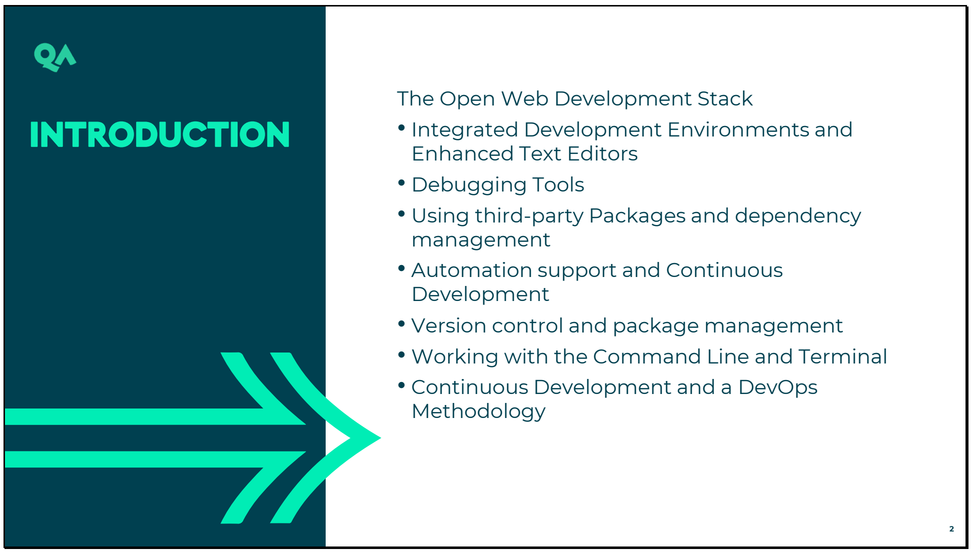
Slide 1

# WEB DEVELOPMENT TOOLS

JavaScript fundamentals

POWERING POTENTIAL

Slide 2



## INTRODUCTION

The Open Web Development Stack

- Integrated Development Environments and Enhanced Text Editors
- Debugging Tools
- Using third-party Packages and dependency management
- Automation support and Continuous Development
- Version control and package management
- Working with the Command Line and Terminal
- Continuous Development and a DevOps Methodology

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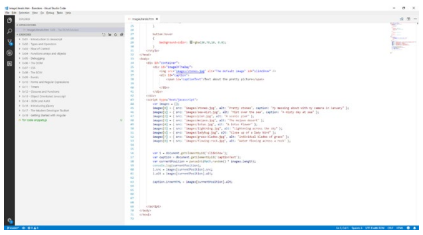
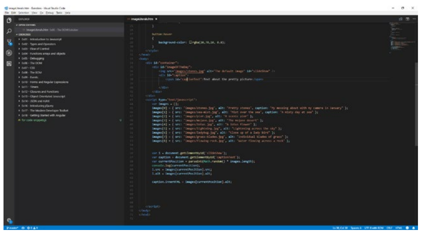
# Walkthrough – using Visual Studio Code

- Visual Studio Code is a free, open source enhanced text editor and it was built using JavaScript!
- Not to be confused with Visual Studio (a paid-for, full IDE designed specifically for .NET development)



```
        }

        button:hover
        {
            background-color: rgba(20,70,10, 0.8);
        }
    </style>
</head>
<body>
    <div id="container">
        <div id="imageOfTheDay">
            <img src="images/stones.jpg" alt="The default image" id="slideShow" />
            <div id="caption">
                <span id="captionText">Text about the pretty picture</span>

            </div>
        </div>
    </div>
    <script type="text/javascript">
        var images = [];
        images[0] = { src: "images/stones.jpg", alt: "Pretty stones", caption: "My messing about with my camera in January" };
        images[1] = { src: "images/sea-mist.jpg", alt: "Mist over the sea", caption: "A misty day at sea" };
        images[2] = { src: "images/pier.jpg", alt: "A scenic pier" };
        images[3] = { src: "images/mojave.jpg", alt: "The mojave desert" };
        images[4] = { src: "images/lotus.jpg", alt: "A lotus flower" };
        images[5] = { src: "images/lightning.jpg", alt: "Lightening across the sky" };
        images[6] = { src: "images/ladybug.jpg", alt: "Close up of a lady bird" };
        images[7] = { src: "images/grass-blades.jpg", alt: "Individual blades of grass" };
        images[8] = { src: "images/flowing-rock.jpg", alt: "Water flowing across a rock" };


        var i = document.getElementById('slideShow');
        var caption = document.getElementById('captionText');
        var currentPosition = parseInt(Math.random() * images.length);
        console.log(currentPosition);
        i.src = images[currentPosition].src;
        i.alt = images[currentPosition].alt;

        caption.innerHTML = images[currentPosition].alt;




    </script>
</body>
</html>
```



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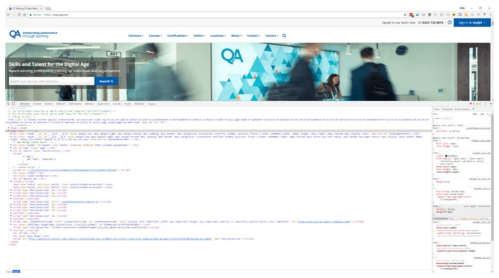
## Walkthrough – Chrome development tools

- Most browsers have development and debugging tools
- Incredibly useful for testing and management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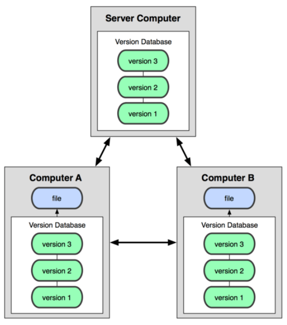
## Distributed version control systems

- DVCS do not just check out the most local snapshot of a file
  - They mirror the repository
  - so each checkout is like a backup of the repository



