Cloud Computing Assignment 2

Details :

- SRN : PES2UG20CS237
- Name : P K Navin Shrinivas
- Section : D

Task 1 : Using docker to setup Jenkins locally

- Create the following file in the directory :
  Dockerfile :

```
FROM jenkins/jenkins:lts
USER root
RUN apt-get update && apt-get install -y make && apt-get install -y
g++
USER jenkins
```

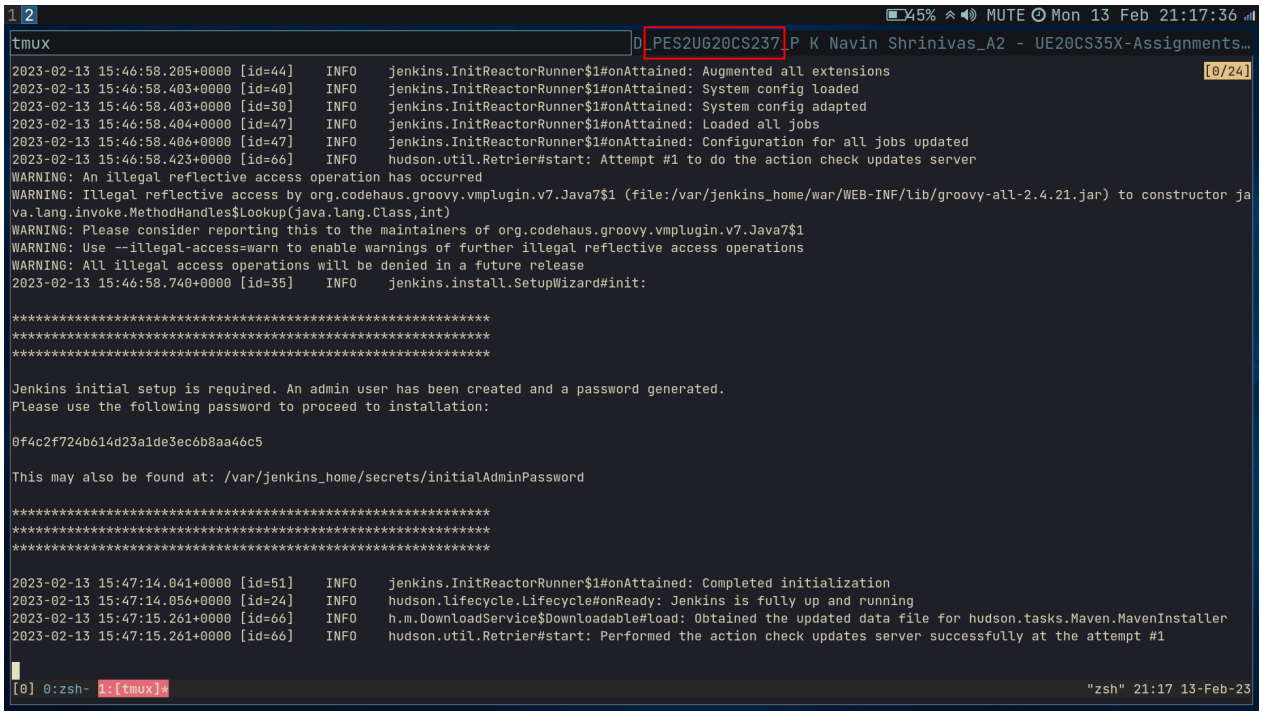
- Let's build the image :

```
sudo docker build . -t localjenkins:PES2UG20CS237
```

- Run the above image eposing port 8080 to 8080 and port 50000 to 50000 and in interactive mode :

```
sudo docker run -p 8080:8080 -p 50000:50000 -it
localjenkins:PES2UG20CS237 #1.png
```

- Note the password, open put localhost:8080 and make sure to install the github plugin when setting up.



Task 2 : Setup a jenkins job and connect it to a github repo for auto build.

- Create a new repo and add the following files :
  hello.cpp :

```cpp
//File: hello.cpp
#include <iostream>
using namespace std;
__asm__(".symver realpath,realpath@GLIBC_2.2.5");
// Above line is important as ldd and g++ disagree over glibc version
int main(void) {
  cout << "Hello, World\n";
  cout << "Hello, Jenkins\n";
  cout << "I have successfully built and run\n";
  return 0;
}
```

Makefile :

```
hello_exec: hello.cpp
	g++ hello.cpp -o hello_exec
```

- Push the repo to github

- Now open up the jenkins dashboard and create a New Item named `SRN-1` in freestyle mode.

