SOFTWARE METHODS AND TOOLS

ASSIGNMENT – 8

GIT WORK FLOW

user	Local Repository	Branch Name
Ami	AmiSnake	master
Bob	BobSnake	development
Cam	CamSnake	developmentCam
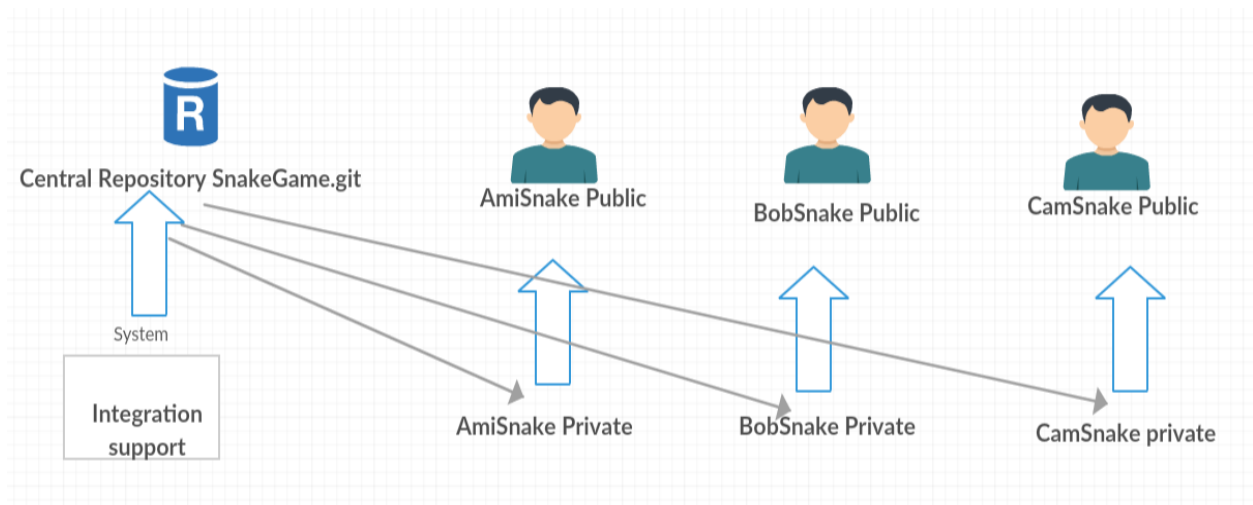
Conflicting Scenario: Bob and Cam modifies MinLength of the snake and commit in their branches. In the master, we cannot merge development and developmentCam branches.

Commands Used:

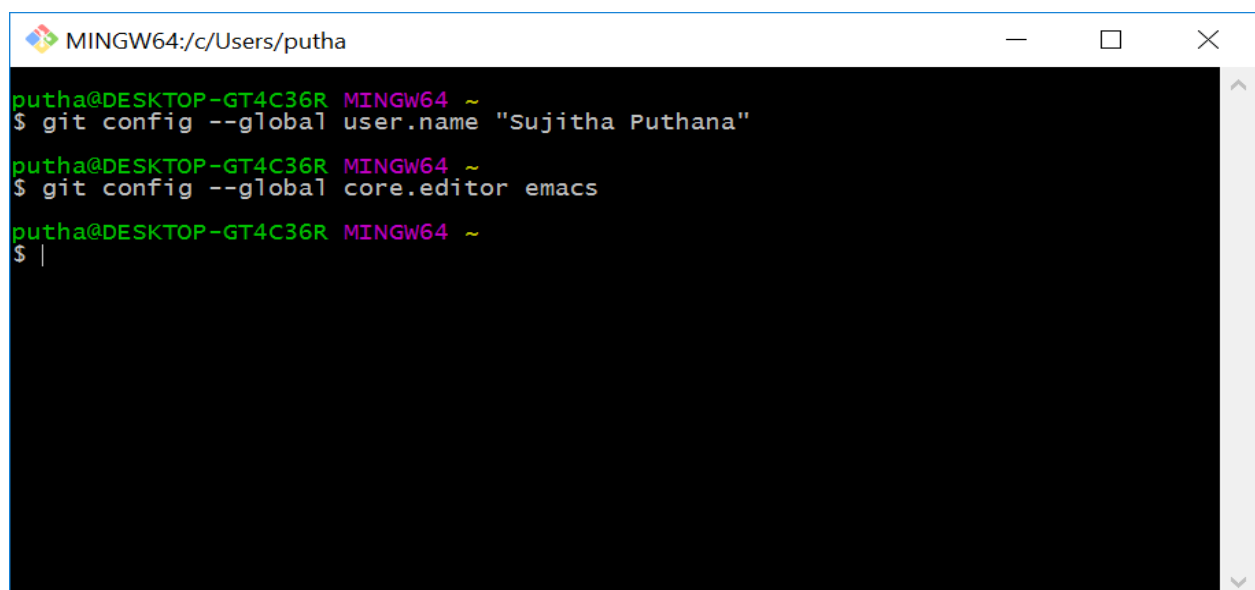| Git Task	Command
Tell the git user	git config –global user.name "Sujitha Puthana"
Default editor specifying	git config –global core.editor emacs
Create new local repository	git init
Clone a repository	git clone <path of repository>
Add file to repository	Git add <file name>
Add all files	Git add *