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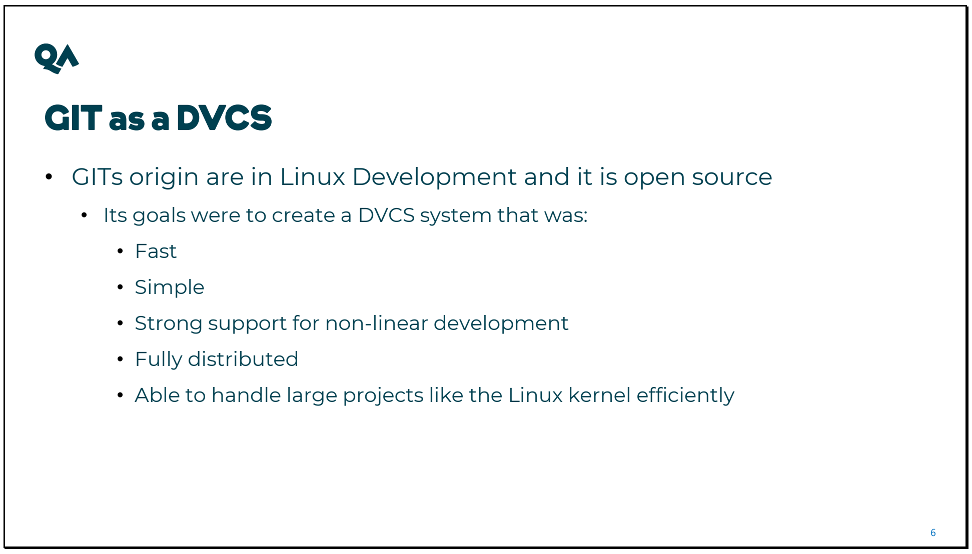

## GIT as a DVCS

- GITs origin are in Linux Development and it is open source
  - Its goals were to create a DVCS system that was:
    - Fast
    - Simple
    - Strong support for non-linear development
    - Fully distributed
    - Able to handle large projects like the Linux kernel efficiently

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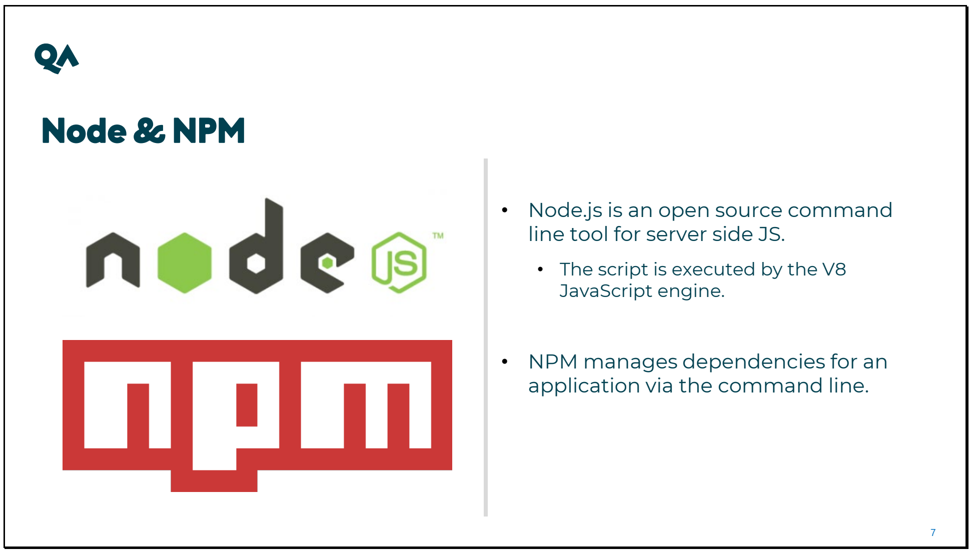

## Node & NPM

- Node.js is an open source command line tool for server side JS.
  - The script is executed by the V8 JavaScript engine.
- NPM manages dependencies for an application via the command line.

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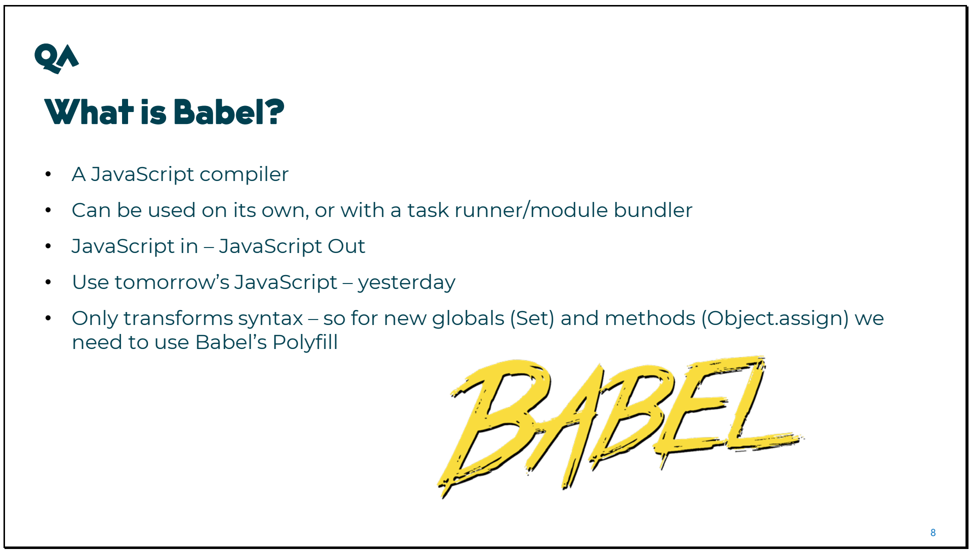

## What is Babel?

- A JavaScript compiler
- Can be used on its own, or with a task runner/module bundler
- JavaScript in – JavaScript Out
- Use tomorrow's JavaScript – yesterday
- Only transforms syntax – so for new globals (Set) and methods (Object.assign) we need to use Babel's Polyfill

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Babel transpiles ES2015+ Syntax back to ES3+ syntax and they have created a polyfill to create the new globals and methods found in ES2015+.  This means that tomorrow's JavaScript works in yesterday's browsers!