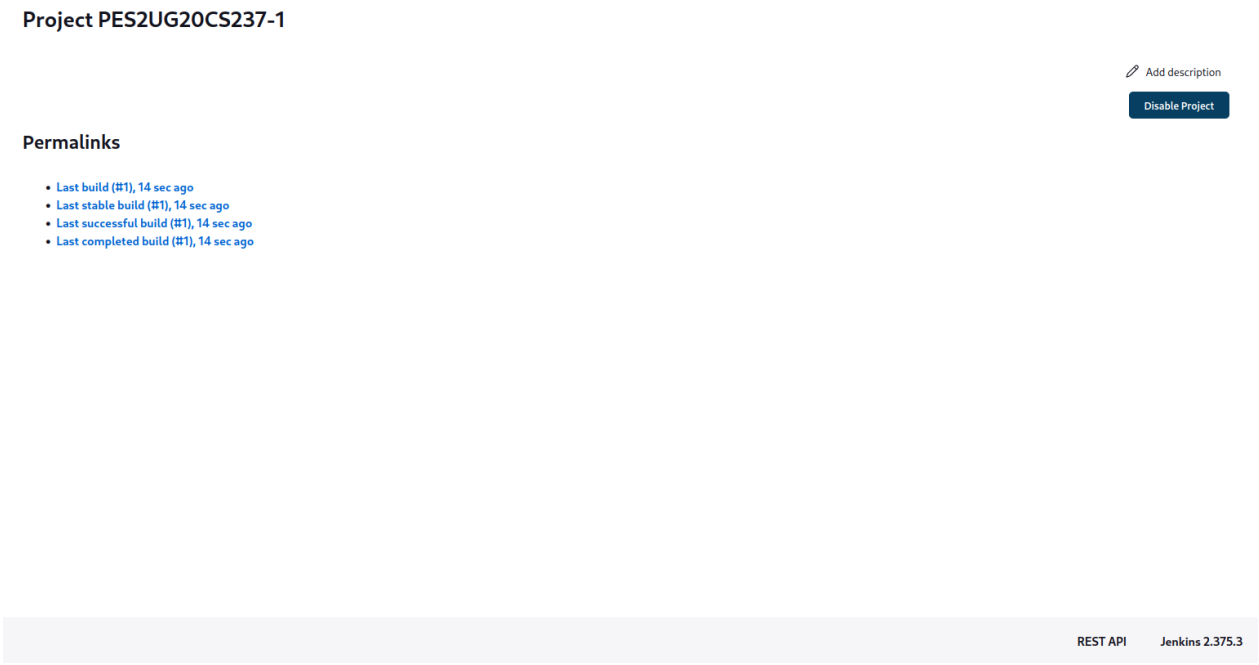
- Add the following :

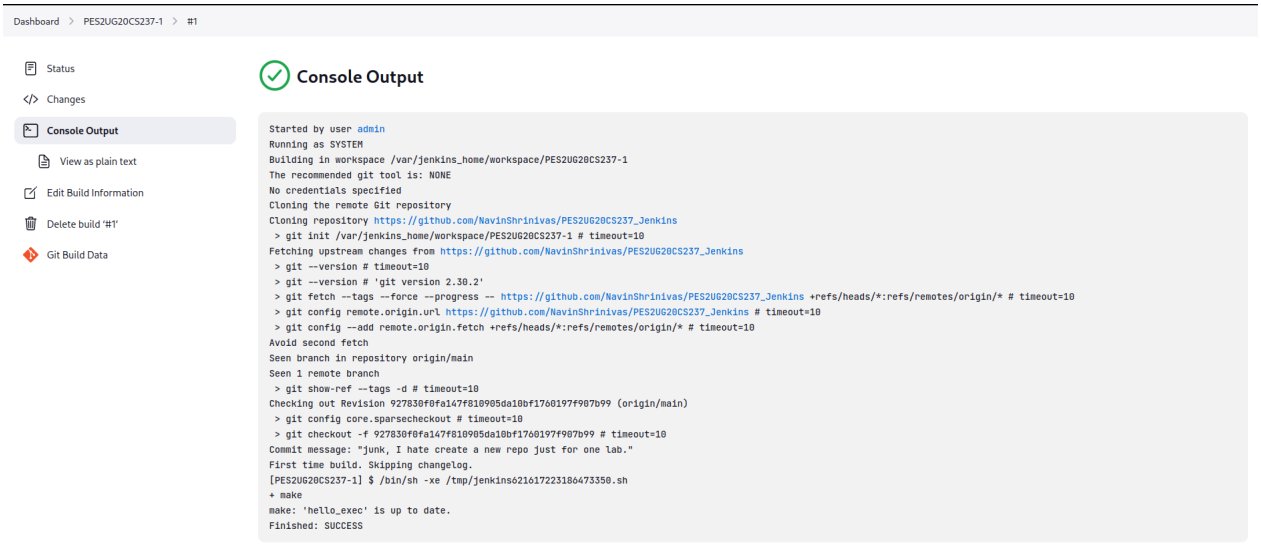
    - Github link
    - select `Git` as `SCM` and enter repo link, go to advanced and add a new brach `*/main`
    - Build trigger is `Poll SCM` and the schedule `H/5 * * * *`
    - Add build step of `Execute Shell` and the command being :

```
rm -r hello_exec
make
```

