3 - Version Control with Git

Solutions for Module "Version Control with Git"

▶ preparations on my MAC

> I have created my own public remote repo on Github: https://github.com/Saban39/git-exercises.git

```
vim ~/.zshrc
parse_git_branch() {
git branch 2> /dev/null | sed -n -e 's/^\* \(.*\)/[\1]/p'
}
COLOR_DEF='%f'
COLOR_USR='%F{243}'
COLOR_DIR='%F{197}'
COLOR_GIT='%F{39}'
NEWLINE=$'\n'
setopt PROMPT_SUBST
export PROMPT='${COLOR_USR}%n@%M ${COLOR_DIR}%d
${COLOR_GIT}$(parse_git_branch)${COLOR_DEF}${NEWLINE}%% '
```

▶ Solution 1: Clone and create new repository

> Use repository: https://gitlab.com/twn-devops-bootcamp/latest/03-git/git-exercises

> EXERCISE 1: Clone git repository, creating a new local copy and push it to your own Gitlab remote repository.

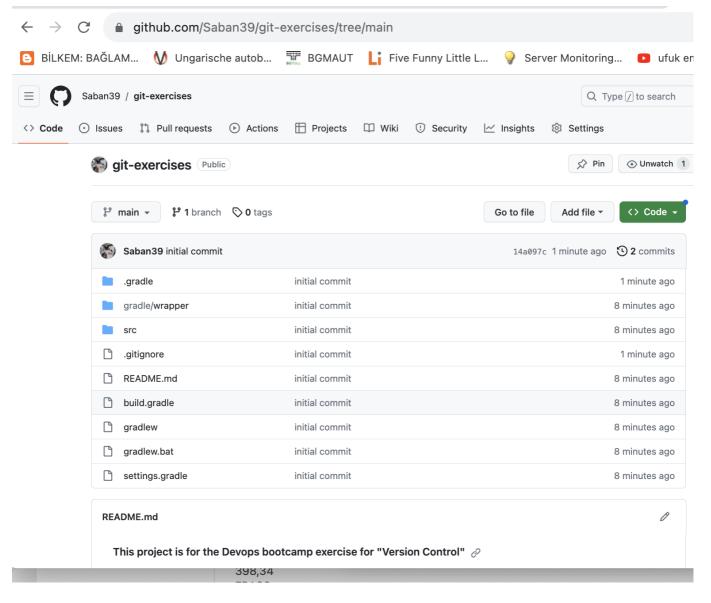**I have executed the following commands:**

```
git clone
mkdir git-exercises-my-repo
cd git-exercises
cp -a * ../git-exercises-my-repo
cd git-exercises-my-repo
rm -rf .git
git config --global user.name "Saban Gül"
git config --global user.email "sg1905w1@gmail.com"

git config --global --list

user.email=sg1905w1@gmail.com
user.name=Saban Gül
filesystem.AdoptOpenJDK|11.0.6|/dev/disk1s1.timestampresolution=3000
nanoseconds
filesystem.AdoptOpenJDK|11.0.6|/dev/disk1s1.minracythreshold=0 nanoseconds
core.editor=nano
init.defaultbranch=main
```

```
git remote add origin https://github.com/Saban39/git-exercises.git

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises-my-repo/.git
[main]
% git push --set-upstream origin main
Objekte aufzählen: 22, fertig.
Zähle Objekte: 100% (22/22), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (14/14), fertig.
Schreibe Objekte: 100% (22/22), 54.40 KiB | 18.13 MiB/s, fertig.
Gesamt 22 (Delta 0), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
To https://github.com/Saban39/git-exercises.git
 * [new branch]      main -> main
Branch 'main' folgt nun 'origin/main'.
```

← → C 🔒 github.com/Saban39/git-exercises/tree/main

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⑂ main ▾   ⑂ **1** branch ⬙ **0** tags   Go to file   Add file ▾   <> **Code** ▾

🖼 **Saban39** initial commit   14a097c 1 minute ago   🕙 **2** commits

📁	.gradle	initial commit	1 minute ago
📁	gradle/wrapper	initial commit	8 minutes ago
📁	src	initial commit	8 minutes ago
🗋	.gitignore	initial commit	1 minute ago
🗋	README.md	initial commit	8 minutes ago
🗋	build.gradle	initial commit	8 minutes ago
🗋	gradlew	initial commit	8 minutes ago
🗋	gradlew.bat	initial commit	8 minutes ago
🗋	settings.gradle	initial commit	8 minutes ago

