CYBR 520 Introduction

Version Control Systems

TOPICS

- Introduction to Version Control
- Working with Git and GitHub
- Introduction to Python

Let's talk Version Control

Version Control Systems are essential in developing computer software

Introduction to Version Control

- Version Control, sometimes referred to as “revision control”, “source control”, and “source code management”, is a process of tracking changes to files over time.
- One of the main goals of version control is to track changes that occur so that they can be reviewed and if necessary, rolled-back.

Version Control Systems

- Imagine that you and your group members are working on a project/ paper
  - Each must contribute by adding files/ text
  - How do we track contributions?
  - What if somebody “deletes” content, can we retrieve them?

Version Control Systems: Git

- There are a lot of version control systems in existence today. For this class we will be focusing on using Git:
  - A “distributed version control” system. Meaning you can keep a local repository on your computer (including history), and synchronize it with a remote repository

Working with Git and GitHub

- You will need to create an account with Github
- We will use the book's repository as an example
  - Copy a template repo
  - Clone the repo to your local machine

Creating a GitHub account

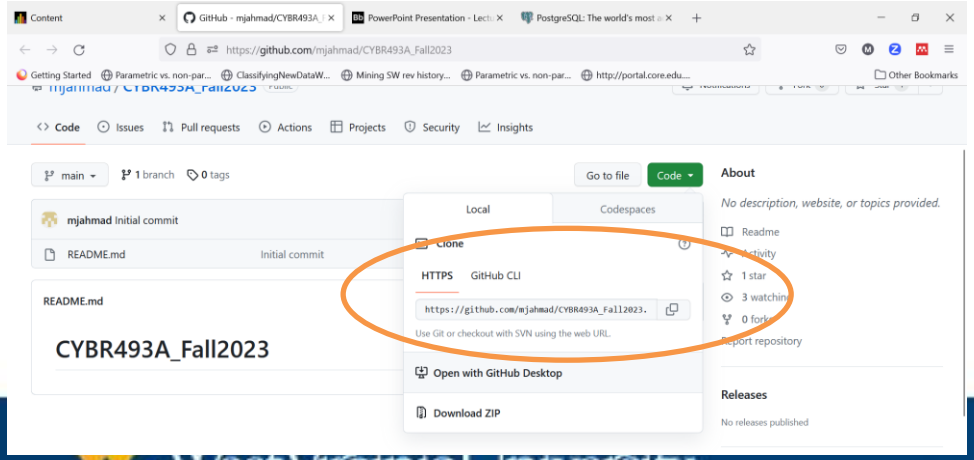
- To begin we will create an account on GitHub. To start:
  1. Open a web browser and go to https://github.com
  2. On the GitHub home page, click Sign up.
  3. On the Create your account page, enter your desired Username, Email address (use Mix please) and Password.
  4. Click to verify your account and solve the puzzle presented.

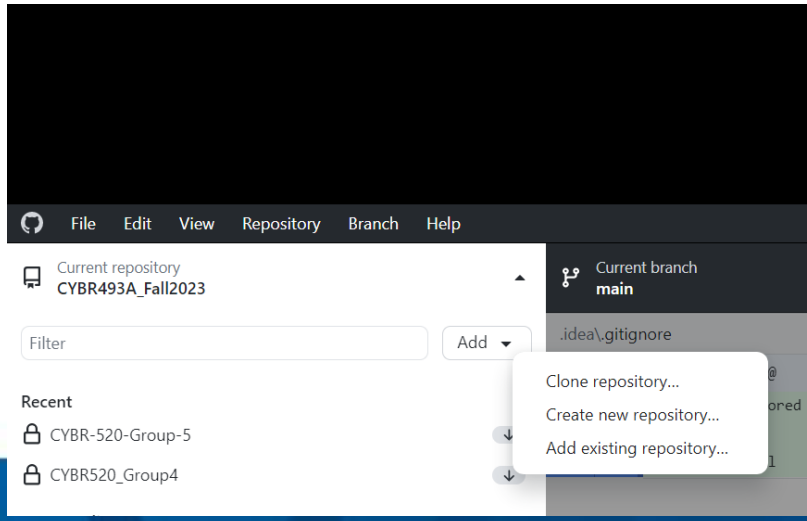
Github Desktop

1. You may also use a user-friendly application named Github Desktop
2. You can do everything using the Github Desktop application.

Install Desktop GitHub

- Direct download and installation.
- Then clone class's repo to your local machine
  - Get the link from our Repo, copy link
  - Then in Desktop GitHub, clone.





