NC STATE UNIVERSITY

CROP AND SOIL SCIENCES

CS 590 Special Topics

Programming and Data Science for Applied Research

Course Concepts and Workflow

WHAT DO YOU HOPE TO LEARN IN THIS CLASS?

Underlying Course Concepts in R and Python

- Basic Programming Skills
- Advanced Programming Topics and Packages
- Data Visualizations and Interactive Packages
- Machine Learning (Supervised and Unsupervised) Algorithms
- Section Exercises and Capstone Project

Environment Setup – Anaconda (Prompt)

Objectives

- Install the Anaconda Working Environment
- Install R and Python3 Kernels for Jupyter Notebooks
- Open and Explore Jupyter Notebooks
- GitHub Exercise

Let’s Browse the Syllabus!

Anaconda and Jupyter Notebooks

- Anaconda is a distributions of R and Python with working environments for many programming languages – via Jupyter Notebooks
- Jupyter Notebooks is an **I**ntegrated **W**orking **E**nvironment (IDE) that manages multiple programming languages (kernels) under one environment
- Jupyter Notebooks gives programmers the ability to write code, display images, and write markdown notes for future references all in one window
- Jupyter Notebooks is the most popular IDE in data science and it is a great learning tool

Disclaimer…

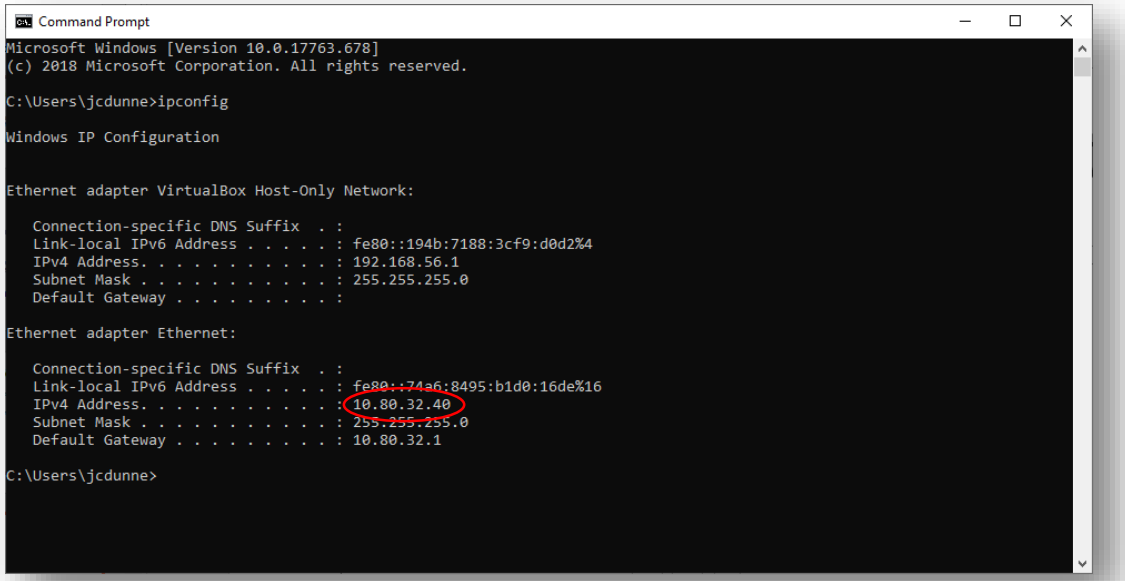
Jupyter Notebooks is not the only IDE available for R and Python programming

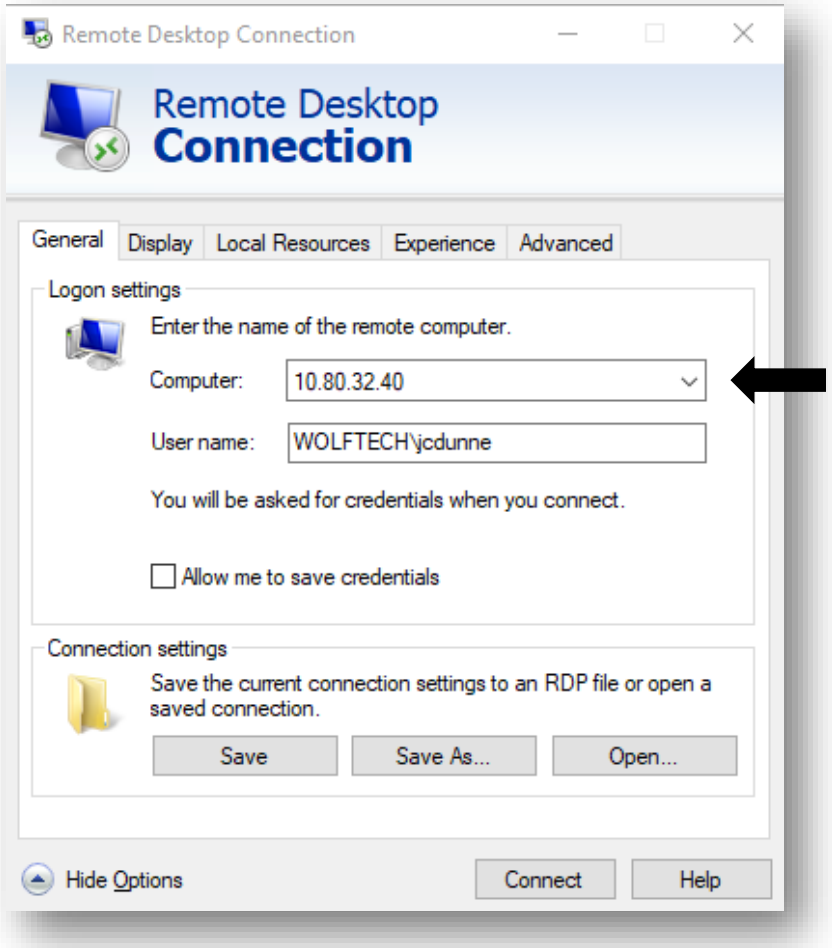
Feel free to use any IDE for R or Python

(e.g. Sublime, TextWrangler, R Studio, Vi/Vim, Visual Studio)

It won’t hurt my feelings… much

Remote Desktop Connection (Recommended)





Anaconda Setup and Installation

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Let's Download Anaconda!

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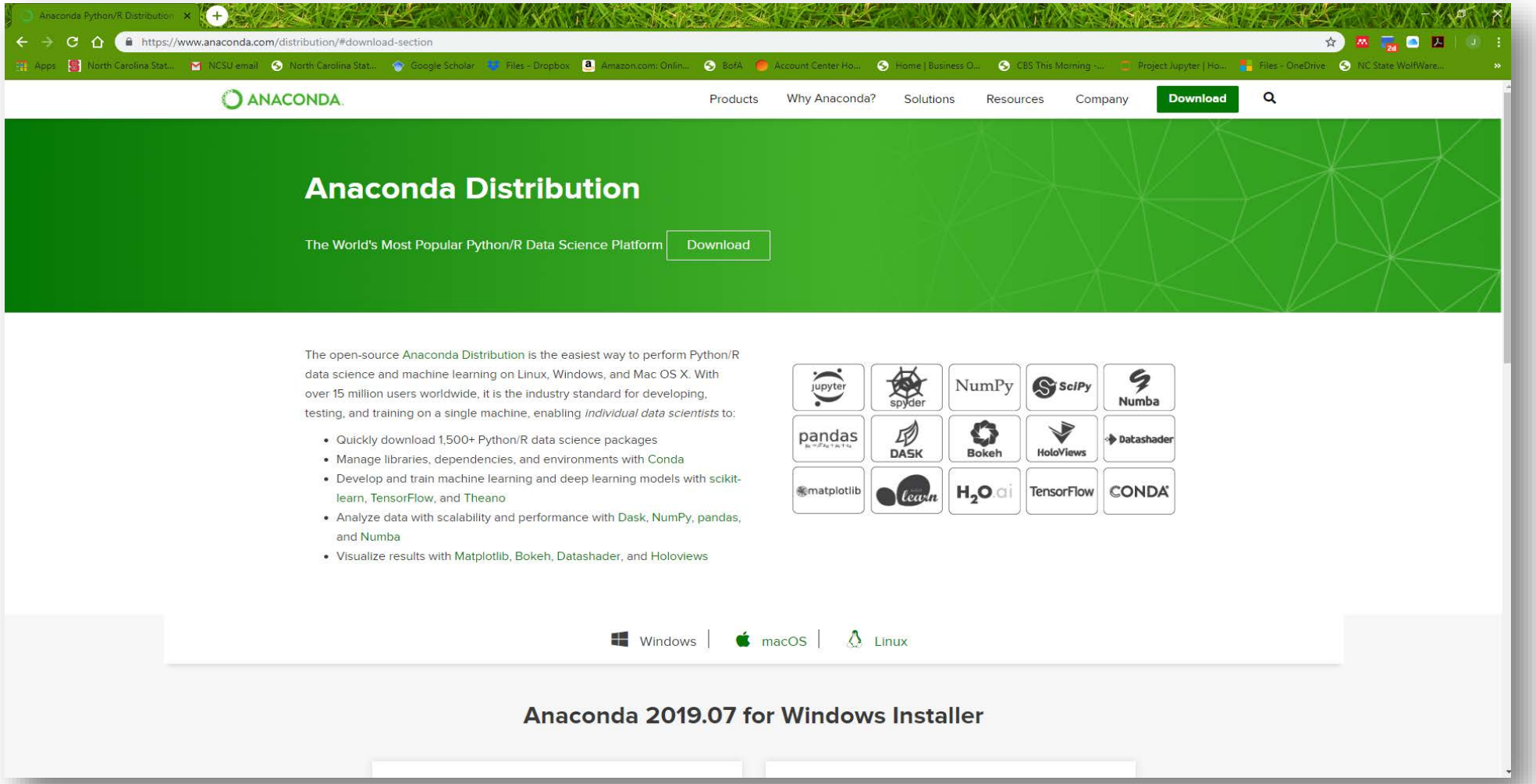
  https://www.anaconda.com/distribution/
- Or Google Search
  Anaconda 3 – Click the first link (Anaconda Python/R Distribution – Free Download)

Binder Rendering

- Online Only (Binder/Docker Setup)

Download Anaconda 3 – Home Page



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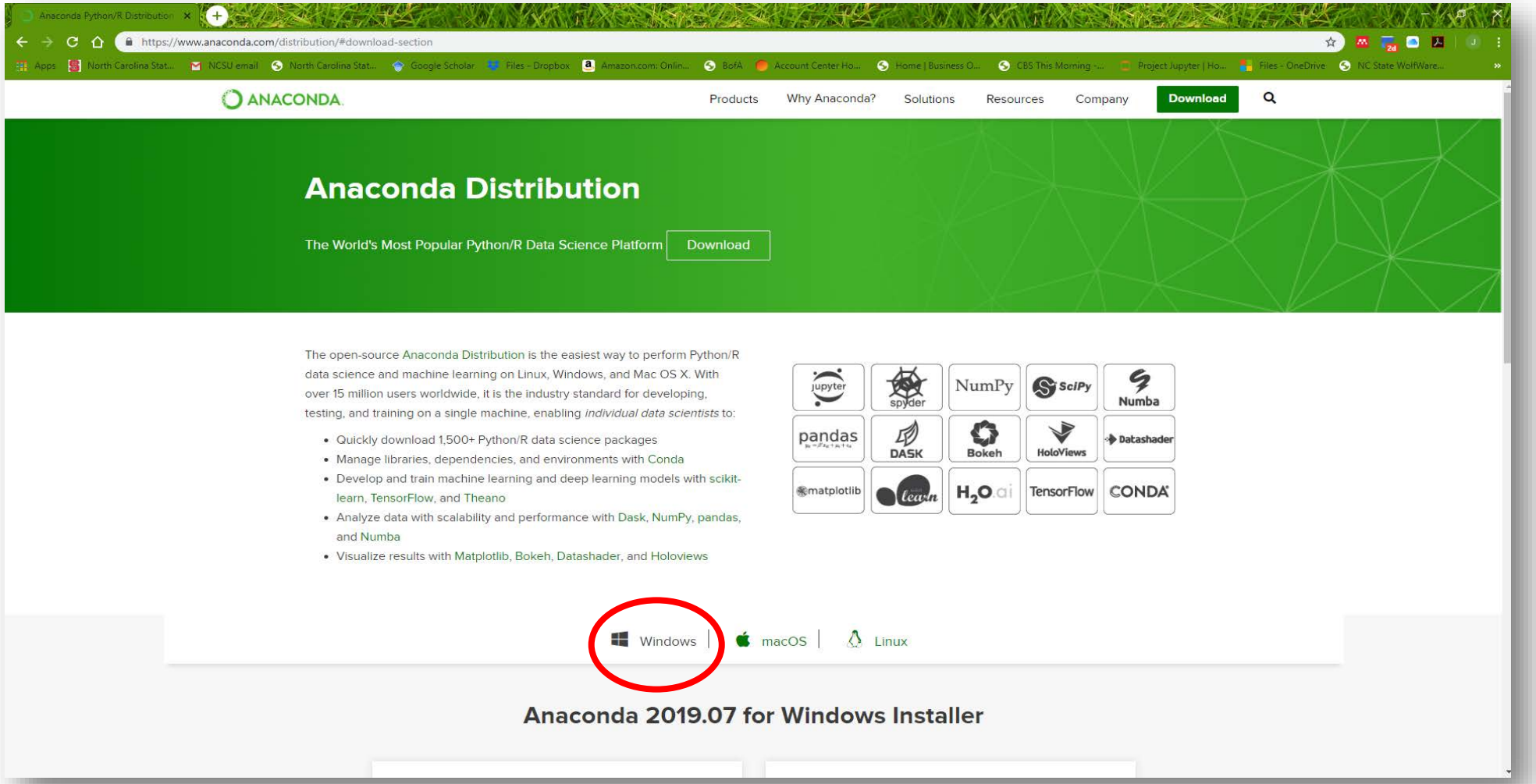

