GENERAL ASSEMBLY

DATA SCIENCE TOOLS

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LEARNING OBJECTIVES

- Identify the data science toolkit
- Navigate Git and the Command Line
- Describe Probability vs Odds

COURSE

PRE-WORK

PRE-WORK REVIEW

- Explain the difference between variance and bias
- Use descriptive stats to understand your data

OPENING

DATA SCIENCE TOOLS

LET'S DISCUSS THE CURRENT LESSON OBEJCTIVES

- Identify the data science toolkit
- Navigate Git and the Command Line
- Describe Probability vs. Odds

TOOLS OF THE TRADE

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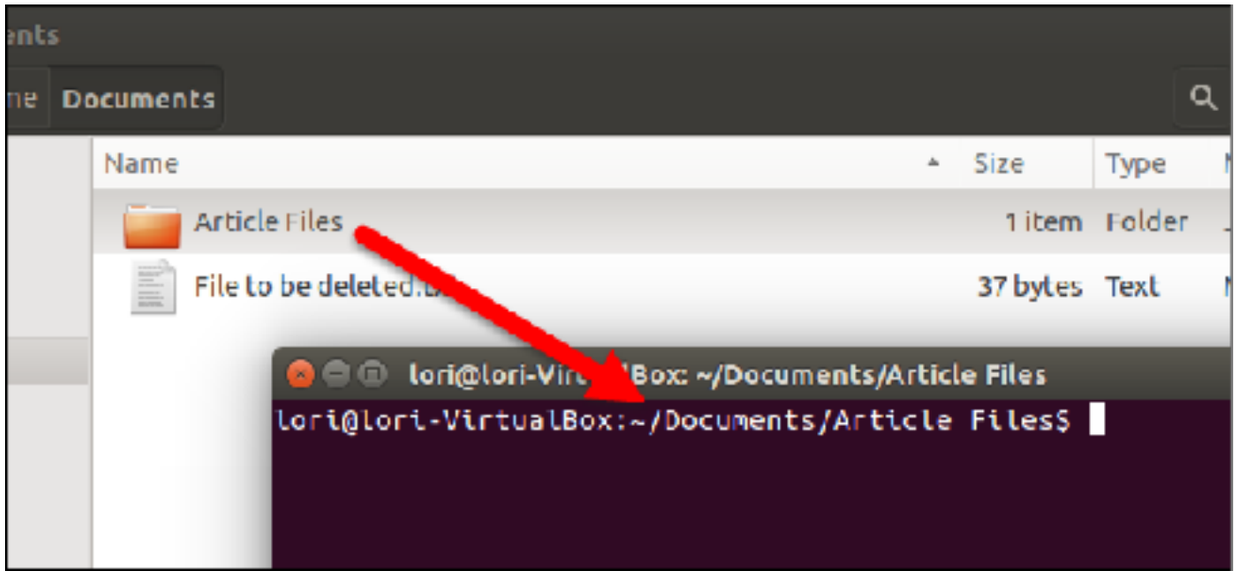
- Today we are going to review some of the tools we use in data science.
- We'll see how they fit into the wider programming environment.
- We'll start with the command line. This is your portal to your computer and the outside world.

LOCAL MACHINE

- On your local computer, you have a variety of tools at your disposal.
  - Text editor
  - Programs/tools
  - Your files
- All of these can be accessed through the terminal or through a GUI (Graphical User Interface).
- You can navigate your files through the terminal or through Finder.



