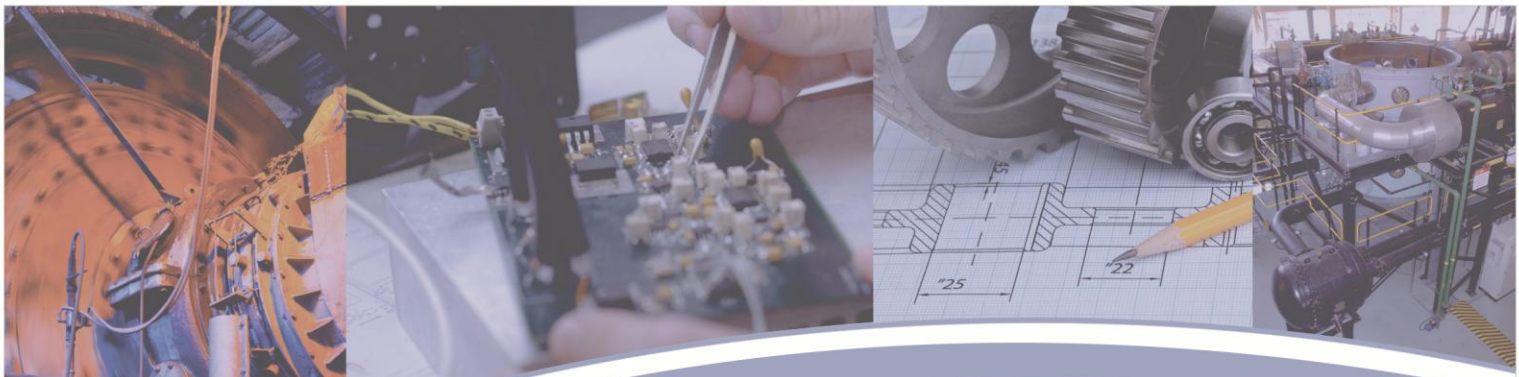

ITRW 324

Group 14

Report 1: Group Member Personalities & Git Tutorial

Completed by:

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Innovation through diversity ®

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NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS ®

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1. INTRODUCTION

Git is vastly used in the software development industry to manage collaborative development projects. The aim of this report is to investigate Git services, and GUI clients, that will aid our project development, as well as gain some insight to the differences in personalities, of different team members. We will need to be aware of these differences, in order to understand each other, and avoid team conflict and misunderstandings. Each team member will also need to get familiar with Git repository management services and GUI clients. We have agreed to use the same GUI client, as this greatly enhances our project and team management capability, and simplifies collaborative development with Git integration.

2. PERSONALITY REPORTS OF INDIVIDUAL TEAM MEMBERS

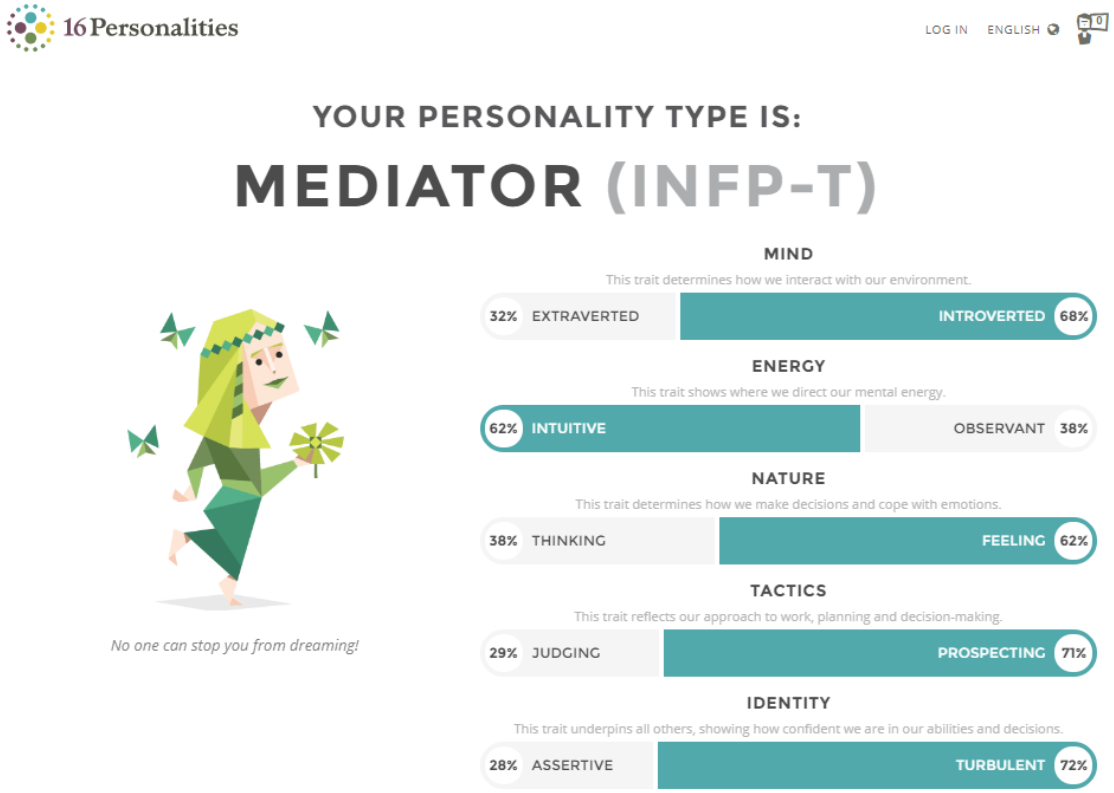
Team members completed Psychometric tests on 16 personalities (NERIS Analytics Limited, 2017) to obtain the following results.

