1. It explains the git branch workflow on a sample project for the sake of developing, building, branching and releasing the project deliverable into various environments.

1. The sample project viz., sample\_proj has one simple index.html and one build\_deploy script; The build\_deploy script viz., build.sh needs the environment (dev, qa and prod) as an argument and based on that, it builds and deploys the deliverable into the tomcat webserver.
2. The git repository: **git clone ssh://**[**git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo**](http://git-codecommit.us-east-1.amazonaws.com/v1/repos/git_workflow_demo)
3. This repo has two branches –
4. master
5. development

(Created the ‘development’ branch from the ‘master’, at the very beginning –

**[root@k8s-node2 git\_workflow\_demo]# git checkout -b development**

Switched to a new branch 'development'

**[root@k8s-node2 git\_workflow\_demo]# git branch --list**

\* development

master

**[root@k8s-node2 git\_workflow\_demo]# git push -u origin development**

Total 0 (delta 0), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

\* [new branch] development -> development

Branch development set up to track remote branch development from origin.

**[root@k8s-node2 git\_workflow\_demo]# git branch --list**

\* development

master

**[root@k8s-node2 git\_workflow\_demo]#**

**SCENARIO 1:**

1. The developer (dev) works on the 'development' branch; commits and pushes the work into the 'development' branch
2. Added some change in the ‘index.html’ –

**[root@k8s-node2 sample\_proj]# git diff index.html**

diff --git a/sample\_proj/index.html b/sample\_proj/index.html

index 7480006..3351703 100755

--- a/sample\_proj/index.html

+++ b/sample\_proj/index.html

@@ -2,7 +2,7 @@

<html>

<body>

<h3>Hello !! This is git workflow project demo </h3>

-<p>Hi <ENV> </p>

+<p>Hi Git <ENV> </p>

</body>

</html>

Committed and pushed that change to the ‘development’ branch.

**[root@k8s-node2 sample\_proj]# 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: index.html

#

No changes added to commit (use "git add" and/or "git commit -a") –

**[root@k8s-node2 sample\_proj]# git add index.html**

**[root@k8s-node2 sample\_proj]# git commit -m "changed Hi statement to address Git...." index.html**

[development baa5743] changed Hi statement to address Git....

1 file changed, 1 insertion(+), 1 deletion(-)

**[root@k8s-node2 sample\_proj]# git push -u origin development**

Counting objects: 7, done.

Compressing objects: 100% (4/4), done.

Writing objects: 100% (4/4), 402 bytes | 0 bytes/s, done.

Total 4 (delta 2), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

4d35e4e..baa5743 development -> development

Branch development set up to track remote branch development from origin.

1. Once the dev is done his/her testing, the code will be merged to the master – Show the difference between the ‘development’ and the ‘master’ –

**[root@k8s-node2 sample\_proj]# git diff development master**

diff --git a/sample\_proj/index.html b/sample\_proj/index.html

index 3351703..7480006 100755

--- a/sample\_proj/index.html

+++ b/sample\_proj/index.html

@@ -2,7 +2,7 @@

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</html>

1. Checkout/switch to the ‘master’ branch –

**[root@k8s-node2 sample\_proj]# git checkout master**

Switched to branch 'master'

**[root@k8s-node2 sample\_proj]#**

1. Just do a pull just in case if any changes are made by anybody in between –

**[root@k8s-node2 sample\_proj]# git pull**

Already up-to-date.

1. Do the merge from ‘development’ to the ‘master’
2. Basically, need to do a merge and push –

**[root@k8s-node2 sample\_proj]# git merge development**

Updating 4d35e4e..baa5743

Fast-forward

sample\_proj/index.html | 2 +-

1 file changed, 1 insertion(+), 1 deletion(-)

**[root@k8s-node2 sample\_proj]# git push -u origin master**

Total 0 (delta 0), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

4d35e4e..baa5743 master -> master

Branch master set up to track remote branch master from origin.

