**Version Control Systems Report**

**Introduction**

In this report, I will define version control and the benefits of using a version control system.

The report will then briefly explore three different version control systems, namely Git and Apache Subversion. I will then explain in greater detail the configuration and installation of one of the above version control systems.

**What is version control?**

Version control is the process by which developers log and manage updates to their code. To ensure these updates are recorded and managed effectively and accurately, a developer (particularly in a team environment) will employ dedicated software known as a version control system [[1]](#footnote-0).

**The benefits of version control**

Regardless of the complexity of a program or the size of the team a developer is working in, version control is a crucial aspect of the development process as it provides the ability to record changes, view older versions of your work and return back to them if required [[2]](#footnote-1). The tracked changes in effect, help the developer or others understand exactly what has occurred throughout the development process and differentiate between older and newer versions of their project.

Another benefit of version control is that it makes the process of collaboration far easier, particularly when working in large teams and on complex projects. With a version control system, teams are able to collaborate simultaneously or asynchronously as the software helps manage and communicate with team members the state of the project and everyone's contributions [[3]](#footnote-2).

**Version control software**

**Git**

Git is the most widely used version control system in software development. It is free, open-source and an example of a distributed version control system (DVCS) [[4]](#footnote-3). A DVCS, unlike a central version control system, enables the user to have a local copy of the repository in addition to the main repository on their computer allowing them to commit, branch, merge and delete locally [[5]](#footnote-4).

Git offers a number of advantages as a DVCS including:[[6]](#footnote-5)

* Provides copies of the repository stored on either a local machine/s and/or server in the event of an individual device failure.
* Versatility to work on and offline by merging an offline local copy with the main repository at a later date.
* Reduced merge conflicts with team members as users the distributed nature of git allows the user to work on their own code locally.

**Apache Subversion**

Apache Subversion is a centralised version control system created by CollabNet, Inc., in 2000[[7]](#footnote-6) as an alternative to Concurrent Versions Systems (CVS)[[8]](#footnote-7).

Apache Subversion offers the following features:[[9]](#footnote-8)

* Branching, merge tracking and committing
* Copy, delete and rename version functions
* File locking

**Git & Globex’s organisational requirements**

As shown above, Git offers a superior version control experience in comparison to Apache Subversion. Additionally, Git meets our organisational requirements in the following manner:

* Git is a DVCS.
* Widely used and supported by the development community.
* Allows for multiple branching strategies including feature branching.

As Git fits our organisational requirements, I will explore the installation process in the next section.

**Installing Git[[10]](#footnote-9) and Homebrew [[11]](#footnote-10) (macOS) process**

1. Navigate to <https://git-scm.com/download/mac>.
2. Install ‘Homebrew’ by pasting */bin/bash -c "$(curl -fsSL* [*https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh*](https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)*)"* into the terminal.
3. Enter your password and wait for the package to download.
4. Once downloaded, enter *$ brew install git* into the terminal and follow the prompts, including configuring your name and email address.
5. Once the homebrew is installed, enter *git --version.* This will tell you what git version you have and show if the installation was successful. I received *git version 2.30.1 (Apple Git-130)*

In this case, there was no issue with installing Git and the endeavor was a success.

**End report**

1. *What is version control?* (n.d.). Atlassian. Retrieved August 27, 2021, from https://www.atlassian.com/git/tutorials/what-is-version-control [↑](#footnote-ref-0)
2. *What is Source Control? - Amazon Web Services*. (n.d.). Amazon Web Services, Inc. Retrieved August 27, 2021, from <https://aws.amazon.com/devops/source-control/> [↑](#footnote-ref-1)
3. Gitbook. (n.d.). *Collaboration, Version Control, & GitHub | Welcome to Mozilla Science Lab’s Study Group Orientation!* Https://Mozillascience.Github.Io/Study-Group-Orientation/3.1-Collab-Vers-Github.Html. Retrieved August 27, 2021, from https://mozillascience.github.io/study-group-orientation/3.1-collab-vers-github.html [↑](#footnote-ref-2)
4. *Git*. (n.d.). Git Source Code Management. Retrieved August 30, 2021, from https://git-scm.com/ [↑](#footnote-ref-3)
5. *The benefits of a distributed version control system*. (n.d.). GitLab: The Benefits of a Distributed Version Control System. Retrieved August 30, 2021, from https://about.gitlab.com/topics/version-control/benefits-distributed-version-control-system/ [↑](#footnote-ref-4)
6. *The benefits of a distributed version control system*. (n.d.). GitLab: The Benefits of a Distributed Version Control System. Retrieved August 30, 2021, from https://about.gitlab.com/topics/version-control/benefits-distributed-version-control-system/ [↑](#footnote-ref-5)
7. *Apache Subversion*. (n.d.). Apache® Subversion®. Retrieved August 31, 2021, from https://subversion.apache.org/ [↑](#footnote-ref-6)
8. *Apache Subversion Features*. (n.d.). Apache Subversion Features. Retrieved August 31, 2021, from https://subversion.apache.org/features.html [↑](#footnote-ref-7)
9. *Apache Subversion Features*. (n.d.). Apache Subversion Features. Retrieved August 31, 2021, from https://subversion.apache.org/features.html [↑](#footnote-ref-8)
10. *Git - Downloading Package*. (n.d.). Https://Git-Scm.Com/Download/Mac. Retrieved August 31, 2021, from https://git-scm.com/download/mac [↑](#footnote-ref-9)
11. Howell, M. (n.d.). *Homebrew:The Missing Package Manager for macOS (or Linux)*. Homebrew. Retrieved August 31, 2021, from https://brew.sh/

    # MusoPlan

    Music management software

    MusoPlan Agenda

    Date: 24 August

    Time: 3PM

    Attendees:

    Globex programmer - Shane

    Music team management officer - Iresha

    Meeting minutes:

    The important data structures - classes (main and child), objects, inheritance.

    The relevant class hierarchies - child class inherits main class properties

    The behavioural loops - Yes.

    The conditional behaviour - inputs informing behavior.

    Inputs to the program - strings, numbers and text.

    Outputs of the program - read and write functionality + text file to documents folder regarding troupe details.

    Class descriptions

    -What data will the class have: Musician & troupe class

    -What behaviours will the class have: Show information specific to the class ie show certain information based on inputs / calculate based on inputs.

    -What (if any) classes will the class inherit from: troupe inherits from musician class

    Class relationships

    -Does this class contain examples of other classes?: Yes

    Program Inputs

    -How users input data into the program: Via command line / terminal / strings, numbers and text.

    Program Outputs

    -How users extract data from the program: From a file saved to the documents which calculate the inputs from the user and puts out troupe information.

    \*\*Design flow \*\*

    create musician

    musician classes Introduce themselves with their name, instrument, years playing, hourly rate, and interesting fact based in their instrument

    create troupe

    Troup class Describes the troupe and each musician in the troupe introduces themselves

    calculate cost of troup from inputs

    display cost in saved file [↑](#footnote-ref-10)