    - Save and trigger a new build.

- 2.png and 3.png are ss of success build list and console output.





Task 3 : Adding post build triggers

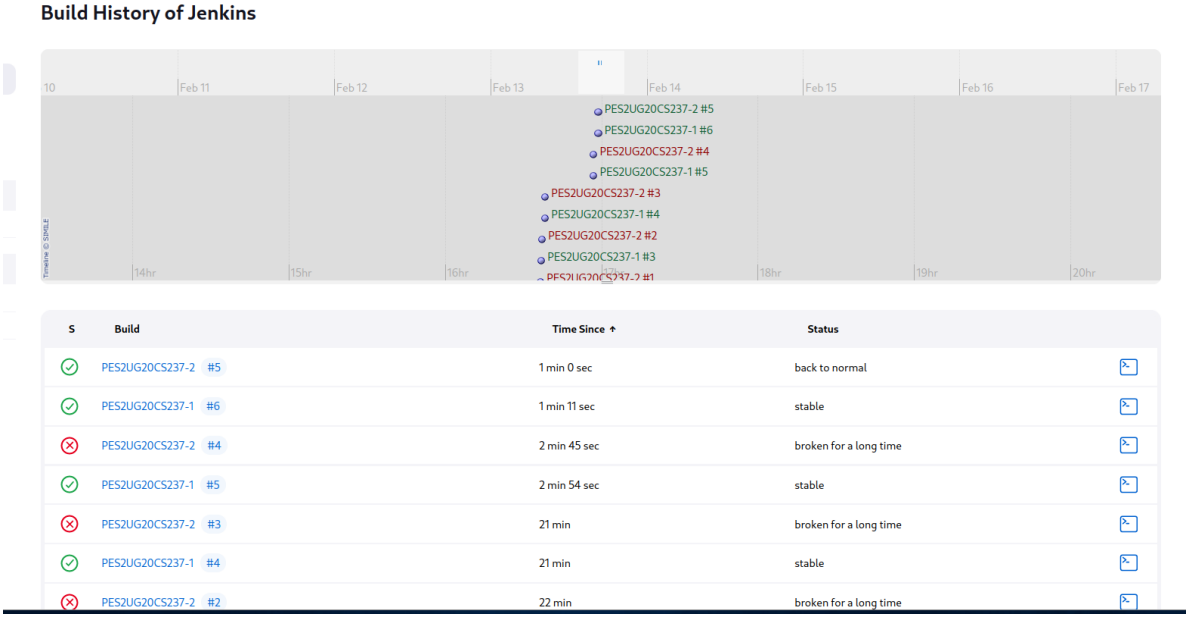
- Create a second New Item in free style and only add a build step in Execute shell with the follwing command :

```
/var/jenkins_home/workspace/<the
name of your first project>/hello_exec
```

