DNP 3.0

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Exercise 1: Introduction to Version Control

Objective:

Initialize a new Git repository and commit your first file.

Instructions:

1. Create a new directory for your project.
2. Navigate into the directory.
3. Initialize a new Git repository in the directory.
4. Create a new file named file1.txt and add some content to it.
5. Add the file to the staging area.
6. Commit the file with a commit message.

```
91768@DESKTOP-9GG88F3 MINGW64 ~
$ mkdir week_1

91768@DESKTOP-9GG88F3 MINGW64 ~
$ cd week_1

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1
$ git init
Initialized empty Git repository in C:/Users/91768/week_1/.git/

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ touch file_1.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ notepad file

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ notepad file_1.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ cat file_1.txt
welcome to DNP 3.0

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git add file_1.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git commit -m "This is the first commit!!"
git commit -m "This is the first commitgit add file_1.txt"
[master (root-commit) c08d2c5] This is the first commitgit add file_1.txt
 1 file changed, 1 insertion(+)
 create mode 100644 file_1.txt
```

Exercise 2: Understanding Git

Objective:

Clone an existing repository and explore its history.

Instructions:

1. Clone a public repository from a platform like GitHub.
2. Navigate into the cloned repository.
3. Check the commit history.
4. Show changes introduced by a specific commit.

```
91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git clone https://github.com/trinity2040/Digital-Nurture-3.0.git
Cloning into 'Digital-Nurture-3.0'...
remote: Enumerating objects: 69, done.
remote: Counting objects: 100% (69/69), done.
remote: Compressing objects: 100% (65/65), done.
remote: Total 69 (delta 16), reused 0 (delta 0), pack-reused 0
Receiving objects: 100% (69/69), 272.88 KiB | 2.29 MiB/s, done.
Resolving deltas: 100% (16/16), done.

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ ls
Digital-Nurture-3.0/  file_1.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ cd Digital-Nurture-3.0/

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1/Digital-Nurture-3.0 (main)
$ git log
commit 1dfe6c8337a13be3c4161711a7e683ed2803bab8 (HEAD -> main, origin/main, origin/HEAD)
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:27:34 2024 +0530

    Add files via upload

commit ab63a44a1414ff9d2df544dc7a17875f6954c70e
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:26:46 2024 +0530

    Delete Java FSE directory

commit 05f397e718a628c5a96562bde5612f6a0ea7d282
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:26:24 2024 +0530

    Delete Java FSE/Week 10_Docker.docx

commit 0f8abea240153782de656a42d291d360d8a8e83e
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:22:58 2024 +0530

    Add files via upload

commit 8d4e232b79194b92364440babd166d04f0faf5f3
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:21:19 2024 +0530

    Delete Cybersecurity/Week 8, 9, 10_Python Advanced Concepts - Part 1.docx

commit a28e766a5ce77d1dab31a130e2106ddb788bdc15
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:21:10 2024 +0530

    Delete Cybersecurity/Week 6, 7_Python Fundamentals.docx

commit 27afd2258eface8434c95893f901b3a8141454b7
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:21:01 2024 +0530

    Delete Cybersecurity/Week 5_JDBC.docx

commit c0570d6b07a1f148e66d4732440cbda87d261018
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:20:53 2024 +0530
```

```
91768@DESKTOP-9GG88F3 MINGW64 ~/week_1/Digital-Nurture-3.0 (main)
$ git show 73cdb606707bb2e8c2bd70013203f4e03344c00e
commit 73cdb606707bb2e8c2bd70013203f4e03344c00e
Author: trinity2040 <unitydiversity2040@gmail.com>
Date:   Mon Jul 22 15:20:31 2024 +0530

    Delete Cybersecurity/Week 3_Threads.docx

diff --git a/Cybersecurity/Week 3_Threads.docx b/Cybersecurity/Week 3_Threads.docx
deleted file mode 100644
index 76376f4..0000000
--- a/Cybersecurity/Week 3_Threads.docx
+++ /dev/null
@@ -1,112 +0,0 @@
-Exercise 1: Understanding Thread States
-Objectives:
- Learn about different states of a thread.
- Understand how threads transition between states.
-Business Scenario:
-You are developing a logging system that needs to monitor the states of various threads in a multithrea
ded application. You need to create a thread and observe its state transitions.
-Tasks:
- Create a New Java Class:
- Create a Java class named ThreadStateLogger.
- Implement Thread States Logging:
- Define a new thread class that overrides the run method to perform a simple task (e.g., printing numbe
rs).
- In the ThreadStateLogger class, create an instance of this thread.
- Log the state of the thread at various points: before starting, after starting, during execution, and
after completion.
- Execute the Program:
- Run the ThreadStateLogger class and observe the output showing the state transitions of the thread.
-Exercise 2: Creating and Running Threads
-Objectives:
- Create and start threads in Java.
- Understand the main thread and how other threads interact with it.
-Business Scenario:
-You are developing a simulation where multiple sensors collect data simultaneously. Each sensor should
run in its own thread.
-Tasks:
- Create a New Java Class:
- Create a Java class named SensorSimulation.
- Define Sensor Threads:
- Create a thread class named Sensor that simulates data collection by printing random data at regular i
ntervals.
- In the SensorSimulation class, create and start multiple Sensor threads.
- Main Thread Interaction:
- In the SensorSimulation class, ensure the main thread waits for all sensor threads to complete before
exiting.
- Use join method to make the main thread wait for the sensor threads.
- Execute the Program:
- Run the SensorSimulation class and observe the concurrent execution of sensor threads.
-
-Exercise 3: Using Sleep, Yield, and Join
-Objectives:
- Understand the use of sleep, yield, and join methods in thread management.
-Business Scenario:
-You are developing a task scheduler where tasks need to be paused, yielded to other tasks, or waited up
on.
```