MR MORNÉ DU PLOOY:

A short summary of the test results says that I am a natural leader who loves to be of service and a great team player who is an excellent networker. This indicates that I would do a great job at being the team leader. This personality type in a leader roll makes everyone feel involved and unifies the team. The team leader roll is further justified because some of the strengths include a sense of duty, good practical skills, connecting with others and being supportive and outgoing. This means as the team leader I can easily take charge when necessary and get everyone's opinion and let them feel that their thoughts and ideas matter. The practical skills will help me to create and maintain order witch will help the entire team stick to their deadlines, as well as relieving some of the administrative duties to help them to focus their creativity on the problems at hand. The good people skills will help me to realise what each person in the team is good at and divide the work accordingly, and also pick up tension between team members and try to restore harmony. The sense of duty that this personality type usually has is a great trait for the leader because I will make sure that everybody knows what to do and offer the get the correct type of help when somebody is struggling. Being judging in tactics means that as the leader I will be decisive, thorough and

highly organised. This means that I will be more comfortable making big decisions, make sure that all the work is done and is done to the proper standard and give the members stability when it comes to communication, work allocation, goals and deadlines. One of the weaknesses is that I am venerable to criticism, which means that I would not typically respond well to people telling me that my work or ideas are wrong when I am confident in them. Luckily I always assure that my work is up to standard and I know everybody has different experience and backgrounds so it is important to hear what everybody has to say.

MR JUSTIN VD WESTHUIZEN



According to the personality test website 16personalities.com I am a personality type Mediator (INFP- T) and they describe Mediators as “Mediator personalities are true idealists, always looking for the hint of good in even the worst of people and events, searching for ways to make things better.”

Strengths:

- Idealistic
- Seek and value harmony
- Open minded and flexible
- Creative

- Passionate and energetic
- Dedicated and hard working

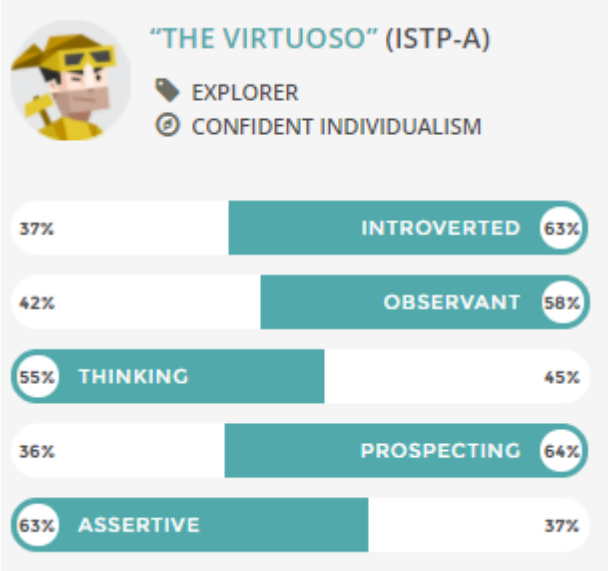
Thus using these qualities of my personality I think I would be a good asset for the team especially in situation where there is conflict that needs to be resolved since I will be able to understand both parties and help them to come to a solution that is beneficial for the group.

Weaknesses:

- Too idealistic
- Too altruistic
- Impractical
- Dislike dealing with data
- Take things personally
- Difficult to get to know

I will have to put myself out there and get to know my group members so that we can build a relationship to more effectively do our project together. Overall I need to work on all my weaknesses so that it does not affect the group negatively.

MR STIAN SCHOLTZ

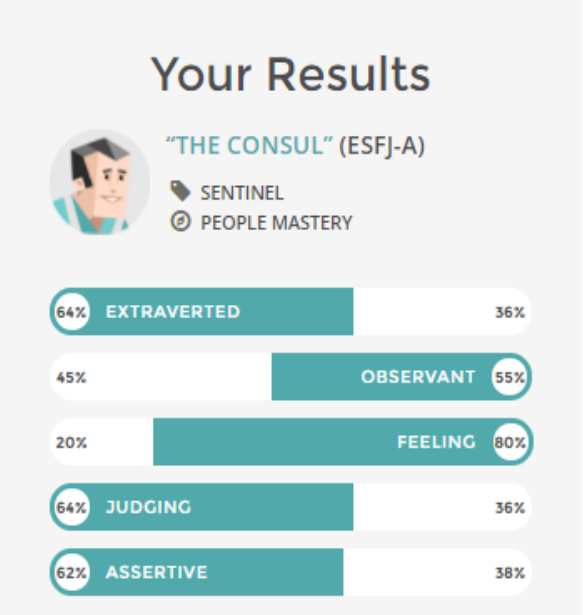


As a Virtuoso, I have optimism and energy to spare, which is good for team collaboration on projects. If we find ourselves doubting the feasibility of our ideas or struggling with the project I can try and keep the spirits up. Virtuosos are also creative and practical, which certainly comes in handy when we need to choose or find the topic for our project or solve any problems that arise.

Other traits that are not so helpful include stubbornness, easily getting bored and insensitivity. Stubbornness does not do well for teamwork since we have to create a unified idea together, with everyone's input and logic valued equally, even if that means using someone else's idea over your own. Easily becoming bored will display a lack of interest and consequently a lack of input.

Understanding these traits will help me to apply the positive ones effectively within the group and keep the negative ones under control to avoid influencing the group in a destructive manner.

MR ZANE SCHOONRAAD



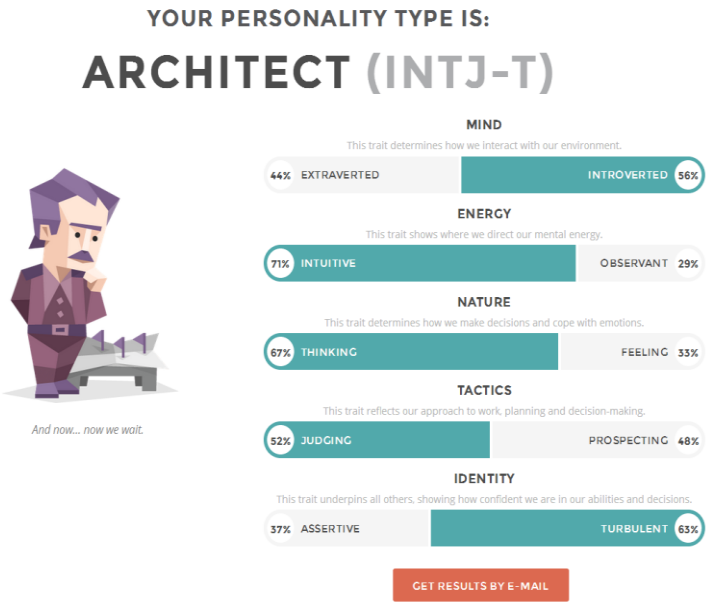
"ESFJ personality types are known for being incredibly reliable, responsible and dependable. This makes them great workers as well as family members, as they always ensure that they are pulling their weight, and often more." (Kennerly, 2016)

According to the 16 Personality Test, my personality type is a consul. I work well with other people easily and help wherever I can, which is one of my strengths. I also like to get things done which I think can defensively help during the project. I am also not very competitive which means that I will care more about our project than to do better than others in the group.