**[root@k8s-node2 sample\_proj]# git diff development master**

**[root@k8s-node2 sample\_proj]# git status**

# On branch master

nothing to commit, working directory clean

1. From the master, a qa tag (ex: tag name= qa\_v0.0.1\_sample\_proj) will be created; and qa tag will be deployed into the qa environment-
2. Need to do a tag and push –

**[root@k8s-node2 git\_workflow\_demo]# git tag qa\_v0.0.1\_sample\_proj**

**[root@k8s-node2 git\_workflow\_demo]# git tag --list**

qa\_v0.0.1\_sample\_proj

**[root@k8s-node2 git\_workflow\_demo]# git push origin qa\_v0.0.1\_sample\_proj**

Total 0 (delta 0), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

\* [new tag] qa\_v0.0.1\_sample\_proj -> qa\_v0.0.1\_sample\_proj

**[root@k8s-node2 sample\_proj]#**

1. Deploying

Checkout the tag and run the build script

**[root@k8s-node2 git\_workflow\_demo]# git checkout tags/qa\_v0.0.1\_sample\_proj**

You are in 'detached HEAD' state. You can look around, make experimental changes and commit them, and you can discard any commits you make in this state without impacting any branches by performing another checkout.

If you want to create a new branch to retain commits you create, you may do so (now or later) by using -b with the checkout command again.

Example:-

git checkout -b new\_branch\_name

HEAD is now at baa5743... changed Hi statement to address Git....

**[root@k8s-node2 git\_workflow\_demo]# git status**

# HEAD detached at qa\_v0.0.1\_sample\_proj

# Untracked files:

# (use "git add <file>..." to include in what will be committed)

#

# qa\_v0.0.1\_sample\_proj

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

**[root@k8s-node2 git\_workflow\_demo]#**

**[root@k8s-node2 git\_workflow\_demo]# cd sample\_proj/**

**[root@k8s-node2 sample\_proj]# sh build.sh qa**

successfully deployed in tomcat

Redirecting to /bin/systemctl restart tomcat.service

Note: checking out 'tags/qa\_v0.0.1\_sample\_proj'.

1. Hit the URL to see the change and test at <http://192.168.195.174:8080/sample_proj>
2. Once it is tested, that qa tag is promoted as prod tag like pushing the qa tag into the prod tag (ex: tag name = prod\_v0.0.1\_sample\_proj) and that prod tag will be deployed into the prod environment –

**[root@k8s-node2 git\_workflow\_demo]# git tag prod\_v0.0.1\_sample\_proj**

**[root@k8s-node2 git\_workflow\_demo]# git tag --list**

prod\_v0.0.1\_sample\_proj

qa\_v0.0.1\_sample\_proj

**[root@k8s-node2 git\_workflow\_demo]# git push origin prod\_v0.0.1\_sample\_proj**

Total 0 (delta 0), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

\* [new tag] prod\_v0.0.1\_sample\_proj -> prod\_v0.0.1\_sample\_proj

**[root@k8s-node2 git\_workflow\_demo]# cd sample\_proj/**

**[root@k8s-node2 sample\_proj]# sh build.sh prod**

successfully deployed in tomcat

Redirecting to /bin/systemctl restart tomcat.service

**[root@k8s-node2 sample\_proj]#**

1. Check the URL to test the deployment.

**SCENARIO2:**

1. One bug is found in the prod tag; so, create a branch from that buggy prod tag –

**[root@k8s-node2 sample\_proj]# git status**

# HEAD detached at prod\_v0.0.1\_sample\_proj

# Untracked files:

# (use "git add <file>..." to include in what will be committed)

#

# ../qa\_v0.0.1\_sample\_proj

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

**[root@k8s-node2 sample\_proj]# git checkout -b hotfix\_prod\_v0.0.1\_sample\_proj**

Switched to a new branch 'hotfix\_prod\_v0.0.1\_sample\_proj'

**[root@k8s-node2 sample\_proj]#**

Pushing the new hotfix branch …

**[root@k8s-node2 sample\_proj]# git push -u origin hotfix\_prod\_v0.0.1\_sample\_proj**

Total 0 (delta 0), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

\* [new branch] hotfix\_prod\_v0.0.1\_sample\_proj -> hotfix\_prod\_v0.0.1\_sample\_proj

Branch hotfix\_prod\_v0.0.1\_sample\_proj set up to track remote branch hotfix\_prod\_v0.0.1\_sample\_proj from origin.

