

**SOFTWARE METHOD AND TOOLS**  
**(CS-5540)**



**ASSIGNMENT 8**

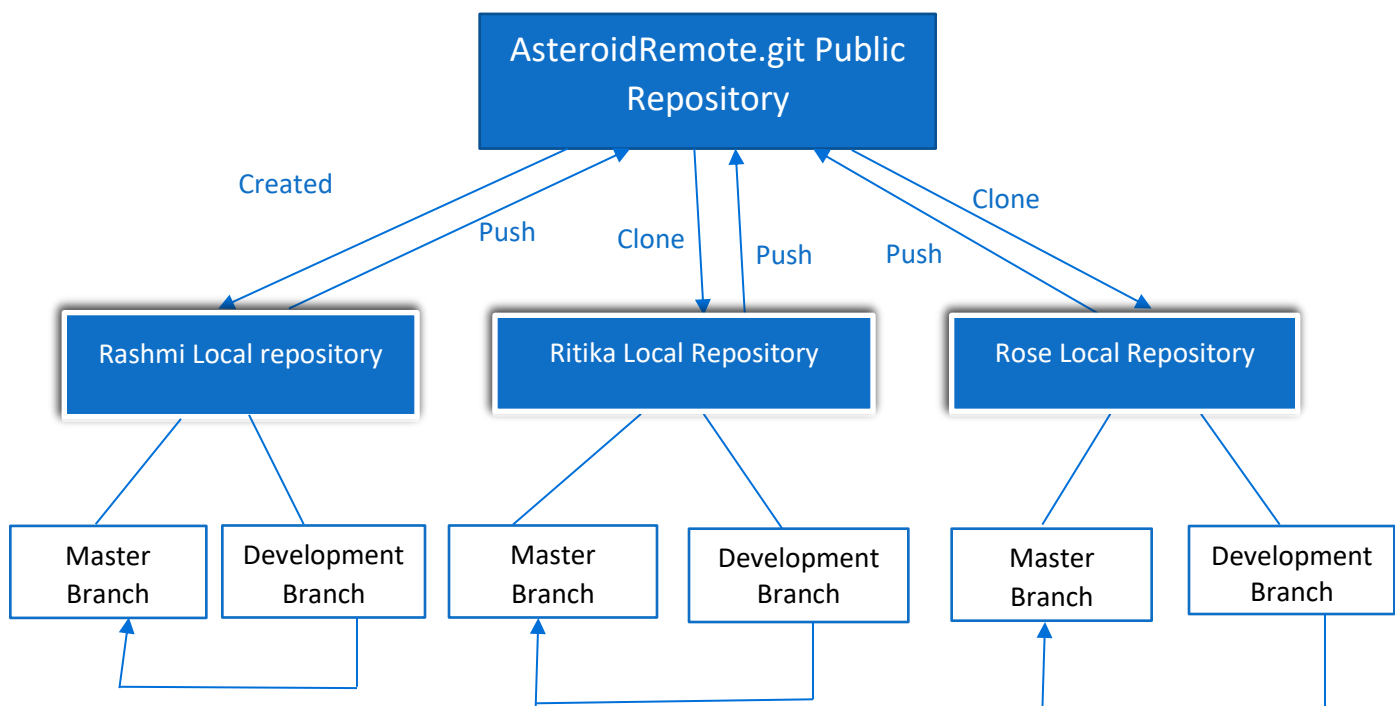
**-RASHMI TRIPATHI**  
**(rtrh6@mail.umkc.edu)**

Imagine that you are working on a project (e.g. the Asteroids application) with another two students, and you have decided to use GIT to manage your source code. Develop a working flow that characterizes how you will use GIT in this project. You cannot use the working flows included in the lecture slides. Instead, you must design a working flow that suggests a new collaboration pattern of using GIT.

In addition, your designed working flow must involve all the important concepts/operations of GIT. These include: remote branch, tracking branch, branching, merging, merging conflicts, repository creation, tracking new files, modifying files, staging files, committing changes, fetching, pulling, and pushing. Your working flow must start from the initial repository creation.