README.md   ✎

This project is for the Devops bootcamp exercise for "Version Control" 🔗

398,34

▶ Solution 2: .gitignore

> EXERCISE 2: .gitignore You see that build folders and editor specific folders are in the repository and
> decide to ignore it as a best practice. Ignore .idea folder, .DS_Store, out and build folders. Hint:

> remove from git cache first

I have executed the following commands:

```
vim .gitignore

created the file .gitignore with this content:

.idea
.DS_Store
out
build

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises-my-repo [main]
% git rm --cached .DS_Store
% git rm --cached .idea
% git rm --cached out
% git rm --cached build

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises-my-repo [main]
% git add .
git commit -m "remove ignored files"
git push

[main 49cb471] remove ignored files
 1 file changed, 5 insertions(+)
 create mode 100644 .gitignore
Objekte aufzählen: 4, fertig.
Zähle Objekte: 100% (4/4), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (2/2), fertig.
Schreibe Objekte: 100% (3/3), 312 Bytes | 312.00 KiB/s, fertig.
Gesamt 3 (Delta 1), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Saban39/git-exercises.git
   b822d6a..49cb471  main -> main
```

▶ Solution 3: Feature branch

> EXERCISE 3: Feature branch

- Create a feature branch and change following:
- Upgrade the logstash-logback-encoder version to 7.3 Add image to the index.html file (url:https://www.careeraddict.com/uploads/article/58721/illustration-group-people-team-meeting.jpg)
- You are done with the changes. So Check your changes using "git diff" and Commit them if everything is correct.

> Note: There is a standard in your team to name commits with descriptive text.

- Push your changes to your remote repository.

```
% git checkout -b feature/add_changes
Zu neuem Branch 'feature/add_changes' gewechselt
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[feature/add_changes]

vim build.gradle
vim src/main/webapp/index.html


% git diff
diff --git a/build.gradle b/build.gradle
index 06ee087..36a1bbf 100644
--- a/build.gradle
+++ b/build.gradle
@@ -15,6 +15,6 @@ repositories {

 dependencies {
     implementation 'org.springframework.boot:spring-boot-starter-web'
-    compile group: 'net.logstash.logback', name: 'logstash-logback-
encoder', version: '5.2'
+    compile group: 'net.logstash.logback', name: 'logstash-logback-
encoder', version: '7.3'
     testCompile group: 'junit', name: 'junit', version: '4.12'
 }
diff --git a/src/main/webapp/index.html b/src/main/webapp/index.html
index d9db2bb..cf34de9 100644
--- a/src/main/webapp/index.html
+++ b/src/main/webapp/index.html
@@ -6,7 +6,7 @@
 </head>
 <body>
     <h1>Team member roles</h1>
-    <!-- add image here  <img src="" width="" /> -->
+    <img
src="https://www.careeraddict.com/uploads/article/58721/illustration-
group-people-team-meeting.jpg" width="200" />
     <ul>
         <li>Sarah - Full stack devlopper</li>
         <li>Bobby - React developer</li>

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[feature/add_changes]
% git add *

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[feature/add_changes]
% git commit -m "F-1023 feature/add_changes"
[feature/add_changes 71adb93] F-1023 feature/add_changes
 2 files changed, 2 insertions(+), 2 deletions(-)
```

```
% git push
Schwerwiegend: Der aktuelle Branch feature/add_changes hat keinen
Upstream-Branch.
Um den aktuellen Branch zu versenden und den Remote-Branch
als Upstream-Branch zu setzen, benutzen Sie

    git push --set-upstream origin feature/add_changes

Damit das automatisch für Branches ohne Upstream-Tracking passiert,
siehe 'push.autoSetupRemote' in 'git help config'.

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[feature/add_changes]
% git push --set-upstream origin feature/add_changes
Objekte aufzählen: 13, fertig.
Zähle Objekte: 100% (13/13), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (6/6), fertig.
Schreibe Objekte: 100% (7/7), 676 Bytes | 676.00 KiB/s, fertig.
Gesamt 7 (Delta 3), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
remote: Resolving deltas: 100% (3/3), completed with 3 local objects.
remote:
remote: Create a pull request for 'feature/add_changes' on GitHub by
visiting:
remote:        https://github.com/Saban39/git-
exercises/pull/new/feature/add_changes
remote:
To https://github.com/Saban39/git-exercises.git
 * [new branch]      feature/add_changes -> feature/add_changes
Branch 'feature/add_changes' folgt nun 'origin/feature/add_changes'.
```