Commit changes to head	**Git commit -m "commit message"**
Commit changes to git	**Git commit -a**
Push changes to master	**Git push origin master**
Check status of local repo	**Git status**
Connect to remote repo	**git remote add origin <server>**
Create new branch and switch to it	**git checkout -b <branchname>**
Switch from one branch to another	**git checkout <branchname>**
Push a branch	**git push origin <branchname>**
Fetch and merge changes	**git pull**
Merge different branches	**git merge <branchname>**
Undo all local changes	**Git fetch origin**
Undo a file local changes	**Git checkout --<filename>**

STEP 1: SETTING UP

COMMANDS USED:

Setting up user name - git config --global user.name "Sujitha Puthana"

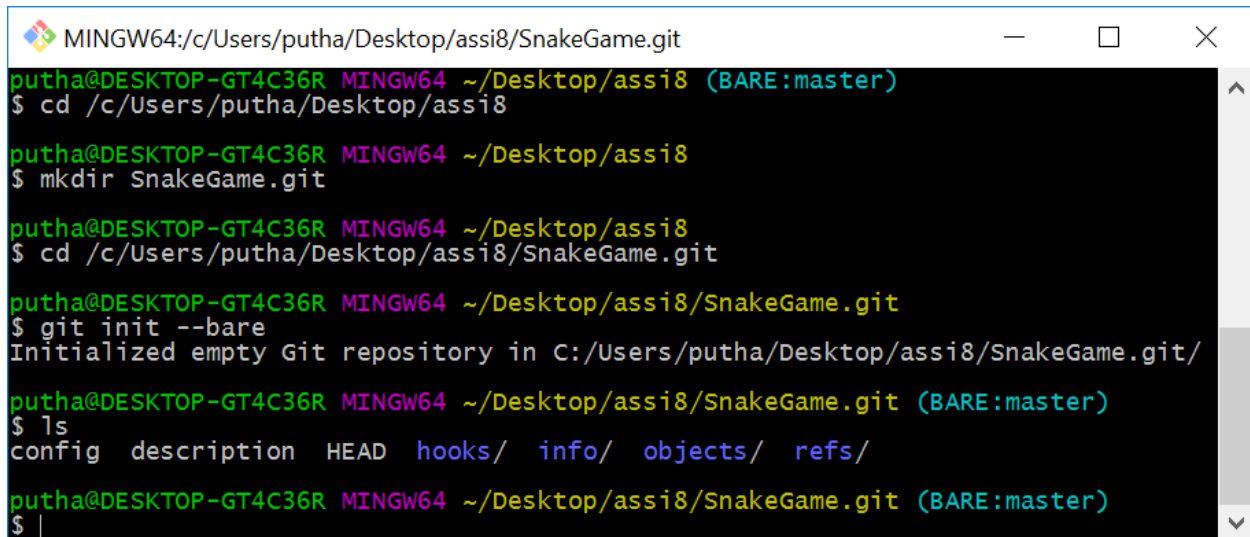**Specifying default editor - git config --global core.editor emacs**

STEP 2: CREATING REPOSITORY AND INITIAL PUSH

COMMANDS USED:

Initializing the folder as git repository - git init –bare

Check the contents of repository - ls

STEP 3: Creating folders for three users Ami, Bob, Cam as AmiSnake , BobSnake, CamSnake and pushing code to central repository from Ami folder and pull code to Bob and Cam.

COMMANDS USED:

Initializing a GIT repository – git init

Tracking added filed – git add *

Initial Commit – git commit -m "Initial Import from AmiSnake"

```
MINGW64:/c/Users/putha/Desktop/assi8/AmiSnake                      —    □    ×

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8 (master)
$ cd /c/Users/putha/Desktop/assi8/AmiSnake

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ git add *
warning: LF will be replaced by CRLF in AmiSnake/org/psnbtech/BoardPanel.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in AmiSnake/org/psnbtech/Clock.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in AmiSnake/org/psnbtech/Direction.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in AmiSnake/org/psnbtech/SidePanel.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in AmiSnake/org/psnbtech/SnakeGame.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in AmiSnake/org/psnbtech/TileType.java.
The file will have its original line endings in your working directory.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ git init
Initialized empty Git repository in C:/Users/putha/Desktop/assi8/AmiSnake/.git/

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ git add *
warning: LF will be replaced by CRLF in org/psnbtech/BoardPanel.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/Clock.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/Direction.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/SidePanel.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/SnakeGame.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/TileType.java.
The file will have its original line endings in your working directory.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ git commit -m "Initial Import from AmiSnake"
[master (root-commit) 49fa7b4] Initial Import from AmiSnake
 6 files changed, 1159 insertions(+)
 create mode 100644 org/psnbtech/BoardPanel.java
 create mode 100644 org/psnbtech/Clock.java
 create mode 100644 org/psnbtech/Direction.java
 create mode 100644 org/psnbtech/SidePanel.java
 create mode 100644 org/psnbtech/SnakeGame.java
 create mode 100644 org/psnbtech/TileType.java

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ ls
org/

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ |
```

Add remote repository into list of remote servers – git remote add origin …/SnakeGame.git

Push AmiSnake with central repository – git push origin master

Clone to local Repository – git clone …/SnakeGame.git BobSnake

Check Status of folder – git status

```
MINGW64:/c/Users/putha/Desktop/assi8/AmiSnake                    —    □    ✕

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake (master)
$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
nothing to commit, working tree clean

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake (master)
$ cd ../BobSnake

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (master)
$ git status
On branch master
Your branch is up-to-date with 'origin/master'.
nothing to commit, working tree clean

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (master)
$ cd ../AmiSnake

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ git status
On branch master
nothing to commit, working tree clean

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake (master)
$ |
```

STEP 4: Bob changed code in SnakeGame.java in branch development.

Cam modified code in SnakeGame.java in branch developmentCam.

COMMANDS USED:

Commit code – git commit -m "add"

Push code – git push origin development

Merge: git merge <branchname>

```
MINGW64:/c/Users/putha/Desktop/assi8/BobSnake                    —    □    ✕

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (master)
$ git checkout -b development
Switched to a new branch 'development'

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ git add SnakeGame.java
fatal: pathspec 'SnakeGame.java' did not match any files

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ git add /c/Users/putha/Desktop/assi8/BobSnake/org/psnbtech/SnakeGame.java

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ git commit -m "Made Snake minimum length to 6"
[development 0096e67] Made Snake minimum length to 6
 1 file changed, 1 insertion(+), 1 deletion(-)

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ git merge master
Already up-to-date.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ git push origin development
Counting objects: 5, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (5/5), 392 bytes | 0 bytes/s, done.
Total 5 (delta 2), reused 0 (delta 0)
To C:/Users/putha/Desktop/assi8/SnakeGame.git
 * [new branch]      development -> development

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ |
```

Cam also modified code in SnakeGame.java and trying to commit his code.


```
MINGW64:/c/Users/putha/Desktop/assi8/CamSnake                    —    □    ✕

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/BobSnake (development)
$ cd ../CamSnake

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake (master)
$ git checkout -b development
M       org/psnbtech/SnakeGame.java
Switched to a new branch 'development'

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake (development)
$ git add /c/Users/putha/Desktop/assi8/CamSnake/org/psnbtech/SnakeGame.java

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake (development)
$ git push origin development
To C:/Users/putha/Desktop/assi8/SnakeGame.git
 ! [rejected]        development -> development (fetch first)
error: failed to push some refs to 'C:/Users/putha/Desktop/assi8/SnakeGame.git'
hint: Updates were rejected because the remote contains work that you do
hint: not have locally. This is usually caused by another repository pushing
hint: to the same ref. You may want to first integrate the remote changes
hint: (e.g., 'git pull ...') before pushing again.
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake (development)
$ |
```

```
  MINGW64:/c/Users/putha/Desktop/assi8/CamSnake/org/psnbtech                    —    □    ✕
putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmentCam)
$ git add /c/Users/putha/Desktop/assi8/CamSnake/org/psnbtech/SnakeGame.java

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmentCam)
$ git commit -m "Cam modified Snake MinLength"
[developmentCam 2c77196] Cam modified Snake MinLength
 1 file changed, 1 insertion(+), 1 deletion(-)

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmentCam)
$ git push origin developmentCam
Counting objects: 10, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (10/10), 743 bytes | 0 bytes/s, done.
Total 10 (delta 4), reused 0 (delta 0)
To C:/Users/putha/Desktop/assi8/SnakeGame.git
 * [new branch]      developmentCam -> developmentCam

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmentCam)
$ |
```



```
  MINGW64:/c/Users/putha/Desktop/assi8/CamSnake/org/psnbtech                    —    □    ✕
Already up-to-date.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmentCam)
$ git merge developmentCam
Already up-to-date.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmentCam)
$ git checkout master
Switched to branch 'master'
Your branch is up-to-date with 'origin/master'.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (master)
$ git merge developmentCam
Updating 49fa7b4..2c77196
Fast-forward
 org/psnbtech/SnakeGame.java | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (master)
$ |
```

STEP 5: Conflict created while merging development and developmentCam.