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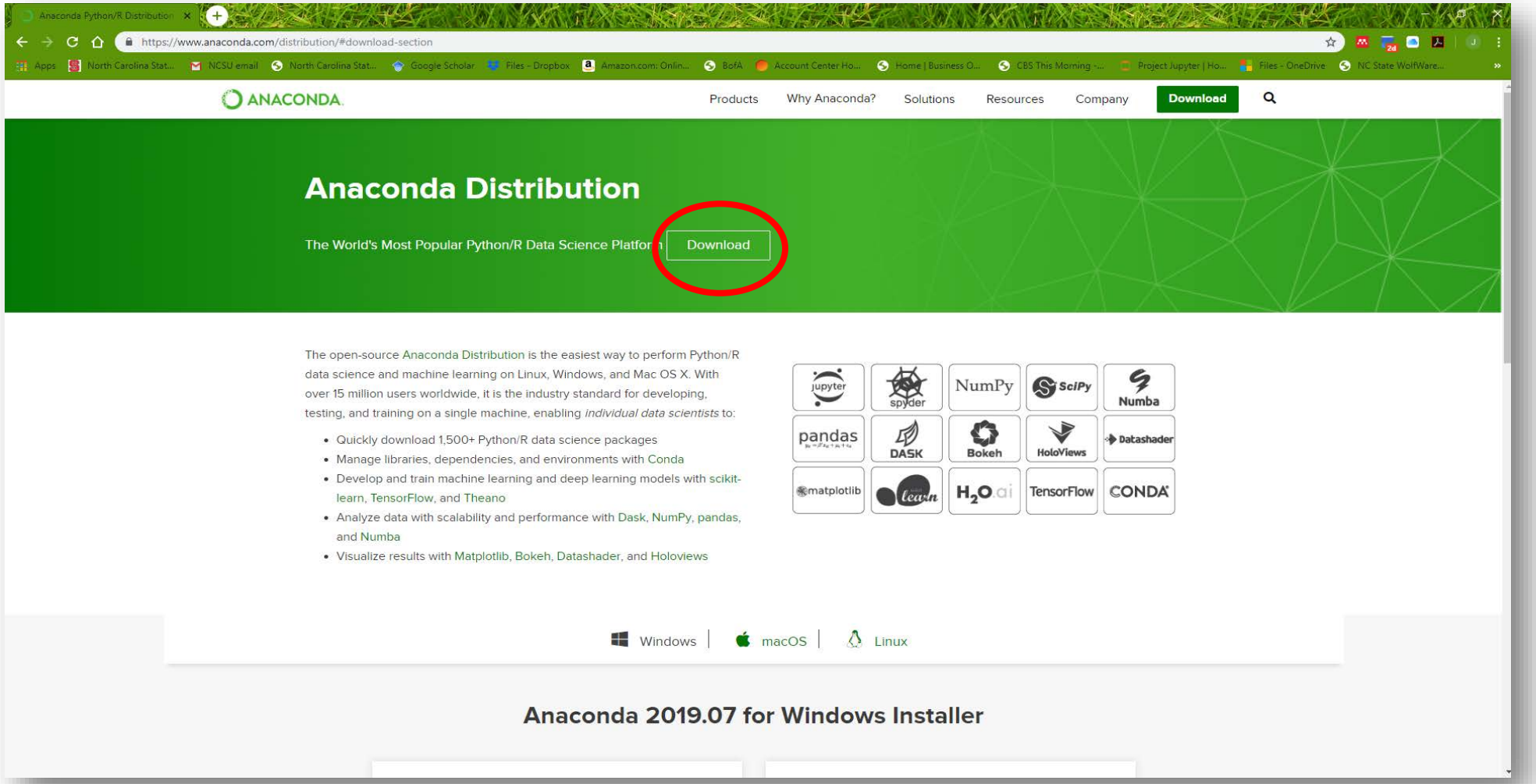
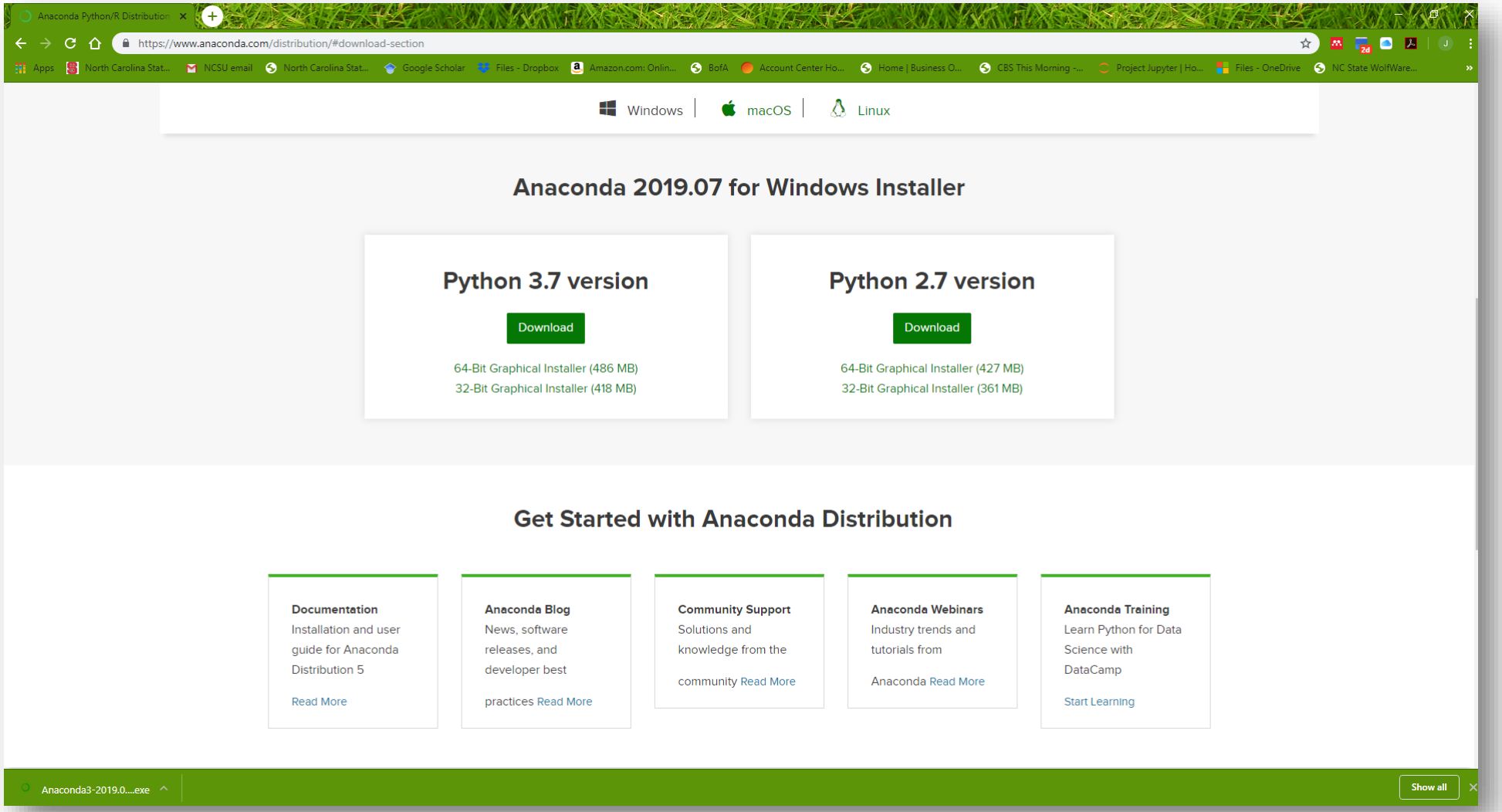
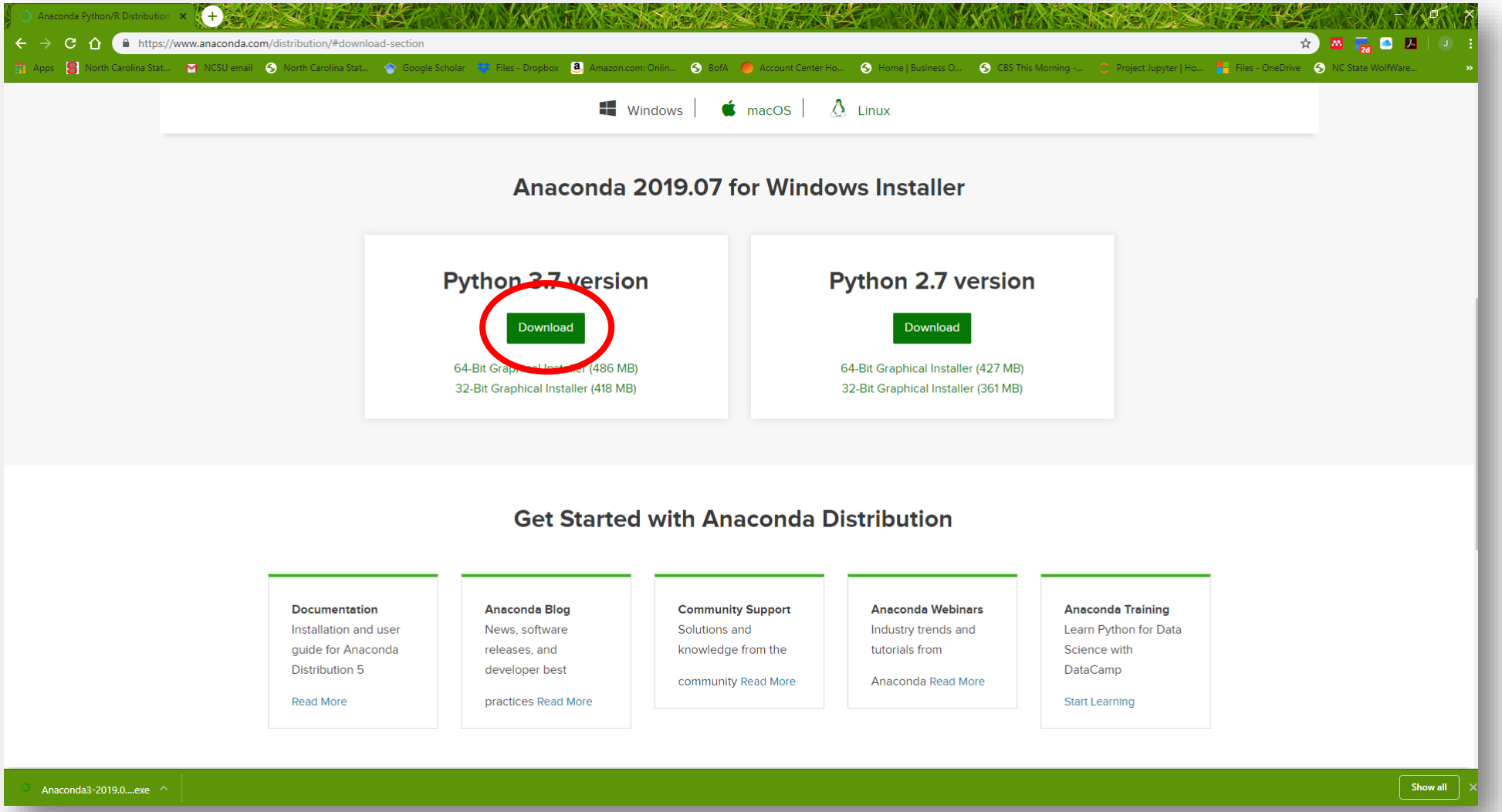


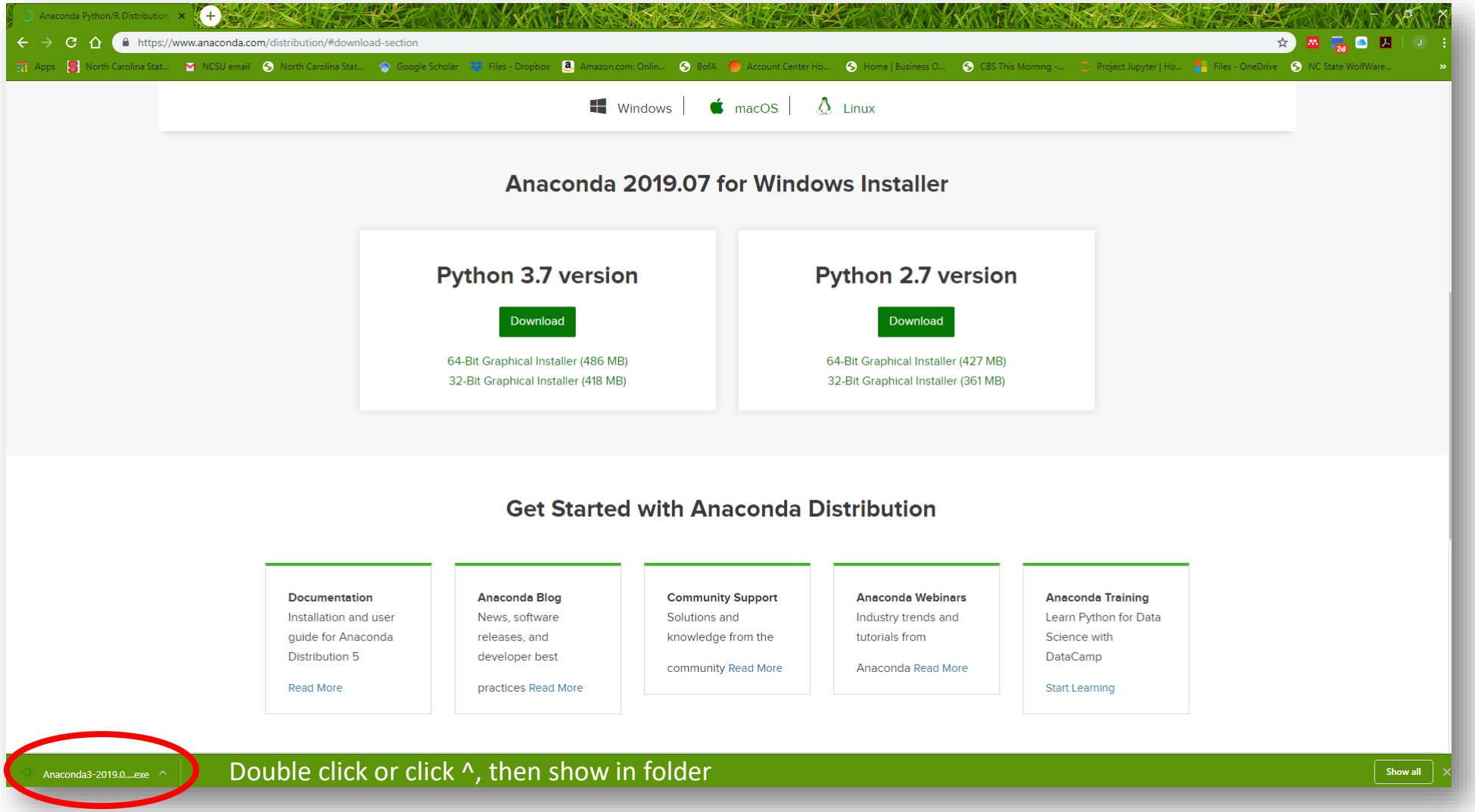
Download Anaconda 3 – Windows Installer



Download Anaconda 3 – Python 3.7 Version



Download Anaconda 3 – Python 3.7 Version



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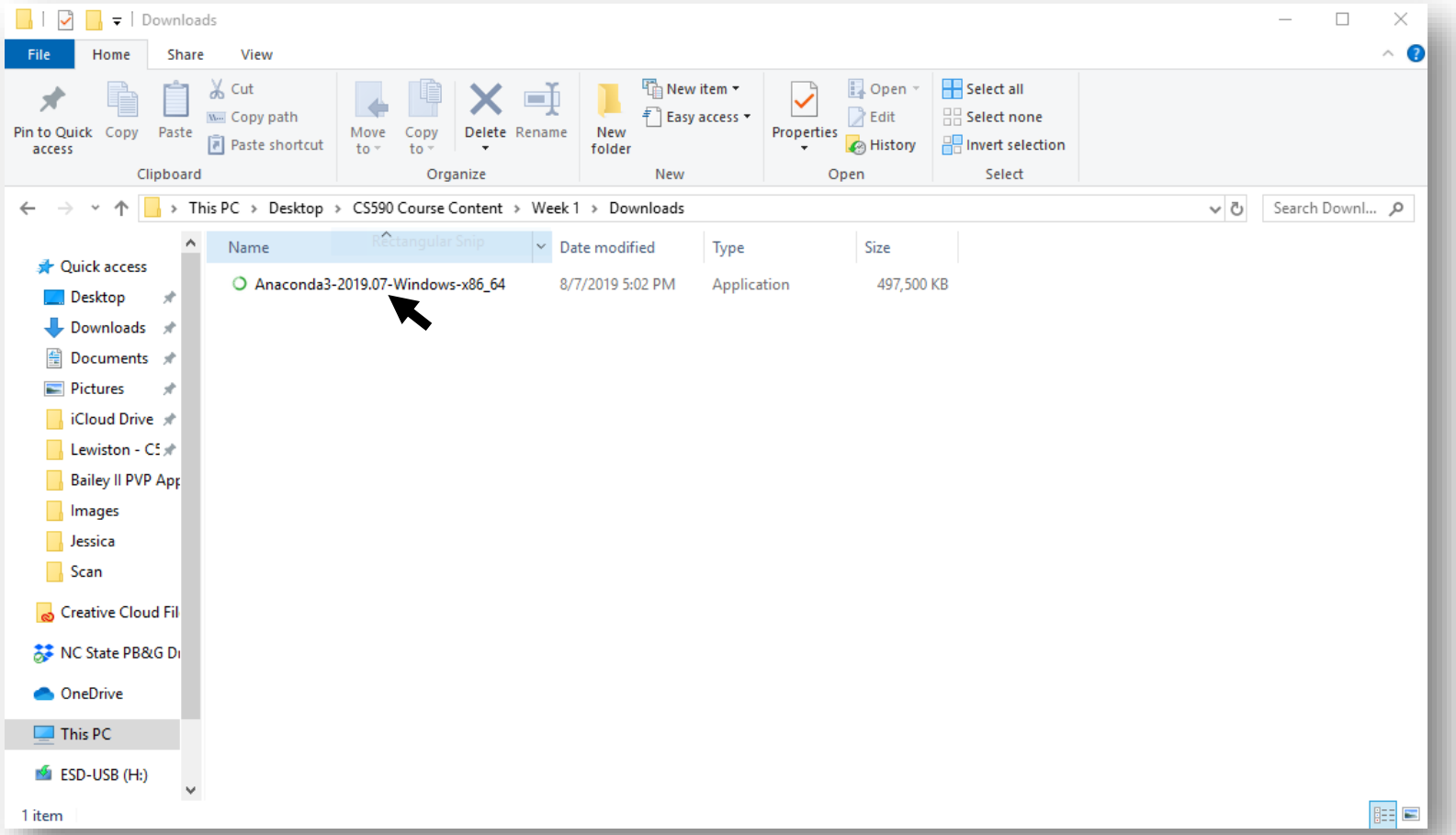
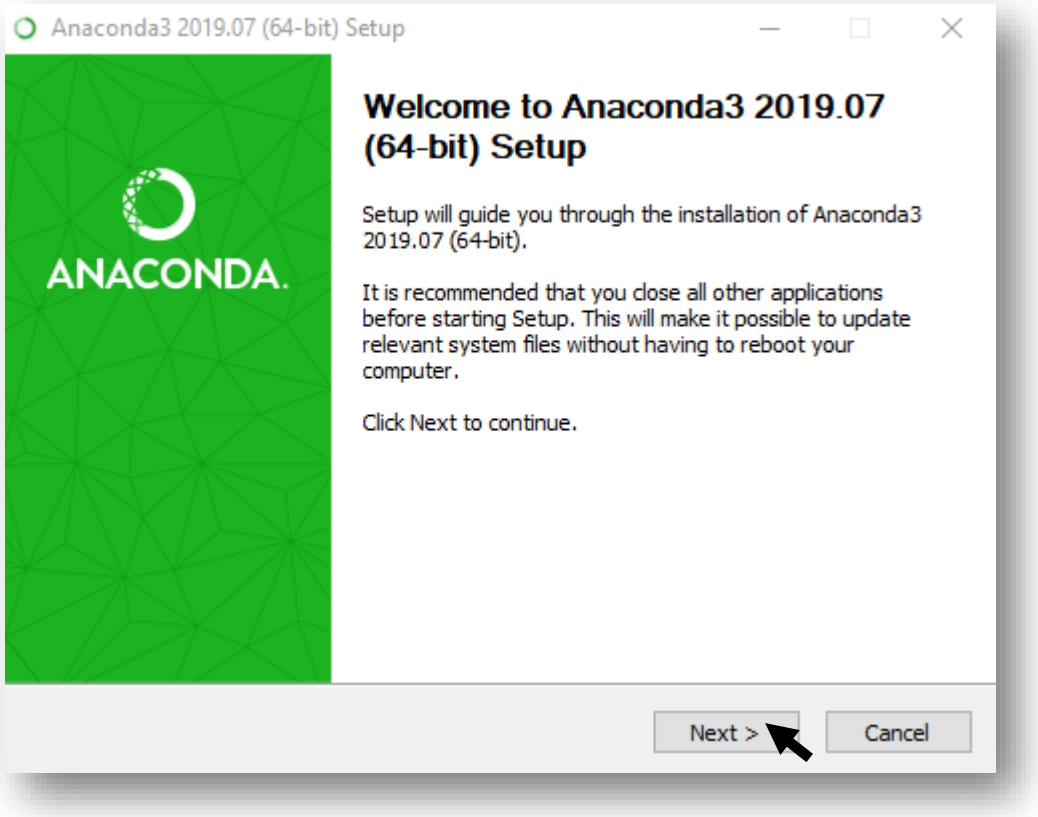


Anaconda 3 Installation and Setup



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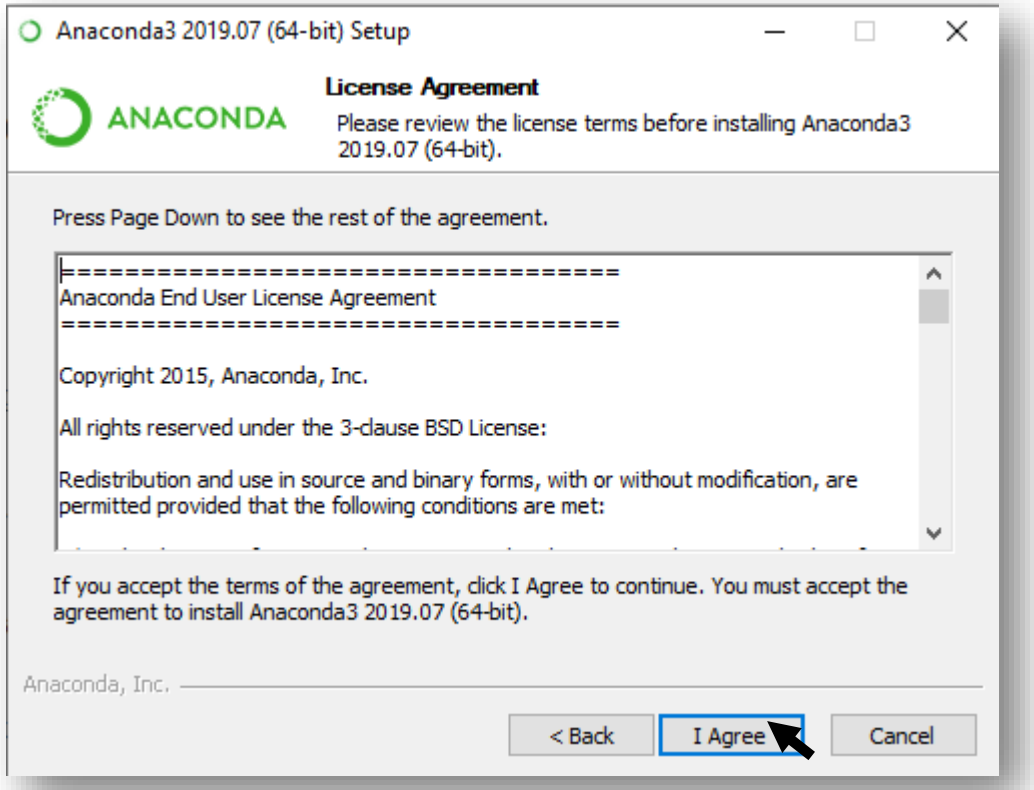