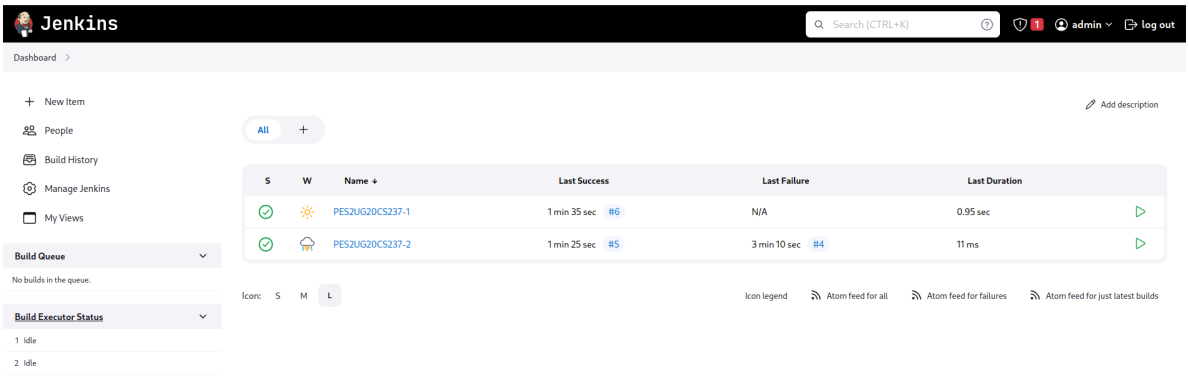
- Save and go to the first Item and do the follwing :
  - Go to the bottom and a `Post build Action`, Select `build other projects` and enter name of second job.
  - Save this new config and trigger a new build.
- Screenshots :
  - Console output of second job 4.png

  - status page of first 5.png

- build history of jenkins 6.png



- jenkins dashboard 7.png

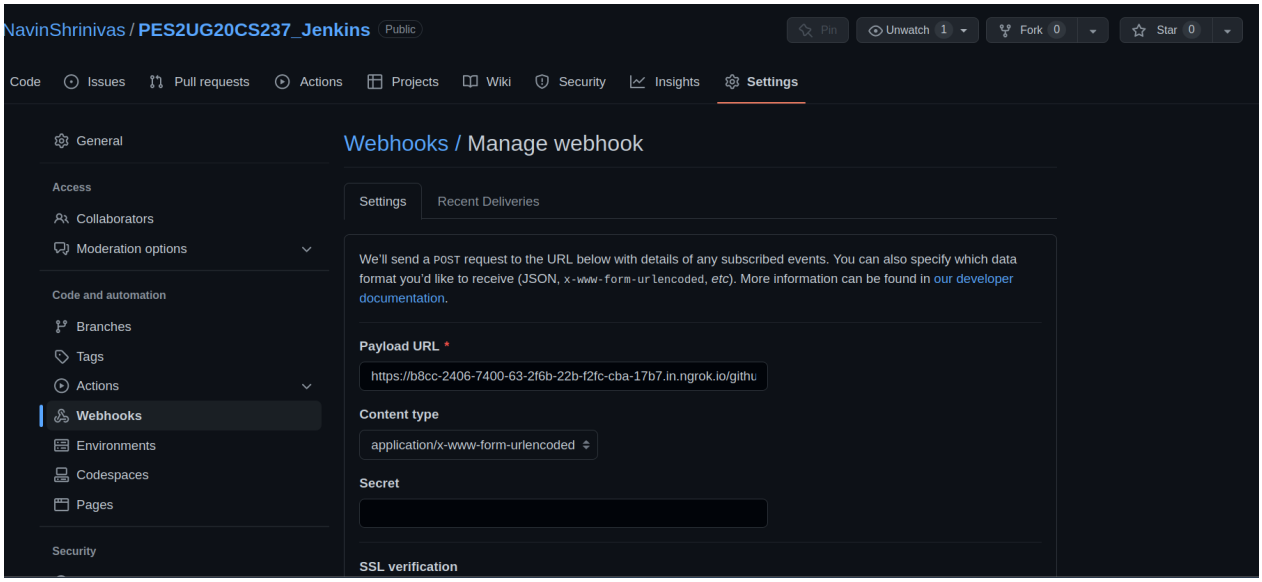


Task 4 : Adding webhook trigger in github

- Install ngrok
- Expose port 8080 :

```
ngrok http 8080
```

- Note the exposing url. This the link to be added in webhook on github. append the neeeded parts to the webhook such as : `github-webhook`
- Go to setting of the first item and enable `Github hook trigger`
- Now do any change to the repo and a git push should trigger a build automatically!
- Screenshots for this task :



