>git add README.md

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Add another section to README.md in another-feature-branch"
[another-feature-branch eb69cdd] Add another section to README.md in another-feature-branch
 1 file changed, 1 insertion(+)
```

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

C:\Users\franc\Desktop\MiRepoLocal>git merge --no-ff another-feature-branch -m "Merge another-feature-branch with No-FF"

Merge made by the 'ort' strategy.
 README.md | 1 +
 1 file changed, 1 insertion(+)

C:\Users\franc\Desktop\MiRepoLocal>git log --oneline --graph --all
*   ae51300 (HEAD -> master) Merge another-feature-branch with No-FF
|\
| * eb69cdd (another-feature-branch) Add another section to README.md in another-feature-branch
|/
* 68d7e1f Add a new section to README.md in feature-branch
* 6711f14 (origin/master) Initial commit with README.md and .gitignore
```
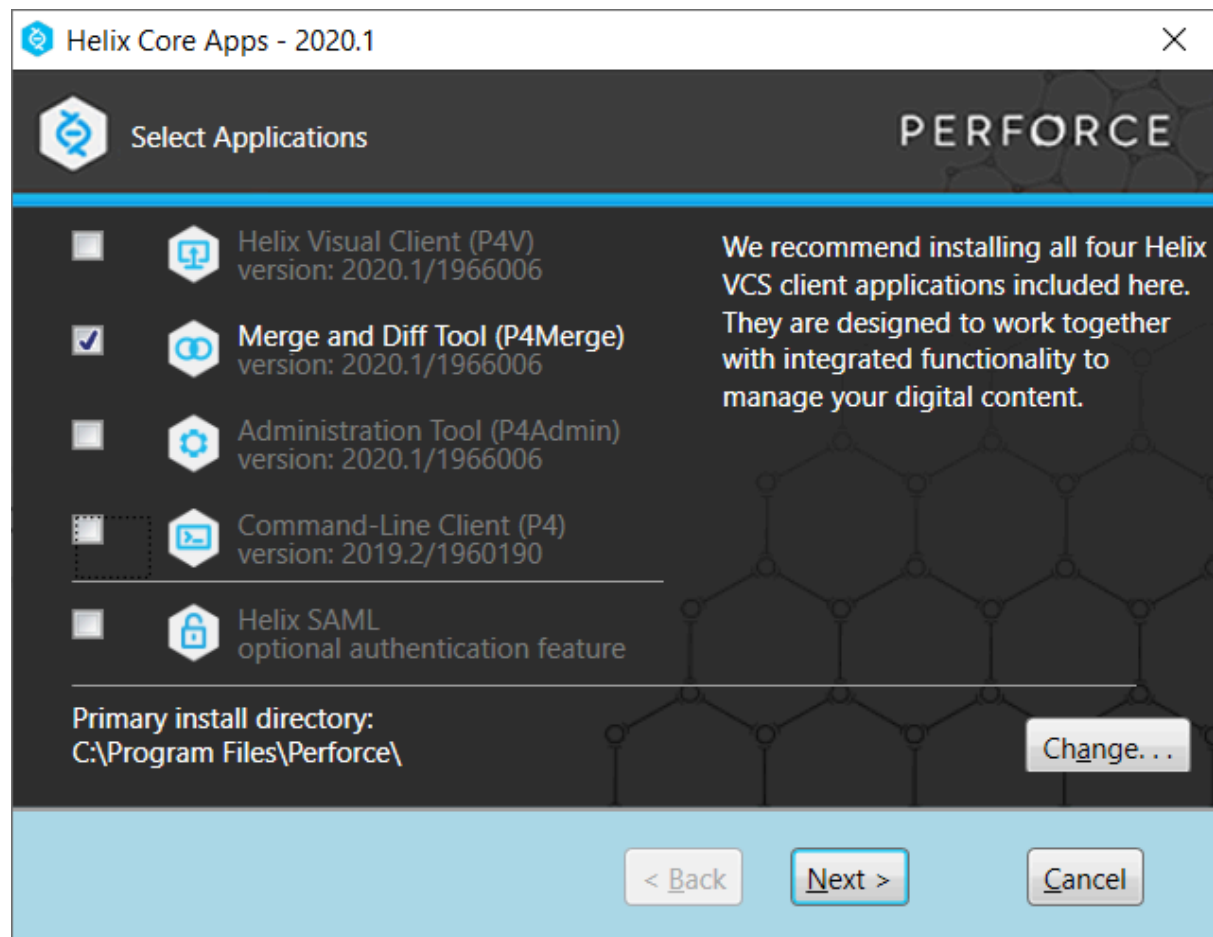
8- Resolución de Conflictos

- Instalar alguna herramienta de comparación. Idealmente una 3-Way:
  - P4Merge https://www.perforce.com/downloads/helix-visual-client-p4v:

  - Se puede omitir registración. Instalar solo opción Merge and DiffTool.
- ByondCompare trial version https://www.scootersoftware.com/download.php
  - Configurar Tortoise/SourceTree para soportar esta herramienta.
  - https://www.scootersoftware.com/support.php?zz=kb_vcs
  - https://medium.com/@robinvanderknaap/using-p4merge-with-tortoisegit-87c1714eb5e2
- Crear una nueva rama conflictBranch

