**Git + GitHub**

* **WHAT:** 
  + A version control system allows you to keep track of changes to your documents.
  + This makes it easy for you to recover older versions of you document if you make a mistake, and it makes collaboration with others much easier.
  + With version control, you know exactly what you need after everyone has contributed their ideas.
  + Git is free and open-source software.
  + Distributed version control system.
  + Accessible anywhere in the world.
  + GitHub is one of the most popular web-hosted services for git repositories – others include:
    - GitLab
    - BitBucket
    - Beanstalk
  + GitHub Website: https://try.github.io/
* **Glossary:** 
  + **SSH protocol:** A method for secure remote login from a computer to another.
  + **Repository:** The folders of you project that are set up for version control.
  + **Fork:** A copy of a repository.
  + **Pull Request:** The process you use to request that someone reviews and approves you changes before they become final.
  + **Working Directory:** A directory on you file system, including its files and subdirectories that associated with a Git repository.
* **Basic Git Commands:**
  + When you are starting out with a new repository, you only need to create it once **(either locally, and then push to GitHub or by cloning an existing repository):**
    - This is done with the command: ***init***
  + To move changes from the working directory to the staging area you must use:
    - “***git add”*** – this moves changes from the working directory to the staging area.
    - ***“git status”*** - this allows you to see. The stage of you working directory and the staged snapshot of you changes.
  + To see you staged snapshots of changes that are made and want them committed to the project use:
    - ***“git commit”*** – this takes the snapshots and assigns them to the project.
  + To undo the changes that you have made you use:
    - ***“git reset”*** – this undoes the changes that you’ve made to the files in you working directory.
  + To browse past changes in one’s project you use:
    - ***“git log”*** – this allows you to brows previous changes to a project.
  + To create an isolated environment within your repository to make changes you use:
    - ***“git branch”*** – this allows you to create that isolated environment in order to make changes.
  + To change existing branches, you use:
    - ***“git checkout”*** – this lets you view and edit your current branches.
  + To put everything together again you use:
    - ***“git merge”*** – this ensures that everything is put back together in one place.
* **Introduction to Git:** 
  + Large software projects need a way to track and control source code updates.
  + Linux needs automated source-version control.
  + **Key Characteristics Include**:
    - Strong support for non-linear development.
    - Distributed development.
    - Compatibility with existing systems and protocols.
    - Efficient handling of large projects.
    - Pluggable merge strategies.
* **Git Repository Model**:
  + ***What is special about the GRM?***
    - Distributed version-control system.
    - Primary focus is on tracking source code during development.
    - Coordinates among programmers.
      * Track changes.
      * Supports non-linear workflows.
      * Provides a central point for collaboration with a primary focus on agile development methodologies.
    - When use correctly:
      * Teams have controlled access scope.
      * The main branch should always correspond to deployable code.
    - This model was created in 2005 by Linus Torvalds.
  + **REMEMBER:** 
    - * GitHub is an online hosting service for Git repositorieS
      * They are hosted by a subsidiary of Microsoft
      * A repository is a data structure for storing documents including application source code.
      * GitLab: this is a DevOps platform, delivered as a single application.
        + GitLab provides access to Git Repositories.
        + Provides source code management.
        + Developers can collaborate.
        + Developers can work from their own local copy.
        + Developers can branch and merge code when required.
        + Developers can streamline testing and delivery with CI/CD.
* **GitHub Repository:** 
  + Website: <https://github.com>