▶ Solution 4: Bugfix branch

EXERCISE 4 - Bugfix branch

- You find out there is a bug in your project, so you need to fix it using a new bugfix branch:
- Create a new bugfix branch. Fix the spelling error in Application.java file.
- You are done with the changes. So Check your changes using "git diff" and Commit them if everything is correct.
- Push your changes to your remote repository.

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[feature/add_changes]
% git checkout -b bugfix/add_changes
Zu neuem Branch 'bugfix/add_changes' gewechselt

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
```

```
[bugfix/add_changes]
% vim src/main/java/com/example/Application.java

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git add *
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git commit -m "B-1023 bugfix/add_changes fixed spelling error (on line
22)"
[bugfix/add_changes fd3f3e3] B-1023 bugfix/add_changes fixed spelling
error (on line 22)
 1 file changed, 1 insertion(+), 1 deletion(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git push
Schwerwiegend: Der aktuelle Branch bugfix/add_changes hat keinen Upstream-
Branch.
Um den aktuellen Branch zu versenden und den Remote-Branch
als Upstream-Branch zu setzen, benutzen Sie

    git push --set-upstream origin bugfix/add_changes

Damit das automatisch für Branches ohne Upstream-Tracking passiert,
siehe 'push.autoSetupRemote' in 'git help config'.

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
%  git push --set-upstream origin bugfix/add_changes
Objekte aufzählen: 15, fertig.
Zähle Objekte: 100% (15/15), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (5/5), fertig.
Schreibe Objekte: 100% (8/8), 604 Bytes | 604.00 KiB/s, fertig.
Gesamt 8 (Delta 2), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
remote:
remote: Create a pull request for 'bugfix/add_changes' on GitHub by
visiting:
remote:      https://github.com/Saban39/git-
exercises/pull/new/bugfix/add_changes
remote:
To https://github.com/Saban39/git-exercises.git
 * [new branch]      bugfix/add_changes -> bugfix/add_changes
Branch 'bugfix/add_changes' folgt nun 'origin/bugfix/add_changes'.
```

▶ Solution 5: Merge request

> **EXERCISE 5: Merge request**

- You are done with the feature, now it needs to be tested and deployed.
- Merge your feature branch into master (using a merge request)

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git checkout main
Zu Branch 'main' gewechselt
Ihr Branch ist auf demselben Stand wie 'origin/main'.

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises [main]
% git merge feature/add_changes
Aktualisiere 14a097c..71adb93
Fast-forward
 build.gradle             | 2 +-
 src/main/webapp/index.html | 2 +-
 2 files changed, 2 insertions(+), 2 deletions(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises [main]
% git push
Gesamt 0 (Delta 0), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
To https://github.com/Saban39/git-exercises.git
   14a097c..71adb93  main -> main
```

▶ Solution 6: Fix Merge conflict

> **EXERCISE 6: Fix merge conflict**

- You are on the bugfix branch. You notice the logger library version is old, so:
- Update it to version 7.2 (Change the same location in bugfix branch)
- Some time went by since you opened your bugfix branch, so you want the up-to-date master state to avoid major conflicts.
- Merge the master branch in your bugfix branch - fix the merge conflict!

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises [main]
% git checkout bugfix/add_changes
Zu Branch 'bugfix/add_changes' gewechselt
Ihr Branch ist auf demselben Stand wie 'origin/bugfix/add_changes'.