My weaknesses include the fact that I like doing things my way, and because of that I do not always give everyone a chance to give their ideas, but I will defiantly concentrate and work on that.

MR EDWIN VILJOEN

Described as the rarest, and one of the most intriguing personality types, architects are "lone wolfs", who prefer to either work alone, or with people who can adhere to their exceptionally high work standards.



Architects like to plan thoroughly, and put a lot of thought into complex ideas and concepts, to solve difficult

challenges. They are keen to take on any task that interests them, no matter how impossible it may seem, as they believe proper planning and intellect will always win!

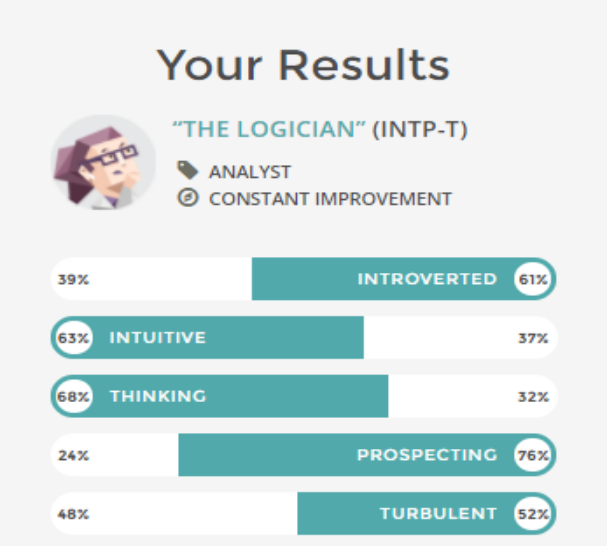
Architects enjoy freedom, and do not like to be restricted to specific tasks and procedures, that will limit their creativity. They are highly independent and have extremely high expectations from managers, leaders, and colleagues, who will have to earn their respect with competence, high work standards, efficiency, and capability.

In the software development environment, the architect personality types will usually try to take on challenges by themselves, avoiding team efforts that will slow down, hinder, or complicate certain design elements.

Surprisingly, architects make natural team leaders, as they are meticulous planners and have a very lenient managing style. They value innovation and effectiveness above any other traits. They also promote a lot of freedom and flexibility in the workplace. They will gladly cast aside hierarchy, protocol, and even their own personal views, if given rational arguments as to why things must change.

Architects are proud to be effective and efficient and will get very frustrated with team members that do not display those qualities.

MR KRISTIAAN PRETORIUS



"After completing the test, it displayed the summary of some of my traits which is quite accurate. The test portrayed that I'm an introvert and make a lot of intuitive decisions. I always think something through before making the final decision. I tend to struggle with dealing with people's emotions as it is in most cases irrelevant to mix emotion with business and work. I'm a great analyst and I can think in an abstract manner which means that I always look for areas to improve something. I'm very open-minded which means that I would not raise an opinion if it isn't necessary. I'm the most straightforward and honest person I know which can sometimes lead to conflict. I'm a very private person and struggle to let people in on my thoughts and feelings. One of my

weaknesses is that when I have an opinion of something I tend to easily get influenced by other information which I gather from other people.

I think that I will be a lot of help to the group in the logical thinking part. I'm a great analyst which means that I'm not necessarily the best programmer but I'm excellent in finding the logical solution to which a problem should be approached and apprehended."

3. GROUP PERSONALITY REPORT

3.1 INTRODUCTION

Personalities play a big part of who someone is as a person. In this report, there was tests conducted on each member of the group to specify where every member will play a role in the development of the project. Each personality type of each member will be discussed and then a conclusion will be made on how members can make their contribution for the development phase.

3.2 GROUP REPORT

Morné, the group leader is excellent in giving the right instructions to achieve the desired goal within the time needed for completion, which is also a good trait to have for software development and reaching goals. He is very smart and is a good programmer who always strives to reach the best possible outcome. It makes it difficult to work with him at times because of the inflexibility his personality has to offer when it comes to work standards.

Kristiaan, the logician is a very intellectual thinker who is to the point. He is not necessarily the best programmer but can help with the logic behind each problem and finds the best solutions for the needed requirements. Having someone like this is good for when there is a problem that someone struggles with, because he would stay with the problem until it is solved. He is also a very dominant member and may find it difficult to collaborate with.

Edwin is the team architect, who has a lot to offer the group with his broad programming skills and knowledge. He is very organised and open minded to innovative ideas and areas for improvisation. He is very mature and decisive which is great for the development of the project. His personality also makes him always seem kind and appreciative of the work and effort other members put in, and this can prevent conflict and dissolve conflict in the group. He works best when he is alone and has very high work standards that can lead to conflict between some members of the group who may be very vulnerable to criticism.

Justin is the team mediator, the person who restores peace and keeps everyone calm. Justin is an exceptional programmer, but needs some motivation to start. He is very dedicated to completing tasks on time. He will be the last person who causes conflict over something, he would rather provide a solution to the conflict.

Zane is also another consul in the group that means that he is very reliable and responsible. This makes for an excellent group member because of the adaptability his personality has to offer. He often wants things done his way which makes it difficult for the other members to do some things they feel is best. He would handle conflict well as his personality type is very feeling at nature.

Stian is the Virtuoso that means he is very optimistic and energetic. He is very practical which is great for any project. He keeps a cool mind and will help a lot with the feasibility of a project. The only problem is that he gets bored easily which will be difficult to keep him motivated to finish the desired goal. Him being very assertive, could possibly cause conflict but his willingness to compromise would help with that.

3.3 STRENGTHS AND WEAKNESSES AS A GROUP

Strengths:

- Great leadership traits amongst the group.
- Strong practical skills
- Very responsible members
- Very intelligent
- Creative minds working together
- Optimistic approaches towards certain tasks and objectives.

Weaknesses:

- Risky behaviours.
- A Few stubborn members
- Some members may be reluctant to Innovate or improvise.
- Dislike dealing with data

4. GIT VERSION CONTROL SOFTWARE

4.1 GIT SERVICE PROVIDERS

GitHub

What is GitHub?

