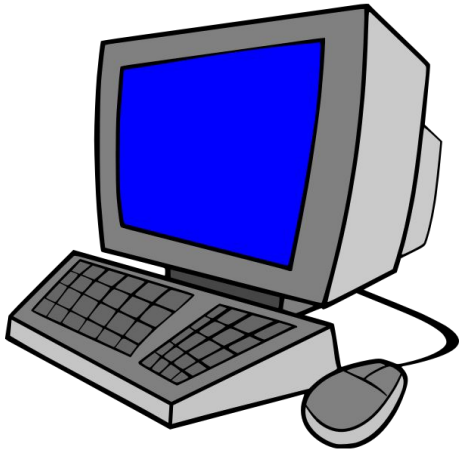
FOSS Planetary Mapping Tools and development

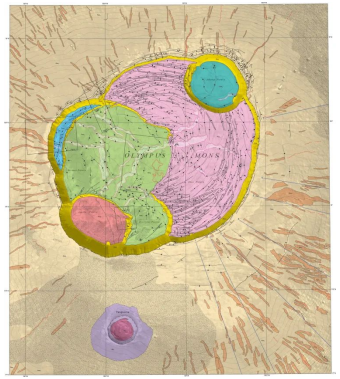
Alessandro Frigeri

Istituto Nazionale di Astrofisica (INAF)
Istituto di Astrofisica e Planetologia Spaziali (IAPS)
Roma, Italy

F O S S :
Free Open Source Software

A **Software** is a set of instructions used to operate computers and execute specific tasks.





Credits: USGS/Astro

GMAP
Geological Mapping

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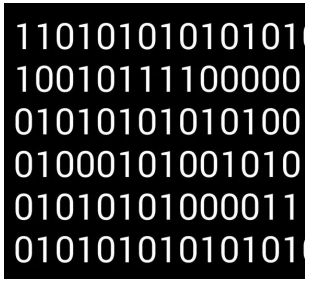
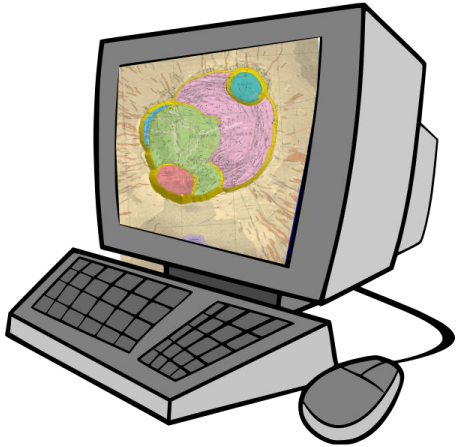
software's source code

1: OPEN THE MAP FILE
2: READ THE DATA
3: PUT COLORS ON
4: DISPLAY THE MAP
5: DO IT!

software's machine code (executable)





F O S S :
Free Open Source Software

The term FREE in FOSS deals with freedom ....

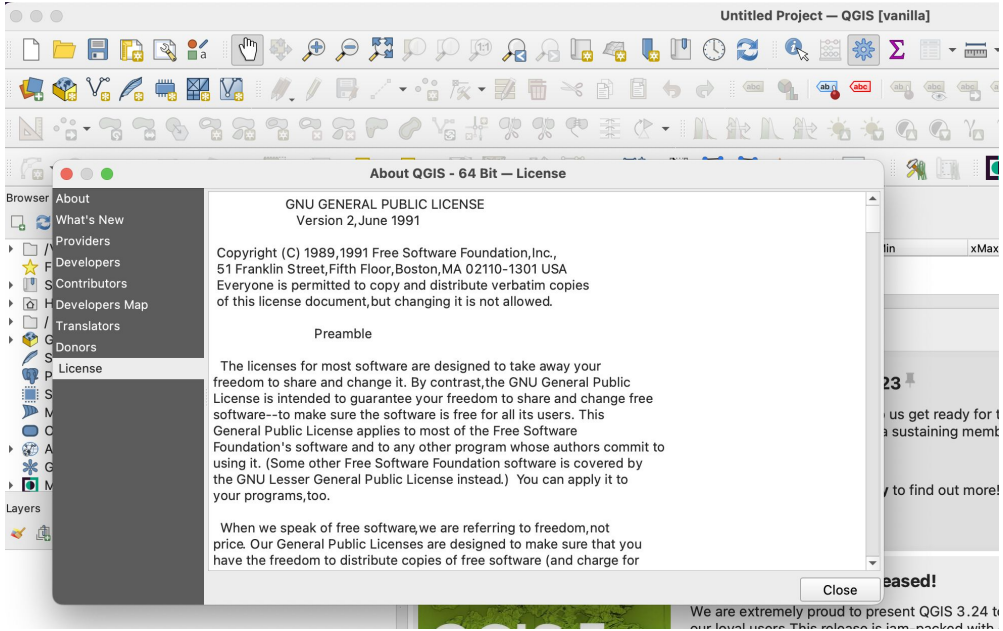
	FREE AS NO COST	FREE AS FREEDOM
English	Free	Free
Italian	gratuito	libero
French	gratis	libre
Spanish	gratis	libre
German	kostenlos	frei
Japanese	無料	大っぴら