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% vim build.gradle

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git add *
```

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git commit -m "upgrade logback library"
[bugfix/add_changes 2592d14] upgrade logback library
 1 file changed, 1 insertion(+), 1 deletion(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git merge main
automatischer Merge von build.gradle
KONFLIKT (Inhalt): Merge-Konflikt in build.gradle
Automatischer Merge fehlgeschlagen; beheben Sie die Konflikte und
committen Sie dann das Ergebnis.

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git add *

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git commit -m "fix merge conflict logback version"
[bugfix/add_changes 9bca95f] update logback version

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git merge main
Bereits aktuell.
```

▶ Solution 7: Revert commit

EXERCISE 7: Revert commit

- Still on the bugfix branch. You also noticed a spelling mistake in the index.html file, so you want to fix
  that in the same branch.
- Fix the spelling mistake and commit the fix. You also want to update the image.
- So also change the image url (src) in a separate commit.
- You are done with the changes: Push both commits to the remote repository.
- Your team members tell you the previous image was the correct one, so you want to undo it. But
  since you already pushed to remote, you must revert the change. Revert the last commit and push
  your changes to remote repository

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% vim src/main/webapp/index.html

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
```

```
% git add *

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git commit -m "Fix spelling error"
[bugfix/add_changes bf38a65] Fix spelling error
 1 file changed, 1 insertion(+), 1 deletion(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git add *
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git commit -m "Replace image url"
[bugfix/add_changes 510094e] Replace image url
 1 file changed, 2 insertions(+), 2 deletions(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git push
Objekte aufzählen: 36, fertig.
Zähle Objekte: 100% (30/30), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (16/16), fertig.
Schreibe Objekte: 100% (18/18), 1.73 KiB | 1.73 MiB/s, fertig.
Gesamt 18 (Delta 7), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
remote: Resolving deltas: 100% (7/7), completed with 3 local objects.
To https://github.com/Saban39/git-exercises.git
   307dcce..510094e  bugfix/add_changes -> bugfix/add_changes

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git revert HEAD
[bugfix/add_changes f35c208] Revert "Replace image url"
 1 file changed, 2 insertions(+), 2 deletions(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git push
Objekte aufzählen: 11, fertig.
Zähle Objekte: 100% (11/11), fertig.
Delta-Kompression verwendet bis zu 16 Threads.
Komprimiere Objekte: 100% (5/5), fertig.
Schreibe Objekte: 100% (6/6), 629 Bytes | 629.00 KiB/s, fertig.
Gesamt 6 (Delta 2), Wiederverwendet 0 (Delta 0), Pack wiederverwendet 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/Saban39/git-exercises.git
   510094e..f35c208  bugfix/add_changes -> bugfix/add_changes
```

▶ Solution 8: Reset commit

> ### EXERCISE 8: Reset commit

- You found 1 last thing you think must be fixed. Bruno just moved to DevOps team, so Bruno's role must be fixed.
- Update the text accordingly
- Commit that fix locally (don't push to remote)
- However after talking to a colleague, you find out it has already been fixed in another branch.
- So you want to undo your local commit. Since commit is only locally, you can reset the commit.

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% vim src/main/webapp/index.html

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git add *

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git commit -m "Adjust employee role description"

[bugfix/add_changes 7130690] Adjust employee role description
 1 file changed, 1 insertion(+), 1 deletion(-)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git reset --hard HEAD~
HEAD ist jetzt bei f35c208 Revert "Replace image url"
```

▶ Solution 9: Merge

> ### EXERCISE 9: Merge

- This time you want to merge your branch directly into master without merge request.
- So: merge your bugfix branch into master using git CLI (Hint: master branch must be up-to-date before the merge) Being on the master branch now.
- Push your merge commit to remote repository

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
% git checkout master
Fehler: Pfadspezifikation 'master' stimmt mit keinen Git bekannten Dateien
überein

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises
[bugfix/add_changes]
```

```
% git checkout main
Zu Branch 'main' gewechselt
Ihr Branch ist 3 Commits vor 'origin/main'.
  (benutzen Sie "git push", um lokale Commits zu publizieren)

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises [main]
% git merge bugfix/add_changes
Aktualisiere 483d856..f35c208
Fast-forward
 src/main/webapp/index.html | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
```

I have executed the following commands:

```
vim .gitignore
```

▶ Solution 10: Delete branches

EXERCISE 10: Delete branches

- Now that you are done, both feature and bugfix got deployed and you want to cleanup the old branches.
- Delete both branches both locally and remotely

```
sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises [main]
%  git branch -D bugfix/add_changes
Branch bugfix/add_changes entfernt (war f35c208).

sgworker@MacBook-Pro-3.local /Users/sgworker/git-exercises [main]
%  git branch -D feature/add_changes
Branch feature/add_changes entfernt (war 1efcb07).
```