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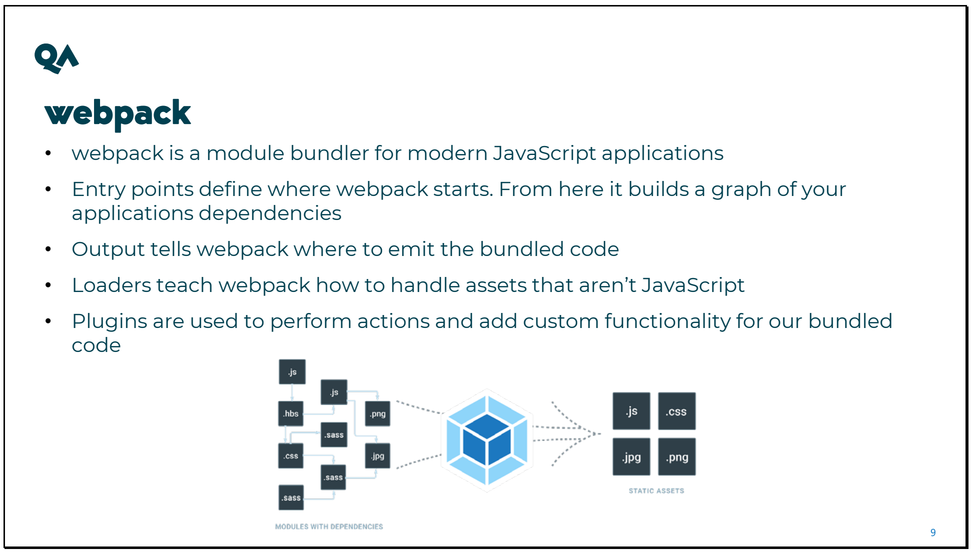
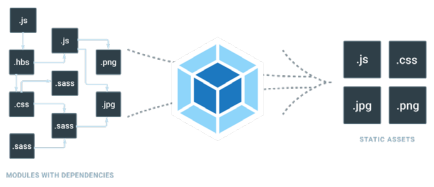


## webpack

- webpack is a module bundler for modern JavaScript applications
- Entry points define where webpack starts. From here it builds a graph of your applications dependencies
- Output tells webpack where to emit the bundled code
- Loaders teach webpack how to handle assets that aren't JavaScript
- Plugins are used to perform actions and add custom functionality for our bundled code



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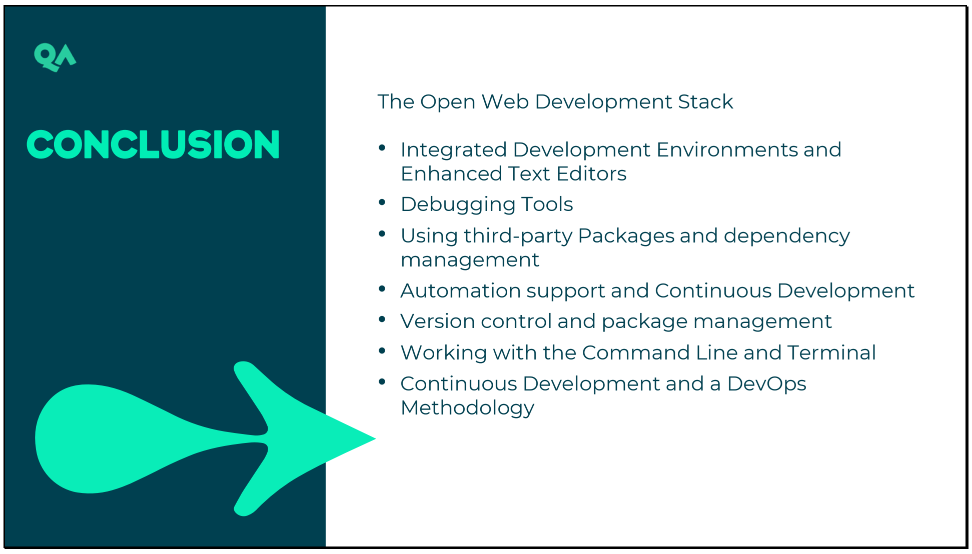

## CONCLUSION

The Open Web Development Stack

- Integrated Development Environments and Enhanced Text Editors
- Debugging Tools
- Using third-party Packages and dependency management
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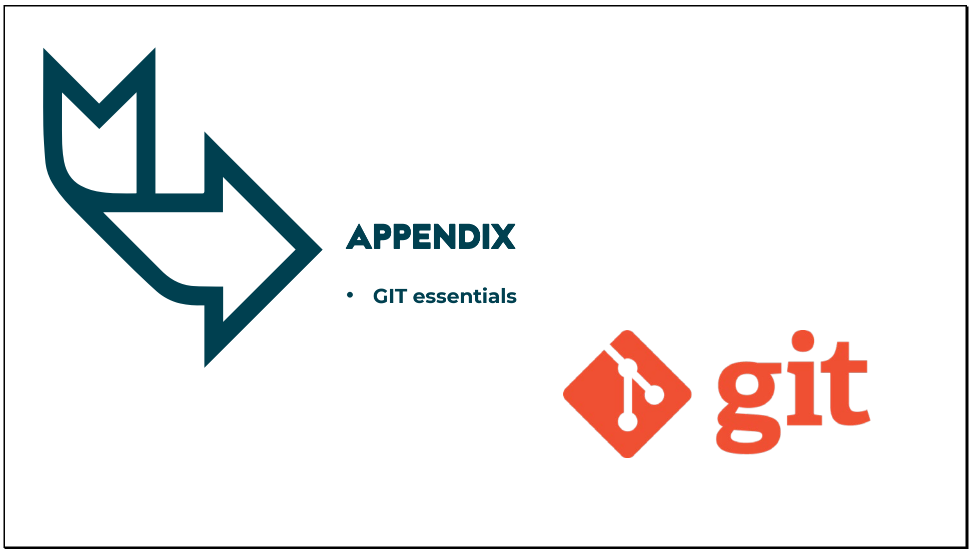