Free open source software definition

1. The freedom to run the program in all its functionalities, for any purpose
2. The freedom to study how the program works, and change it (access to the source code)
3. The freedom to redistribute copies
4. The freedom to distribute changes (access to the source code)

Is QGIS FOSS? Check the License!

Help menu > About, or for OSX QGIS menu > About



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The Development of FOSS

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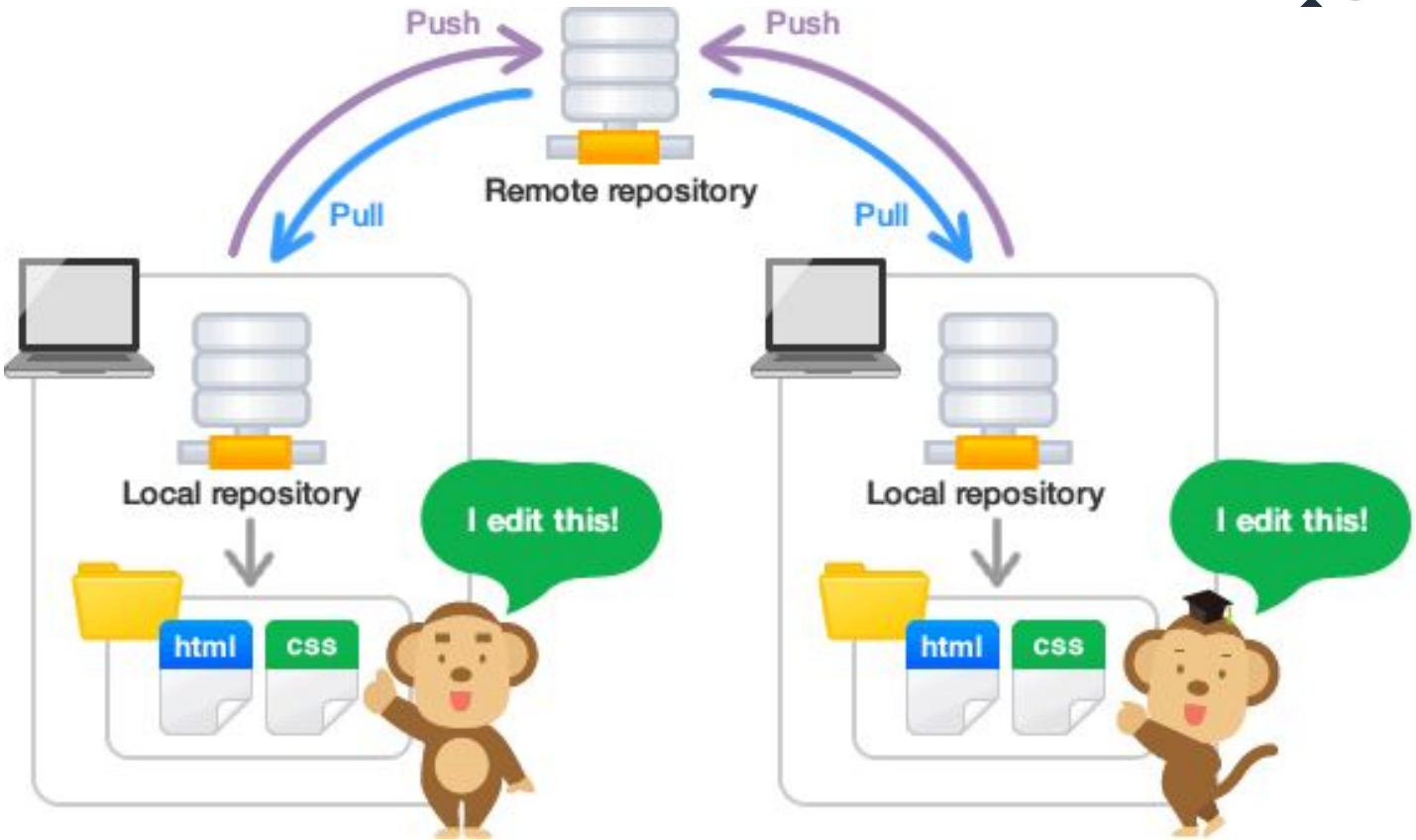
git