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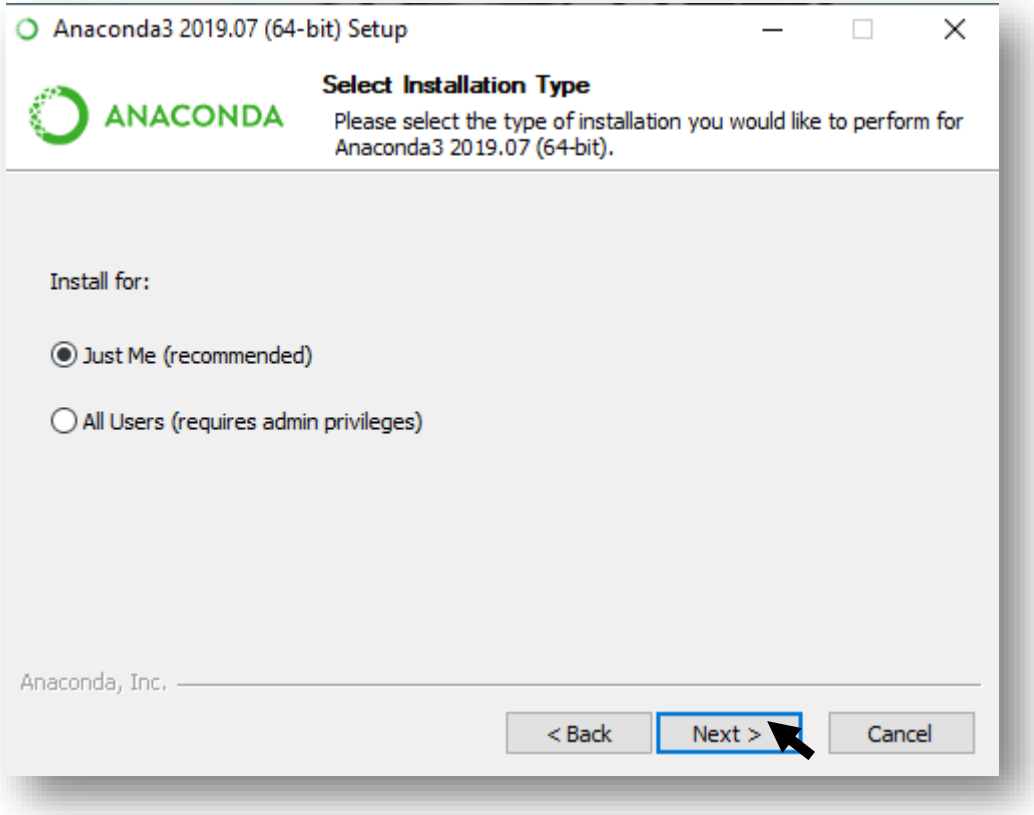

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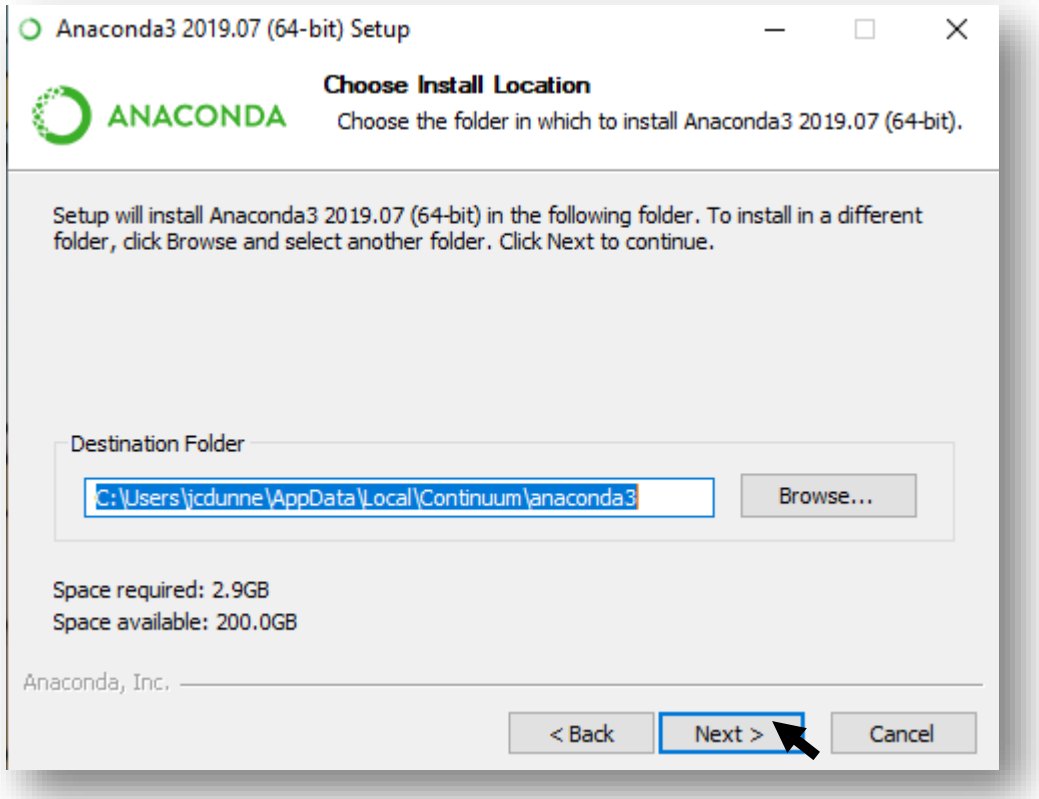

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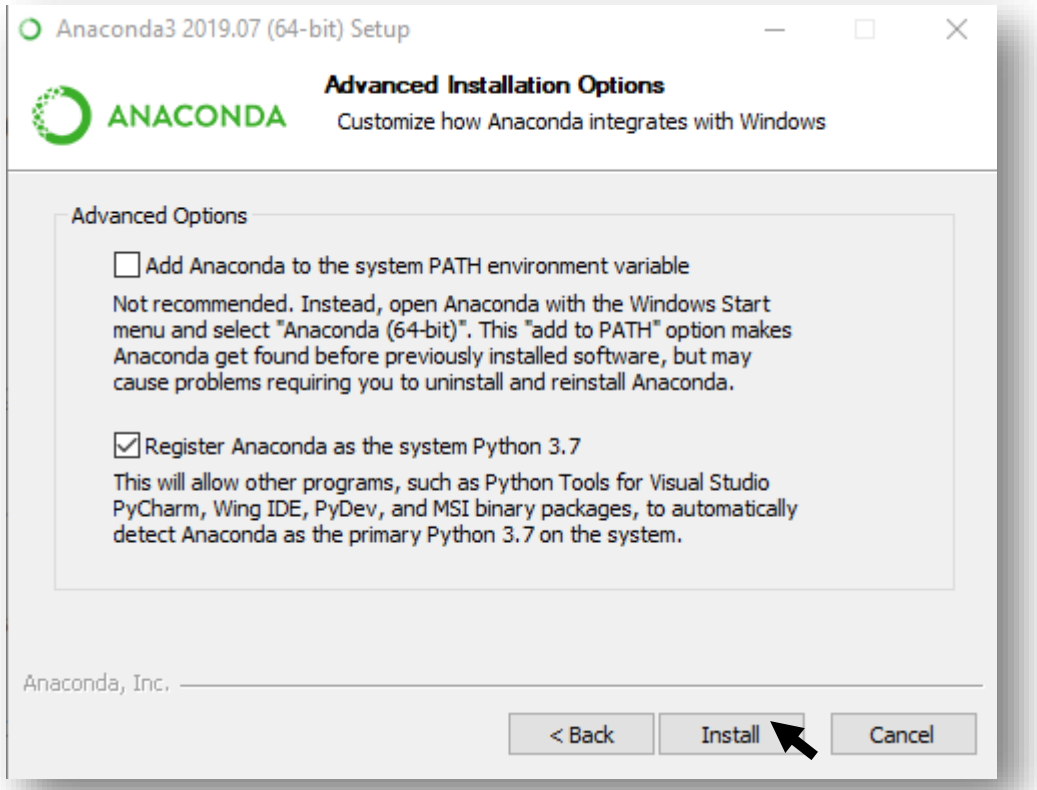

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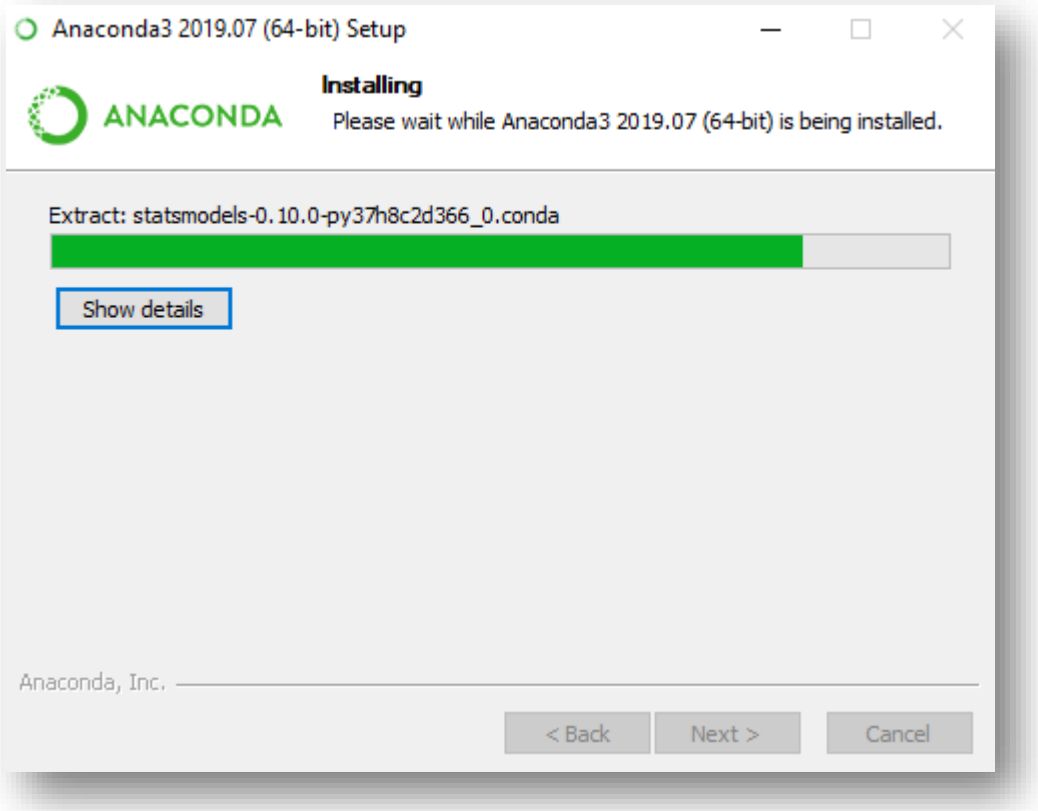

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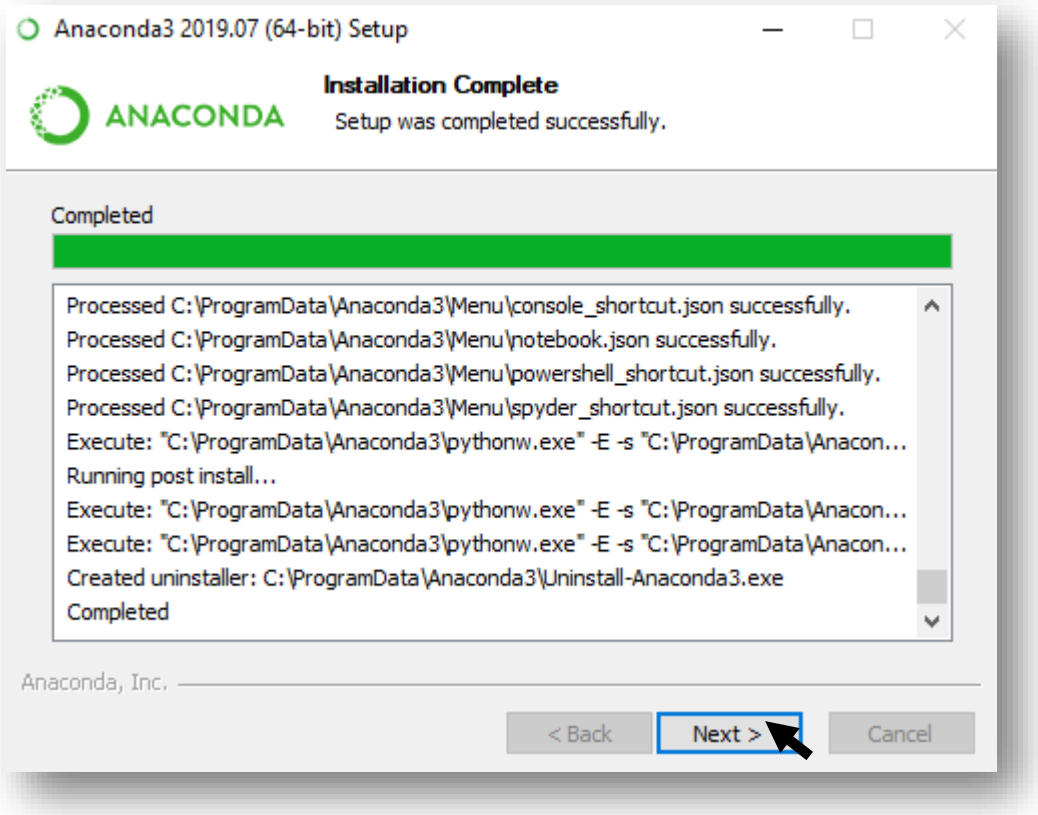

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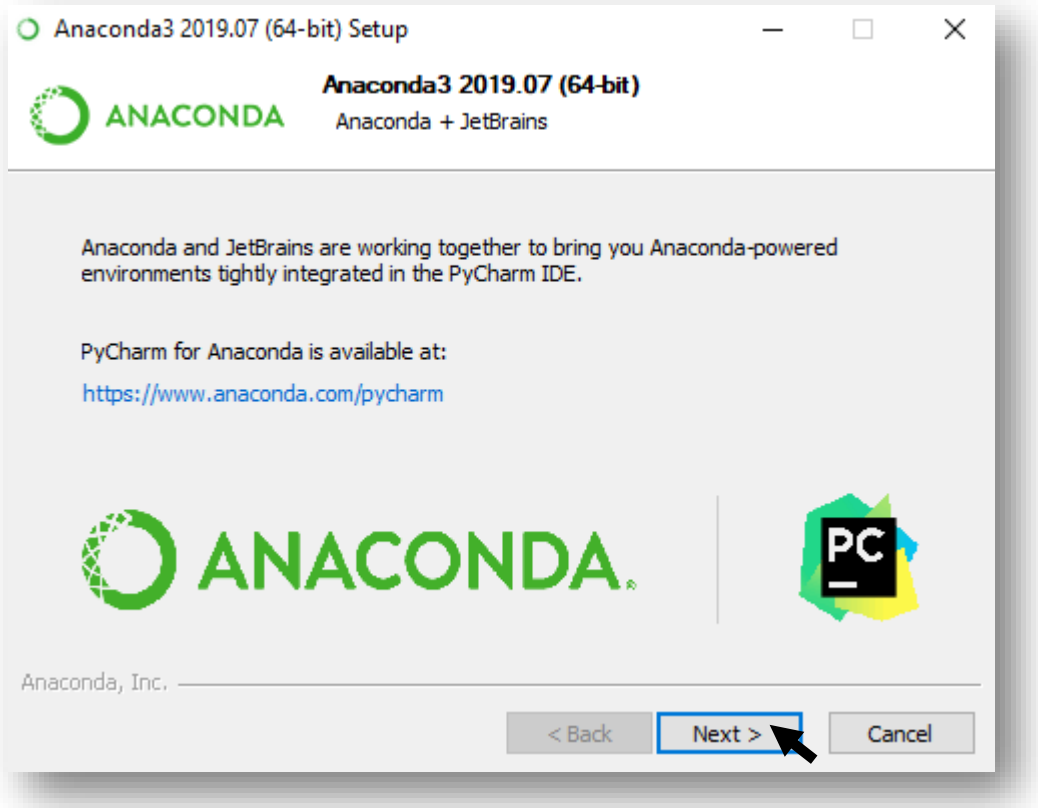