Exercise 3: Setting Up Git

Objective:

Set up Git configuration and verify it.

Instructions:

1. Set your username for Git.
2. Set your email for Git.
3. Verify your configuration settings.

```
91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git config --global user.name "G.Pranay"

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git config --global user.email "gg3834@srmist.edu.in"

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git config --list
diff.astextplain.textconv=astextplain
filter.lfs.clean=git-lfs clean -- %f
filter.lfs.smudge=git-lfs smudge -- %f
filter.lfs.process=git-lfs filter-process
filter.lfs.required=true
http.sslbackend=openssl
http.sslcainfo=C:/Program Files/Git/mingw64/etc/ssl/certs/ca-bundle.crt
core.autocrlf=true
core.fscache=true
core.symlinks=false
pull.rebase=false
credential.helper=manager
credential.https://dev.azure.com.usehttppath=true
init.defaultbranch=master
user.name=G.Pranay
user.email=gg3834@srmist.edu.in
core.repositoryformatversion=0
core.filemode=false
core.bare=false
core.logallrefupdates=true
core.symlinks=false
core.ignorecase=true
```

Exercise 4: Basic Git Commands

Objective:

Practice basic Git commands by modifying files and tracking changes.

Instructions:

1. Create a new file named file2.txt and add some content to it.
2. Add the file to the staging area.
3. Commit the new file with a commit message.
4. Modify the existing file1.txt and add more content to it.
5. Add the modified file to the staging area.
6. Commit the changes with a commit message.
7. View the current status of your repository.
8. View the differences between your working directory and the repository.

```
91768@DESKTOP-9GG88F3 MINGW64 ~/week_1/Digital-Nurture-3.0 (main)
$ cd

91768@DESKTOP-9GG88F3 MINGW64 ~
$ cd week_1

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ ls
Digital-Nurture-3.0/  file_1.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ touch file_2.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ notepad file_2.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git add file_2.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git commit -m "File 2 with intialized content"
[master 5b57c8e] File 2 with intialized content
 1 file changed, 1 insertion(+)
 create mode 100644 file_2.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ echo "modification in file 1">>file_1.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git add file_1.txt
warning: in the working copy of 'file_1.txt', LF will be replaced by CRLF the next time Git touches it

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git commit -m "File 1 is modified"
[master 63971e9] File 1 is modified
 1 file changed, 1 insertion(+)

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git status
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        Digital-Nurture-3.0/

nothing added to commit but untracked files present (use "git add" to track)

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git diff

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
```

Exercise 5: Branching and Merging

Objective:

Create a new branch, make changes, and merge it back to the main branch.

