**Git Research**

* **Version Control Software**, also known as revision control systems, helps teams track and manage changes to files over time. It's a fundamental tool for agile development, as it promotes collaboration, history tracking, rollback, and code review. **Git** is a distributed version control system that tracks changes in computer files. It is often used to coordinate work among programmers who are collaboratively developing source code.
* **Git-ADD** - Add file contents to the index- This command updates the index using the current content found in the working tree, to prepare the content staged for the next commit. It typically adds the current content of existing paths, but with some options, it can also be used to add content with only part of the changes made to the working tree files applied or remove paths that do not exist in the working tree anymore.
* **Git-COMMIT** - is a snapshot of the project's state at a specific point in time. It is a collection of changes that have been made. COMMITS are the building blocks of a Git repository. To create a commit, you use the git commit command. This command takes a message as an argument, which describes the changes that have been made. The message should be concise and informative, and it should start with a summary of the changes, followed by a more detailed description.
* **Git-PUSH** - The git push command is used to transfer commits from a local repository to a remote repository. This process synchronizes the local and remote repositories, ensuring that both contain the same code. The git push command is the opposite of git fetch, which imports commits to local branches. Some best practices for using git push include Pull, Commit, Push, Resolve duplicates, Commit new changes. To rename a branch, use the git push command with an additional argument. For example, git push REMOTE-NAME LOCAL-BRANCH-NAME:REMOTE-BRANCH-NAME pushes the LOCAL-BRANCH-NAME to REMOTE-NAME, but renames it to REMOTE-BRANCH-NAME. A push policy can be used to limit the number of branches and tags that can be updated in a single push. This can prevent potentially destructive pushes and limit data loss.
* **Git-PULL** - The term "pull" is used in Git to receive data from GitHub. The git pull command updates the local version of a repository from a remote. It is a combination of the git merge and git fetch commands:
  + **Git-FETCH**: Downloads files, commits, and refs from a remote repository into the local repo. This is used to see what others have been working on.
  + **Git-MERGE**: Merges changes of the fetched onto the checked out branch.
* **The git pull command has two parts:**
  + Syncs the remote-tracking branch with the "true" branch in the remote repository.
  + Compares the local branch to the remote-tracking branch and receives the new commits.
    - The simple command to pull from a branch is git pull 'remote\_name' 'branch\_name'.
* **Git-CLONE** - is a copy of an existing Git repository. The original repository is typically on a remote server, such as GitHub, Bitbucket, or GitLab. The git clone command downloads the repository to your local computer, creating a local version of the Git repo. This creates a sandbox for experimenting without affecting the original code base. It also establishes a connection between the local repository and the remote repository, allowing push and pull actions.