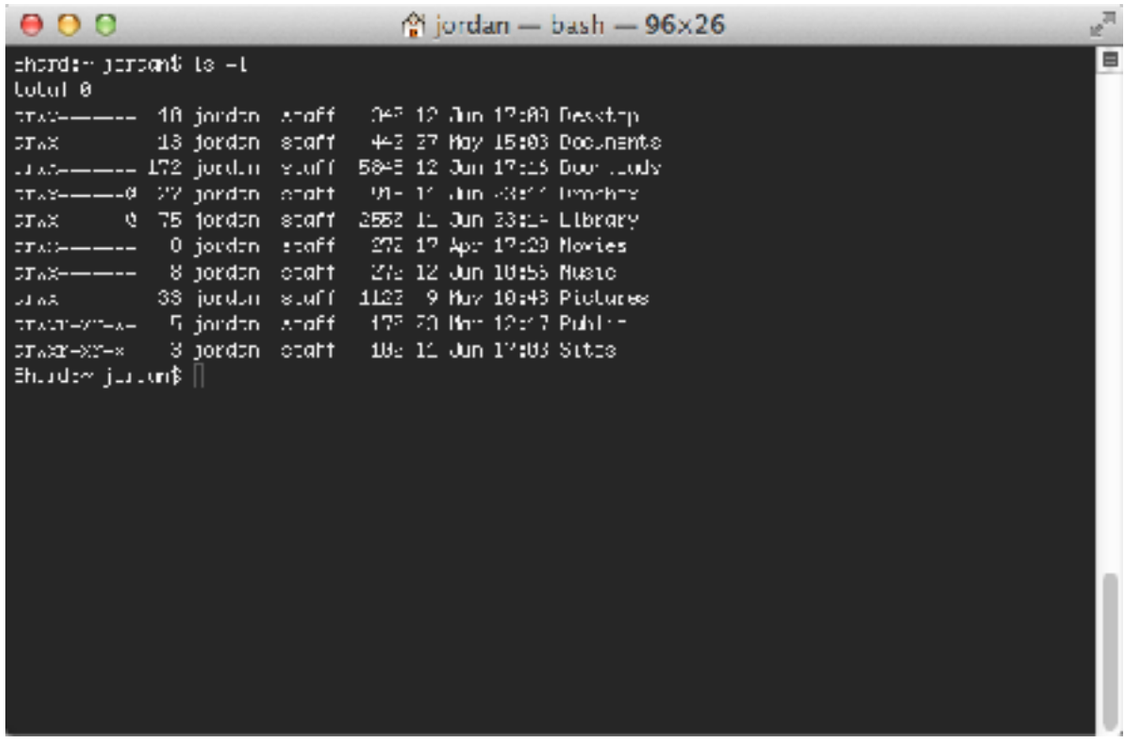
DATA SCIENCE TOOLS

DEMO

COMMAND LINE

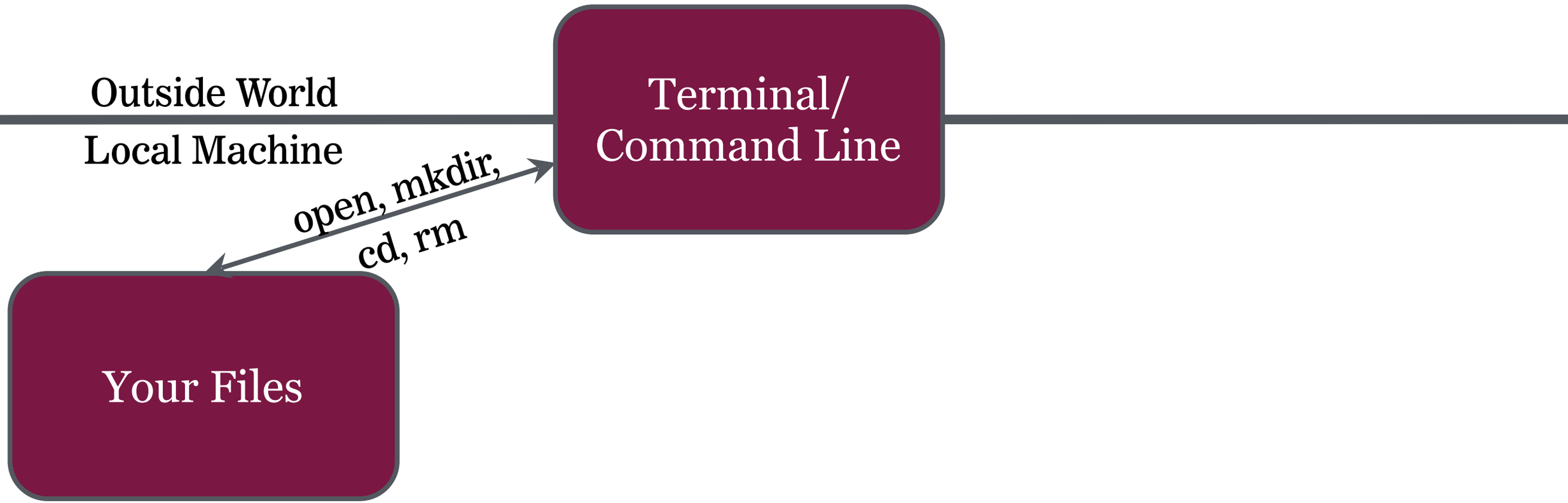
COMMAND LINE

- Let's walk through a few commands.
  - `cd`
  - `pwd`
  - `$home`
  - `mkdir`
  - `open`



- We can access many tools with the terminal.
  Let's walk through a few.