Instructions:

1. Create a new branch named new-feature.
2. Switch to the new branch (if not already switched).
3. Create a new file named feature.txt and add some content to it.
4. Add the file to the staging area.
5. Commit the new file with a commit message.
6. Switch back to the main branch.
7. Merge the new-feature branch into the main branch.
8. Resolve any conflicts if they arise and commit the merge.

```
91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ git branch new-feature

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ git checkout new-feature
Switched to branch 'new-feature'

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (new-feature)
$ touch feature.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (new-feature)
$ echo "This is a file in the new branch" >> feature.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (new-feature)
$ git add feature.txt
warning: in the working copy of 'feature.txt', LF will be replaced by CRLF the next time Git touches it

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (new-feature)
$ git commit -m "The branch file is commited"
[new-feature 13a5ea3] The branch file is commited
 1 file changed, 1 insertion(+)
 create mode 100644 feature.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (new-feature)
$ git checkout main
error: pathspec 'main' did not match any file(s) known to git

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (new-feature)
$ git checkout master
Switched to branch 'master'

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ git merge new-feature
Updating 63971e9..13a5ea3
Fast-forward
 feature.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 feature.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ cat feature.txt
This is a file in the new branch

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ ls
Digital-Nurture-3.0/  feature.txt  file_1.txt  file_2.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ git add feature.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ commit -m "merge new feature into main"
bash: commit: command not found

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ git commit -m "merge new feature into main"
On branch master
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        Digital-Nurture-3.0/
```

Exercise 6: Remote Repositories

Objective:

Add a remote repository and push your local changes.

Instructions:

1. Add a remote repository URL to your local Git repository.
2. Push your local changes to the remote repository.

```
91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git remote add origin https://github.com/RA2111030010115/week_1.git

91768@DESKTOP-9GG88F3 MINGW64 ~/week_1 (master)
$ git push -u origin master
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Delta compression using up to 8 threads
Compressing objects: 100% (7/7), done.
Writing objects: 100% (12/12), 1.11 KiB | 228.00 KiB/s, done.
Total 12 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/RA2111030010115/week_1.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

Exercise 7: Collaborating with Git

Objective:

Collaborate on a repository by creating a pull request.

Instructions:

1. Fork a repository on GitHub.
2. Clone your forked repository to your local machine.
3. Navigate into the cloned repository.
4. Create a new branch for your changes.
5. Make your changes and commit them.
6. Push the branch to your forked repository.
7. Create a pull request from your forked repository to the original repository.

```
91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ git clone https://github.com/RA2111030010115/learn-git.git
Cloning into 'learn-git'...
remote: Enumerating objects: 790, done.
remote: Total 790 (delta 0), reused 0 (delta 0), pack-reused 790
Receiving objects: 100% (790/790), 108.94 KiB | 3.89 MiB/s, done.
Resolving deltas: 100% (279/279), done.

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ ls
Digital-Nurture-3.0/  feature.txt  file_1.txt  file_2.txt  learn-git/

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1 (master)
$ cd learn-git/

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (master)
$ git branch b

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (master)
$ git checkout b
Switched to branch 'b'

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (b)
$ echo "Collaborating with git" >>b.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (b)
$ git add b.txt
warning: in the working copy of 'b.txt', LF will be replaced by CRLF the next time Git touches it

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (b)
$ git add .

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (b)
$ git commit -m "b.txt file commited"
[b 222d4a9] b.txt file commited
 1 file changed, 1 insertion(+)
 create mode 100644 b.txt

91768@DESKTOP-9GG88F3 MINGW64 ~/Week_1/learn-git (b)
$ git push origin b
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 363 bytes | 363.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'b' on GitHub by visiting:
remote:      https://github.com/RA2111030010115/learn-git/pull/new/b
remote:
To https://github.com/RA2111030010115/learn-git.git
 * [new branch]      b -> b
```