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout -b conflictBranch
Switched to a new branch 'conflictBranch'
```

- Realizar una modificación en la linea 1 del Readme.md desde main y commitear

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 3 commits.
  (use "git push" to publish your local commits)

C:\Users\franc\Desktop\MiRepoLocal>git add README.md

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Modify line 1 of README.md from master"
[master 9c0ebd4] Modify line 1 of README.md from master
 1 file changed, 1 insertion(+)
```
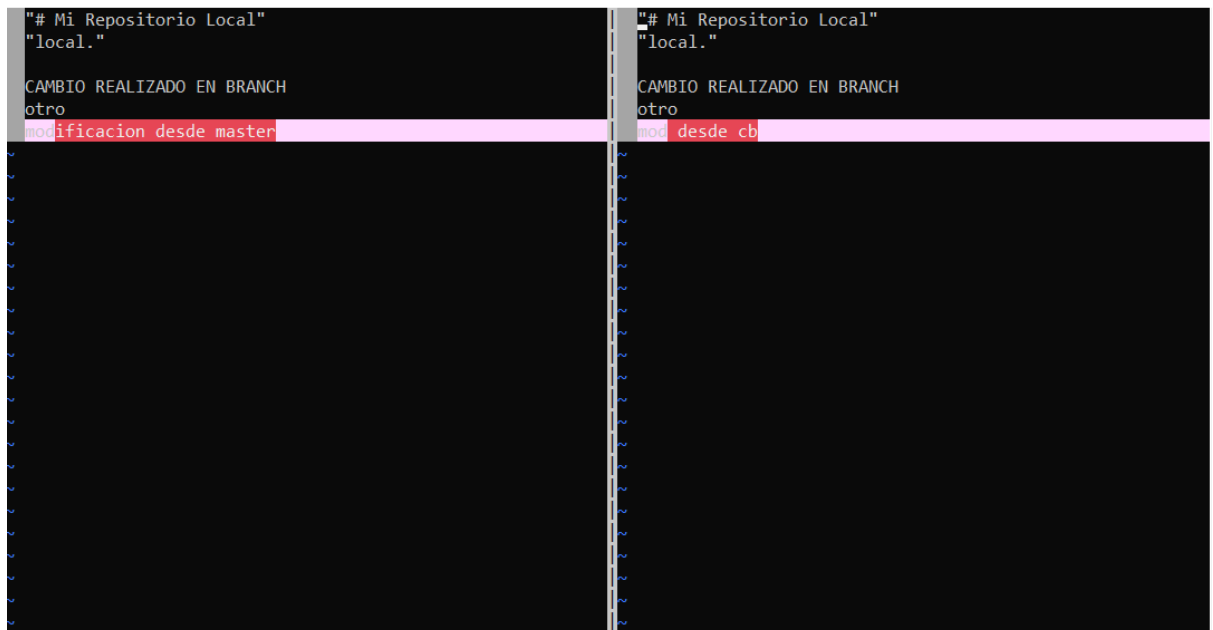
- En la conflictBranch modificar la misma línea del Readme.md y commitear

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout conflictBranch
Switched to branch 'conflictBranch'

C:\Users\franc\Desktop\MiRepoLocal>git add README.md

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Modify line 1 of README.md from conflictBranch"
[conflictBranch 790de33] Modify line 1 of README.md from conflictBranch
 1 file changed, 1 insertion(+)
```

- Ver las diferencias con git difftool main conflictBranch

```
"# Mi Repositorio Local"              "# Mi Repositorio Local"
"local."                              "local."

CAMBIO REALIZADO EN BRANCH            CAMBIO REALIZADO EN BRANCH
otro                                  otro
modificacion desde master             mod desde cb
```

- Cambiarse a la rama main e intentar mergear con la rama conflictBranch

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 4 commits.
  (use "git push" to publish your local commits)

C:\Users\franc\Desktop\MiRepoLocal>git merge conflictBranch
Auto-merging README.md
CONFLICT (content): Merge conflict in README.md
Automatic merge failed; fix conflicts and then commit the result.

C:\Users\franc\Desktop\MiRepoLocal>git mergetool

This message is displayed because 'merge.tool' is not configured.
See 'git mergetool --tool-help' or 'git help config' for more detail
'git mergetool' will now attempt to use one of the following tools:
tortoisemerge emerge vimdiff nvimdiff
Merging:
README.md

Normal merge conflict for 'README.md':
  {local}: modified file
  {remote}: modified file
Hit return to start merge resolution tool (vimdiff):
```