GitHub should be broken up into two parts firstly what is git, secondly what is GitHub in whole. Git is an open-source version control system that was created by the creator of Linux, Linus Trovalds. Version control systems are systems that is used when a team of developers are creating a new application or system; it allows different developers to work on the same project from their own computers. Since the code is often changed and improved upon the version control system stores all modifications in a central repository so that all the developers can stay in the loop and see what modifications are made.

Git is widely preferred by many developers around the world over other systems because git is more efficient when storing file changes and the file integrity is more secure.

GitHub is used for many reasons, some of the main reasons are the following:

- Forking a repo
- Pull requests
- Social networking
- Changelogs

Forking a repo

This feature allows you to use the base of a previously written project and further develop it and improve it so that you can post it again and thus allowing the community to grow and projects to go to even greater heights.

Pull requests

Using the pull requests feature you can show the original developers of the project you forked what you did to improve their project and thus they can decide if they want to implement you changes on their original project. GitHub provides a perfect medium that you and the project's maintainer can use to communicate with each other.

Social networking

This feature is one of GitHub most sought after features and its importance is immeasurable since this feature allows users of GitHub to communicate easily since all users need a profile that can often be seen as a sort of resume since it shows all project or pull requests you have been involved in. This feature is what allows GitHub projects to grow exponentially since different expert programmers get involved in programs and contribute on improving it.

Changelogs

GitHub provides a means where any member of the ongoing project can see what has been changed to the project and who changed it by the use of changelogs. Thus there is no unnecessary conflict when a problem in the project arises since they can just backtrack it too see who changed what and easily find the problem.

GitLab

What is GitLab?

GitLab is a git-based repository manager and is a very powerful application used for software development.

GitLab has a user and newbie friendly interface which means that it is easy to use even if you are new to the interface without any prior experience with GitLab. GitLab allows the user to work from both the command line and the User Interface itself. GitLab is a great way to bring the whole team working on a project to a single central platform and allows everyone to work on the same project from their own Personal Computers.

GitLab Workflow:

GitLab Workflow is a logical sequence of the possible actions or things to do during the lifesycle of the project. The main goal of the GitLab workflow is to help the team reach a goal in the most efficient way with 10 steps that needs to be followed.

- Idea
- Issue
- Plan

- Code
- Commit
- Test
- Review
- Staging
- Production
- Feedback

GitLab Issue Tracker:

GitLab issue tracker is a great way to track your progress and allows you and your team to collaborate and discuss ideas before and while you implement them.

What is Issue Tracker mostly usefull for?

- Discussing ideas
- Submitting feature proposals
- Asking questions
- Reporting bugs
- Obtaining support

GitHub vs GitLab

The following table show in every way what the differences between GitHub and GitLab is: (Peham, 2013)

Features	GitLab	GitHub
released	September 2011	April 2008
Pricing	Unlimited public and private repositories / unlimited public and private collaborators	Free for public repositories / Paid plans for private repositories
Code review features	yes	yes
Wiki	yes	yes
Bug & issue tracking	yes	yes
Private branch	yes	Yes (with paid plans)
Build system	yes	Yes (with 3rd party service)
Self-hosting	yes	Yes (with enterprise plan)
Popularity	100.000+ projects	35.000.000+ projects
detailed pricing	Free: gitlab.com / Free: GitLab Community Edition / $39 / Year: GitLab Enterprise	Free: public projects / $7/month: Personal plan / $25/month: organization plan / $2.500/year: Enterprise

After analyzing the differences between these two we have decided that GitHub will be more beneficial for our group although GitLab also presents us with good tools to do the work GitHub is still better known and in our opinion still better.

4.2 COMPARISON OF GIT GUI CLIENTS

There are many Git GUI clients available. Clients such as GitKraken, SourceTree, GitExtensions, SmartGit, TortoiseGit, etc., all come to mind but there are three that seem to stand out above them all: GitKraken, SmartGit and SourceTree.

GitKraken

Specifications and features:

- Cross-platform consistency
  - GitKraken will run on Mac, Windows and Linux operating systems.
- Intuitive features
  - Features such as merging, commit history and branching are displayed with Visual Interactions.
  - Completely responsive and resizable commit graph that is easy to break down and understand.
  - Merge, reset, push, rebase and more simply by dragging and dropping.
- Integrate seamlessly
  - It supports and integrates with current performing and generally preferable Git hosting service providers such as GitHub, GitLab and Bitbucket.
- Fluid and efficient workflow
  - Perform in-app tasks such as clone, opening pull requests and adding remotes very easily.
  - The app also includes a merge tool that allows the user to resolve merge conflicts.
  - The processes most used will be easy to find via a search bar.
- Functionality and control
  - Gitflow support.
  - Undo and redo with a single click.
  - Easy to find keyboard shortcuts.
  - File history and blame.

    - Submodules.
    - Dark and light themes.
    - Git hooks support.
    - No other git tools are required.
- Upgrading to the Pro version of Gitkraken provides additional features such as:
    - Multiple profiles for personal use or the workplace.
    - Merge conflict output within the app's editor.
    - Integrates with GitHub Enterprise.
    - Email support guaranteed.

SmartGit

Specifications and features:

- Professional design
    - Design for more advanced users that are required to master challenging Git tasks.
    - Not necessary to use for simple tasks such as pull, push or commit.
    - Productive and efficient workflow.
    - Safeguards the user from common mistakes made when using Git.
- Cross-platform consistency
    - SmartGit will run on Mac, Windows and Linux operating systems.
    - SmartGit supports Git and SVN.
    - Only one license needed for an unlimited number of machines.
- Everything is included
    - SmartGit include tools such as Git-flow, SSH-client and File merge/compare, meaning there is no need for any additional tools.
- Integrate seamlessly
    - It supports and integrates with popular and generally preferable Git hosting service providers such as GitHub, Bitbucket, Atlassian Stash.
    - You can also use your own repositories or other service providers such as GitLab.