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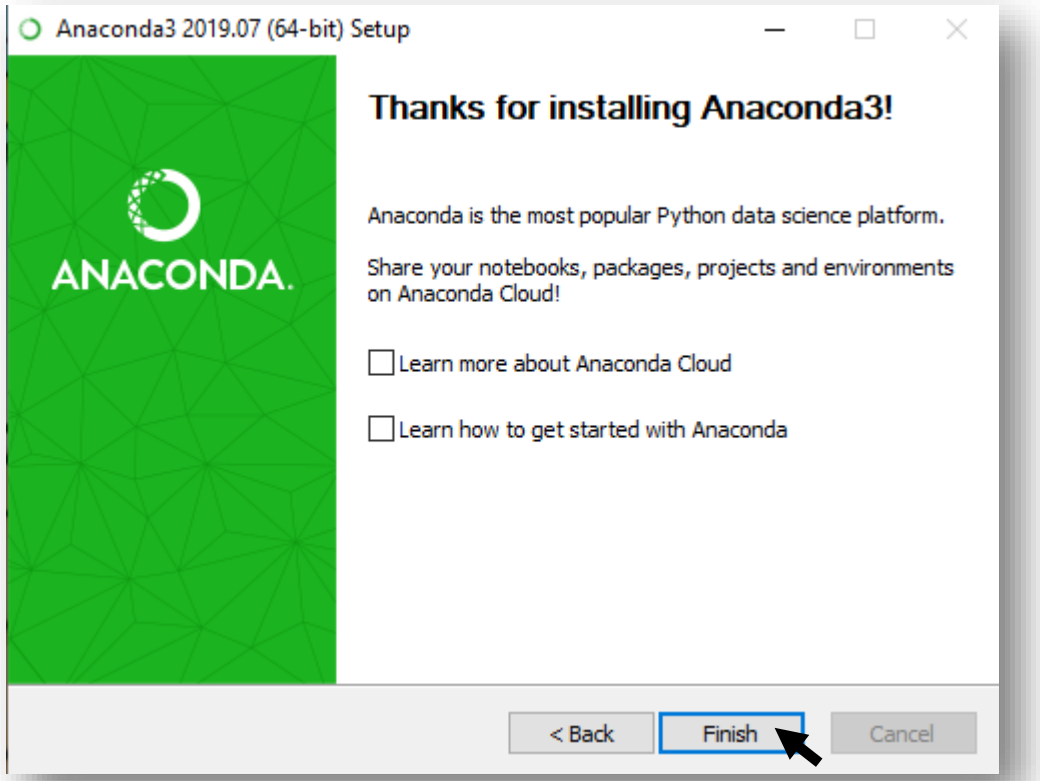
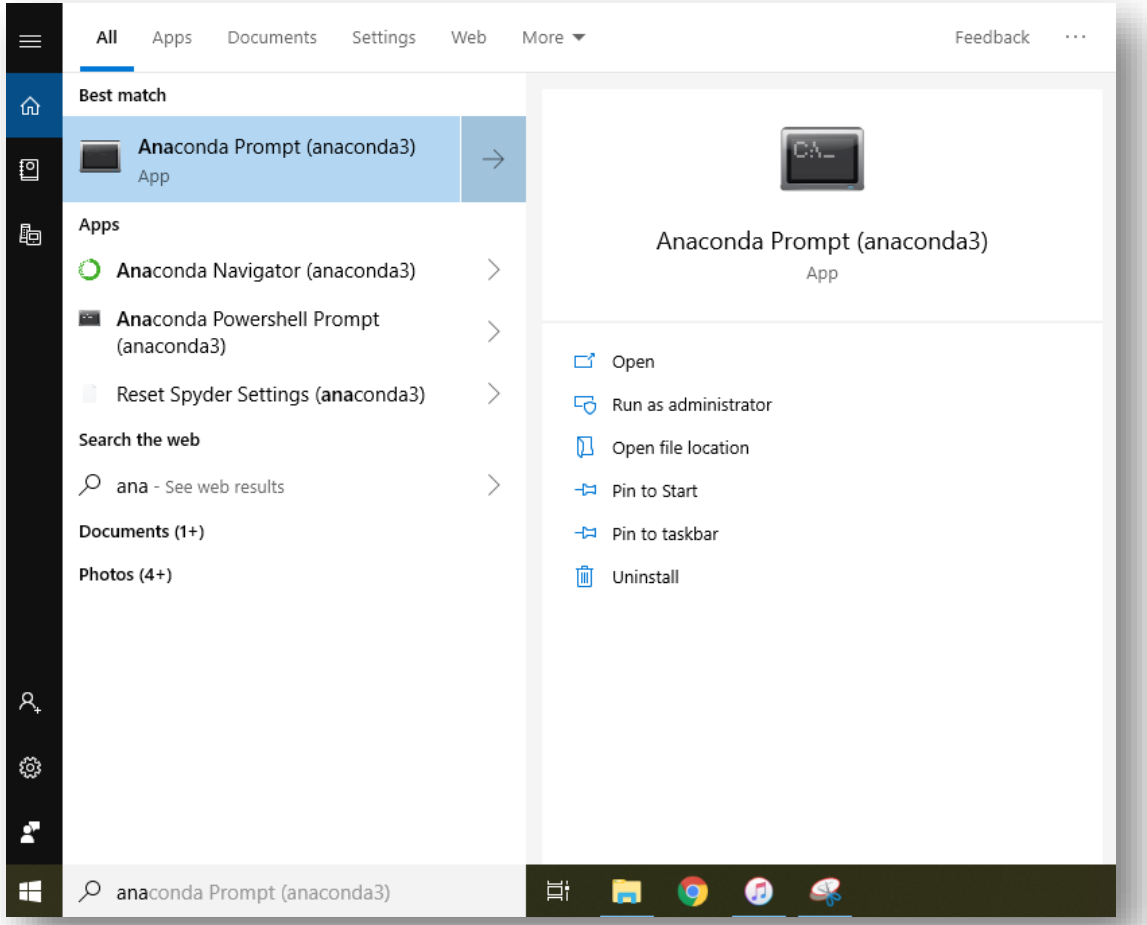
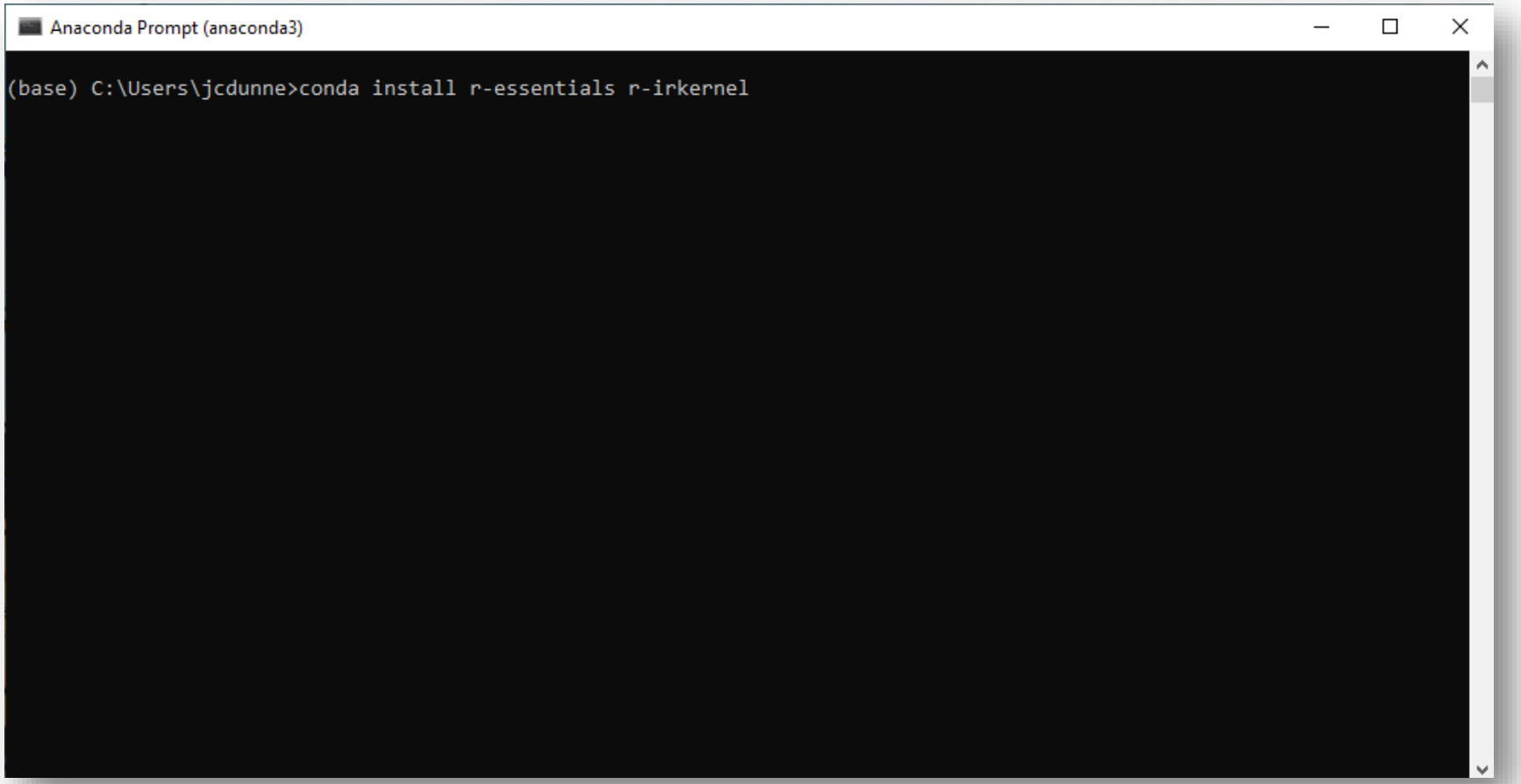


Installing R / R-Kernel for Jupyter Notebooks



*** MAC Users > Finder > Search “Terminal” > Open Terminal

Installing R / R-Kernel for Jupyter Notebooks



> conda install r-essentials r-irkernel

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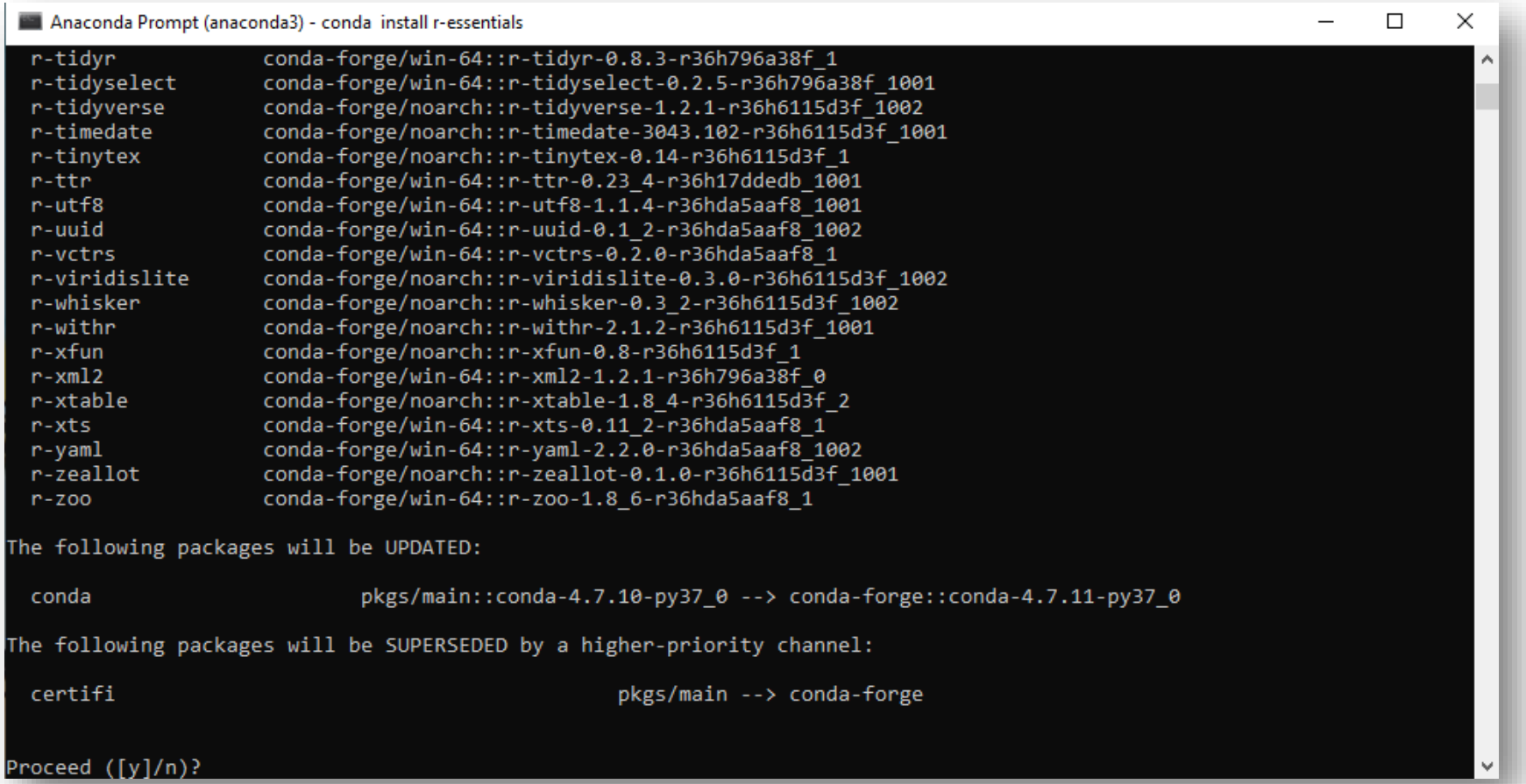
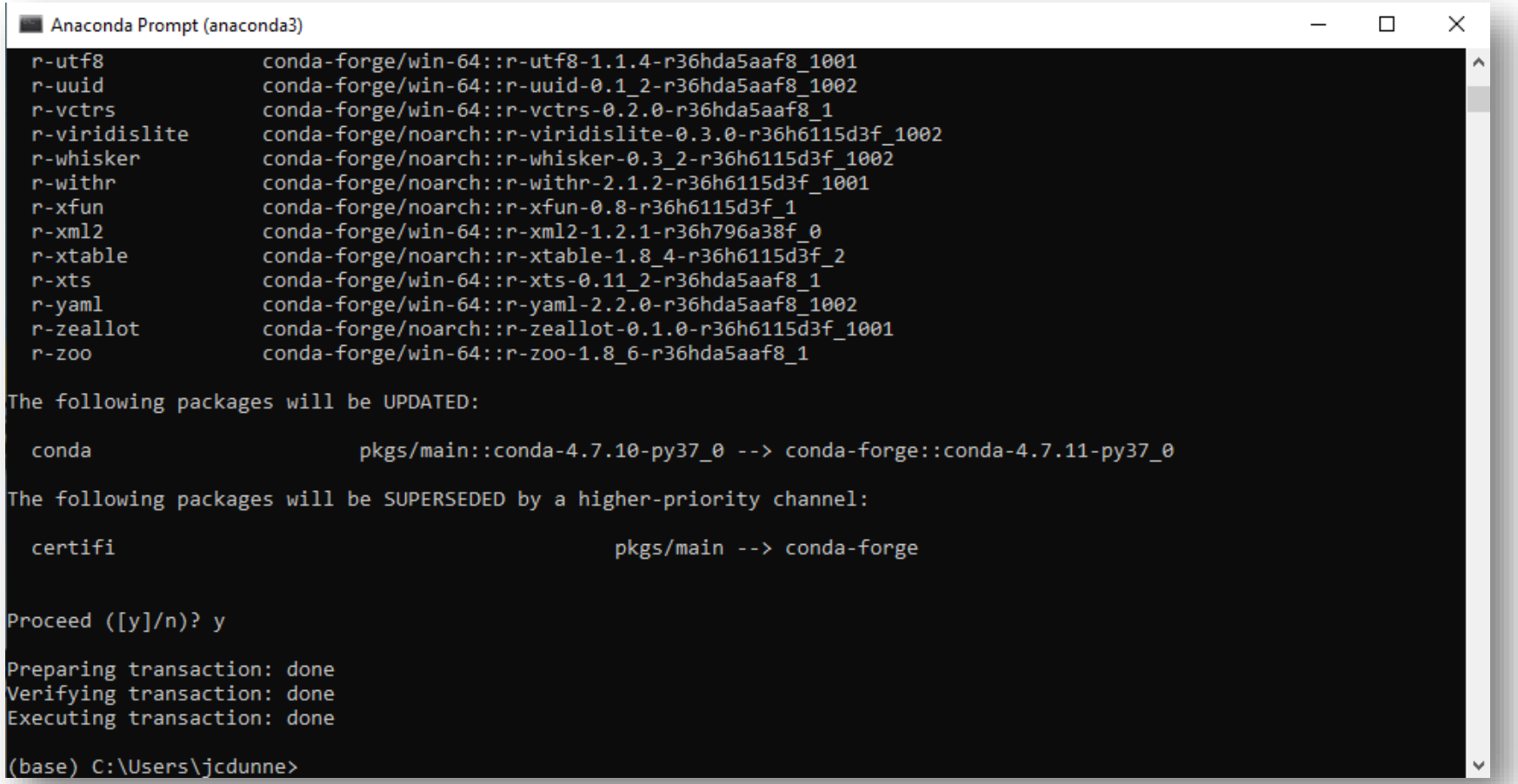


