PyQGIS: expanding QGIS's functionality with Python – Day 2

November 2021

Today's agenda

- Continue with Day 2 practical
  - Main deal: Processing with PyQGIS / Model Builder
  - Brief introduction to developing plugins

- Guided session going through the materials

- Separate Zoom room for those who prefer independent work

Course structure

- **Day 2: Processing and plugins**
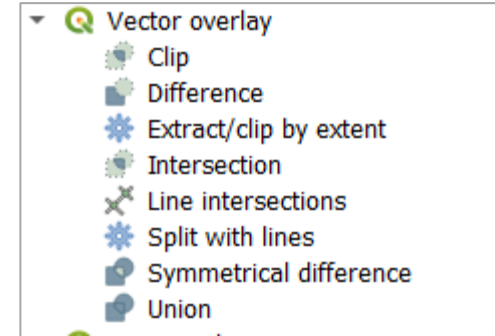
9–10:20 - Processing via PyQGIS

10:20–10:40 - BREAK

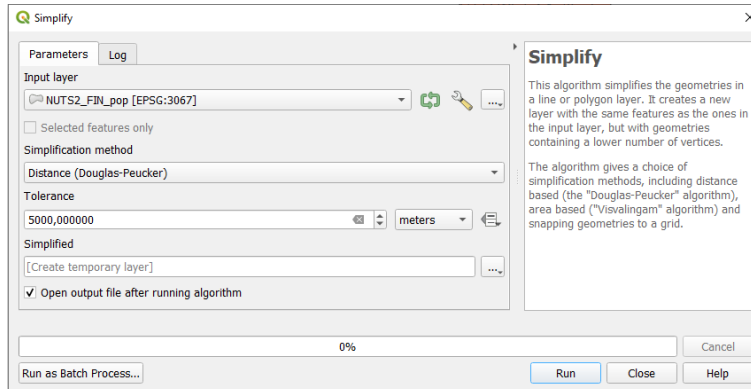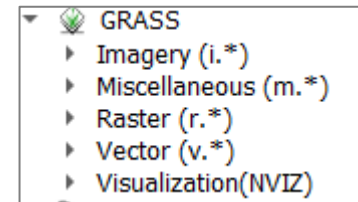10:40–12 - A look at plugin
development

Processing framework

- The processing framework is used to call various processing algorithms in QGIS
  - Native ones maintained by the core development team
  - External ones added by scripts and plugins
- Processing algorithms follow a common theme

Native

External

Processing pipelines

- Strength of processing: chaining algorithms

- Example: Find adult people living within 1 km of roads
  - Buffer > Select by location > Summarize
  - What if you want to find > 16 year olds within 1,5 km?
  - Repeat the whole thing…

- Pipelines offer
  - Easy iteration
  - Reproducibility
  - Easy to share

```
Data
  ↓
Buffer
  ↓
Select by location
  ↓
Summarize
  ↓
Output
```
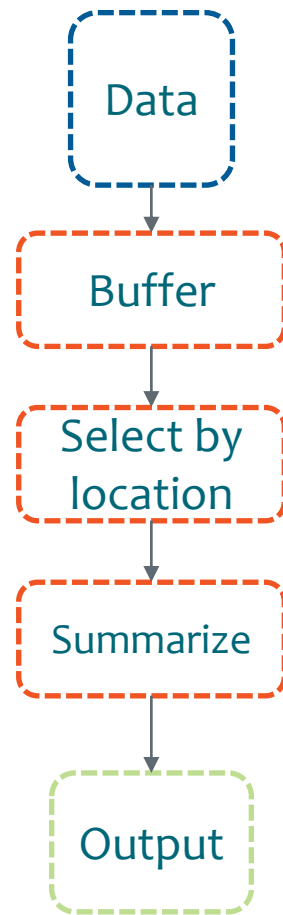
Models and PyQGIS for creating new scripts

- Processing algorithms can be called via PyQGIS
  - Chaining algs, batch processing

- Model builder allows creating new algorithms graphically
  - Drag inputs, algorithms and outputs on a plain
  - Can be exported, modified as Python scripts