SourceTree

Specifications and features:

- Cross-platform consistency
    - SourceTree will run in Windows and Mac only.
- Easy to use for beginners
    - Users uncomfortable with the command line can use this simplified version control system.
- Powerful for experienced users
    - Improves productivity of advanced users.
    - Review changesets, cherry-pick between branches and stash.
- Visualizing your work
    - Retrieve information on any branch and commit with only one click.
- Integrate seamlessly
    - The fully-featured GUI supports and integrates with service providers such as Git and Mercurial.
- Commit confidently
    - Easy to visualize your work and push.
    - Discard and stage changes by the line, hunk or file.
- Fully-featured client
    - Stay up to date with all the work and your code simply by viewing the Git status of your project.
    - View the team's progress on detailed branching diagrams.
    - Tutorials for introductive as well as advanced features and tasks.

Our chosen Git GUI: GitKraken

When comparing the difficulty of performing simple tasks and more advanced tasks, GitKraken does not only seem easy to master for beginners it also feels more natural to use and learn more advanced features. Visualizing the team's progress and your own work is more user friendly on GitKraken as well. This along with all the other extra features that GitKraken provides, and the other GUI's lack, is a clear indication that GitKraken is more than enough for our version control needs.

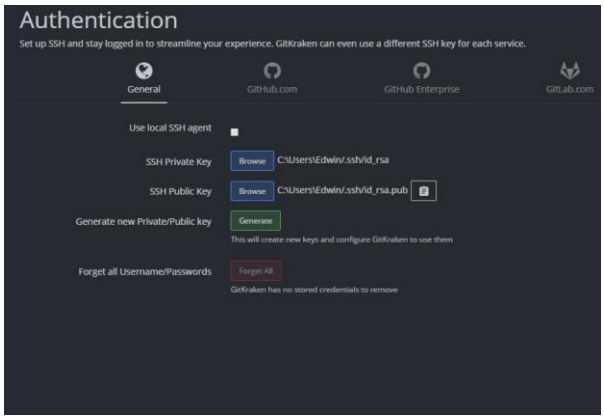
4.3 GITKRAKEN TUTORIAL

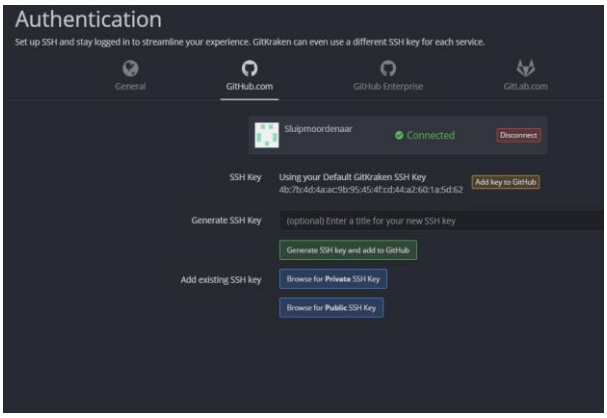
We have chosen GitKraken as the preferred Git GUI client. This tutorial will cover some of the basic GitKraken features.

GitKraken is a cross-platform Git GUI client that allows Git users to easily interact with Git repositories, manage teams and specific tasks at hand, and keeps all team members focussed and informed of repository activities.

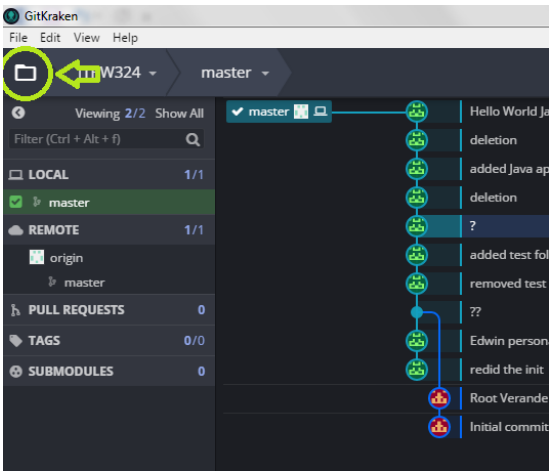
Setup

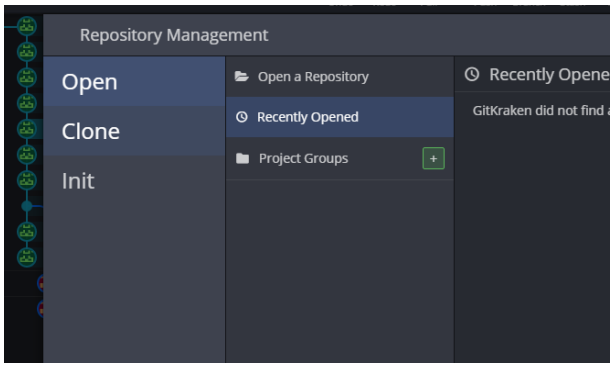
Upon running GitKraken for the first time, some Authentication Settings need to be set, and users need to log in to their Git profiles. This can be done in the Settings/Preferences/Authentication menu. GitKraken conveniently allows users to automatically generate SSH keys with the click of a button. Existing SSH is also automatically detected and added to your Git profiles. This avoids the manual process of generating a SSH key with the *ssh-keygen -t rsa -b 4096 -C "email@mail.com"* command, and setting up the specific SSH with your Git service provider.





To manage Git repositories, click the top left folder icon.