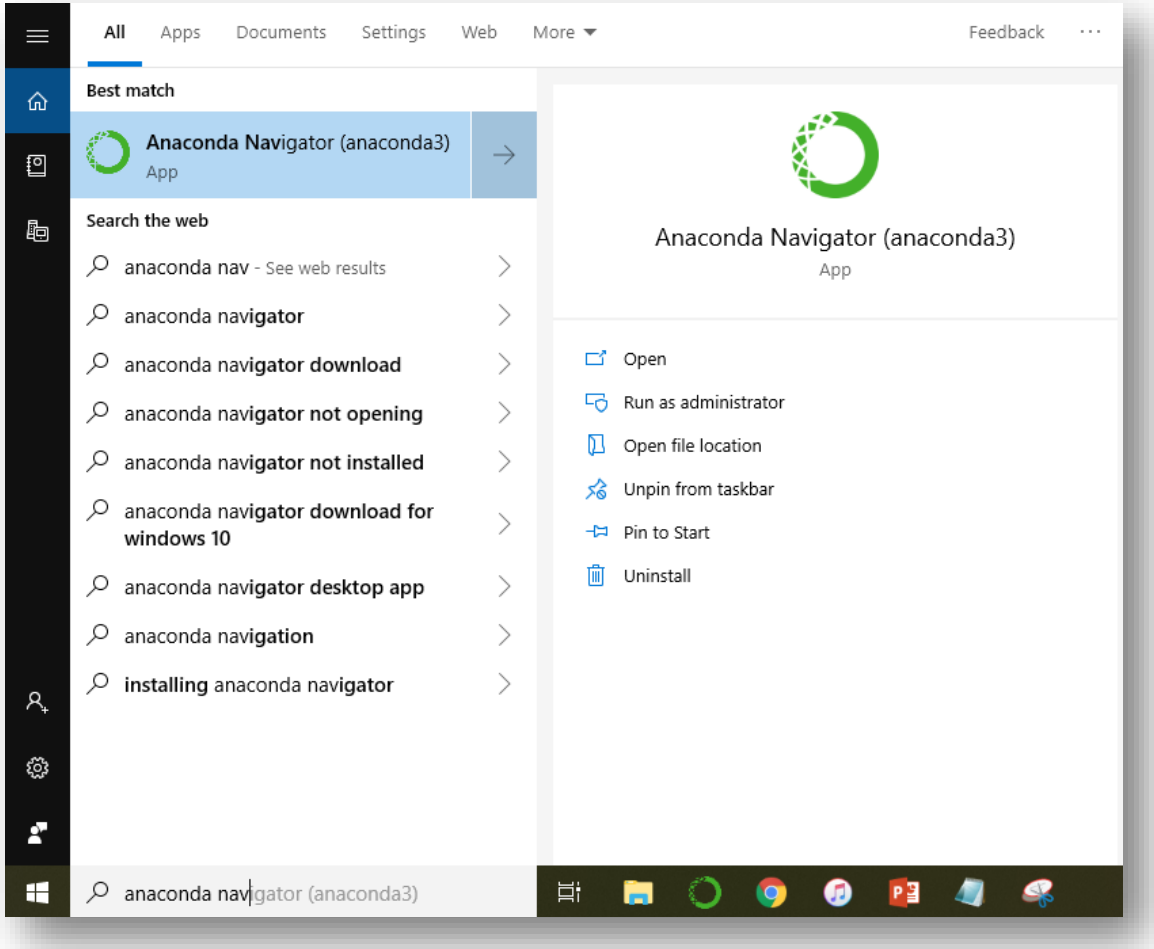
> Proceed ([y]/n)? y

Installing R / R-Kernel for Jupyter Notebooks



> exit

Launch Anaconda Navigator



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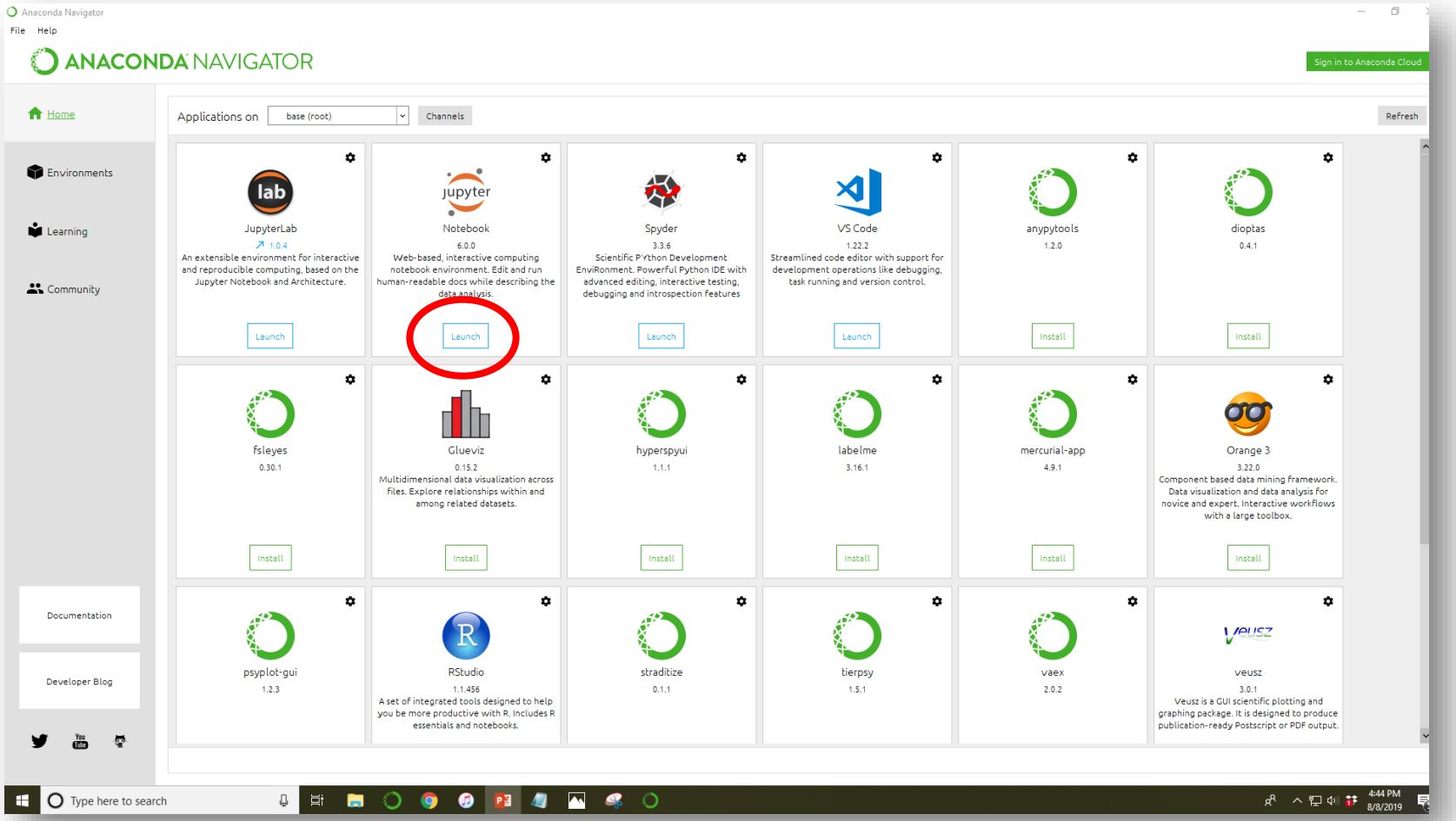

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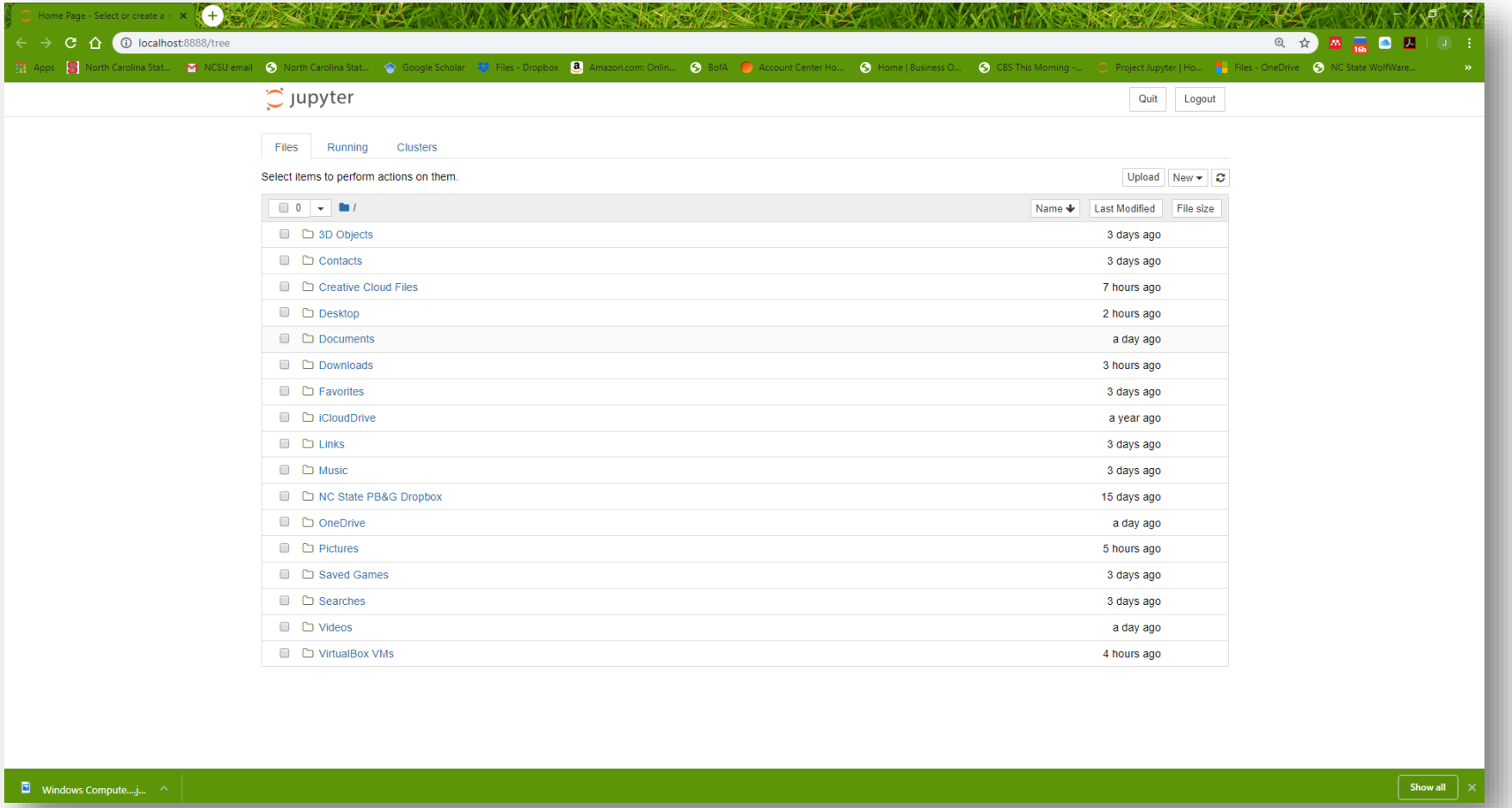

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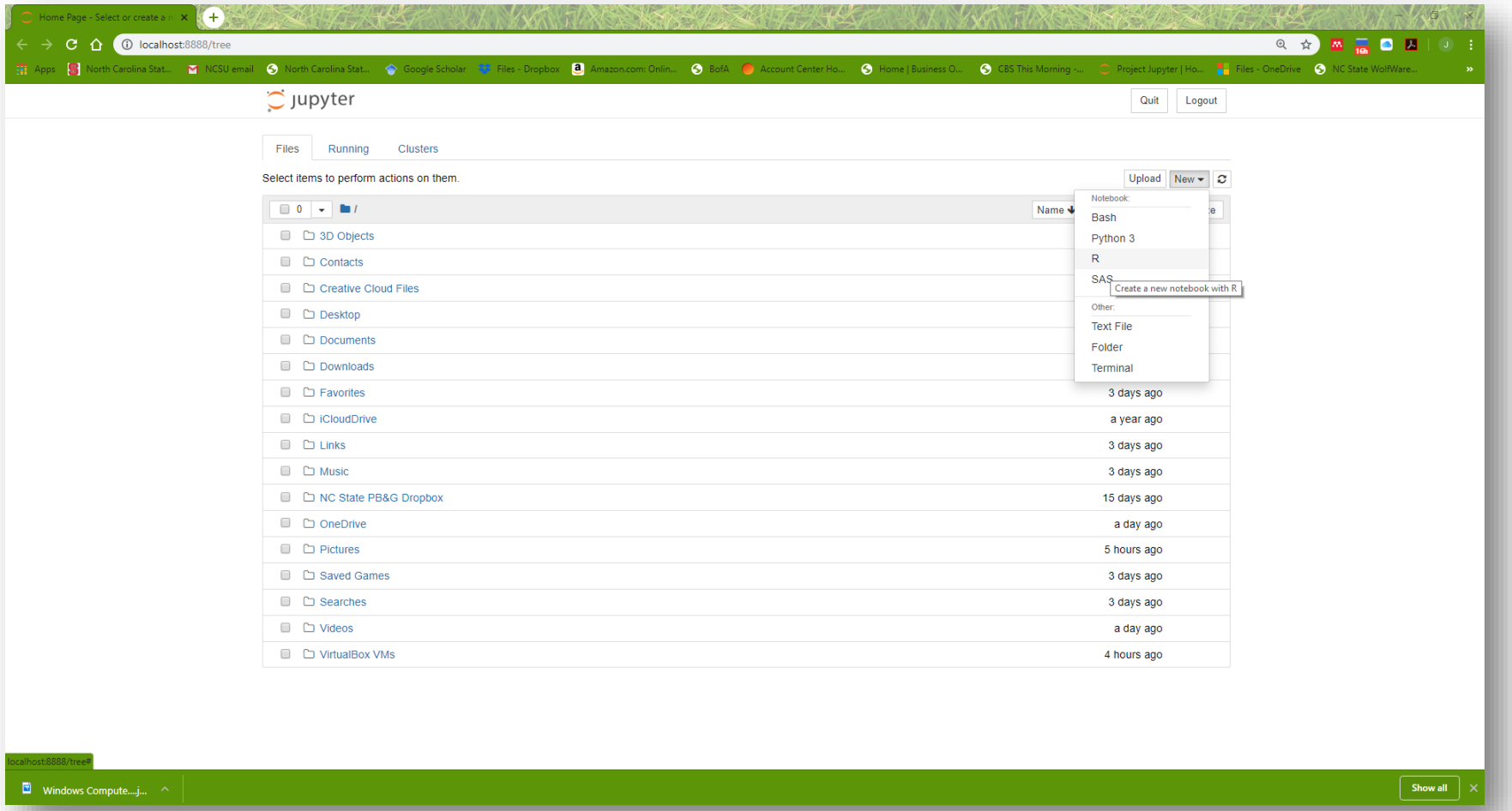

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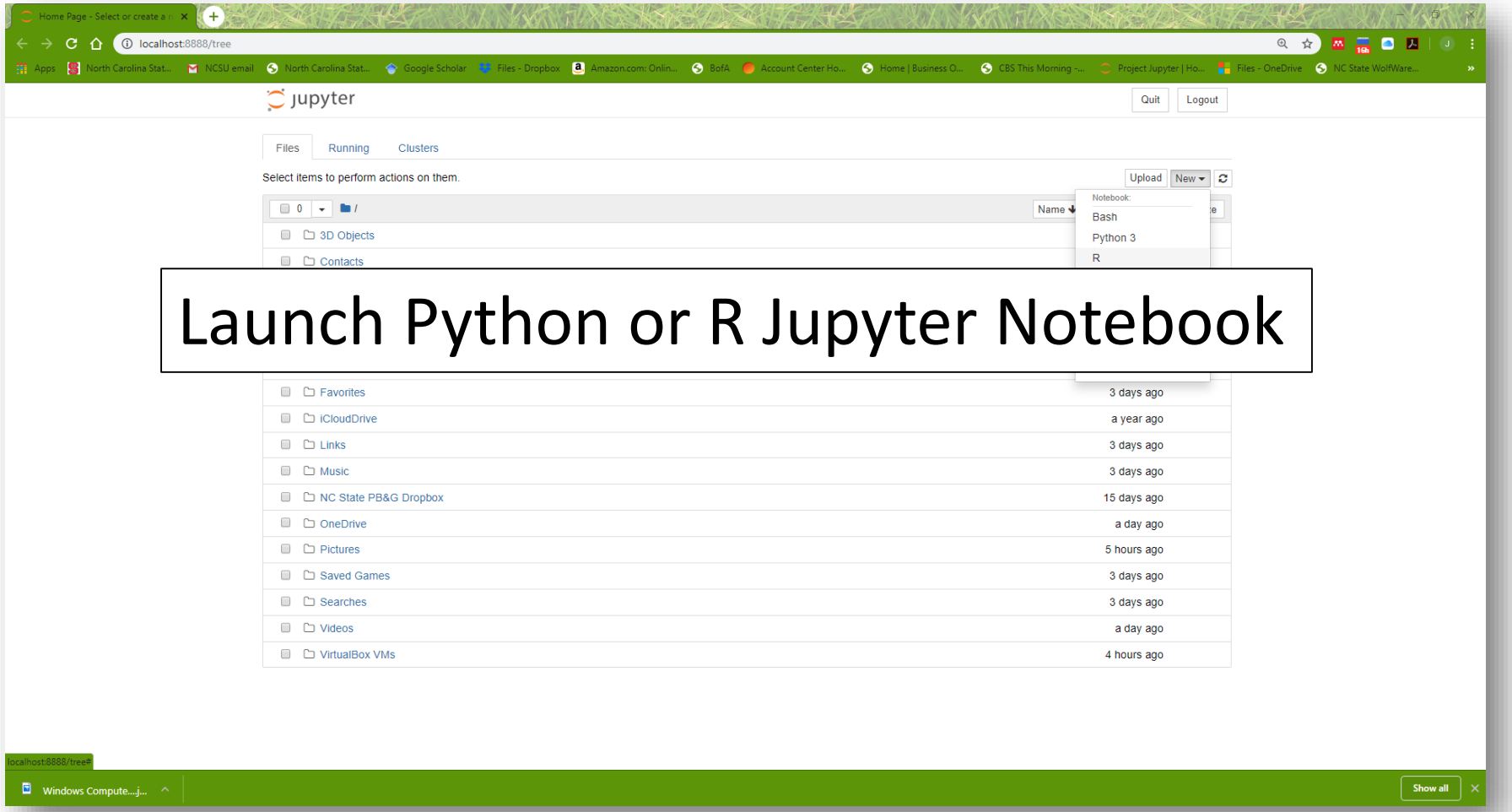
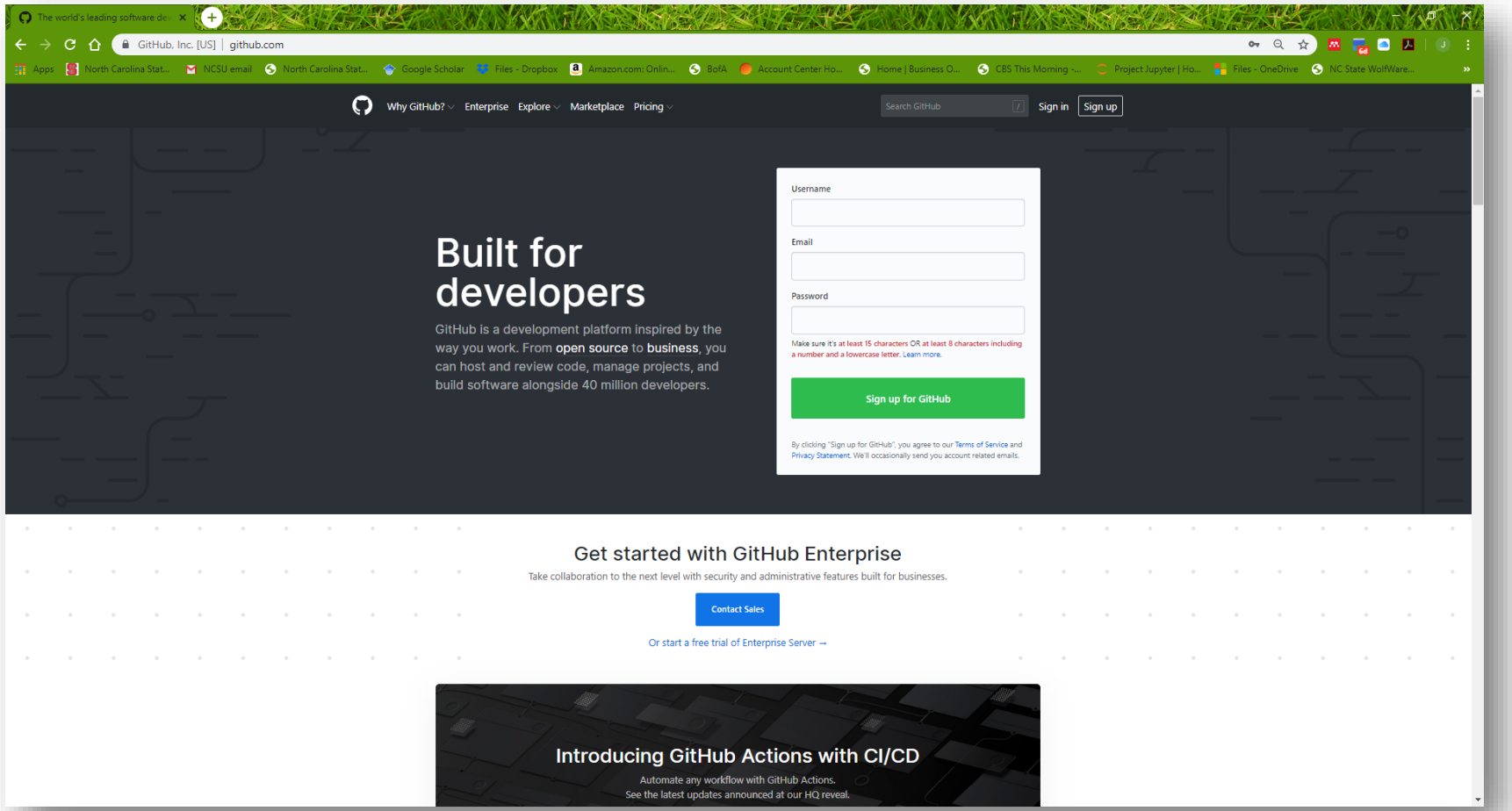
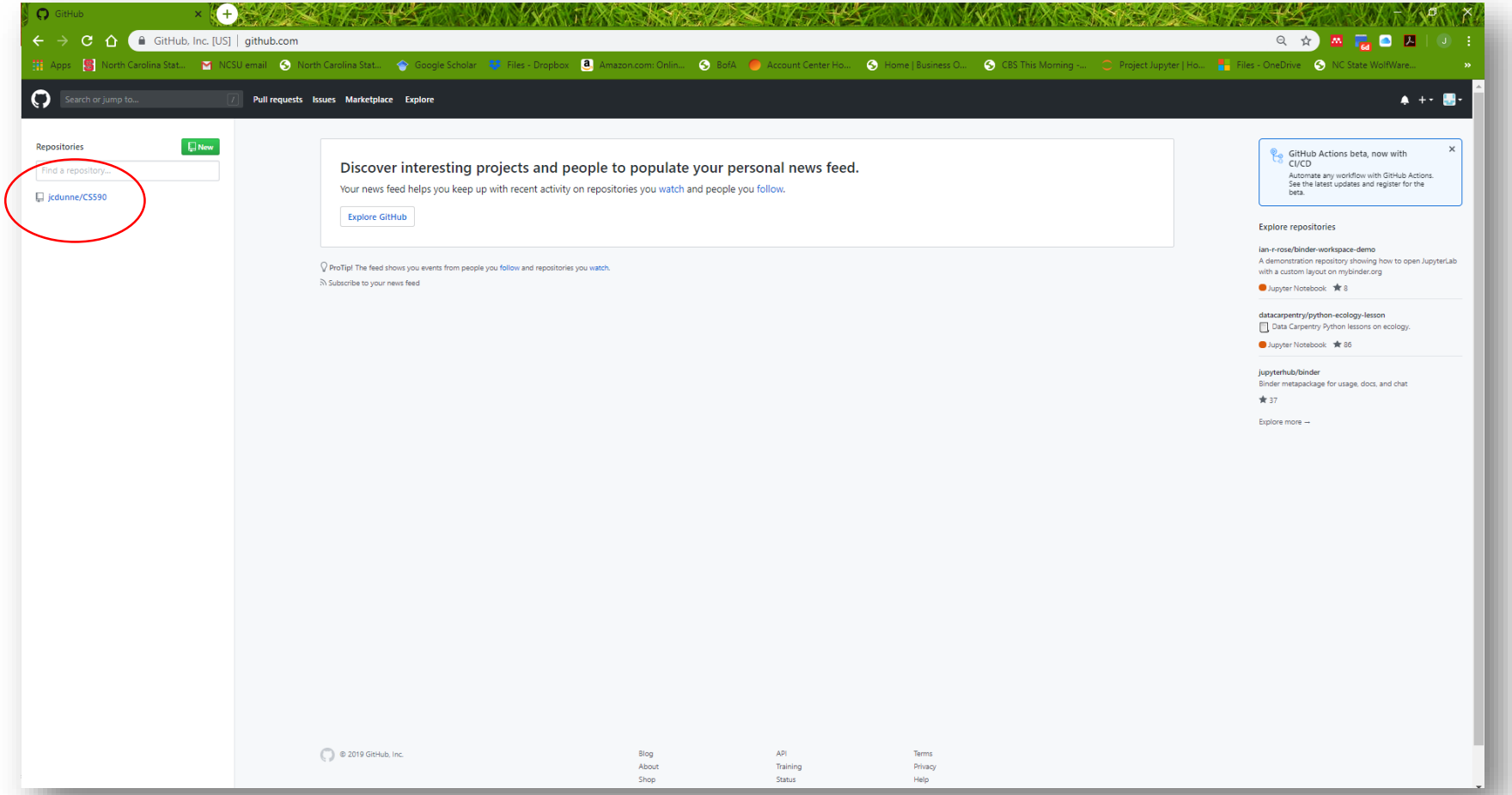