Cloning our repo

1. In the web browser, go to https://github.com/mjahmad/CYBR520_Fall2023.git , this is the our main repository, it also has the source code for the sample files in the text books.

Joining GitHub

1. Create an account on github, using your mix account.
2. Download and install Github Desktop
3. Create your own **private** repo
    1. Name is [Your First Name]_[Your Last Name]_CYBR520_Fall23.
    2. Add Dr. Ahmad[mahmad2@mix.wvu.edu] as a contributor
    3. Clone your own repo to your local machine
4. Clone our class Repo.

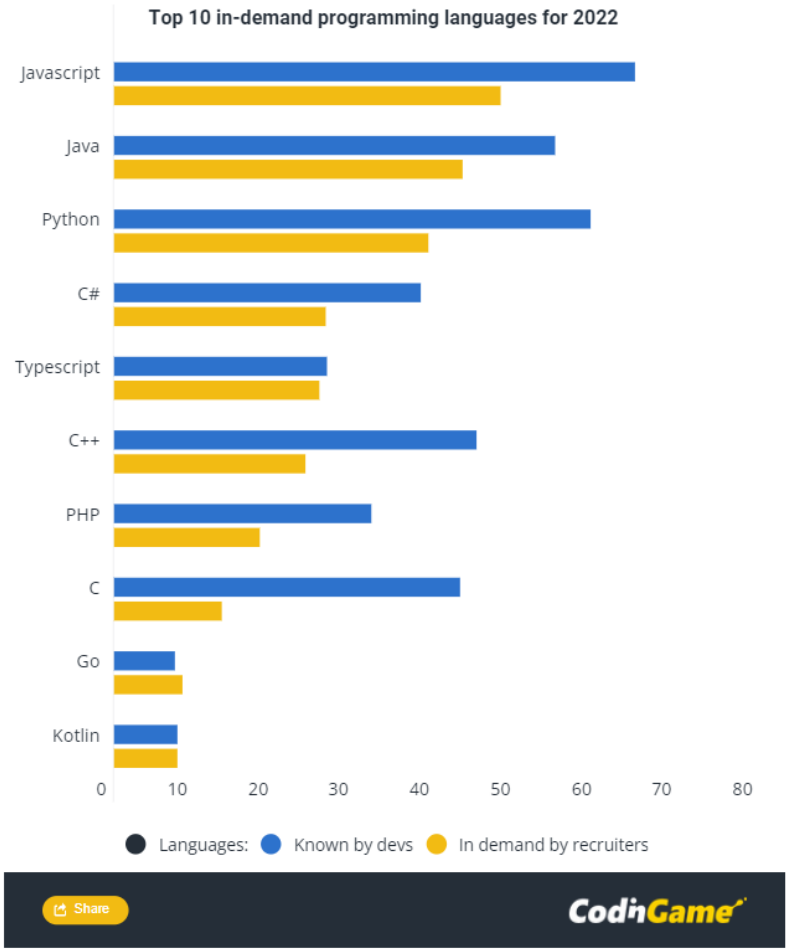
Introduction to Python

- Python is a “programming”/scripting language initially developed in 1989 by Guido van Rossum.
- Many of main tenants for the Python programming language center around readability and simplicity, which has made it extremely accessible and easy to use.
- Python is meant to be “fun to use” ☺

Introduction to Python

- In recent years, the flexibility and usability of Python has resulted in its use growing rapidly.
- Python has become a critical skill to know in several realms including:
  - Networking
  - cyber-security
  - systems management
  - data scientists
  - artificial intelligence

Introduction to Python



Simplest way to create a python file

- We write source code and save them in files.
  - These are known as source code files
- Source code files are nothing but text documents with fancy extensions:
  - Python => .py
  - C ++ => .cpp
  - Java => .java
- What do you think extensions are used for?

Keep in mind

- Your computer does not understand what Python/ Java/ C++ is.
- For each programming/ scripting language, the OS needs a program understand it and execute it.
- These are named compilers/ interpreter.
- This is what we mean when we say, install Python.

Source code: file extensions

- Each file consists of two parts:
  - Name
  - Extension
- The extension tells the Operating System (and users) what kind of file this is
  - Also allows the PS to use certain programs (compiler/ interpreter) to run the file.

Create and commit the following files

- One file named [your first name_last name.py]
- One file named [your first name_last name.java]
- If Python and Java are installed, these files should have different icons:
  - To check whether you have Python installed:
    - Go to Run => type cmd => type python and hit enter

    You should see a black screen with >> waiting for input, otherwise, you will need to install python.