DATA SCIENCE TOOLS



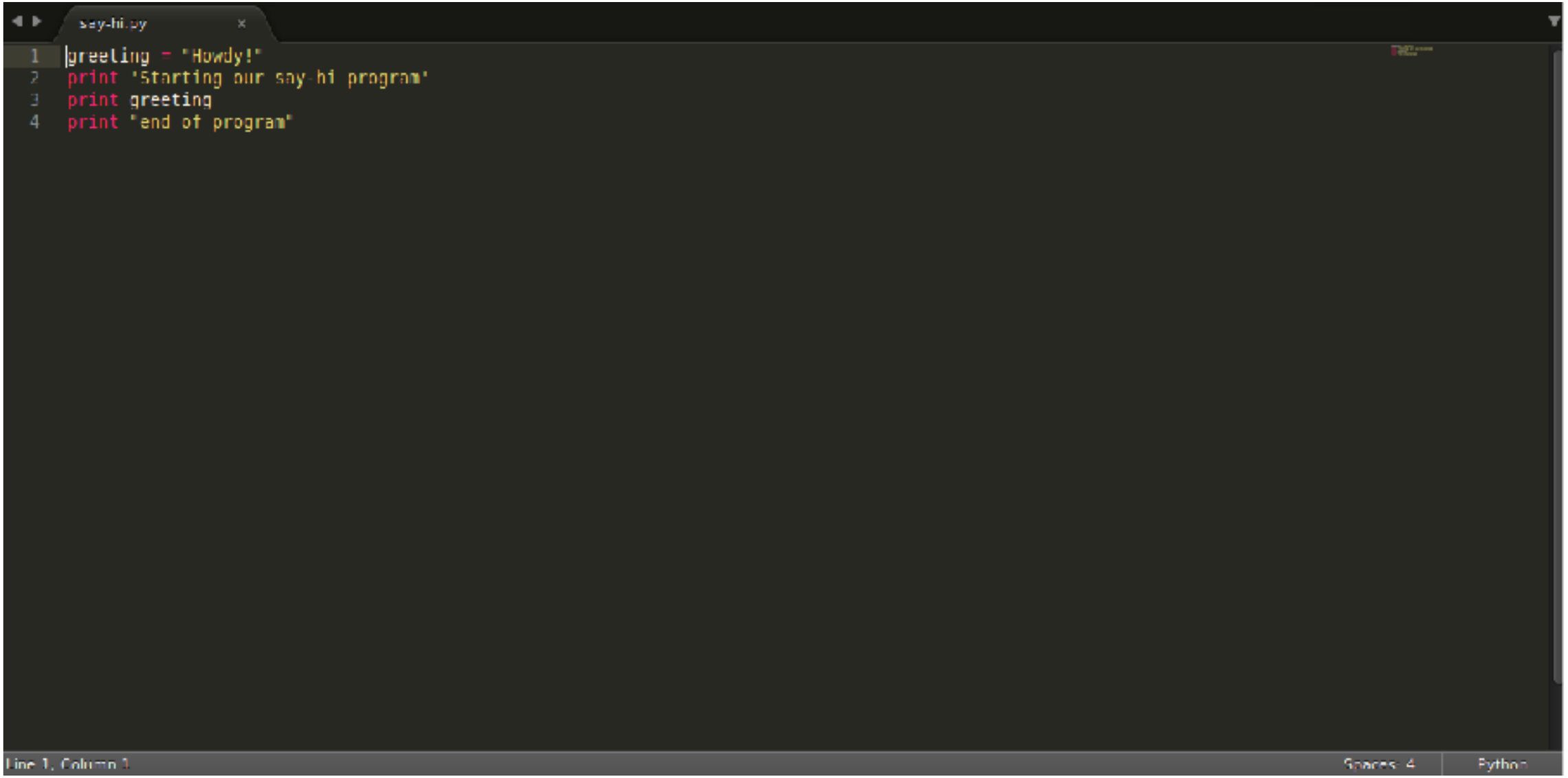
TEXT EDITORS

TEXT EDITORS

- So far, we've used iPython Notebooks in place of a text editor.
- However, there are many options available
  - eMacs
  - Vim
  - Sublime Text

- Let's see what Sublime Text look like with Python.

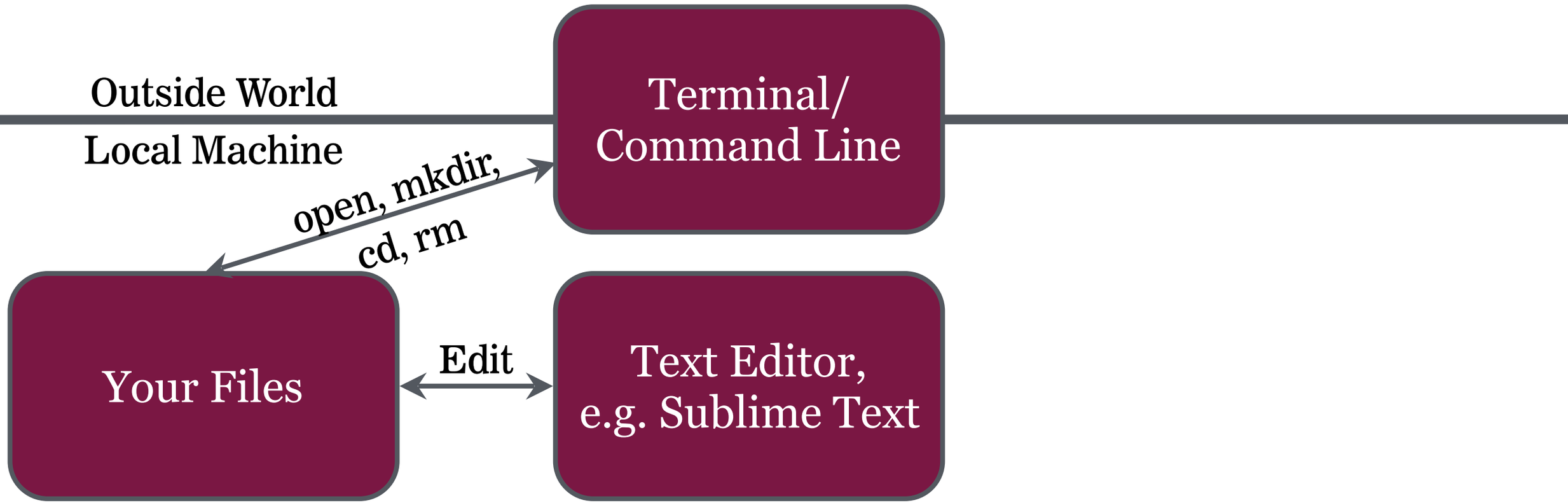
TEXT EDITORS



TEXT EDITORS

- Open “say-hi.py”, found in the lesson-05 folder of the class repo, in Sublime Text to see it for yourself.

DATA SCIENCE TOOLS



ACTIVITY: KNOWLEDGE CHECK

ANSWER THE FOLLOWING QUESTIONS

1. What is a text editor?
2. Can you name any other examples?

DELIVERABLE

Answers to the above questions

IPYTHON NOTEBOOK

IPYTHON NOTEBOOK

- Where does iPython Notebook fit in?
- We can refer to the iPython Notebook docs to get a better idea: the notebook combines the console, web apps, and markdown to capture the whole computation process.
- iPython notebooks combine two components:
    - A web application
    - Notebook documents