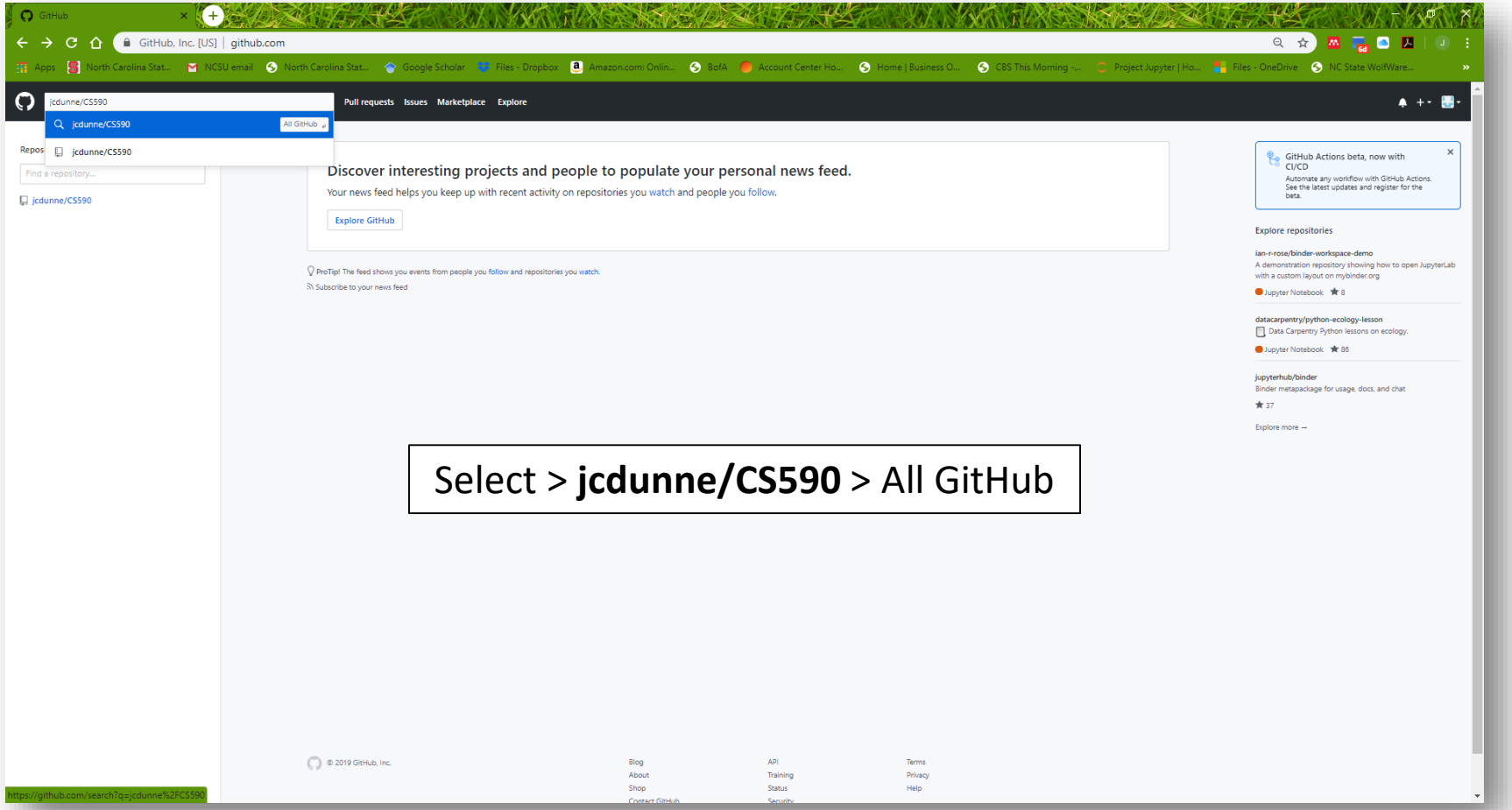
GitHub Exploration - Sign Up



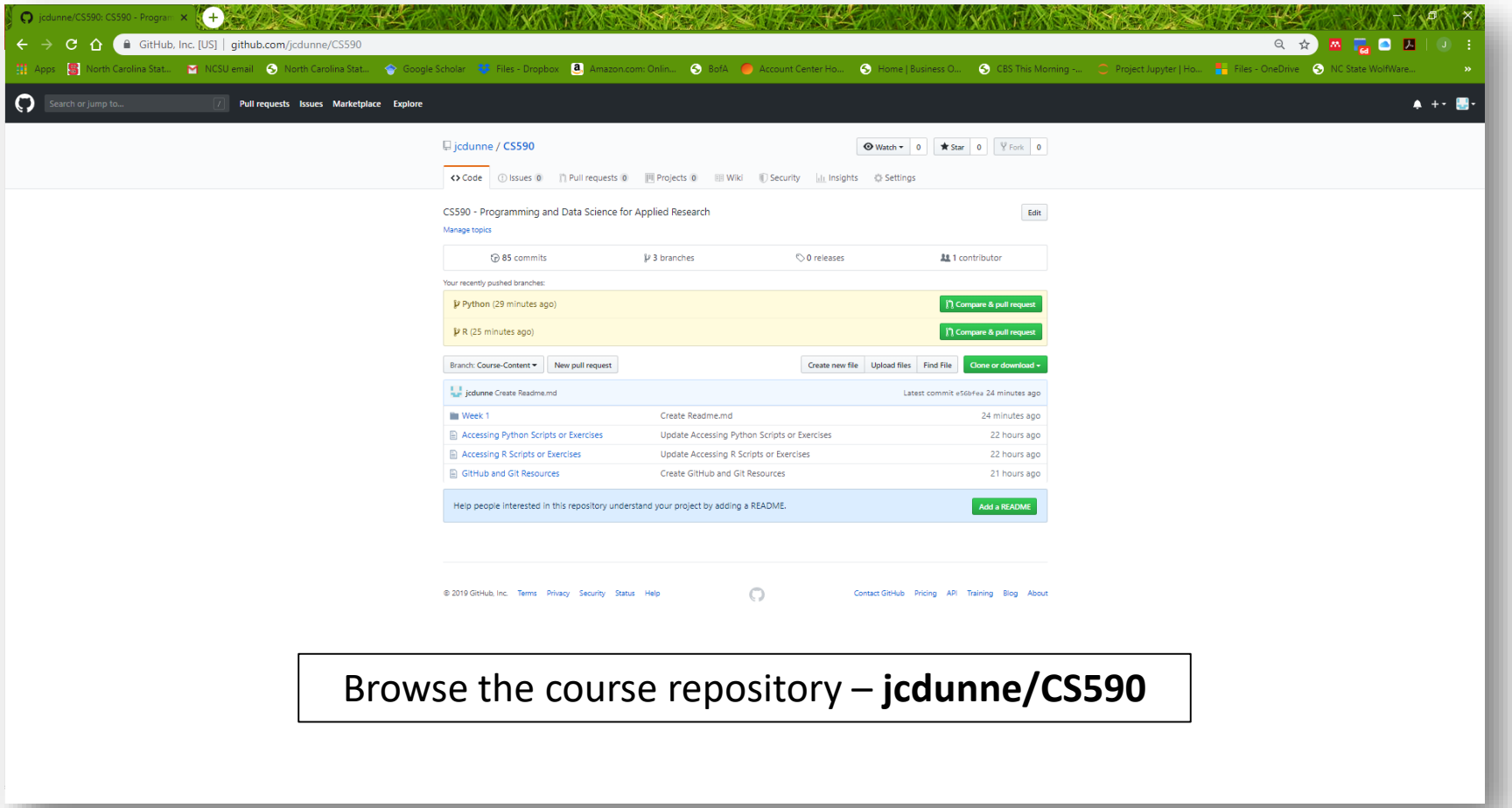
GitHub Repository – Course Content



GitHub Repository Search – jcdunne/CS590



GitHub Course Repository – jcdunne/CS590



Browse the course repository – **jcdunne/CS590**

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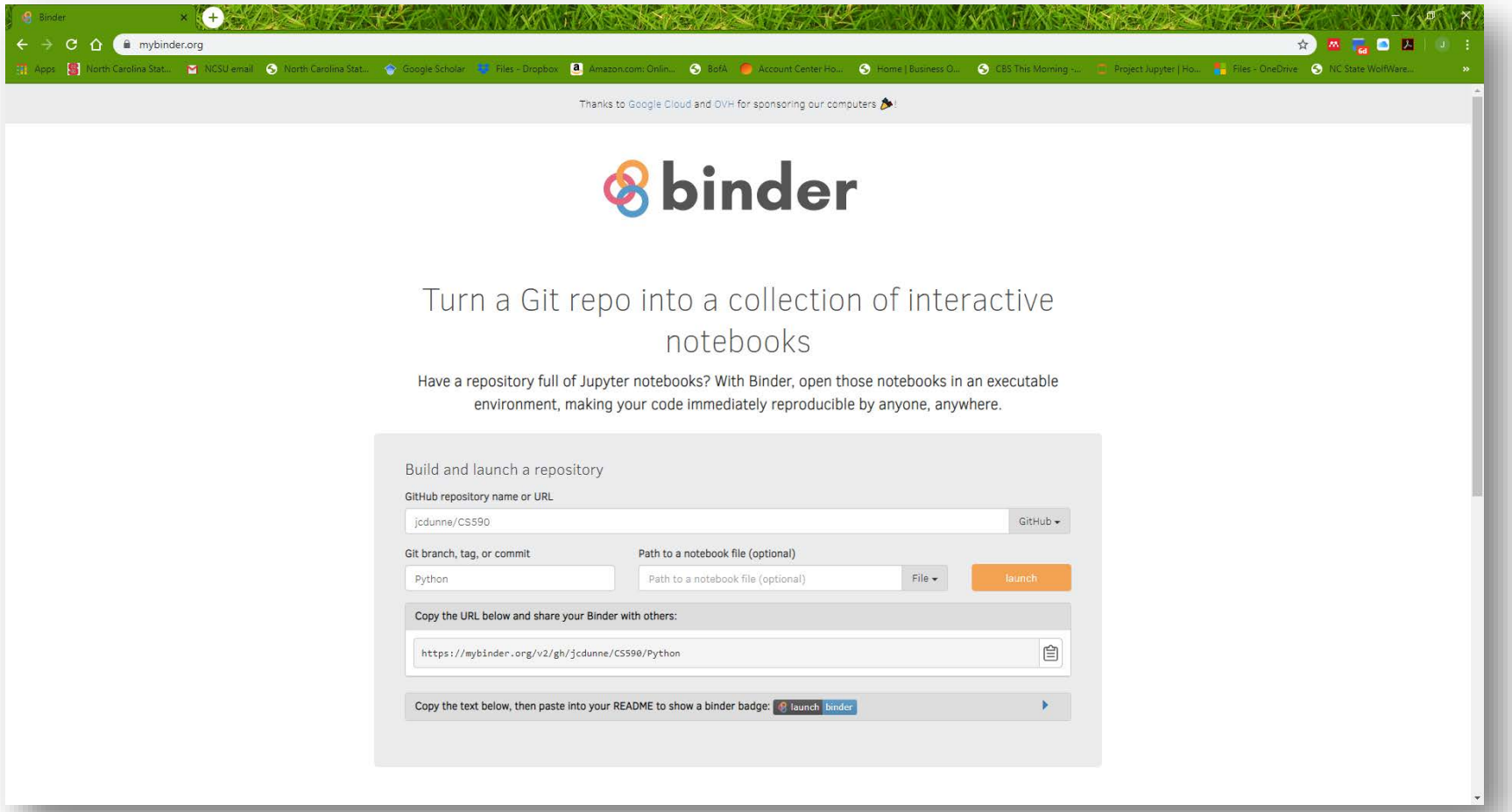
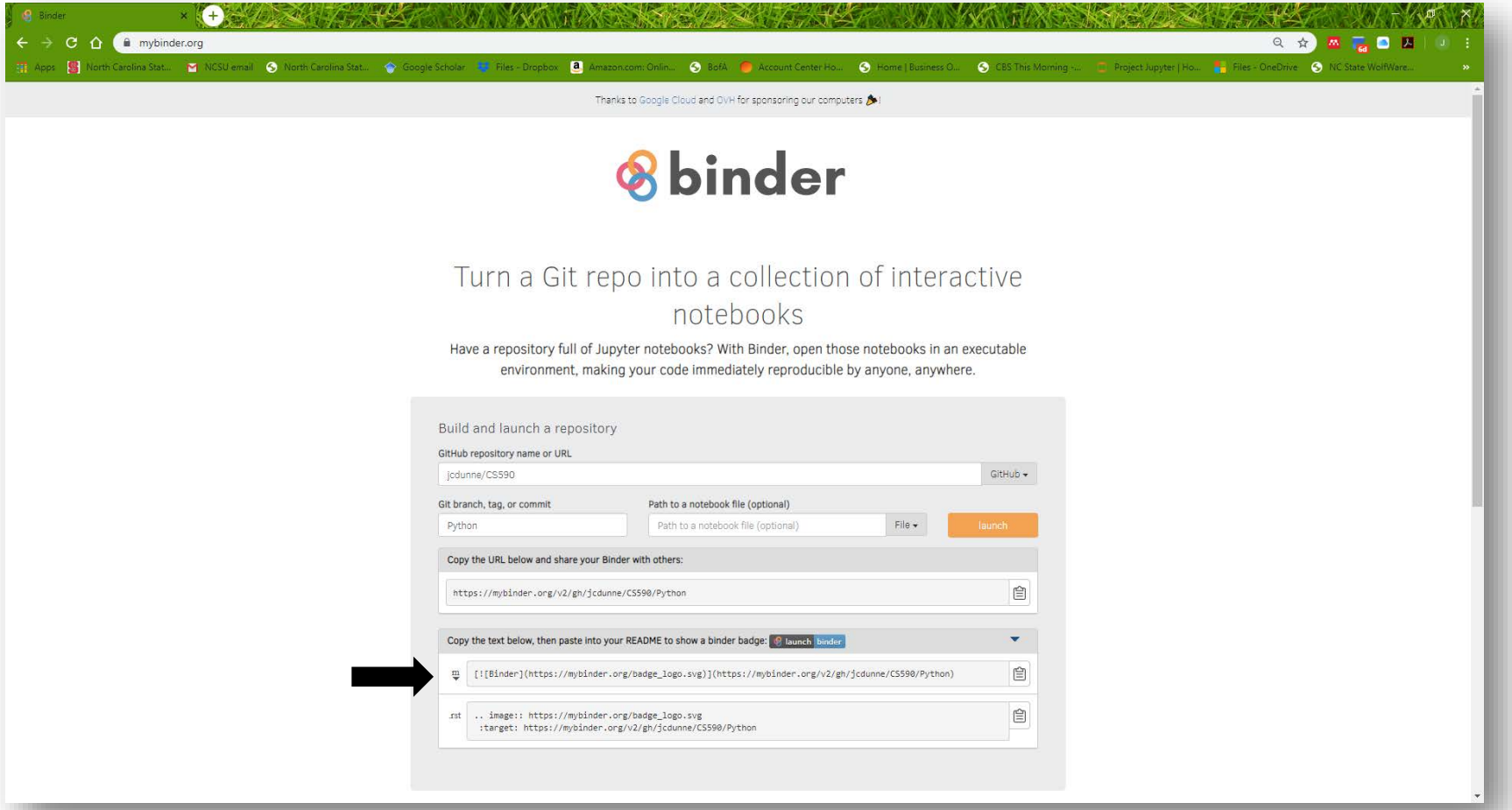
- Online Only (Binder/Docker Setup)