## APPENDIX

- GIT essentials

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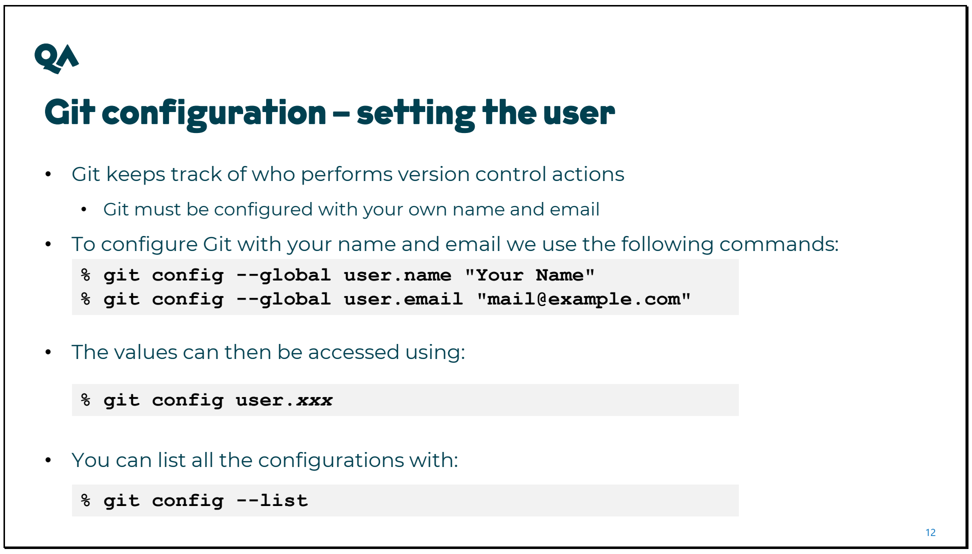

## Git configuration – setting the user

- Git keeps track of who performs version control actions
  - Git must be configured with your own name and email
- To configure Git with your name and email we use the following commands:

```
% git config --global user.name "Your Name"
% git config --global user.email "mail@example.com"
```

- The values can then be accessed using:

```
% git config user.xxx
```

- You can list all the configurations with:

```
% git config --list
```

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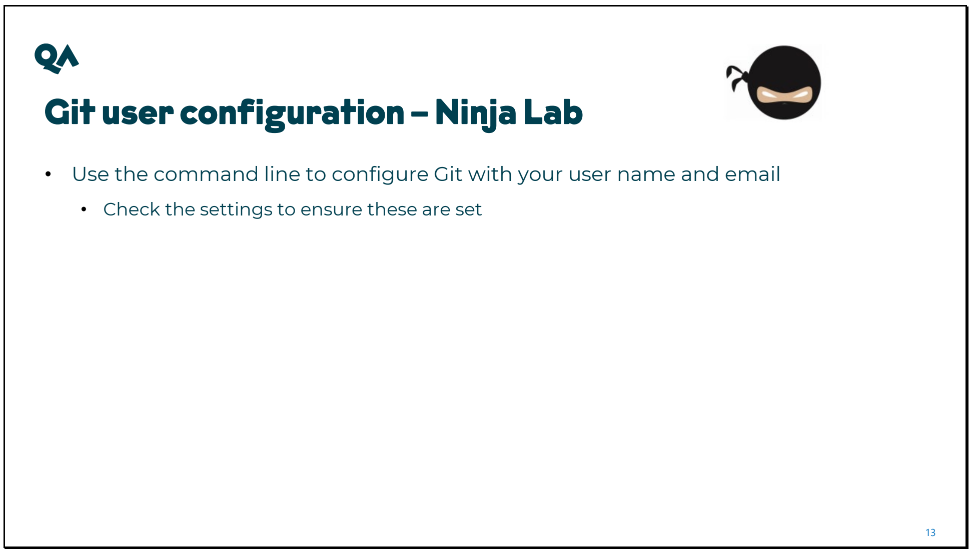

## Git user configuration – Ninja Lab

- Use the command line to configure Git with your user name and email
  - Check the settings to ensure these are set

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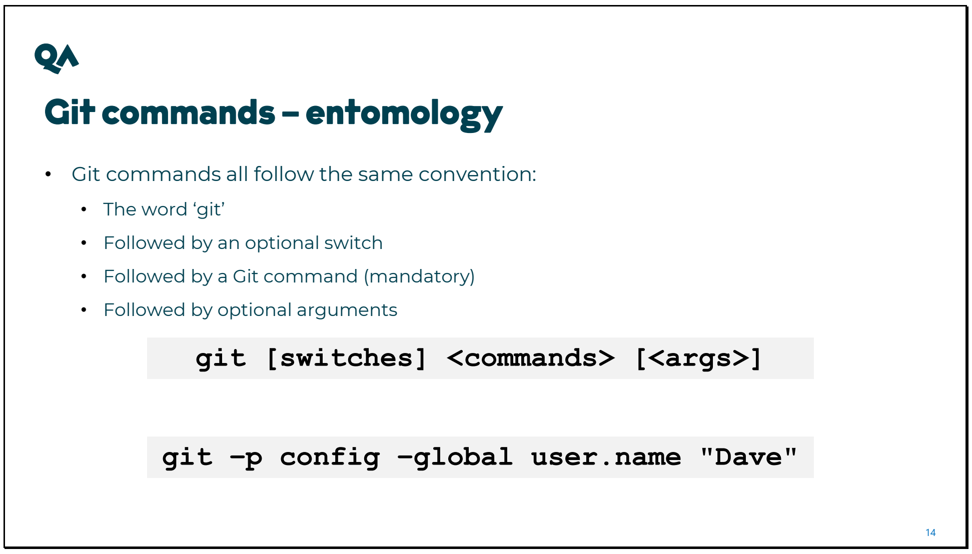