Draw a diagram to illustrate the working process (Similar to the diagram of the integration manager workflow included in the lecture slides). Submit your report in the PDF format to the Blackboard system.

As part of this assignment I have created the following collaboration for Git Repository. Here there are three developers as: Rashmi, Ritika and Rose. Here Rashmi, Ritika, Rose have development branches to do development changes and then push it to master branch. Further changes in master branch can be pushed to remote repository named as AsteroidRemote.git. RitikaLocalGit and RoseLocalGit are cloned from remote repository whereas RashmiLocalGit is created and pushed to remote for first time.



## **Step 1) Creating Repository:** Setting up remote repository named as AsteroidRemote.git using command

**git init --bare**

```
Puchu@WINDOWS-TCH5H2B MINGW64 ~
$ git config --global user.name "Rashmi"

Puchu@WINDOWS-TCH5H2B MINGW64 ~
$ git config --global core.editor emacs

Puchu@WINDOWS-TCH5H2B MINGW64 ~
$ cd E:

Puchu@WINDOWS-TCH5H2B MINGW64 /e
$ cd smt

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt
$ cd
Assignment 1/          Assignment 5/          SMT-Assignments_Fall14_UMKC-master/
Assignment 2/          Assignment 6/          eclipse neon/
Assignment 3/          Assignment7/          eclipse-SDK-4.6-win32-x86_64/
Assignment 4/          Assignment8/          lecture/

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt
$ cd Assignment8

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ mkdir AsteroidRemote.git

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ cd AsteroidRemote.git

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/AsteroidRemote.git
$ git init --bare
Initialized empty Git repository in E:/SMT/Assignment8/AsteroidRemote.git/

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/AsteroidRemote.git (BARE:master)
$ ls
HEAD  config  description  hooks/  info/  objects/  refs/
```

## **Step 2: Creating Repository and Tracking new files :** Creating local repository for Rashmi

**Commands used:**

**git init --bare** ←----- to initialize local repository

**git add \*** ←-----to add tracked files to staging

**git commit -m "first time code check in"** ←-----to commit staging files to local repository

**git remote add origin AsteroidRemote.git** ←-----to add remote repository connection to local one

**git push origin master** ←-----to push local changes to remote repository

```

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/AsteroidRemote.git (BARE:master)
$ cd ..

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ mkdir RashmiLocalGit

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ cd RashmiLocalGit

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit
$ git add *
fatal: Not a git repository (or any of the parent directories): .git

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit
$ git init
Initialized empty Git repository in E:/SMT/Assignment8/RashmiLocalGit/.git/

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit (master)
$ git add *
warning: LF will be replaced by CRLF in org/psnbtech/Game.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/WorldPanel.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/entity/Asteroid.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/entity/AsteroidSize.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/entity/Bullet.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/entity/Entity.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/entity/Player.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/util/Clock.java.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in org/psnbtech/util/Vector2.java.
The file will have its original line endings in your working directory.

```

```

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit (master)
$ git commit -m "Initial import by rashmi"
[master (root-commit) d09869f] Initial import by rashmi
 9 files changed, 1855 insertions(+)
 create mode 100644 org/psnbtech/Game.java
 create mode 100644 org/psnbtech/WorldPanel.java
 create mode 100644 org/psnbtech/entity/Asteroid.java
 create mode 100644 org/psnbtech/entity/AsteroidSize.java
 create mode 100644 org/psnbtech/entity/Bullet.java
 create mode 100644 org/psnbtech/entity/Entity.java
 create mode 100644 org/psnbtech/entity/Player.java
 create mode 100644 org/psnbtech/util/Clock.java
 create mode 100644 org/psnbtech/util/Vector2.java

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit (master)
$ git remote add origin /e/smt/Assignment8/AsteroidRemote.git

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit (master)
$ git push origin master
Counting objects: 15, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (13/13), done.
Writing objects: 100% (15/15), 15.50 KiB | 0 bytes/s, done.
Total 15 (delta 0), reused 0 (delta 0)
To E:/smt/Assignment8/AsteroidRemote.git
 * [new branch]      master -> master

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit (master)
$

```

### **Step 3) Cloning Repository:** Create clone repository for developer Ritika.

*Commands used:*

git clone AsteroidRemote.git RitikaLocalGit ←-----to clone remote repository to local one

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit
$ cd ..