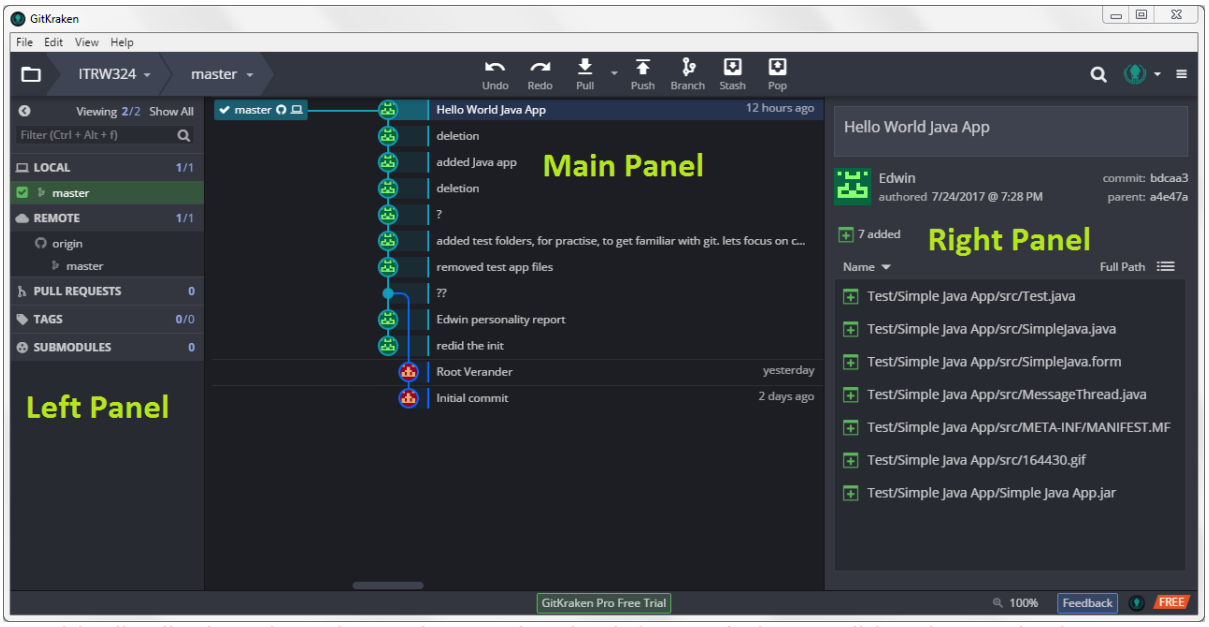




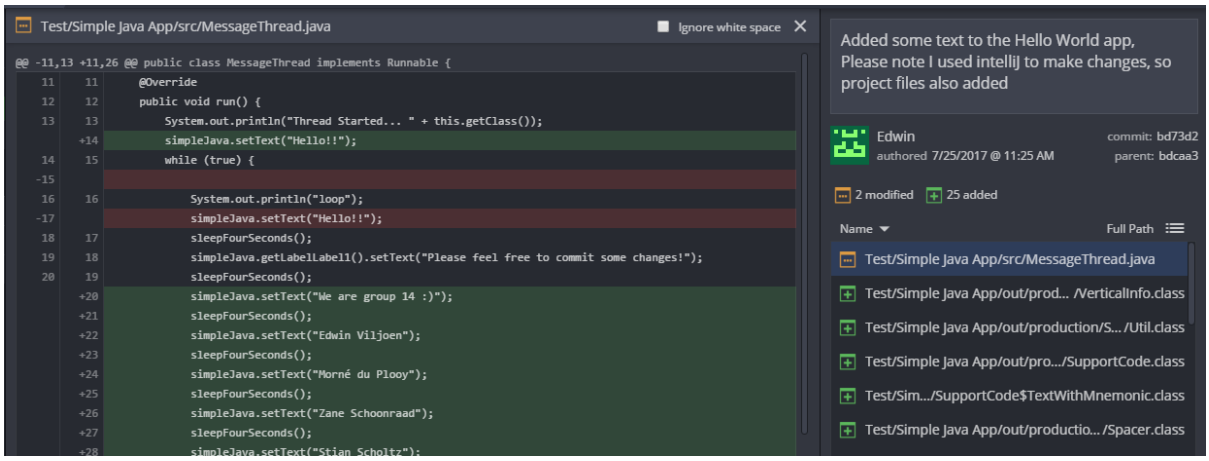
The repository management menu will be shown, where users can open existing repositories on their local machine, initialise new directories to their repository, or clone repositories to specified folders.

General

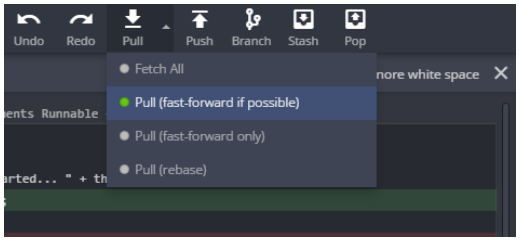
Once a Git repository is initialised and opened, the entire history of the repository will be



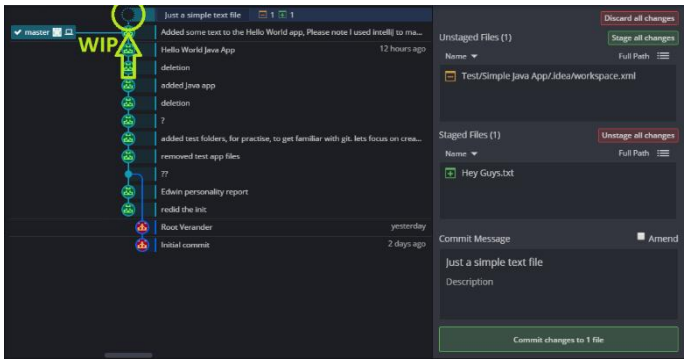
graphically displayed on the main panel. The left panel shows all local repositories, remote repositories, pull requests, stashes, tags, and sub-modules. The right panel shows all the files that were added, or changed, for the selected commit. To view the files, simply click on the relative file name in the right panel. Insertions will be highlighted green, while deletions will be red.



Note that the top toolbar also contains handy features, such as: undo, redo, push and pull buttons, as well as a branch button. The pull method can also be set between rebase, fast-forward and fetch modes.

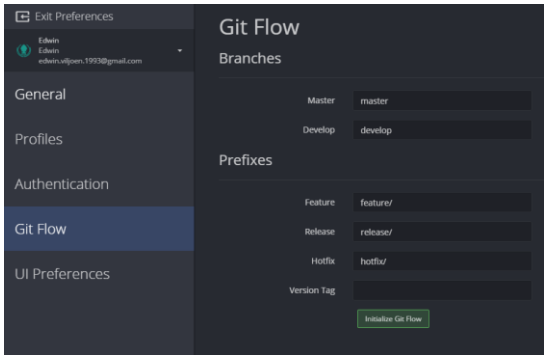


The WIP feature on the main panel will detect all changes that has been made in the working directory (of the local repository). These changes can then be staged, unstaged, and committed, by clicking the WIP button. Staging is equivalent to the git add, and git reset, commands.