## Git commands – entomology

- Git commands all follow the same convention:
  - The word ‘git’
  - Followed by an optional switch
  - Followed by a Git command (mandatory)
  - Followed by optional arguments

```
git [switches] <commands> [<args>]
```

```
git -p config -global user.name "Dave"
```

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The -p switch paginates the output if needed.

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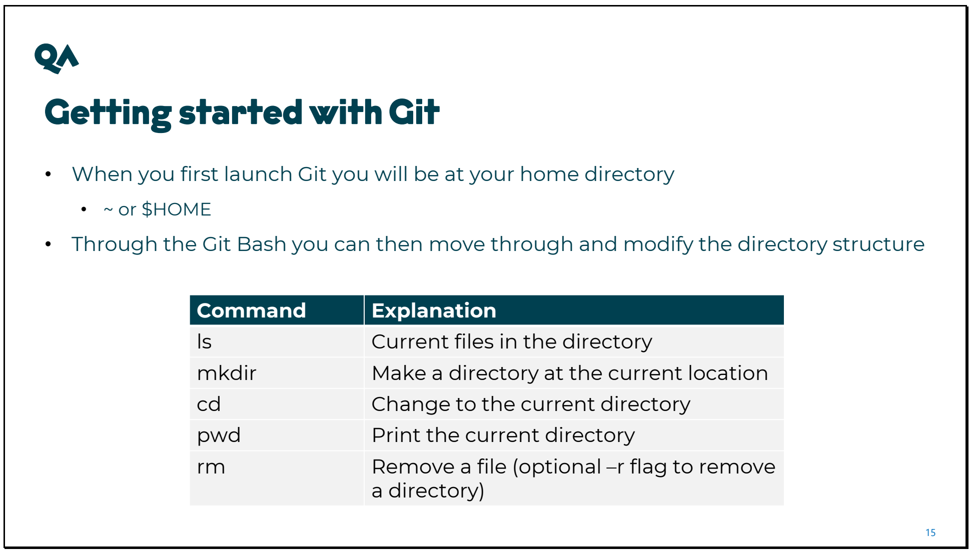

## Getting started with Git

- When you first launch Git you will be at your home directory
  - ~ or $HOME
- Through the Git Bash you can then move through and modify the directory structure

| Command | Explanation |
|---|---|
| ls | Current files in the directory |
| mkdir | Make a directory at the current location |
| cd | Change to the current directory |
| pwd | Print the current directory |
| rm | Remove a file (optional –r flag to remove a directory) |

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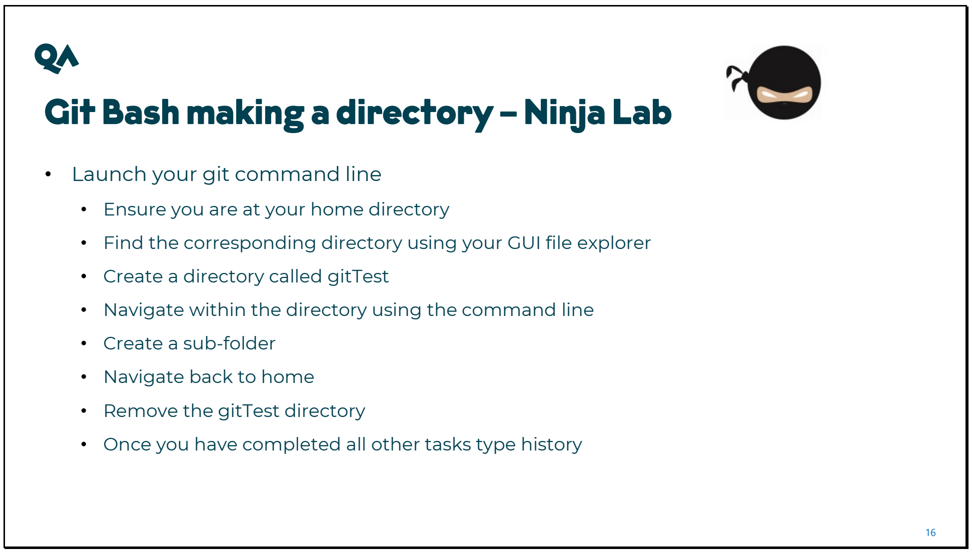

## Git Bash making a directory – Ninja Lab

- Launch your git command line
  - Ensure you are at your home directory
  - Find the corresponding directory using your GUI file explorer
  - Create a directory called gitTest
  - Navigate within the directory using the command line
  - Create a sub-folder
  - Navigate back to home
  - Remove the gitTest directory
  - Once you have completed all other tasks type history