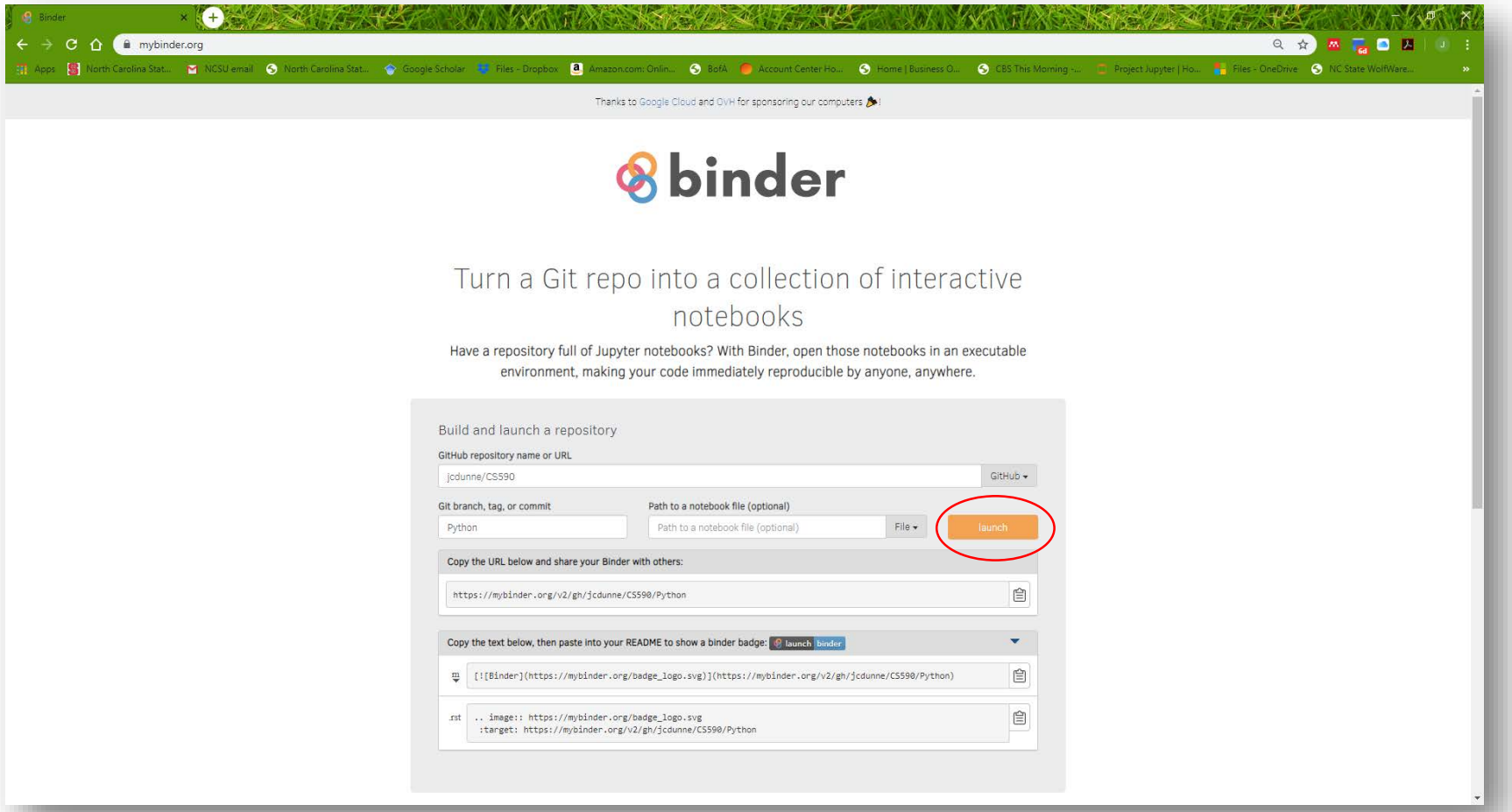
Binder Exploration – GitHub Input



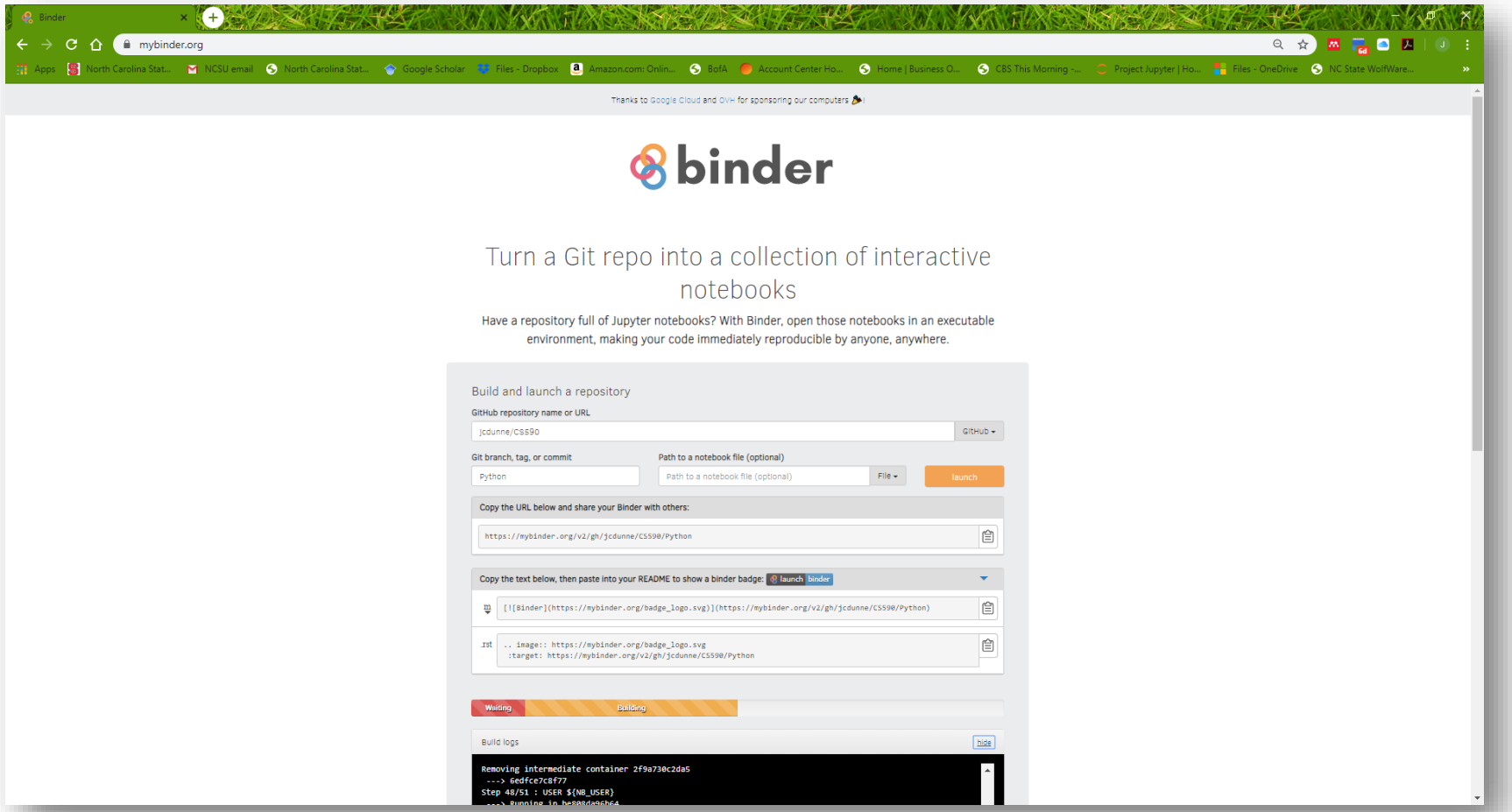
Binder Exploration – GitHub Rendering



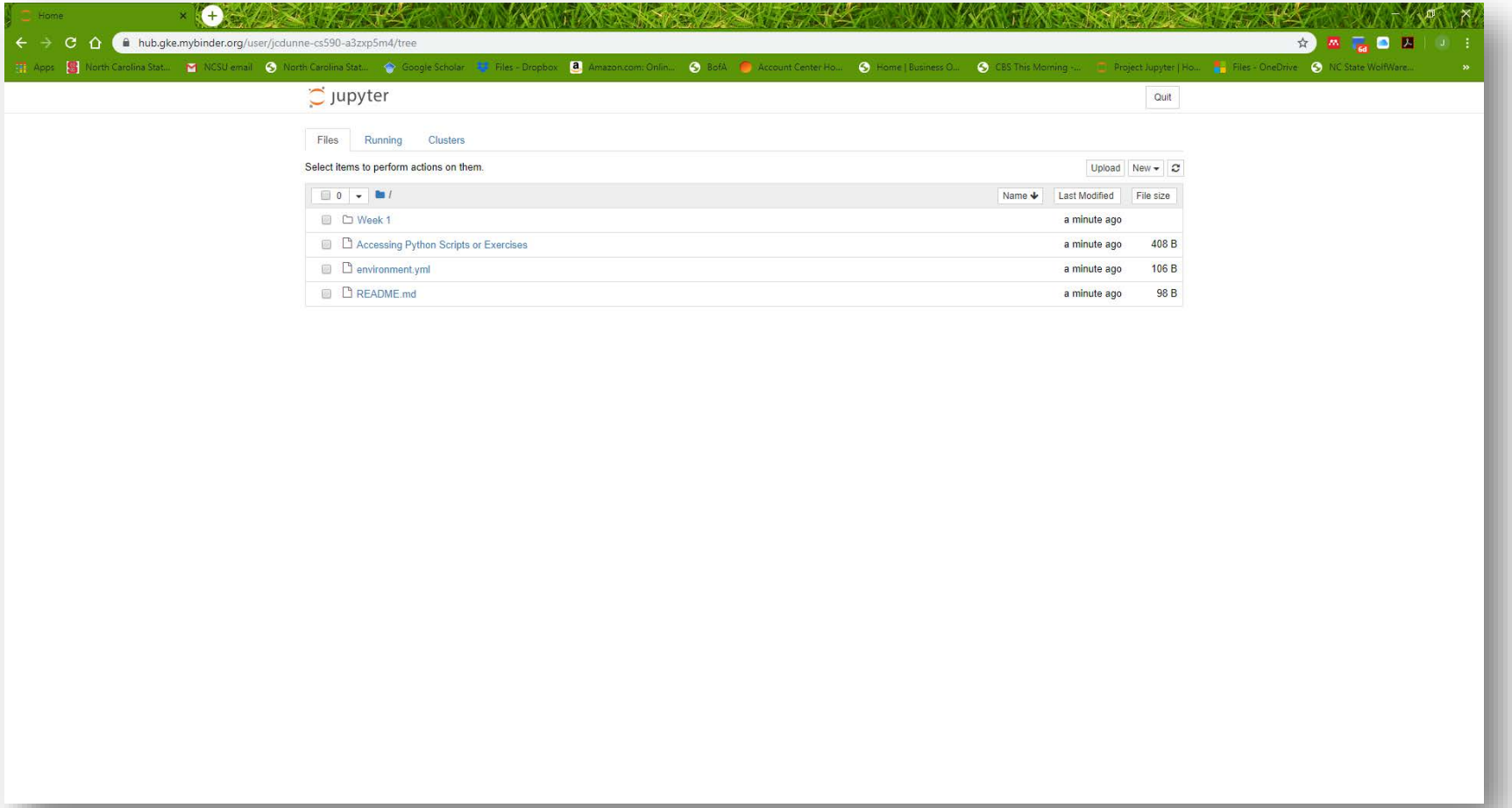
Binder Launch – Accessing GitHub Repository