Task 5 : Creating a jenkins pipeline

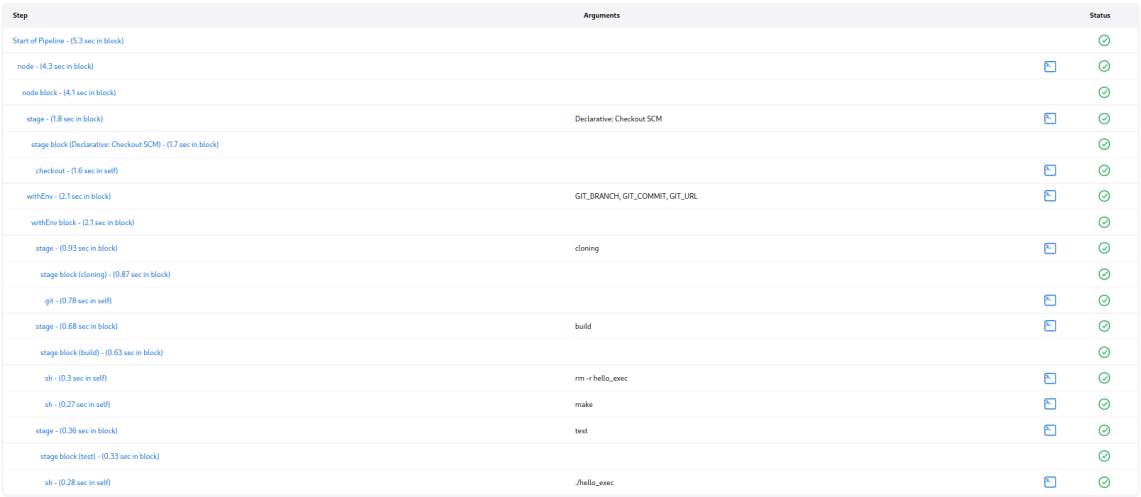
- Create a new Item and select pipeline, select the following :
  - github link

    - github webhook trigger
    - Pipeline from SCM and the usual stuff (remember */main)
- The following are the screenshots :
    - SS of script 10.png

Jenkinsfile

```
pipeline {
    agent any
    stages {
        stage('cloning') {
            steps {
                git branch : "main",
                url : "https://github.com/NavinShrinivas/PES2UG20CS237_Jenkins"
            }
        }
        stage("build"){
            steps{
                sh 'rm -r hello_exec'
                sh 'make'
            }
        }
        stage("test"){
            steps{
                sh './hello_exec'
            }
        }
    }
    post{
      failure{
         echo "Pipline failed"
      }
    }
}
```

    - SS of the pipeline steps 11.png



    - SS of pipline console output 12.png

```
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (cloning)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
 > git rev-parse --resolve-git-dir /var/jenkins_home/workspace/PES2UG20CS237/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/NavinShrinivas/PES2UG20CS237_Jenkins # timeout=10
Fetching upstream changes from https://github.com/NavinShrinivas/PES2UG20CS237_Jenkins
 > git --version # timeout=10
 > git --version # 'git version 2.30.2'
 > git fetch --tags --force --progress -- https://github.com/NavinShrinivas/PES2UG20CS237_Jenkins +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision 94ffd252132e96b9c2d900237088ed97f06a64e6 (refs/remotes/origin/main)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 94ffd252132e96b9c2d900237088ed97f06a64e6 # timeout=10
 > git branch -a -v --no-abbrev # timeout=10
 > git checkout -b main 94ffd252132e96b9c2d900237088ed97f06a64e6 # timeout=10
Commit message: "jenkinsfileg"
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (build)
[Pipeline] sh
+ rm -r hello_exec
[Pipeline] sh
+ make
g++ hello.cpp -o hello_exec
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (test)
[Pipeline] sh
+ ./hello_exec
Hello, World
Hello, Jenkins
I have successfully built and run
This is a new version, where builds are being triggered using webhooktesting webhook push
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

- Link to the repo : "https://github.com/NavinShrinivas/PES2UG20CS237_Jenkins"
- Creating an intentional mistake in the pipline :
  - mistake in script 13.png

Jenkinsfile

```
pipeline {
    agent any
    stages {
        stage('cloning') {
            steps {
                git branch : "main",
                url : "https://github.com/NavinShrinivas/PES2UG20CS237_Jenkins
            }
        }
        stage("build"){
            steps{
                sh 'rm -r hello_exec'
                sh 'make'
            }
        }
        stage("test"){
            steps{
                sh './hello'
            }
        }
    }
    post{
      failure{
         echo "Pipline failed"
      }
    }
}
```

- Failed pipeline stage 14.png

```
Commit message: "mistake"
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (build)
[Pipeline] sh
+ rm -r hello_exec
[Pipeline] sh
+ make
g++ hello.cpp -o hello_exec
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (test)
[Pipeline] sh (hide)
+ ./hello
/var/jenkins_home/workspace/PES2UG20CS237@tmp/durable-9f99e3c1/script.sh: 1: ./hello: not found
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] echo
Pipline failed
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
ERROR: script returned exit code 127
Finished: FAILURE
```