Clipped heatmap from population squares
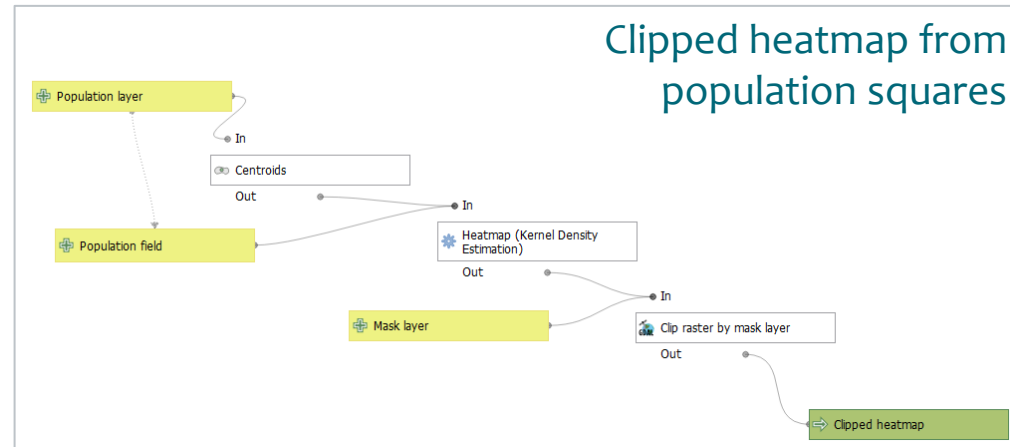
Plugins in QGIS

- Plugins extend QGIS
  - o Interaction with a new service
  - o Novel functionality

- Core and external plugins

- QGIS handles these differently than algorithms
  - o Loaded on startup
  - o Saved on a separate folder

- Can have GUI's or function otherwise within QGIS

Course practicalities

- HackMD page for a summary of course practicalities:
  https://hackmd.io/@GeospatialCSC/PyQGIS
  - You may also use it to ask questions
- Ask for help in Zoom via chat or voice
- All the course materials can be found in GitHub
  https://github.com/csc-training/pyqgis
  - Practical instructions are as .ipynb files, you may open them directly in GitHub
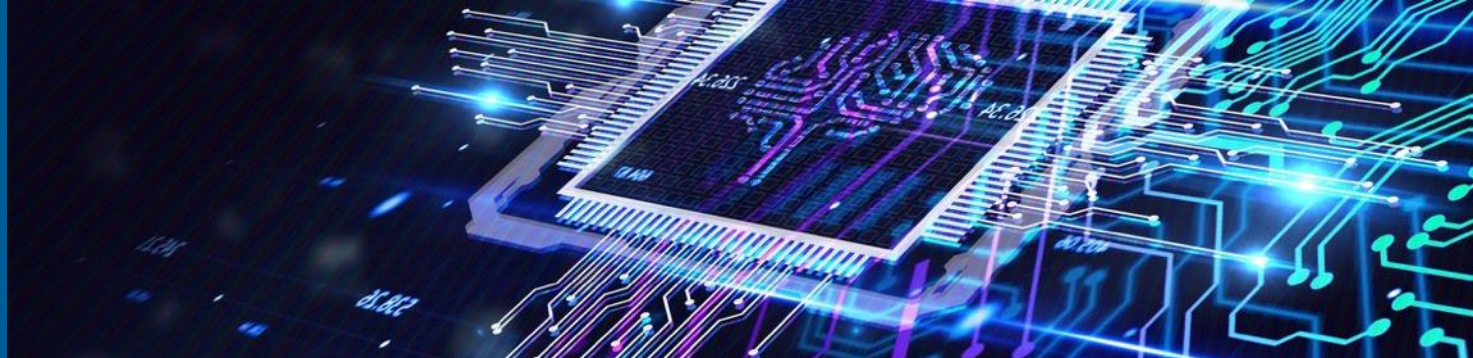
Day 1: Processing and plugins

- Objectives
  - Understand the processing framework and learn to harness it through PyQGIS
    - Effectively combining GUI and code
  - Learn about plugins, what they consist of and the basics of working with plugins

Good luck, have fun!