Binder Build – Building the Environment

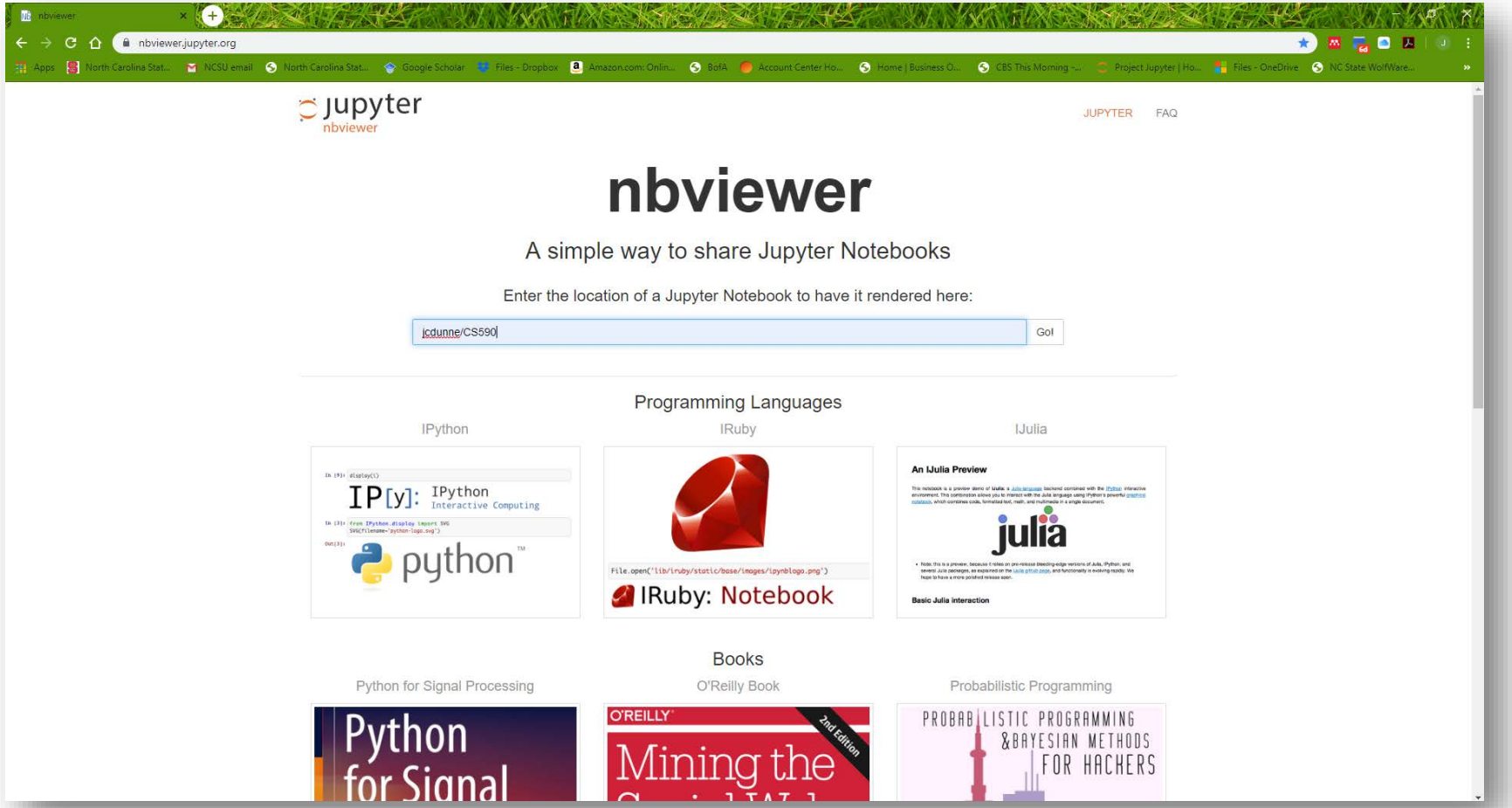


Binder Rendering – CS590/Python Repository

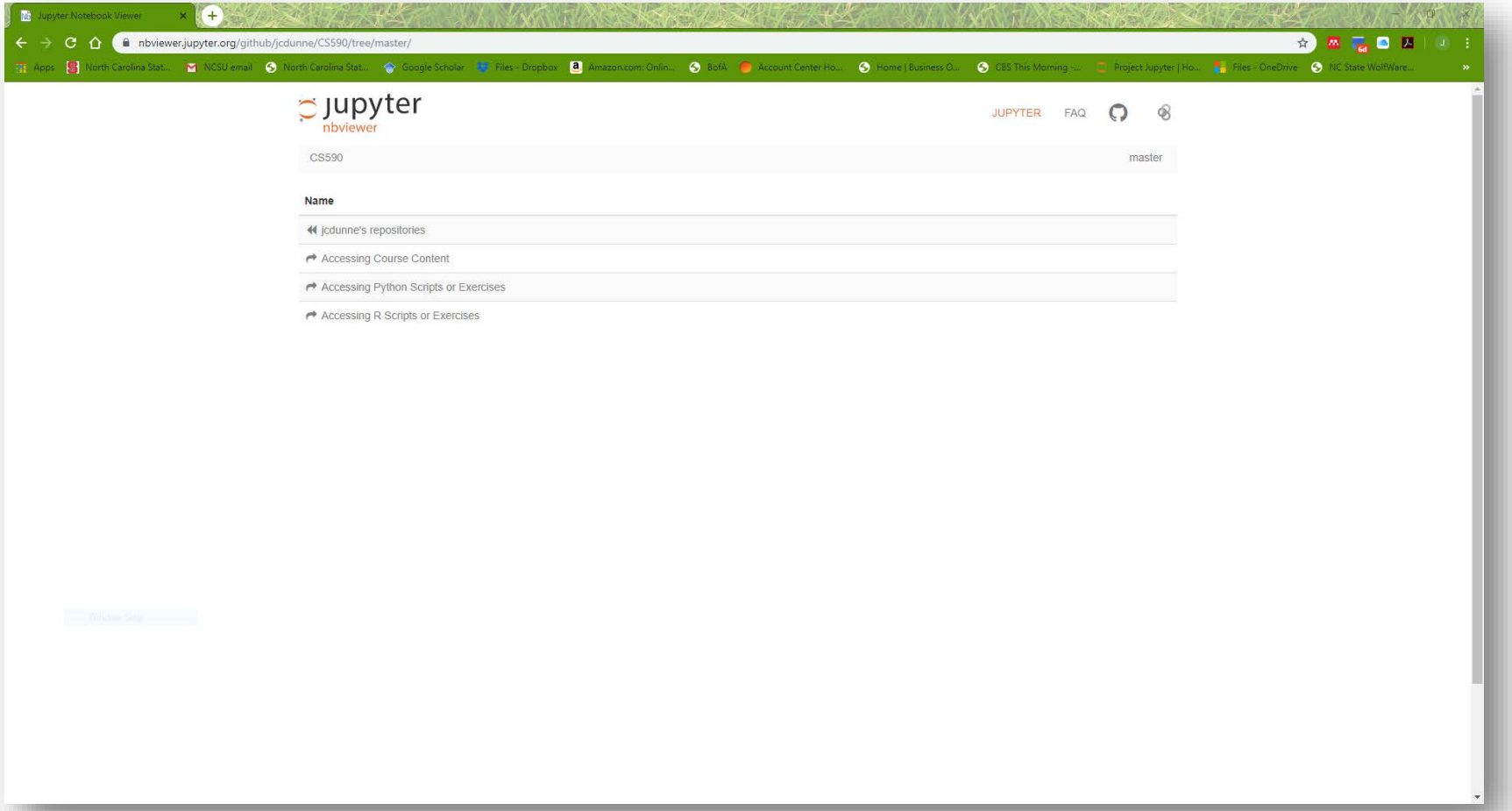


Jupyter NBViewer Exploration - Recommended

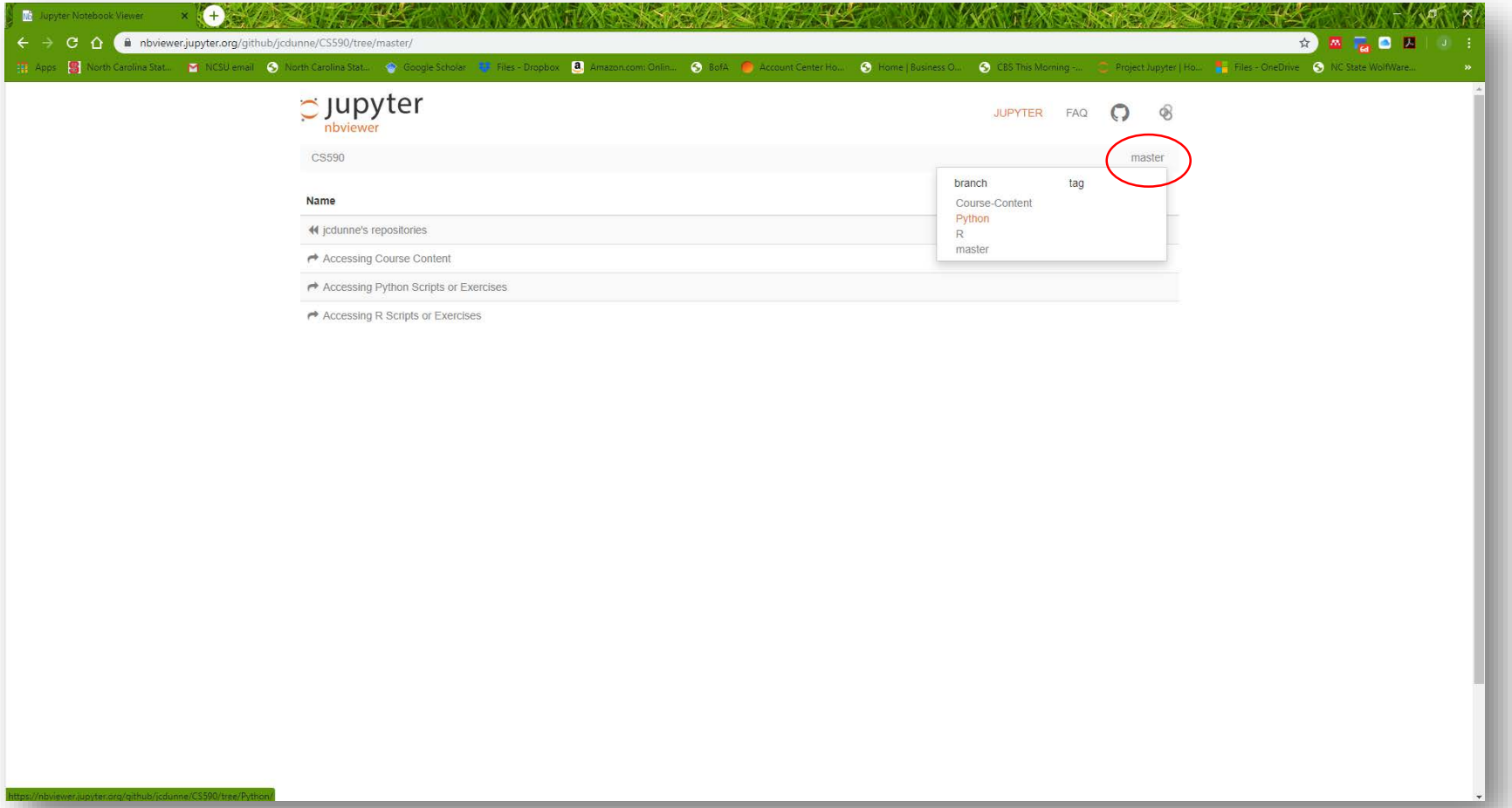
Jupyter NBViewer Search



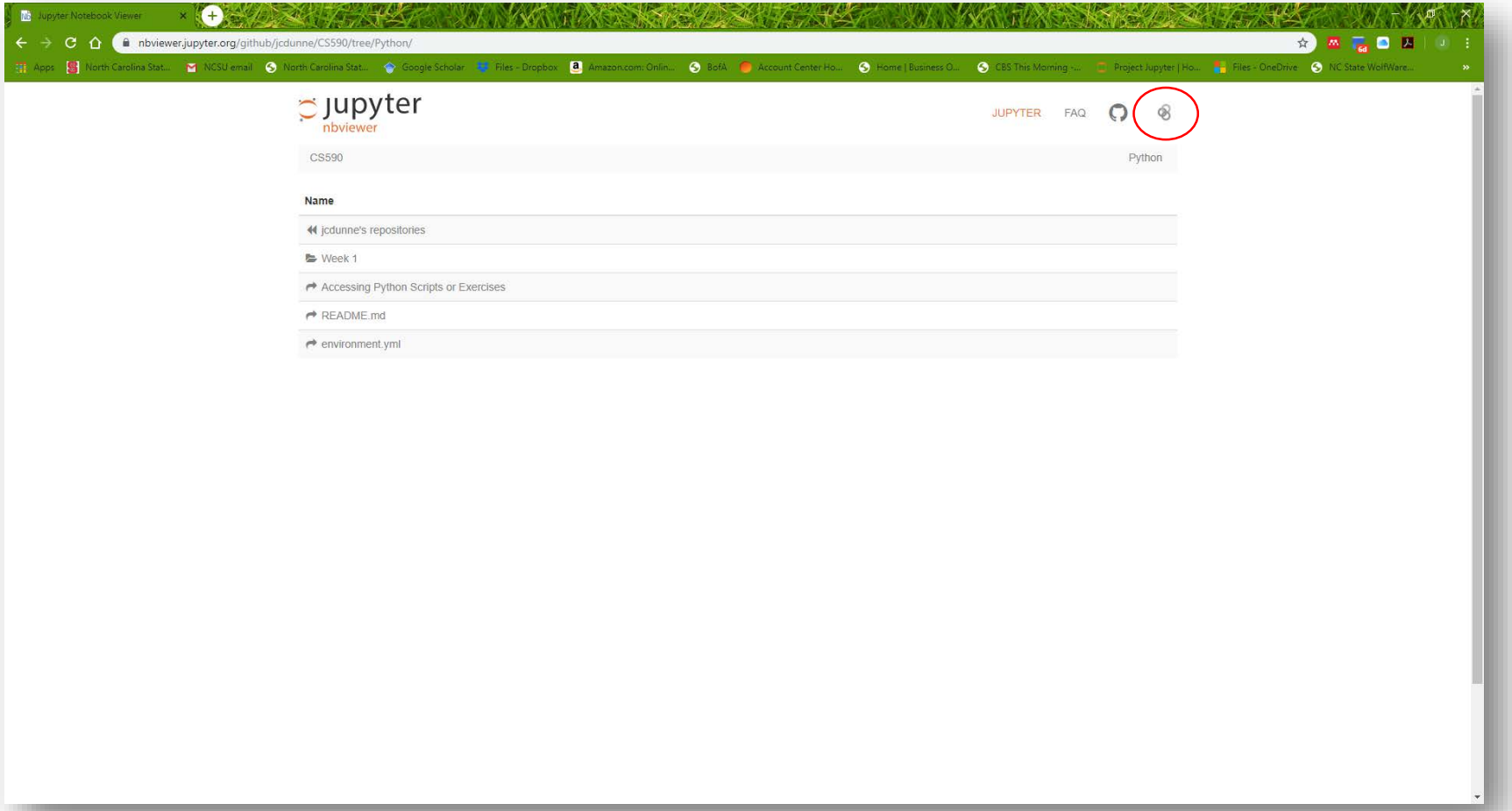
Jupyter NBViewer – CS590



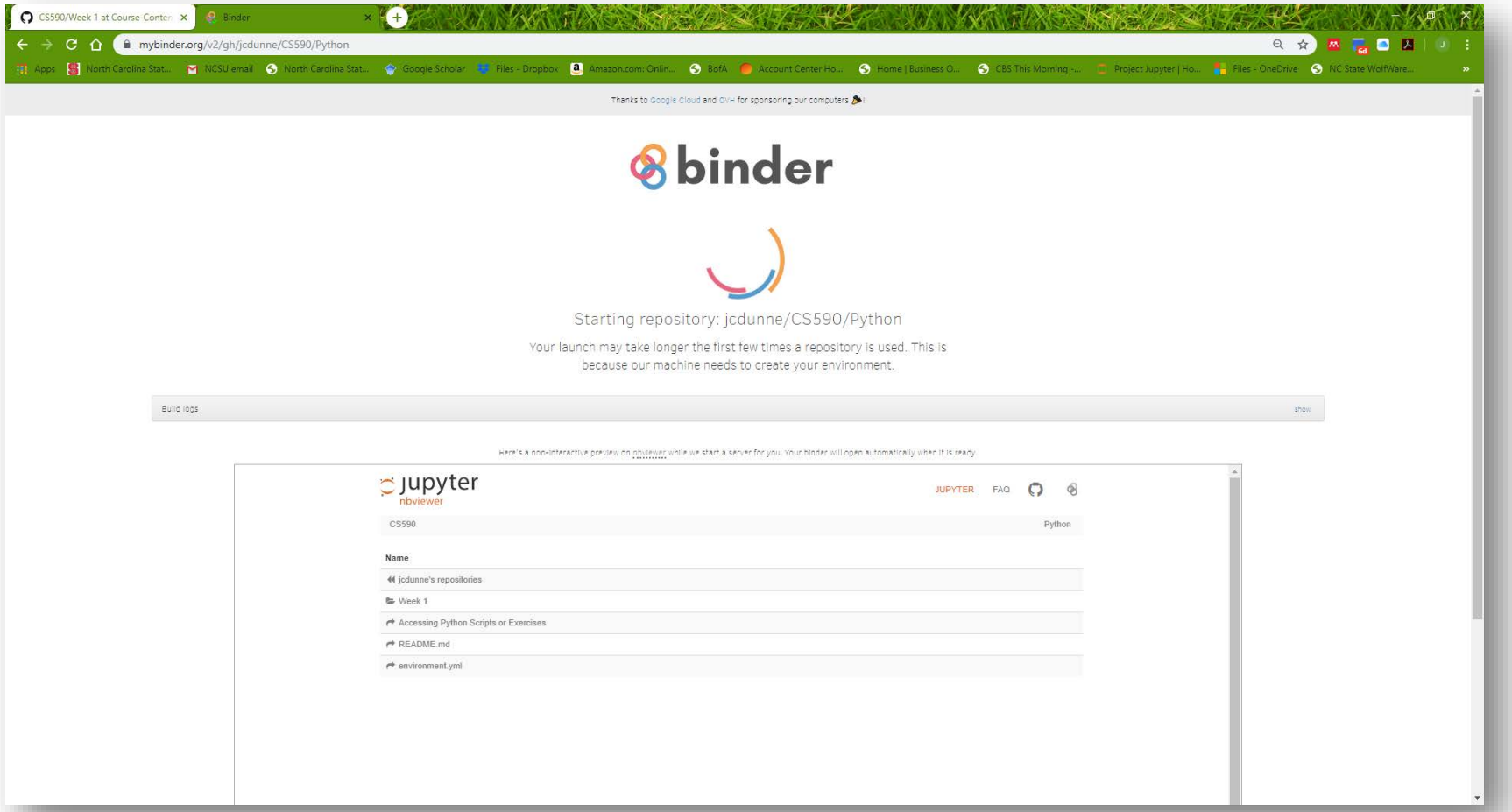
Jupyter NBViewer – Branch Selection



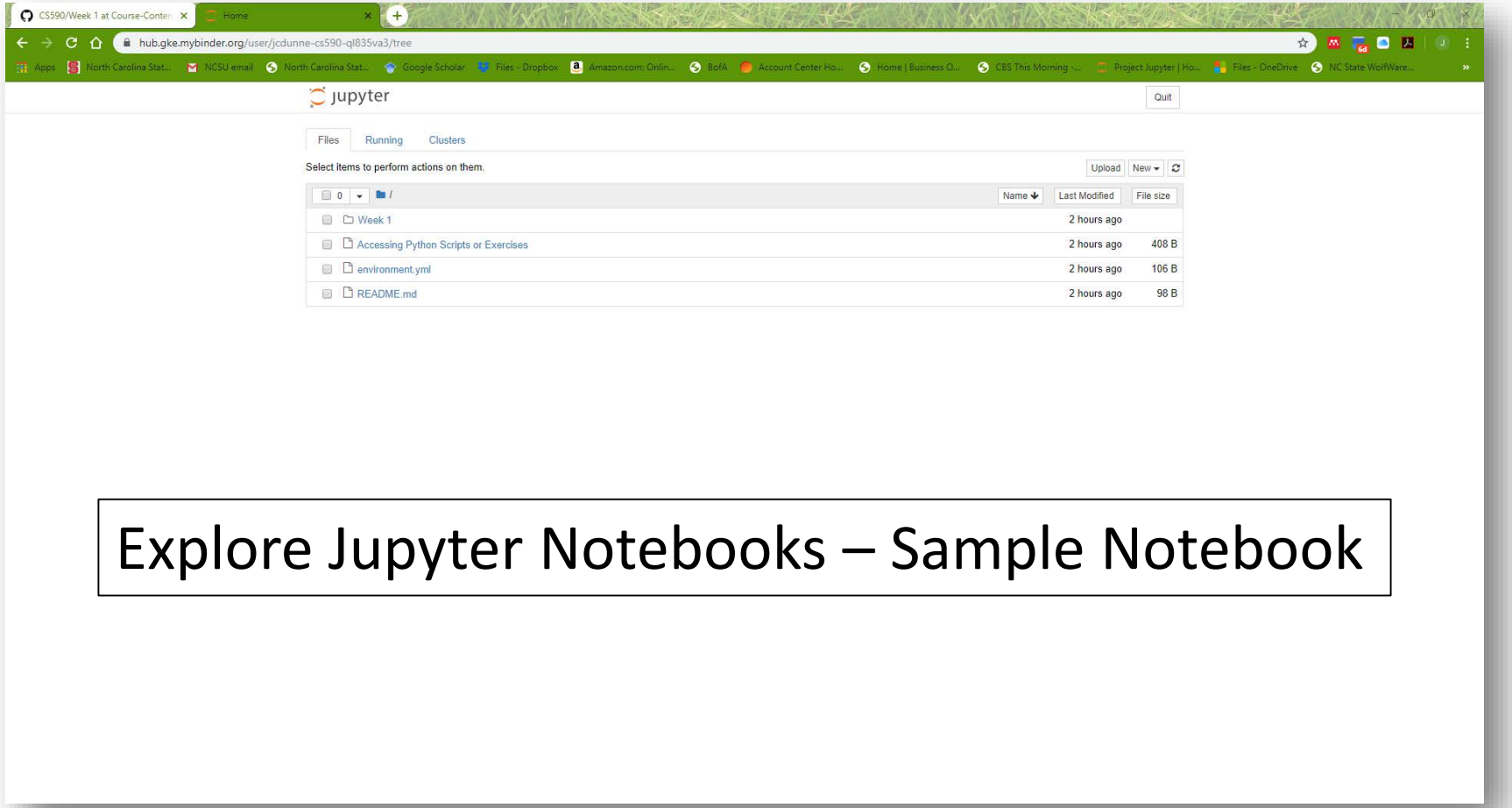
Jupyter NBViewer – Binder Build



Jupyter NBViewer – Binder Build



Jupyter NBViewer – Navigation Page



Explore Jupyter Notebooks – Sample Notebook