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ git clone file:///e/smt/Assignment8/AsteroidRemote.git RitikaLocalGit
Cloning into 'RitikaLocalGit'...
remote: Counting objects: 15, done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 15 (delta 0), reused 0 (delta 0)
Receiving objects: 100% (15/15), 15.50 KiB | 0 bytes/s, done.

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ cd RitikaLocalGit

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit (master)
$ ls
org/
```

### **Step 4) Branch Creation:** created development branch in Ritika Local Git

*Commands used:*

git checkout -b development

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit (master)
$ git checkout -b development
Switched to a new branch 'development'
```

### **Step 5) Staging files addition:**

**made changes to Game.java file at line 34**

```
24 ▼ public class Game extends JFrame {
25
26 ▼ /**
27  * The Serial Version Unique Identifier.
28  */
29  private static final long serialVersionUID = -3535839203174039672L;
30
31 ▼ /**
32  * The number of frame per second the game should run at.
33  */
34  private static final int FRAMES_PER_SECOND = 60; //changes added by rashmi in ritika git local copy
35
36 ▼ /**
37  * The number of nanoseconds that should elapse each frame. This is far more
38  * accurate than using milliseconds.
39  */
40  private static final long FRAME_TIME = (long)(1000000000.0 / FRAMES_PER_SECOND);
41
```

Checking **status** of changed file as

*Commands used:*

**git status**

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit (development)
$ git status
On branch development
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:   org/psnbtech/Game.java

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

Staging the modified file, committing it to local branch and then committing it to server

*Commands used:*

**git add Game.java**

**git commit -m "developing"**

**git push origin development**

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit/org/psnbtech (development)
$ git add Game.java

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit/org/psnbtech (development)
$ git commit -m "Developing in progress"
[development 9a475c9] Developing in progress
 1 file changed, 1 insertion(+), 1 deletion(-)

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit/org/psnbtech (development)
$ git push origin development
Counting objects: 5, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (5/5), 519 bytes | 0 bytes/s, done.
Total 5 (delta 1), reused 0 (delta 0)
To file:///e/smt/Assignment8/AsteroidRemote.git
 * [new branch]      development -> development

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RitikaLocalGit/org/psnbtech (development)
$ git checkout master
Switched to branch 'master'
Your branch is up-to-date with 'origin/master'.
```

**Step 6) Cloning and Fetching Repository:** Create another clone repository for developer Rose.

*Commands used:*

git clone AsteroidRemote.git RoseLocalGit

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ git clone file:///e/smt/Assignment8/AsteroidRemote.git RoseLocalGit
Cloning into 'RoseLocalGit'...
remote: Counting objects: 20, done.
remote: Compressing objects: 100% (16/16), done.
Receiving objects: 50% (10/reused 0 (delta 0)
Receiving objects: 100% (20/20), 15.94 KiB | 0 bytes/s, done.
Resolving deltas: 100% (1/1), done.
```

**Show remote branch information** and fetching it to Rose local repository.

*Commands used:*

git remote show origin ←-----show remote repository information

git fetch origin

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (master)
$ git remote show origin
* remote origin
  Fetch URL: file:///e/smt/Assignment8/AsteroidRemote.git
  Push URL: file:///e/smt/Assignment8/AsteroidRemote.git
  HEAD branch: master
  Remote branches:
    development tracked
    master          tracked
  Local branch configured for 'git pull':
    master merges with remote master
  Local ref configured for 'git push':
    master pushes to master (up to date)