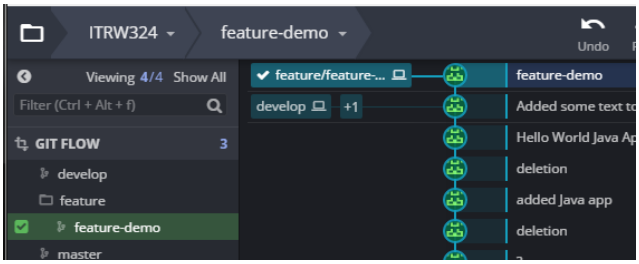


GitFlow

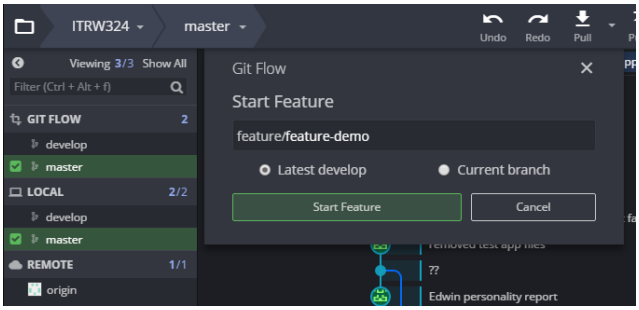
GitKraken incorporates the GitHub Flow functionality, which is a lightweight branch-based workflow, for better managing the branches within the Git repository. To set up the Git Flow experience, head to *Settings/Preferences/Git Flow*, and 'click initialize Git Flow'. This will initialise Git Flow with the remote repository.



Once initialised, a new branch, called 'develop' will be created, which points to the same commit that the 'master' branch points to. The master branch is used to hold all production-ready code, while develop will be used to develop new features for the existing functioning code on master.

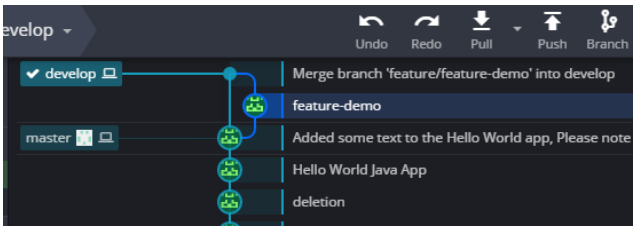


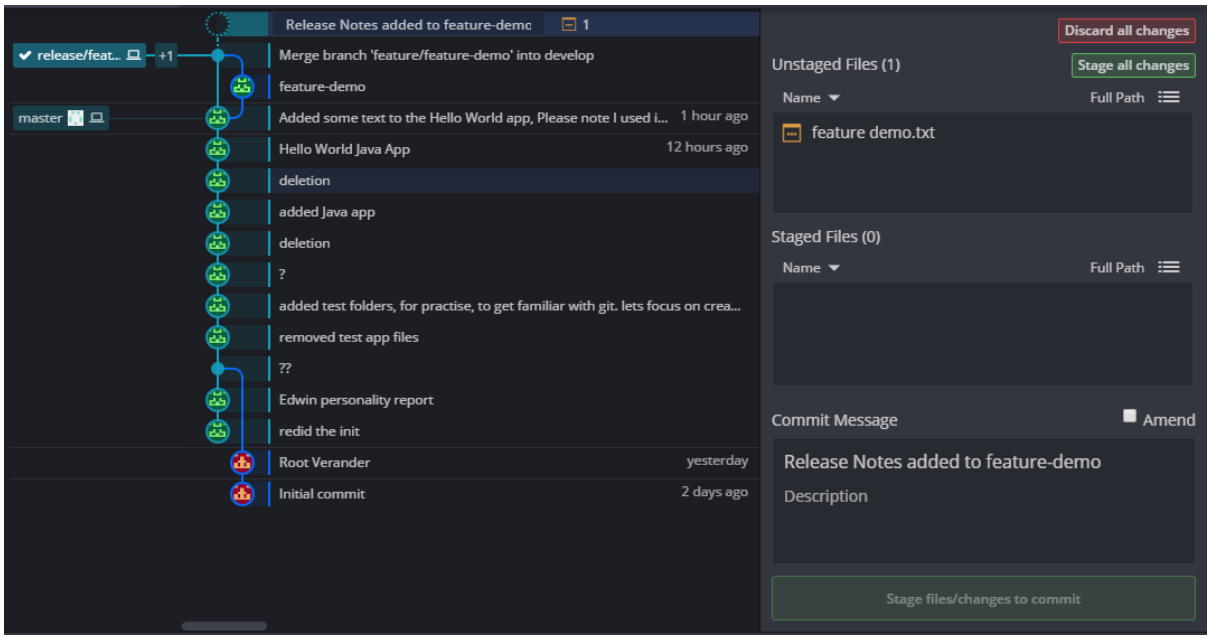
To create a feature that needs to be added, click the 'Open Git Flow' button next to Git Flow on the left panel. Any changes that are staged while a specific feature branch is selected (active) will be seen as part of that feature.



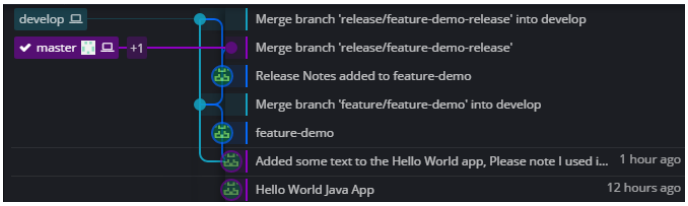
When a feature is complete, it can be finished, by right-clicking the feature and selecting, finish feature. This causes the feature branch to be deleted, after it is merged to develop. At this point, the develop branch will be ahead of the master branch. In order to release the finished feature, click the 'Open Git Flow' button, and name the release. After changes are committed,

the release can be finalised in same way as a feature (by right clicking and selecting finish release).





By releasing a feature, the feature branch will get merged with the, develop, and master branches. Hotfixes can be applied form the Git Flow tab, in the same way that features and releases are used, and allows users to organise branches that focus on bug-fixing.