**[root@k8s-node2 sample\_proj]#**

1. Fixing the bug, committing it and pushing to the hotfix prod branch…

**[root@k8s-node2 sample\_proj]# git diff**

diff --git a/sample\_proj/index.html b/sample\_proj/index.html

index 3351703..57dc810 100755

--- a/sample\_proj/index.html

+++ b/sample\_proj/index.html

@@ -1,7 +1,7 @@

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**[root@k8s-node2 sample\_proj]# git add index.html**

**[root@k8s-node2 sample\_proj]# git commit -m "jira:1234 fixing the prod bug by adding additional bang after Hello..."**

[hotfix\_prod\_v0.0.1\_sample\_proj bfa47a2] jira:1234 fixing the prod bug by adding additional bang after Hello...

1 file changed, 1 insertion(+), 1 deletion(-)

**[root@k8s-node2 sample\_proj]# git push -u origin** hotfix\_prod\_v0.0.1\_sample\_proj

Counting objects: 7, done.

Compressing objects: 100% (4/4), done.

Writing objects: 100% (4/4), 419 bytes | 0 bytes/s, done.

Total 4 (delta 2), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

baa5743..bfa47a2 hotfix\_prod\_v0.0.1\_sample\_proj -> hotfix\_prod\_v0.0.1\_sample\_proj

Branch hotfix\_prod\_v0.0.1\_sample\_proj set up to track remote branch hotfix\_prod\_v0.0.1\_sample\_proj from origin.

**[root@k8s-node2 sample\_proj]#**

1. Testing the release in qa and then finally release it to the prod –

**[root@k8s-node2 sample\_proj]# sh build.sh qa**

successfully deployed in tomcat

Redirecting to /bin/systemctl restart tomcat.service

**[root@k8s-node2 sample\_proj]# sh build.sh prod**

successfully deployed in tomcat

Redirecting to /bin/systemctl restart tomcat.service

**[root@k8s-node2 sample\_proj]#**

1. \*\* While fixing the bug in the above hotfix branch, the dev is being continued in the 'development' branch related to further dev work – Going to the different workspace and having the development branch code in it –

**[root@k8s-node2 sample\_proj]# pwd**

/home/ganga/workspace2/git\_workflow\_demo/sample\_proj

**[root@k8s-node2 sample\_proj]#**

**[root@k8s-node2 sample\_proj]# git pull**

remote: Counting objects: 9, done.

Unpacking objects: 100% (9/9), done.

From ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

368abc8..baa5743 master -> origin/master

368abc8..baa5743 development -> origin/development

\* [new branch] hotfix\_prod\_v0.0.1\_sample\_proj -> origin/hotfix\_prod\_v0.0.1\_sample\_proj

Updating 368abc8..baa5743

Fast-forward

sample\_proj/index.html | 6 ++----

1 file changed, 2 insertions(+), 4 deletions(-)

**[root@k8s-node2 sample\_proj]# git checkout development**

Switched to branch 'development'

Your branch is behind 'origin/development' by 2 commits, and can be fast-forwarded. (use "git pull" to update your local branch) –

**[root@k8s-node2 sample\_proj]# git status**

# On branch development

# Your branch is behind 'origin/development' by 2 commits, and can be fast-forwarded.

# (use "git pull" to update your local branch)

#

nothing to commit, working directory clean

1. Made a change and pushed it to the ‘development branch –

**[root@k8s-node2 sample\_proj]# git pull**

Updating 368abc8..baa5743

Fast-forward

sample\_proj/index.html | 6 ++----

1 file changed, 2 insertions(+), 4 deletions(-)

**[root@k8s-node2 sample\_proj]# vi index.html**

**[root@k8s-node2 sample\_proj]# git diff**

diff --git a/sample\_proj/index.html b/sample\_proj/index.html

index 3351703..0d192f6 100755

--- a/sample\_proj/index.html

+++ b/sample\_proj/index.html

@@ -1,7 +1,7 @@

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**[root@k8s-node2 sample\_proj]# git add index.html**

**[root@k8s-node2 sample\_proj]# git commit -m "jira:1235 new refinement..added two o's after hello.."**

[development 9cb8949] jira:1235 new refinement..added two o's after hello..