COMMANDS USED:

Fetch information about remote repository - git remote show origin

Fetch data about remote Repository - git fetch show origin

Checkout a particular branch - git checkout -b development origin/development

Merge branch - git merge developmentCam

```
MINGW64:/c/Users/putha/Desktop/assi8/AmiSnake/org/psnbtech                    —    □    ✕

$ cd /c/Users/putha/Desktop/assi8/AmiSnake/org/psnbtech

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git remote show origin
* remote origin
  Fetch URL: C:/Users/putha/Desktop/assi8/SnakeGame.git
  Push  URL: C:/Users/putha/Desktop/assi8/SnakeGame.git
  HEAD branch: master
  Remote branches:
    development    new (next fetch will store in remotes/origin)
    developmentCam new (next fetch will store in remotes/origin)
    master         tracked
  Local ref configured for 'git push':
    master pushes to master (local out of date)

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git fetch origin
remote: Counting objects: 11, done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 11 (delta 5), reused 0 (delta 0)
Unpacking objects: 100% (11/11), done.
From C:/Users/putha/Desktop/assi8/SnakeGame
 * [new branch]      development    -> origin/development
 * [new branch]      developmentCam -> origin/developmentCam
   49fa7b4..0096e67  master         -> origin/master

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git fetch origin development
From C:/Users/putha/Desktop/assi8/SnakeGame
 * branch            development -> FETCH_HEAD

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git checkout -b development origin/development
Branch development set up to track remote branch development from origin.
Switched to a new branch 'development'

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development
)
$ git merge developmentCam
merge: developmentCam - not something we can merge

Did you mean this?
        origin/developmentCam

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development
)
$ git merge origin/developmentCam
Auto-merging org/psnbtech/SnakeGame.java
CONFLICT (content): Merge conflict in org/psnbtech/SnakeGame.java
Automatic merge failed; fix conflicts and then commit the result.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development
|MERGING)
$ |
```

```java
        */
<<<<<<< HEAD
    private static final int MIN_SNAKE_LENGTH = 6;
=======
    private static final int MIN_SNAKE_LENGTH = 15;
>>>>>>> origin/developmentCam

    /**
```

STEP 6: Solving conflict

Manually resolve conflict by human interference to check where the conflict occurred and discuss to modify the code. Each user has to checkout master, modify code and commit.

```
MINGW64:/c/Users/putha/Desktop/assi8/CamSnake/org/psnbtech        —    □    ✕

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (master)
$ git checkout -b developmentCam
Switched to a new branch 'developmentCam'

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmen
tCam)
$ git add SnakeGame.java

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmen
tCam)
$ git commit -m "Cam resolving the conflicts"
On branch developmentCam
Untracked files:
        BoardPanel.java
        Clock.java
        Direction.java
        SidePanel.java
        TileType.java

nothing added to commit but untracked files present

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/CamSnake/org/psnbtech (developmen
tCam)
$ git push origin developmentCam
fatal: 'origin' does not appear to be a git repository
fatal: Could not read from remote repository.

Please make sure you have the correct access rights
and the repository exists.
```

```
MINGW64:/c/Users/putha/Desktop/assi8/AmiSnake/org/psnbtech        —    □    ✕

fatal: Exiting because of an unresolved conflict.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development|MERGING)
$ git add SnakeGame.java

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development|MERGING)
$ git commit -m "resolving conflicts"
[development 31c82c9] resolving conflicts

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development)
$ git push origin master
To C:/Users/putha/Desktop/assi8/SnakeGame.git
```

```
MINGW64:/c/Users/putha/Desktop/assi8/AmiSnake/org/psnbtech                    —    □    ×

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (development)
$ git checkout master
Switched to branch 'master'

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git merge development
Updating 49fa7b4..31c82c9
Fast-forward
 org/psnbtech/SnakeGame.java | 4 +++-
 1 file changed, 3 insertions(+), 1 deletion(-)

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git merge developmentCam
merge: developmentCam - not something we can merge

Did you mean this?
        origin/developmentCam

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git merge origin/developmentCam
Already up-to-date.

putha@DESKTOP-GT4C36R MINGW64 ~/Desktop/assi8/AmiSnake/org/psnbtech (master)
$ git checkout origin/development
```

Observation:

1. All users make use of same public repository.
2. Each user has private and public repository.
3. In public repository user can edit and commit to the central repository.