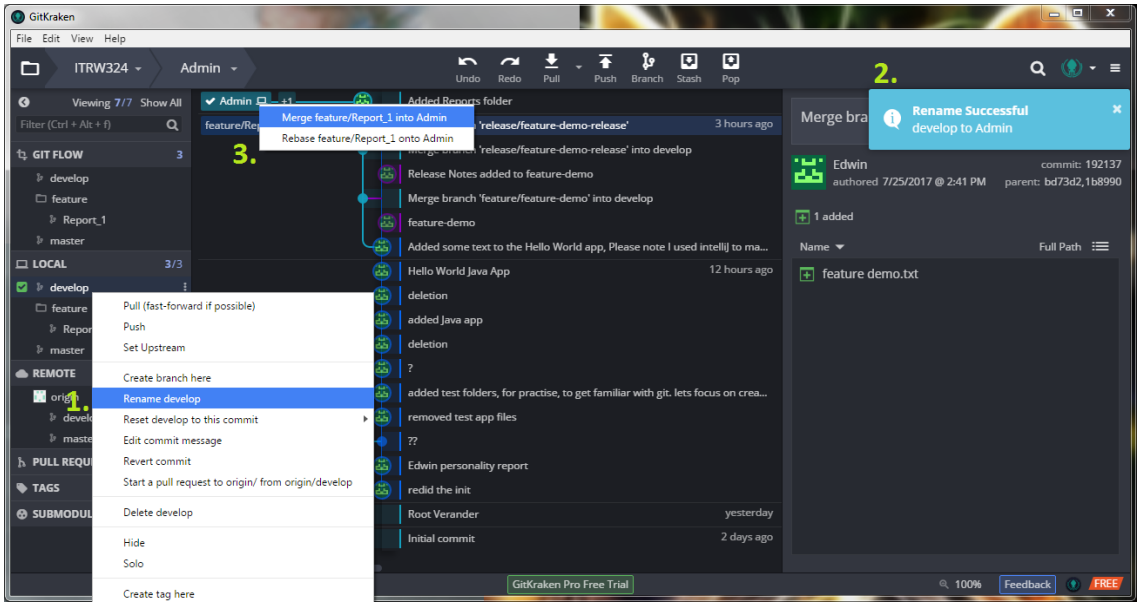


Pull Requests

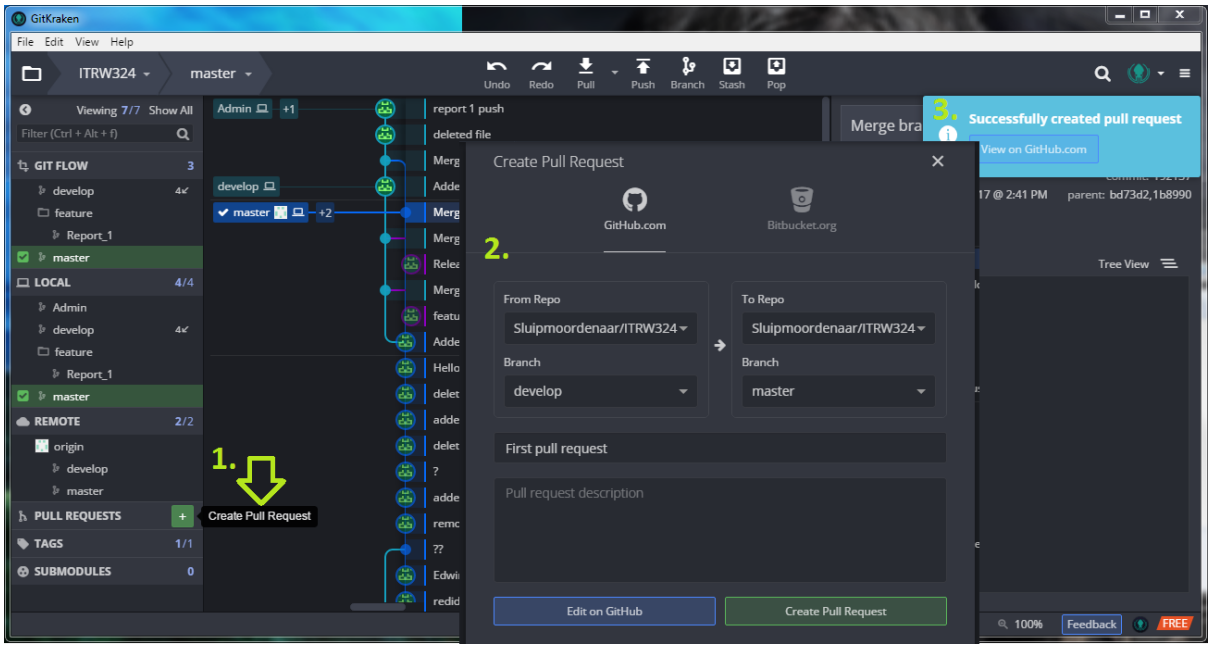
Pull requests are there to initiate conversation over changes that has been made, before final changes are pulled to the maser form other branches/ repositories. First, let us look at renaming a branch:

A branch can be renamed by right clicking the relative branch, and selecting rename <branch_name>. (1; 2.)

Features can be merged or to specific branches, by dragging them onto the branch. (3.)

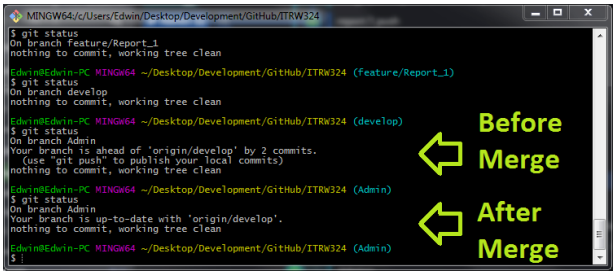


A pull request to different outdated repos can be issued at any time during development. To issue a pull request, click the create pull request button on the left panel. Different team



members can then review each other's changes before the merge is finalised on GitHub.

Here can be seen the 'git status' for the repo before and after a merge with the master:



This concludes the basic GitKraken Tutorial. We are looking forward to using this software to manage our project effectively.

5. SUMMARY

It is evident that we all have completely different personalities, and sometimes conflict will be inevitable. We will strive to do our best to function, cooperatively, effectively, and efficiently as a team, and that means that each team member has equal rights to his own views and perspective, and they should matter to each other equally. We are a team and we will help fellow team members where possible. We also realise the importance of using Git to aid our project management and design. Computer Science is a never-ending learning curve, and we aim to assist each other with knowledge and explanation, so that we may build on each other's knowledge and experience, so that we may move forward as a team.

6. BIBLIOGRAPHY

NERIS Analytics Limited. (2017). Retrieved from 16 Personalities: https://www.16personalities.com/

Peham, T. (2013). *GitLab vs GitHub. Key differences & similarities explained by Usersnap*. Retrieved from UserSnap: https://usersnap.com/blog/gitlab-github/