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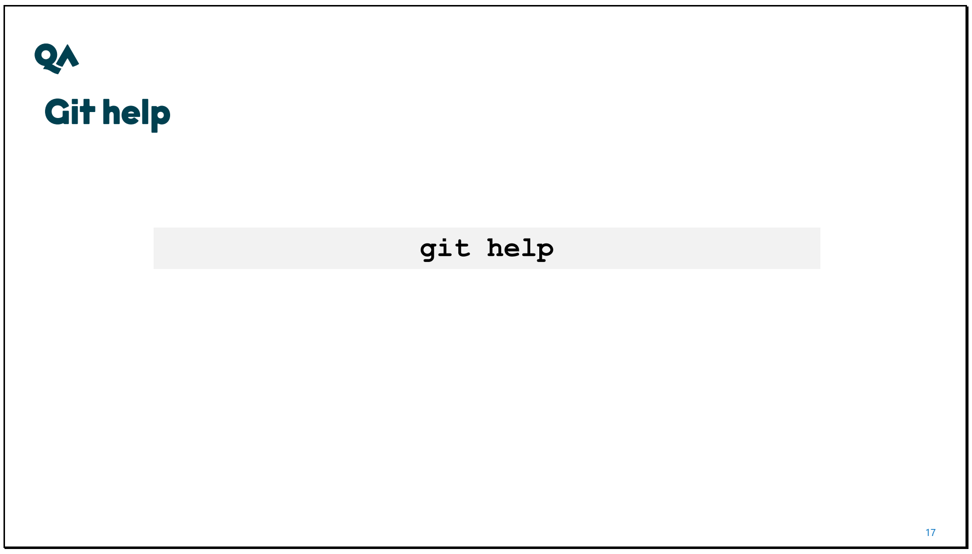

## Git help

```
git help
```

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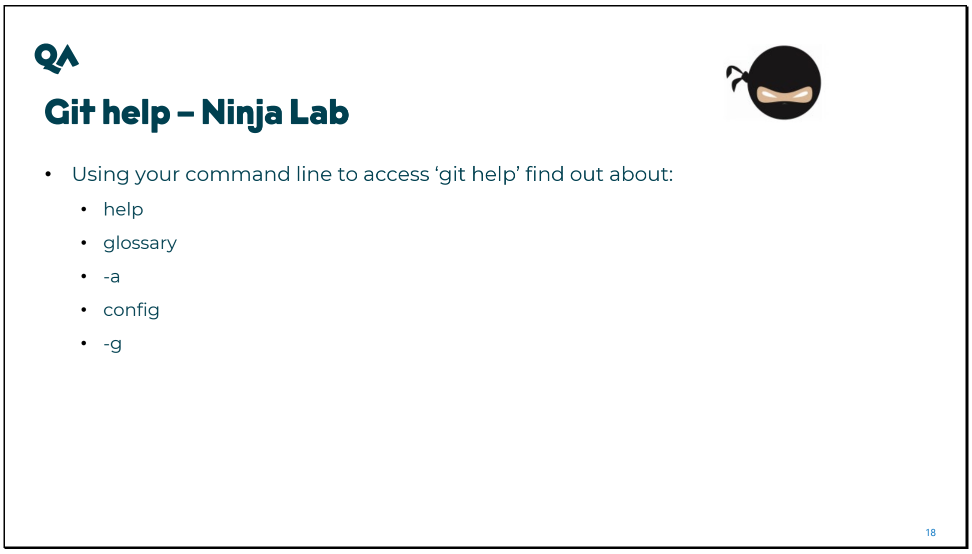

## Git help – Ninja Lab

- Using your command line to access ‘git help’ find out about:
  - help
  - glossary
  - -a
  - config
  - -g

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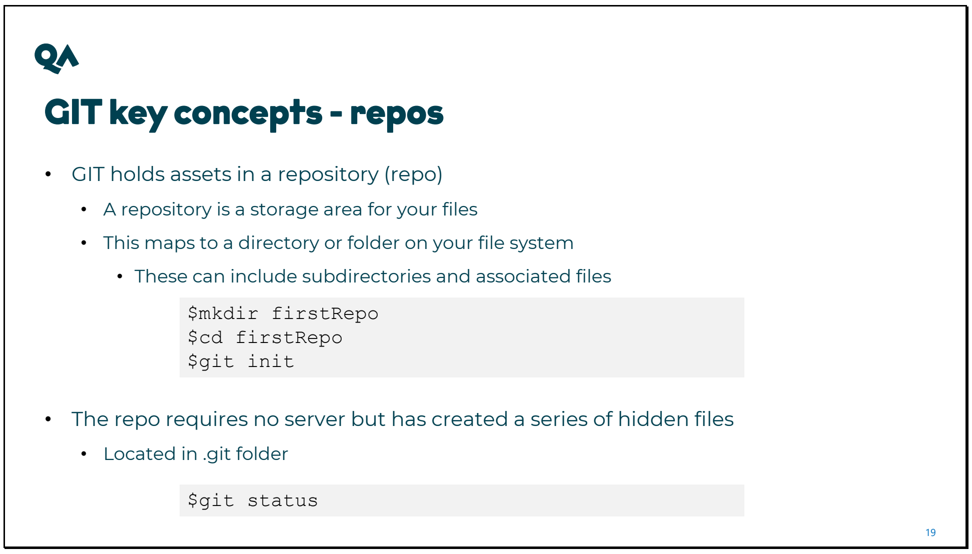

## GIT key concepts - repos

- GIT holds assets in a repository (repo)
  - A repository is a storage area for your files
  - This maps to a directory or folder on your file system
    - These can include subdirectories and associated files

```
$mkdir firstRepo
$cd firstRepo
$git init
```

- The repo requires no server but has created a series of hidden files
  - Located in .git folder

```
$git status
```