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (master)
$ git fetch origin
```

### Step 7) Tracking branch, Remote branch and Merging: Creating new tracking branch from remote branch and then merging branch

**Commands used:**

`git checkout -b development origin/development` ←-- tracking branch creating using remote branch

`git checkout master`

`git merge development` ←----- merging the branches development to master

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (master)
$ git checkout -b development origin/development
Branch development set up to track remote branch development from origin.
Switched to a new branch 'development'

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (development)
$ git checkout master
Switched to branch 'master'
Your branch is up-to-date with 'origin/master'.

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (master)
$ git merge development
Updating d09869f..9a475c9
Fast-forward
 org/psnbtech/Game.java | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
```

### Step 7) Conflict : in Rose directory by different changes in same line in different branches

Added changes in development branch and master branch at same line. As you can see below conflict show both master and development branches changes for merging.

```
*/
▼ public class Game extends JFrame {

  ▼ /**
    * The Serial Version Unique Identifier.
    */
    <<<<<< HEAD|
      private static final long serialVersionUID = -3535839203174039672L; //changes added by rashmi for conflict in master branch
    =====
      private static final long serialVersionUID = -3535839203174039672L; //changes added by rashmi in rose git local copy in
      development branch to get conflict
    >>>>>> development
```



### Commands executed for the same in development branch:

#### *Commands used:*

git checkout development

git add Game.java

git commit -m "adding development branch"

git push origin development

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (master)
$ git checkout development
M       org/psnbtech/Game.java
Switched to branch 'development'
Your branch is ahead of 'origin/development' by 1 commit.
  (use "git push" to publish your local commits)

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit (development)
$ cd org/psnbtech

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (development)
$ git add Game.java

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (development)
$ git commit -m "development in progress by Rose"
[development 7af1b5b] development in progress by Rose
 1 file changed, 2 insertions(+), 2 deletions(-)

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (development)
$ git push origin development
Counting objects: 10, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (10/10), 995 bytes | 0 bytes/s, done.
Total 10 (delta 2), reused 0 (delta 0)
To file:///e/smt/Assignment8/AsteroidRemote.git
   9a475c9..7af1b5b  development -> development
```

### Commands executed in master branch:After manually editing Game.java at same line as in development branch

#### *Commands used:*

git checkout master

git add Game.java

git commit -m "adding master branch changes"

git merge development

```

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (development)
$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 2 commits.
(use "git push" to publish your local commits)

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master)
$ git add Game.java

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master)
$ git commit -m "development by rashmi in master"
[master 0081c6c] development by rashmi in master
1 file changed, 1 insertion(+), 1 deletion(-)

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master)
$ git merge development
Auto-merging org/psnbtech/Game.java
CONFLICT (content): Merge conflict in org/psnbtech/Game.java
Automatic merge failed; fix conflicts and then commit the result.

```

As you can see conflict arises as same line changes between development and master branch

### **Step 8) Conflict Resolution:**

Manually edit the file using vi command and then add it to master branch.

*Commands used:*

**git add Game.java**

**git commit -m "adding master branch changes"**

**git merge development**

No conflict as user have manually edited the file.

```

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master|MERGING)
$ vi Game.java

[1]+  Stopped                  vi Game.java

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master|MERGING)
$ git add Game.java

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master|MERGING)
$ git commit -m "development by rashmi in merging"
[master 493f7cf] development by rashmi in merging

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RoseLocalGit/org/psnbtech (master)
$ git merge development
Already up-to-date

```

## Step 9) Use of pull command for fetching changes

Pulling the changes in RashmiLocalGit Repository

*Commands used:*

**Git pull**

```
Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8
$ cd RashmiLocalGit

Puchu@WINDOWS-TCH5H2B MINGW64 /e/smt/Assignment8/RashmiLocalGit (master)
$ git pull
remote: Counting objects: 15, done.
remote: Compressing objects: 100% (9/9), done.
remote: Total 15 (delta 3), reused 0 (delta 0)
Unpacking objects: 100% (15/15), done.
From E:/smt/Assignment8/AsteroidRemote
* [new branch]      development -> origin/development
There is no tracking information for the current branch.
Please specify which branch you want to merge with.
See git-pull(1) for details.

    git pull <remote> <branch>

If you wish to set tracking information for this branch you can do so with:

    git branch --set-upstream-to=origin/<branch> master
```

=====