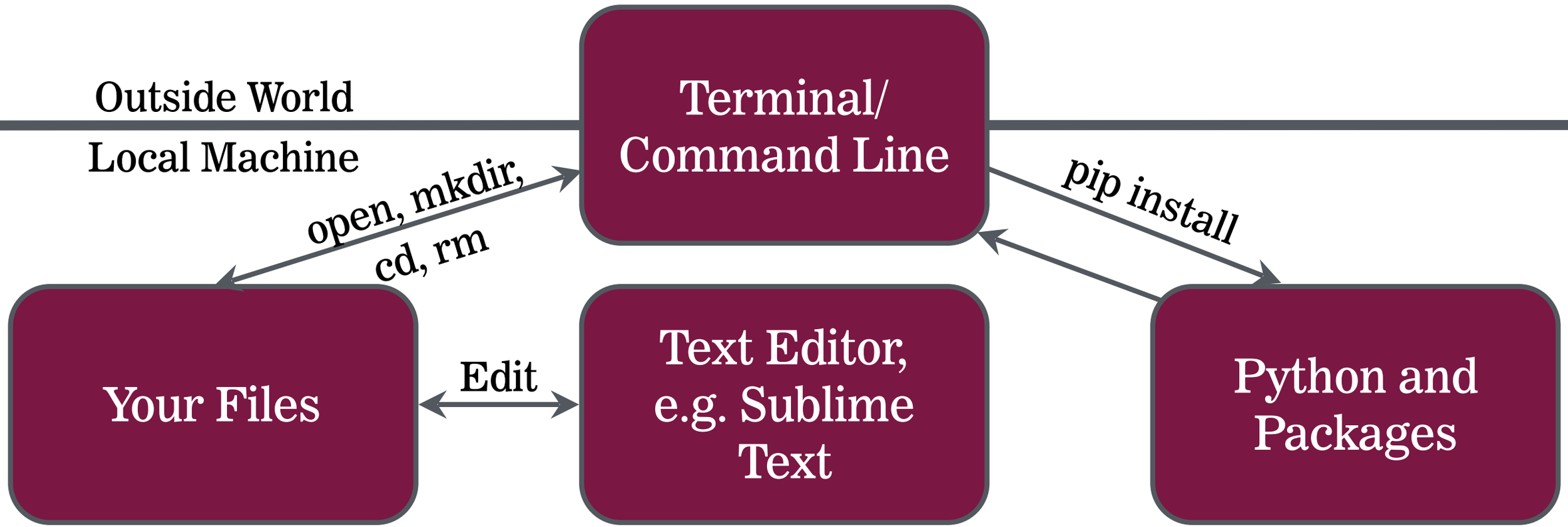
PYTHON PACKAGES

PYTHON PACKAGES

- The terminal allows us to run programs and reach out to the outside world.
- We can add programs and packages as needed.
- To add Python packages, we use a tool called *pip*.
- Let's pip install a package with the command line. We'll install Beautiful Soup, a HTML/XML parsing package.

```
pip install beautifulsoup4
```