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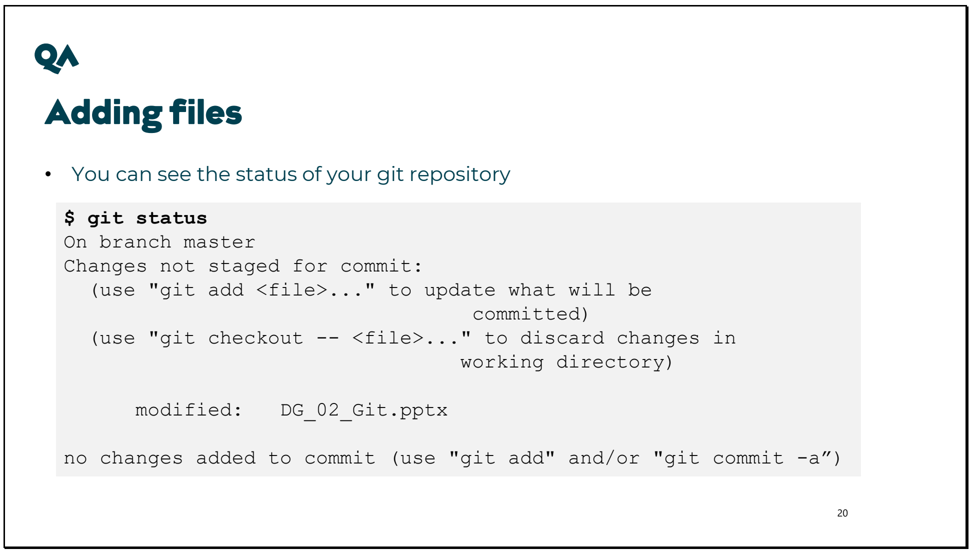

## Adding files

- You can see the status of your git repository

```
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be
                                  committed)
  (use "git checkout -- <file>..." to discard changes in
                                 working directory)

      modified:   DG_02_Git.pptx

no changes added to commit (use "git add" and/or "git commit -a”)
```

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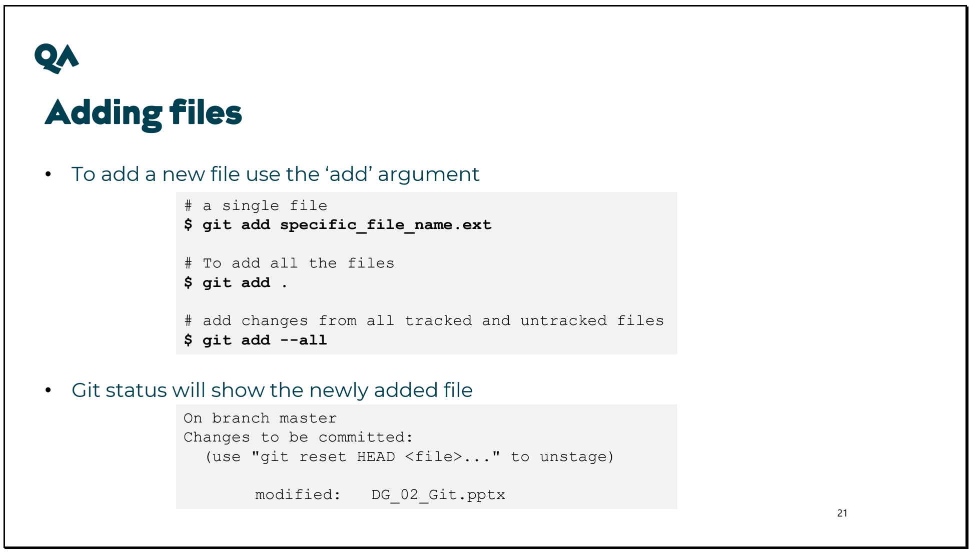

## Adding files

- To add a new file use the ‘add’ argument

```
# a single file
$ git add specific_file_name.ext

# To add all the files
$ git add .

# add changes from all tracked and untracked files
$ git add --all
```

- Git status will show the newly added file

```
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   DG_02_Git.pptx
```

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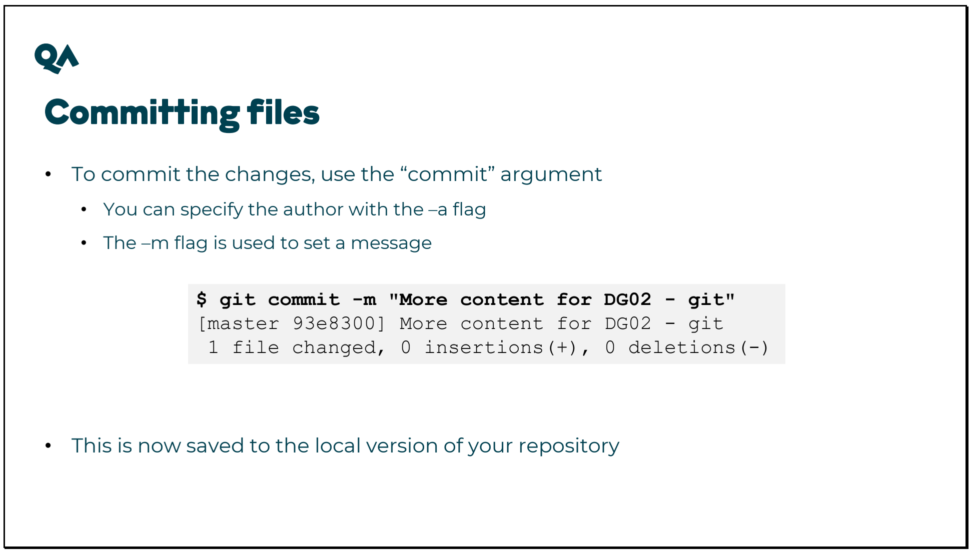
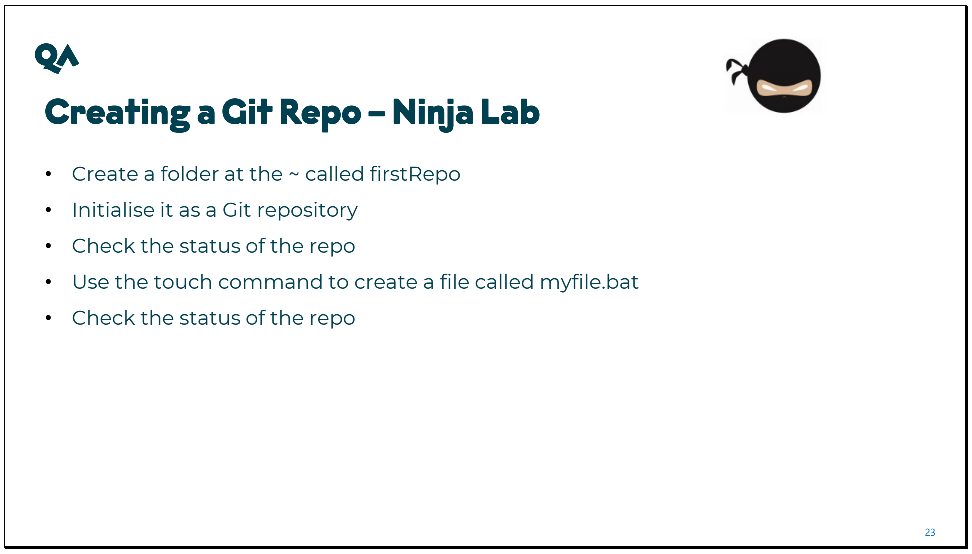