1 file changed, 1 insertion(+), 1 deletion(-)

**[root@k8s-node2 sample\_proj]# git push -u origin development**

Counting objects: 7, done.

Compressing objects: 100% (4/4), done.

Writing objects: 100% (4/4), 411 bytes | 0 bytes/s, done.

Total 4 (delta 2), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

baa5743..9cb8949 development -> development

Branch development set up to track remote branch development from origin.

**[root@k8s-node2 sample\_proj]#**

\*\* After the bug fix deployment from hotfix branch to prod env, merge that change from the hotfix branch to the 'development' branch –

**[root@k8s-node2 git\_workflow\_demo]# git checkout development**

Switched to branch 'development'

[root@k8s-node2 git\_workflow\_demo]# git merge hotfix\_prod\_v0.0.1\_sample\_proj

Auto-merging sample\_proj/index.html

CONFLICT (content): Merge conflict in sample\_proj/index.html

Automatic merge failed; fix conflicts and then commit the result.

**[root@k8s-node2 git\_workflow\_demo]# vi sample\_proj/index.html**

**[root@k8s-node2 git\_workflow\_demo]# git add sample\_proj/index.html**

**[root@k8s-node2 git\_workflow\_demo]# git commit -a**

[development ee07aca] Merge branch 'hotfix\_prod\_v0.0.1\_sample\_proj' into development

**[root@k8s-node2 git\_workflow\_demo]# git log --merges**

commit ee07acae85418b6b63e3b64f43b14b6ddcfad8fb

Merge: 9cb8949 bfa47a2

Author: gambati-at-073821729584 <gangadhar.ambati@saven.in>

Date: Tue Sep 4 11:05:07 2018 +0530

Merge branch 'hotfix\_prod\_v0.0.1\_sample\_proj' into development

Conflicts:

sample\_proj/index.html

conflics resolved...

**[root@k8s-node2 git\_workflow\_demo]# git push -u origin development**

Counting objects: 10, done.

Compressing objects: 100% (4/4), done.

Writing objects: 100% (4/4), 488 bytes | 0 bytes/s, done.

Total 4 (delta 2), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

9cb8949..ee07aca development -> development

Branch development set up to track remote branch development from origin.

**[root@k8s-node2 git\_workflow\_demo]#**

1. \*\* Finally, merge the 'development' branch into the 'master' for the next subsequent qa release –

**[root@k8s-node2 git\_workflow\_demo]# git checkout master**

Switched to branch 'master'

**[root@k8s-node2 git\_workflow\_demo]# git merge development**

Updating baa5743..ee07aca

Fast-forward

sample\_proj/index.html | 2 +-

1 file changed, 1 insertion(+), 1 deletion(-)

**[root@k8s-node2 git\_workflow\_demo]#**

**[root@k8s-node2 git\_workflow\_demo]# git push -u origin master**

Total 0 (delta 0), reused 0 (delta 0)

To ssh://git-codecommit.us-east-1.amazonaws.com/v1/repos/git\_workflow\_demo

baa5743..ee07aca master -> master

Branch master set up to track remote branch master from origin.

**[root@k8s-node2 git\_workflow\_demo]# vi sample\_proj/index.html**

**[root@k8s-node2 git\_workflow\_demo]# cat sample\_proj/index.html**

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<p>Hi Git <ENV> </p>

</body>

</html>

**[root@k8s-node2 git\_workflow\_demo]#**