DATA SCIENCE TOOLS

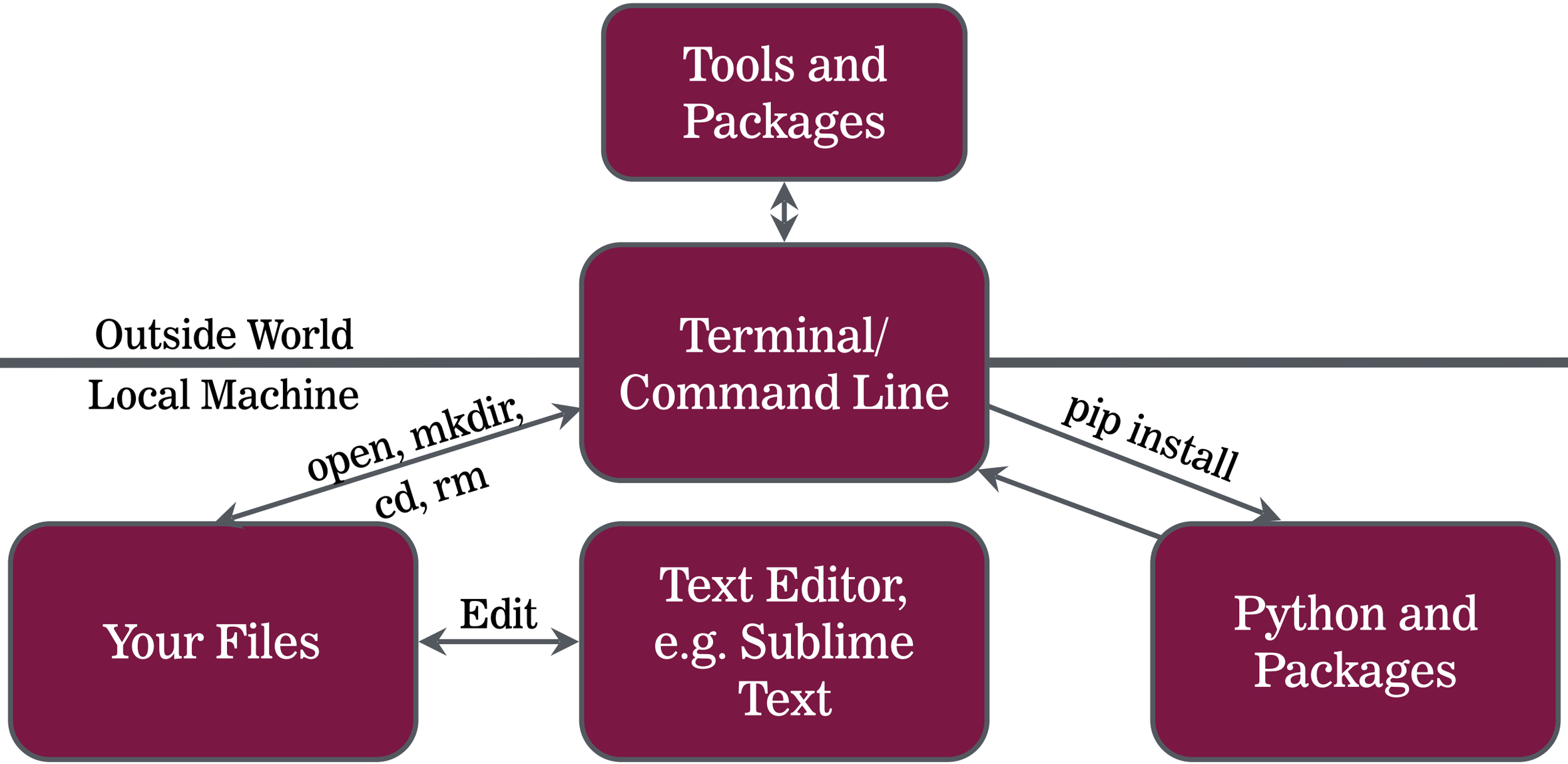


THE OUTSIDE WORLD

THE OUTSIDE WORLD

- The command line also allows you to download and use other tools and packages.
- There are many tools for different purposes available in the outside world.