## Committing files

- To commit the changes, use the “commit” argument
  - You can specify the author with the –a flag
  - The –m flag is used to set a message

```
$ git commit -m "More content for DG02 - git"
[master 93e8300] More content for DG02 - git
 1 file changed, 0 insertions(+), 0 deletions(-)
```

- This is now saved to the local version of your repository



## Creating a Git Repo – Ninja Lab

- Create a folder at the ~ called firstRepo
- Initialise it as a Git repository
- Check the status of the repo
- Use the touch command to create a file called myfile.bat
- Check the status of the repo

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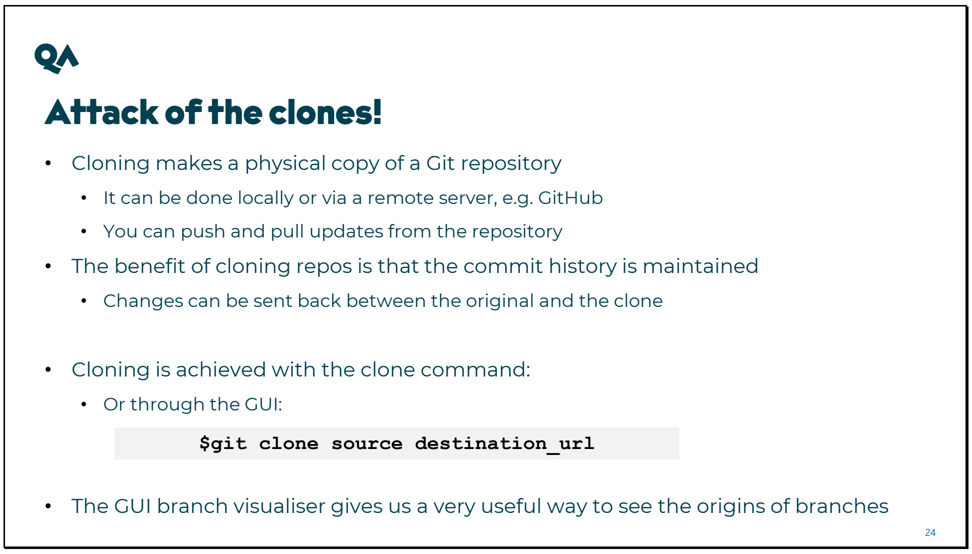

## Attack of the clones!

- Cloning makes a physical copy of a Git repository
  - It can be done locally or via a remote server, e.g. GitHub
  - You can push and pull updates from the repository
- The benefit of cloning repos is that the commit history is maintained
  - Changes can be sent back between the original and the clone
- Cloning is achieved with the clone command:
  - Or through the GUI:

```
$git clone source destination_url
```

- The GUI branch visualiser gives us a very useful way to see the origins of branches

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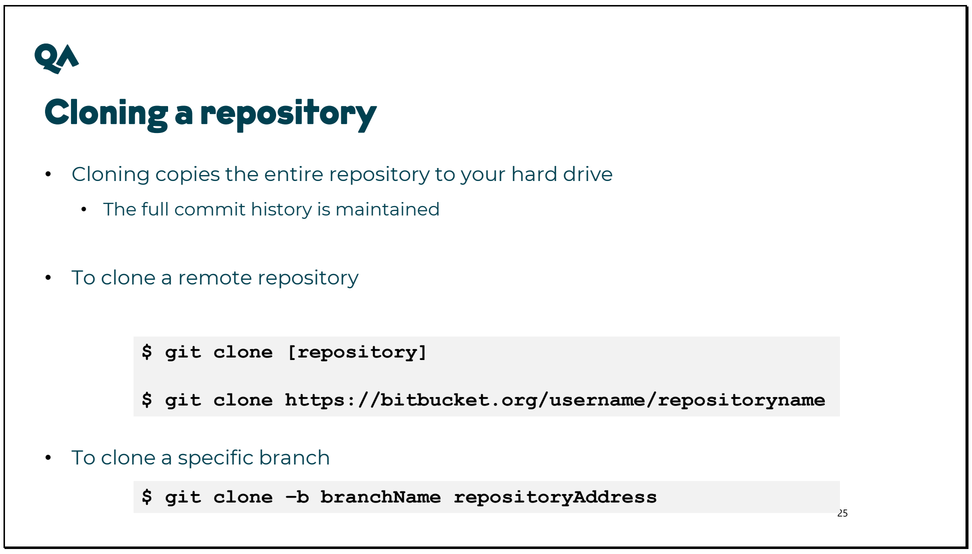

## Cloning a repository

- Cloning copies the entire repository to your hard drive
  - The full commit history is maintained

- To clone a remote repository

```
$ git clone [repository]

$ git clone https://bitbucket.org/username/repositoryname
```

- To clone a specific branch

```
$ git clone –b branchName repositoryAddress
```