"git" can mean anything, depending on your mood.

https://git-scm.com/



from StatChats Git tutorial: https://kevintshoemaker.github.io/StatsChats/GIT_tutorial.html

WEB BASED DEVELOPMENT PLATFORM (BASED ON GIT)

GitHub

GitLab

- DOWNLOAD THE CODE AND COLLABORATE WITH OTHERS
- SUBMIT ISSUES AN/OR FEATURE REQUESTS
- DEVELOP NEW CODE AND SUBMIT FOR REVISION
- EXAMPLE:
  HTTPS://GITHUB.COM/EUROPLANET-GMAP/WINTER-SCHOOL-2023/

Can I contribute to FOSS in first person?

Casual User: Use it!

User: Use it, advanced features, document

Power User: observe and submit possible issues

Contributor: submitting fixes or plug-ins

Developer: fix issues, add new features

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Some Examples of Planetary mapping FOSS

Command Line Tools and Libraries

PROJ contributors (2020). PROJ coordinate transformation software library. Open Source Geospatial Foundation. URL https://proj.org/
DOI: 10.5281/zenodo.5884394

GDAL contributors (2022). Open Source Geospatial Foundation. URL https://gdal.org.
DOI: https://doi.org/10.5281/zenodo.6801315

FOSS Geographic Information Systems (GIS)

http://qgis.org

http://grass.osgeo.org

https://saga-gis.sourceforge.io/

SOME FOSS SUITES *SPECIFIC TO PLANETARY MAPPING*

NASA AMES STEREO PIPELINE (ASP): GEODESY, PHOTOGRAMMETRY, STEREO

DEVELOPMENT ON GITHUB COORDINATED BY ROSS BEYER @ NASA

INTEGRATED SOFTWARE FOR IMAGERS AND SPECTROMETERS (ISIS): PROCESSING

DEVELOPMENT ON GITHUB COORDINATED BY USGS ASTRO, FLAGSTAFF AZ

MMGIS MULTI-MISSION GEOGRAPHIC. INFORMATION SYSTEM: ONLINE MAPPING

DEVELOPMENT ON GITHUB COORDINATED BY FRED CALEF @ NASA-JPL

ORGANIZATIONS / AGENCIES PROMOTING/SUPPORTING FOSS

GMAP Geological Mapping

USGS science for a changing world

NASA

OpenPlanetary

OSGeo

... YOUR AGENCY HERE

Summary: FOSS for Planetary Mapping

1. What is a **Software**
2. The **source code** and the **machine code**
3. **Free Open Source Software (FOSS) definition** and License
4. The **development mechanism**
5. Ways of Supporting FOSS projects

Take home messages

FOSS software is everyones' and we can support it by:

- use it
- cite the software (and authors) as you do with the data
- contribute to a project:
  - contribute to documentation/translation
  - submit reports of issues in its functionalities
  - submit solution to issues
  - produce new code / fix existing one

Good luck with the Winter School!

School Q&A and Discord

Contact: alessandro.frigeri@inaf.it

PS: Please send observations on free/libre terms in different languages