Programming Concepts
Part 1: How to talk to your computer

With instructor Aaron Geller

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How to download these materials from GitHub

1. Navigate in your browser to :
    https://github.com/nuitrcs/programming_concepts_video_series

2. Click on the green Code button

3. Click on Download ZIP

4. Unpack the ZIP file on your computer to access the files.

(You should typically download all the files in a repo, as described above, instead of choosing to download only individual files.)

How to download these materials from GitHub
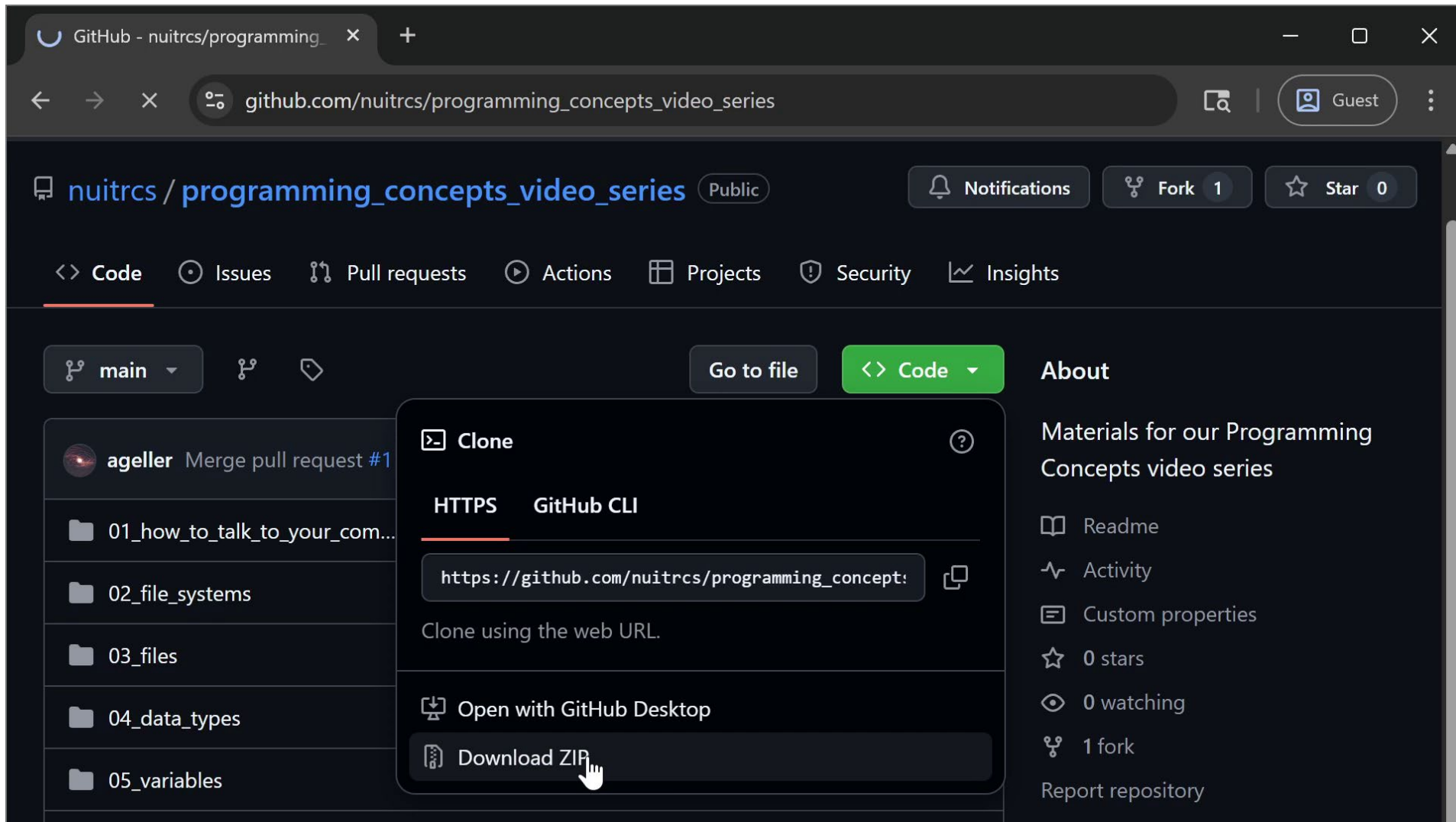
Programming languages

- You "talk" to your computer with programming languages.

- Modern computers can interpret many different languages.

- GUIs (graphical user interfaces) allow you to talk to your computer without knowing any programming language.

Programming languages

- Programming requires you to use specific words or characters in a specific order.

Programming languages

- The ***command line*** is how we can talk directly to our computer without a GUI.

- Different computers have different ***shells*** to access the command line and different languages you use on the command line.
  - Mac: Terminal uses Unix Bash or zsh,
  - Linux: Bash shell
  - PC: Windows PowerShell, Git Bash, WSL

- These are designed for controlling your operating system and computer: installing programs, moving files, etc.

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How do we talk to our computer in Python or R?

- *Interactive programming :* through a shell, one line at a time

```
user1@computer1: Documents $ python
Python 3.10.9 | packaged by conda-forge | (main, Fe
b  2 2023, 20:20:04) [GCC 11.3.0] on linux
Type "help", "copyright", "credits" or "license" fo
r more information.
>>> x = 4 + 5
>>> print(x)
9
>>>
```

How do we talk to our computer in Python or R?

- ***Interactive programming :*** through a shell, one line at a time
- ***Batch programming :*** running a whole script (a plain text file that contains one to many lines of code)
- ***Integrated Development Environments (IDEs):*** allows both interactive and batch programming
- ***Coding notebooks*** allow you to run code in chunks and view output directly below.

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Time to review

- The next slide has a short "quiz".

- Navigate to the contents of our GitHub repo
  - If you already downloaded the repo to your computer, navigate to that directory.
  - Otherwise, you can view the quiz online here: https://github.com/nuitrcs/programming_concepts_video_series

- Open the folder "01_how_to_talk_to_your_computer", then open the file "01_how_to_talk_to_your_computer_slides.pdf".

- The quiz is on Slide 9 (and answers on are Slide 10).

Programming Concepts Part 1:
How to talk to your computer
Quiz

(fill in the blanks)

1. A _____ allows you to talk to your computer without knowing a programming language.

2. When working interactively in the _____, each input line starts with a _____, which may look like >, >>>, or $ (or something else entirely) with a space after it.

3. You can also write a _____: a file with many lines of code in it to be executed together.

Programming Concepts Part 1:
How to talk to your computer
Quiz answers

(fill in the blanks)

1. A ___*GUI*___ allows you to talk to your computer without knowing a programming language.

2. When working interactively in the __*command line (or shell)*_, each input line starts with a __*command prompt*_, which may look like >, >>>, or $ (or something else entirely) with a space after it.

3. You can also write a __*script*__: a file with many lines of code in it to be executed together.