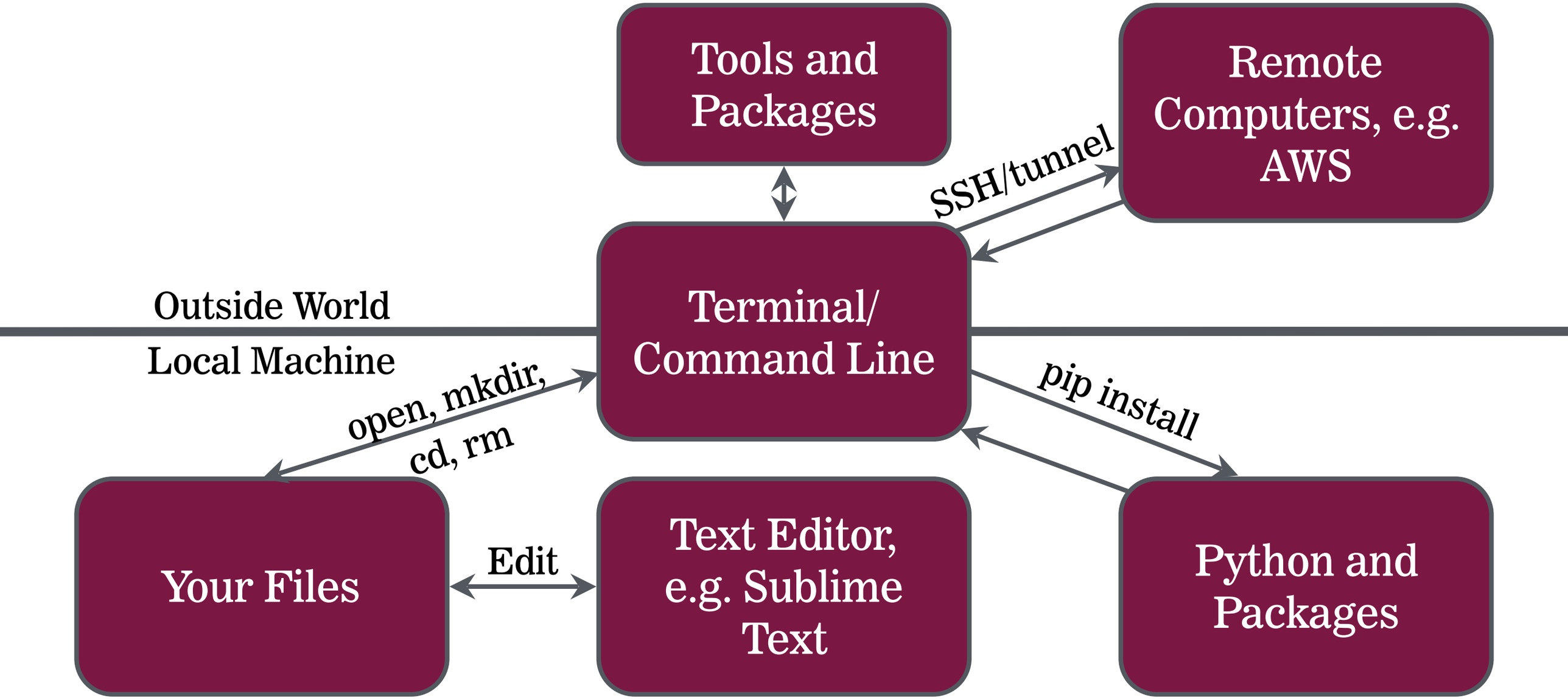
DATA SCIENCE TOOLS



THE OUTSIDE WORLD

- As we saw with pip, the command line can connect us to the outside world. This becomes more important for data.
- We may have HIPAA protected data. This means we can't leave this sensitive data on our *local* machine (i.e. laptop).
- We need to communicate with a *remote* machine (i.e. server) to access the data via command line.
- Let's see a demonstration of this.

DATA SCIENCE TOOLS



GIT

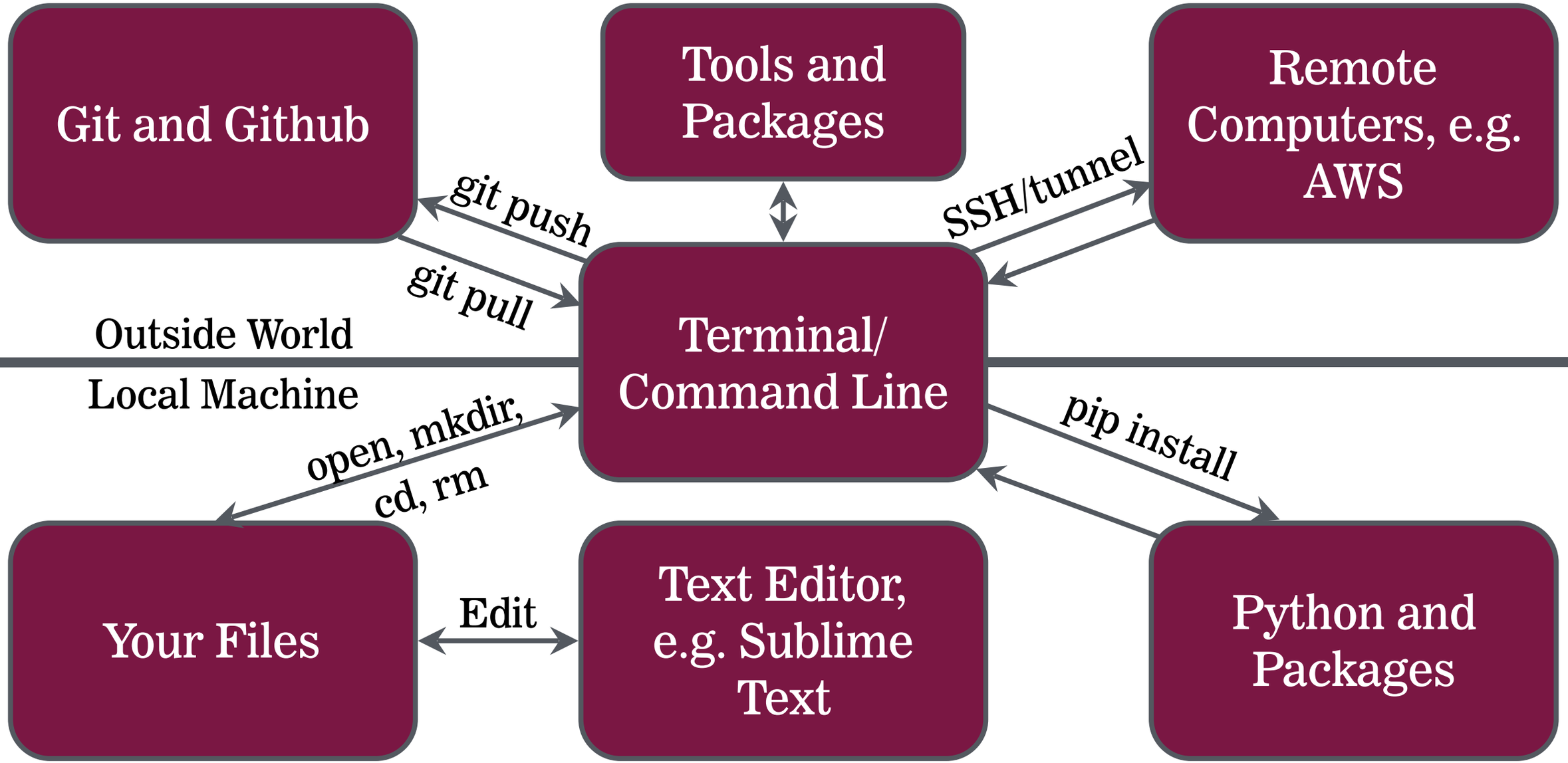
GIT

- Version control is necessary when working on complex projects.
- Git is a way of tracking changes we've made to our programs that allows us to go back in time to fix errors.
- Combined with Github, Git is a powerful tool for collaborating with colleagues. You can work on different aspects of projects simultaneously and merge the changes together seamlessly.
- There are many different ways to use these tools.

GIT

- Let's see an example of using Git and Github.
- There are three primary commands we'll use.
  - `git add`
  - `git commit`
  - `git push`
- When a colleague wants to implement our change, we may use the command `git pull`.

DATA SCIENCE TOOLS



ACTIVITY: KNOWLEDGE CHECK

ANSWER THE FOLLOWING QUESTIONS

1. What is a GUI?
2. What is the command line?
3. What are the big advantages of using the command line over a GUI?

DELIVERABLE

Answers to the above questions

GUIDED PRACTICE

GIT AND COMMAND LINE

ACTIVITY: GIT AND COMMAND LINE

DIRECTIONS (20 minutes)

1. Let's set up student repositories and move project and student work to them.

DELIVERABLE

Questions

GUIDED PRACTICE

ODDS AND PROBABILITY

ACTIVITY: ODDS & PROBABILITY

DIRECTIONS (20 minutes)

Some of you may already be familiar with odds and probability.

1. We will use the starter code in lesson-05 of the class repo to review the concepts of odds and probability.

DELIVERABLE

Answer the questions in the notebook

TOPIC REVIEW

REVIEW

- What are some common data science tools?
- Why are these tools useful?
- Any other questions?

LESSON

Q & A

LESSON

EXIT TICKET

DON’T FORGET TO FILL OUT YOUR EXIT TICKET