- Resolver el conflicto con git mergetool

- Agregar .orig al .gitignore
- Hacer commit y push

```
C:\Users\franc\Desktop\MiRepoLocal>git add .gitignore README.md

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Resolve merge conflict between master and conflictBranch and update .
itignore"
[master 73d2c0a] Resolve merge conflict between master and conflictBranch and update .gitignore

C:\Users\franc\Desktop\MiRepoLocal>git push origin master
info: please complete authentication in your browser...
Enumerating objects: 20, done.
Counting objects: 100% (20/20), done.
Delta compression using up to 8 threads
Compressing objects: 100% (16/16), done.
Writing objects: 100% (17/17), 1.57 KiB | 1.57 MiB/s, done.
Total 17 (delta 6), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (6/6), done.
To https://github.com/francotalloneucc/MiRepoRemoto.git
   6711f14..73d2c0a  master -> master
```

9- Familiarizarse con el concepto de Pull Request

- Explicar que es un pull request.
-

  Un Pull Request es una función en plataformas de control de versiones como GitHub, GitLab, o Bitbucket, que permite a los desarrolladores notificar a otros sobre los cambios que han realizado en una rama de un repositorio. Es una solicitud para que los cambios en una rama sean revisados y, si se aprueban, fusionados en otra rama, generalmente la rama master o main.

- Crear un branch local y agregar cambios a dicho branch.

```
C:\Users\franc\Desktop\MiRepoLocal>git checkout master
Already on 'master'
Your branch is up to date with 'origin/master'.

C:\Users\franc\Desktop\MiRepoLocal>git checkout -b feature-branch
Switched to a new branch 'feature-branch'

C:\Users\franc\Desktop\MiRepoLocal>git add README.md

C:\Users\franc\Desktop\MiRepoLocal>git commit -m "Add new section to README.md in feature-branch"
[feature-branch d3cc17c] Add new section to README.md in feature-branch
 1 file changed, 5 insertions(+)
```

- Subir el cambio a dicho branch y crear un pull request.

```
C:\Users\franc\Desktop\MiRepoLocal>git push origin feature-branch
info: please complete authentication in your browser...
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 403 bytes | 403.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'feature-branch' on GitHub by visiting:
remote:      https://github.com/francotalloneucc/MiRepoRemoto/pull/new/feature-branch
remote:
To https://github.com/francotalloneucc/MiRepoRemoto.git
 * [new branch]      feature-branch -> feature-branch
```

- Completar el proceso de revisión en github y mergear el PR al branch master.

Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also compare across forks. Learn more about diff comparisons here.

⇅ | base: master ▾ | ← | ⋯ | compare: feature-branch ▾ | ⋯ | ✓ **Able to merge.** These branches can be automatically merged.

Add a title

> Add new section to README.md in feature-branch

Add a description

| Write | Preview | | H | **B** | *I* | ▤ | <> | 🔗 | ☰ | ☰ | ☑ | 📎 | @ | ⧉ | ↩ | ⬚ |

> Add your description here...

📖 Markdown is supported | 🖼 Paste, drop, or click to add files

Create pull request ▾

ⓘ Remember, contributions to this repository should follow our GitHub Community Guidelines.

Add new section to README.md in feature-branch #1

Edit | <> Code ▾

⑂ Open | francotalloneucc wants to merge 1 commit into `master` from `feature-branch` ⧉

| 💬 Conversation 0 | ⋯ Commits 1 | ☑ Checks 0 | 📄 Files changed 1 |

+5 −0 ■■■■■

francotalloneucc commented now

Owner ⋯

No description provided.

☺

⋯ Add new section to README.md in feature-branch   d3cc17c

⑂ **Require approval from specific reviewers before merging**

Add rule ✕

Rulesets ensure specific people approve pull requests before they're merged.

◉ **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.

Add a comment

Reviewers ⚙
No reviews

Assignees ⚙
No one—assign yourself

Labels ⚙
None yet

Projects ⚙
None yet

Milestone ⚙
No milestone

Development
Use Closing keywords in the description to automatically close issues

Helpful resources
GitHub Community Guidelines

Reviewers ⚙
No reviews

Still in progress? Convert to draft

Assignees ⚙
No one—assign yourself

Labels ⚙
None yet

Projects ⚙
None yet

Milestone ⚙
No milestone

Development ⚙
Successfully merging this pull request may close these issues.

None yet

Add new section to README.md in feature-branch #1

Merged francotalloneucc merged 1 commit into `master` from `feature-branch` now

💬 Conversation 0 ⚬ Commits 1 ☑ Checks 0 ± Files changed 1

francotalloneucc commented now   Owner •••

No description provided.

☺

⚬ Add new section to README.md in feature-branch   d3cc17c

francotalloneucc merged commit **cdf17f4** into `master` now   Revert

Pull request successfully merged and closed
You're all set—the `feature-branch` branch can be safely deleted.   Delete branch

10- Algunos ejercicios online
- Entrar a la página https://learngitbranching.js.org/
- Completar los ejercicios Introduction Sequence
- Opcional - Completar el resto de los ejercicios para ser un experto en Git!!!

11- Crear Repositorio de la materia
- Crear un repositorio para la materia en github. Por ejemplo ing-software-3
- Subir archivo(s) .md con los resultados e imágenes de este trabajo práctico. Puede ser en una subcarpeta trabajo-practico-01

Referencias
- https://try.github.io/
- https://github.github.com/training-kit/downloads/es_ES/github-git-cheat-sheet.pdf
- https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet