

Cloud Computing - Assignment 4(a) – Jenkins

(Creating a DevOps Pipeline, CI/CD tool)

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PES1UG21CS540
6 |

Task-1:

- ### 1. Screenshot of the running Docker Container after installing Jenkins

```

2024-03-06 06:22:26.997+0000 [id=1] INFO o.e.j.server.AbstractConnector#doStart: Started ServerConnector@78365cfa(HTTP/1.1, (ht
tp/1.1))@0.0.0.0:8080}
2024-03-06 06:22:27.002+0000 [id=1] INFO org.eclipse.jetty.server.Server#doStart: Started Server@5644dc81[STARTING][10.0.18,sto
=0] @1272ms
2024-03-06 06:22:27.004+0000 [id=27] INFO winstone.Logger#logInternal: Winstone Servlet Engine running: controlPort=disabled
2024-03-06 06:22:27.108+0000 [id=35] INFO jenkins.InitReactorRunner$1#onAttained: Started initialization
2024-03-06 06:22:27.110+0000 [id=35] INFO jenkins.InitReactorRunner$1#onAttained: Listed all plugins
2024-03-06 06:22:27.475+0000 [id=38] INFO jenkins.InitReactorRunner$1#onAttained: Prepared all plugins
2024-03-06 06:22:27.477+0000 [id=38] INFO jenkins.InitReactorRunner$1#onAttained: Started all plugins
2024-03-06 06:22:27.480+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: Augmented all extensions
2024-03-06 06:22:27.572+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: System config loaded
2024-03-06 06:22:27.572+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: System config adapted
2024-03-06 06:22:27.572+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2024-03-06 06:22:27.573+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2024-03-06 06:22:27.593+0000 [id=61] INFO hudson.util.Retrier#start: Attempt #1 to do the action check updates server
2024-03-06 06:22:27.846+0000 [id=39] INFO jenkins.install.SetupWizard#init:

*****
*****
*****

Jenkins initial setup is required. An admin user has been created and a password generated.
Please use the following password to proceed to installation:

956241209f244adfaeac4573ef3c1ef7

This may also be found at: /var/jenkins_home/secrets/initialAdminPassword

*****
*****
*****

2024-03-06 06:22:44.939+0000 [id=35] INFO jenkins.InitReactorRunner$1#onAttained: Completed initialization
2024-03-06 06:22:44.962+0000 [id=26] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
2024-03-06 06:22:49.409+0000 [id=61] INFO h.m.DownloadService$Downloadable#load: Obtained the updated data file for hudson.tasks
.Maven.MavenInstaller
2024-03-06 06:22:49.416+0000 [id=61] INFO hudson.util.Retrier#start: Performed the action check updates server successfully at t
he attempt #1

```

Task-2:

1. The console output after the build is successful

Dashboard > PES1UG21CS540-1 > #3 > Console Output

Status

</> Changes

Console Output

View as plain text

Edit Build Information

Delete build '#3'

Git Build Data

Previous Build

✓ Console Output

Started by user [Sarthak K Bhat](#)
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES1UG21CS540-1
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/jenkins_home/workspace/PES1UG21CS540-1/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/SarthakBhat22/PES1UG21CS540_Jenkins.git # timeout=10
Fetching upstream changes from https://github.com/SarthakBhat22/PES1UG21CS540_Jenkins.git
> git --version # timeout=10
> git --version # 'git version 2.39.2'
> git fetch --tags --force --progress -- https://github.com/SarthakBhat22/PES1UG21CS540_Jenkins.git +refs/heads/*:refs/remotes/origin/* # timeout=10
Seen branch in repository origin/main
Seen 1 remote branch
> git show-ref --tags -d # timeout=10
Checking out Revision 84dacd60fc56ac9ecefadab5f5f24e32d9f3c6e1 (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 84dacd60fc56ac9ecefadab5f5f24e32d9f3c6e1 # timeout=10
Commit message: "First push"
> git rev-list --no-walk 84dacd60fc56ac9ecefadab5f5f24e32d9f3c6e1 # timeout=10
[PES1UG21CS540-1] \$ /bin/sh -xe /tmp/jenkins17355663992064466123.sh
+ make -C main
make: Entering directory '/var/jenkins_home/workspace/PES1UG21CS540-1/main'
make: 'hello_exec' is up to date.
make: Leaving directory '/var/jenkins_home/workspace/PES1UG21CS540-1/main'
Finished: SUCCESS

2. The Stable state of the task in Build History of Jenkins

Jenkins

Search (⌘+K)

🛡️ 1

Sarthak K Bhat

log out

Dashboard > All > Build History

+ New Item

👤 People

Build History

Manage Jenkins

My Views

Build Queue
No builds in the queue.

Build History of Jenkins

S	Build	Time Since	Status ↓
✓	PES1UG21CS540-1 #3	4 min 2 sec	stable 🔍

Icon: S M L Icon legend 📡 Atom feed for all 📡 Atom feed for failures 📡 Atom feed for just latest builds

Task-3:

1. Console output of second job

Search (%%+K)

1 Sarthak K Bhat log out

Dashboard > PES1UG21CS540-2 > #5 > Console Output

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build '#5'

Previous Build

Console Output

Started by upstream project "PES1UG21CS540-1" build number 7 originally caused by:
Started by user Sarthak K Bhat
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES1UG21CS540-2
[PES1UG21CS540-2] \$ /bin/sh -xe /tmp/jenkins3490883150382569207.sh
+ /var/jenkins_home/workspace/PES1UG21CS540-1/main/hello_exec
Hello, World
Hello, Jenkins
I have successfully built and run
Finished: SUCCESS

2. Status page of first job

Search (%%+K)

1 Sarthak K Bhat log out

Dashboard > PES1UG21CS540-1 >

Status

Changes

Workspace

Build Now

Configure

Delete Project

Git Polling Log

GitHub

Rename

PES1UG21CS540-1

Add description

Disable Project

Downstream Projects

[PES1UG21CS540-2](#)

Permalinks

- Last build (#7), 2 min 4 sec ago
- Last stable build (#7), 2 min 4 sec ago
- Last successful build (#7), 2 min 4 sec ago
- Last completed build (#7), 2 min 4 sec ago

Build History

trend

Filter...

#76 Mar 2024, 07:01

#66 Mar 2024, 07:01

3. Build History of Jenkins

Jenkins

Q Search (⌘+K)

?

1

Sarthak K Bhat

log out

Dashboard > All > Build History

+ New Item

People

Build History

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

Build History of Jenkins

S	Build	Time Since	Status ↓
	PES1UG21CS540-2 #5	3 min 3 sec	stable
	PES1UG21CS540-1 #7	3 min 11 sec	stable
	PES1UG21CS540-1 #6	3 min 44 sec	stable
	PES1UG21CS540-1 #5	8 min 42 sec	stable
	PES1UG21CS540-1 #4	10 min	stable
	PES1UG21CS540-1 #3	21 min	stable

Icon:

S M L

Icon legend

Atom feed for all

Atom feed for failures

Atom feed for just latest builds

4. Jenkins Dashboard

Jenkins

Q Search (⌘+K)

?

1

Sarthak K Bhat

log out

Dashboard >

+ New Item

People

Build History

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

All +

S

W

Name ↓

Last Success

Last Failure

Last Duration

[PES1UG21CS540-1](#)

3 min 43 sec [#7](#)

N/A

1.3 sec

[PES1UG21CS540-2](#)

3 min 35 sec [#5](#)

N/A

20 ms

Icon:

S M L

Icon legend

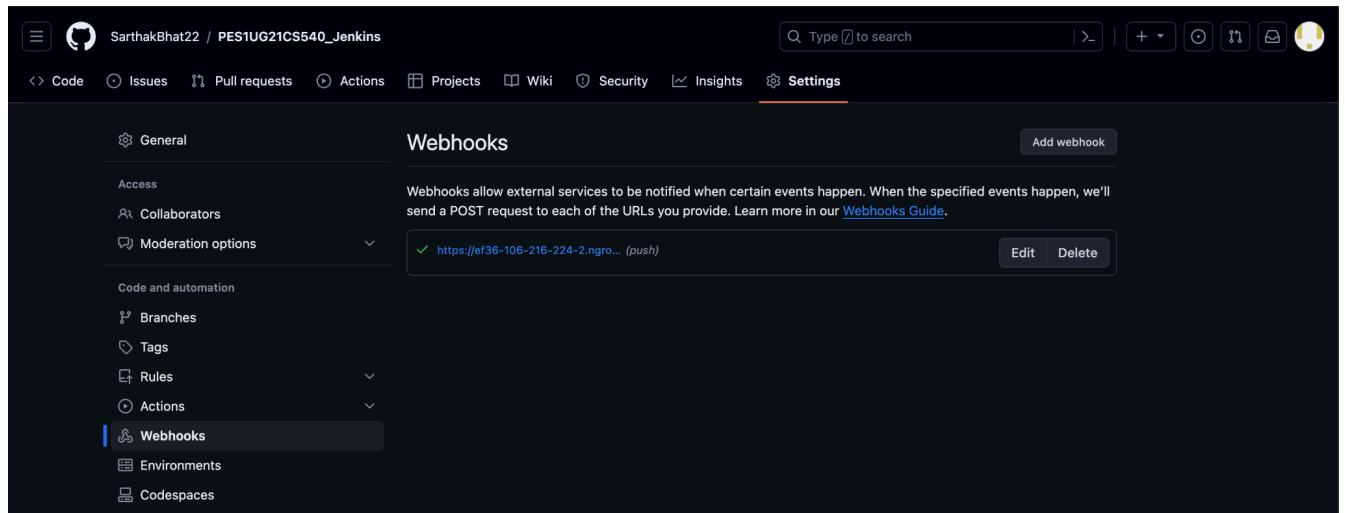
Atom feed for all

Atom feed for failures

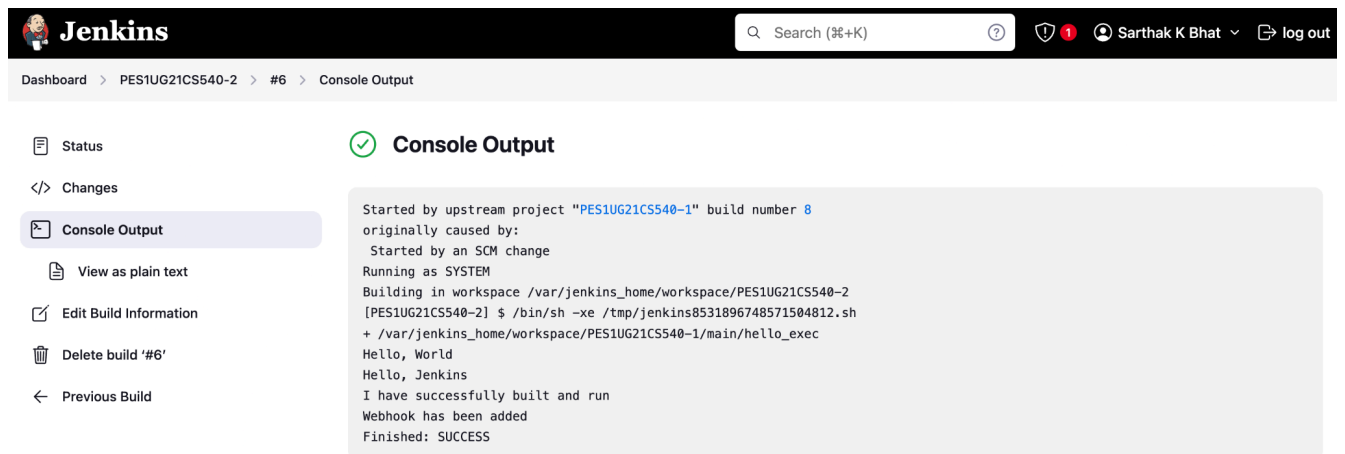
Atom feed for just latest builds

Task-4:

1. Webhook added to the GitHub repository



2. Console Output of second job displaying the change “Webhook has been added” made in hello.cpp file



Task-5

1. Code/script written to create basic pipeline using GitHub repository

```
1  pipeline {
2      agent any
3
4      stages {
5          stage('Build') {
6              steps {
7                  echo 'Compiling the .cpp file...'
8                  sh "g++ -o test test.cpp"
9              }
10         }
11
12         stage('Test') {
13             steps {
14                 echo 'Running the .cpp file...'
15                 sh "./test"
16             }
17         }
18
19         stage('Build PES1UG21CS540-1 Project') {
20             steps {
21                 echo 'Triggering PES1UG21CS540-1 project build...'
22                 build job: 'PES1UG21CS540-1'
23             }
24         }
25
26         stage('Deploy') {
27             steps {
28                 echo 'Deploying the program...'
29             }
30         }
31     }
32
33     post {
34         failure {
35             echo 'Pipeline failed!'
36         }
37     }
38 }
```

Build #1: All stages were executed successfully
Build #3: Includes the intentional error in the Deploy stage.

```
stage('Deploy') {
  steps {
    echo 'Deploying the program...'
    sh 'this_command_does_not_exist'
  }
}
```

2. Output of working created pipeline

Dashboard > PES1UG21CS540 >

Status

Changes

Build Now

Configure

Delete Pipeline

Full Stage View

Rename

Pipeline Syntax

Build History

trend

Filter...

#3 6 Mar 2024, 13:34

#1 6 Mar 2024, 13:22

Atom feed for all

Atom feed for failures

PES1UG21CS540

Add description

Disable Project

Stage View

Average stage times:
(Average full run time: ~11s)

	Declarative: Checkout SCM	Build	Test	Build PES1UG21CS540- 1 Project	Deploy	Declarative: Post Actions
#3 Mar 06 19:04 2 commits	1s	292ms	313ms	9s	310ms failed	33ms
#1 Mar 06 18:52 No Changes	1s	318ms	292ms	6s	32ms	

Permalinks

Last build (#1), 11 min ago

Last stable build (#1), 11 min ago

Last successful build (#1), 11 min ago

Last completed build (#1), 11 min ago

3. Console Output of the Pipeline

Dashboard > PES1UG21CS540 > #1

```
> git config core.sparsecheckout # timeout=10
> git checkout -f 4384de87a0c658b05121017b76aca6446e7c459a # timeout=10
Commit message: "Update Jenkinsfile"
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] echo
Compiling the .cpp file...
[Pipeline] sh
+ g++ -o test test.cpp
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Test)
[Pipeline] echo
Running the .cpp file...
[Pipeline] sh
+ ./test
Hello, World!
Hello Task 5
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build PES1UG21CS540-1 Project)
[Pipeline] echo
Triggering PES1UG21CS540-1 project build...
[Pipeline] build (Building PES1UG21CS540-1)
Scheduling project: PES1UG21CS540-1
Starting building: PES1UG21CS540-1 #5
Build PES1UG21CS540-1 #5 completed: SUCCESS
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy)
[Pipeline] echo
Deploying the program...
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

4. Link to the created GitHub repository

https://github.com/SarthakBhat22/PES1UG21CS540_Jenkins.git

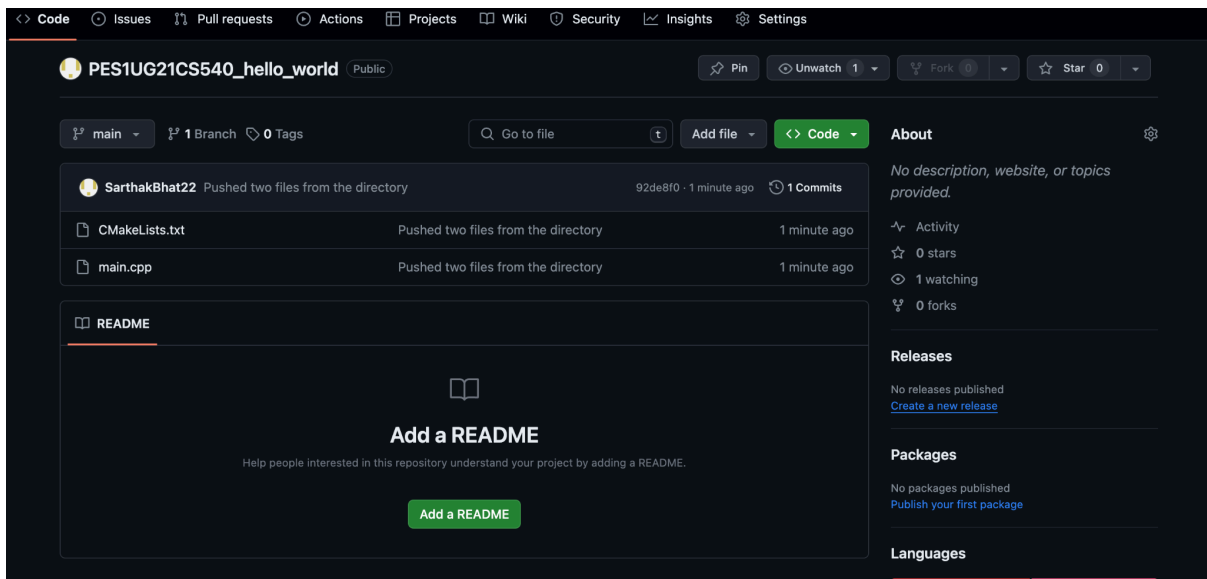
Assignment - 4(b) – GitHub Actions

Building A CI Pipeline With GitHub Actions

1. Initialize Git Repository:

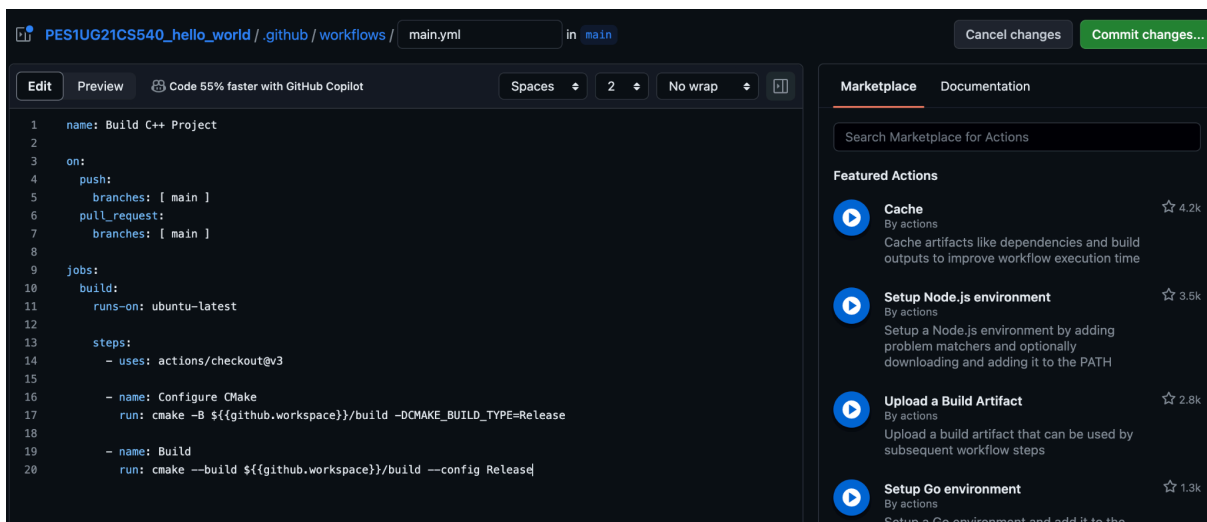
The two files uploaded using git commands

(a)

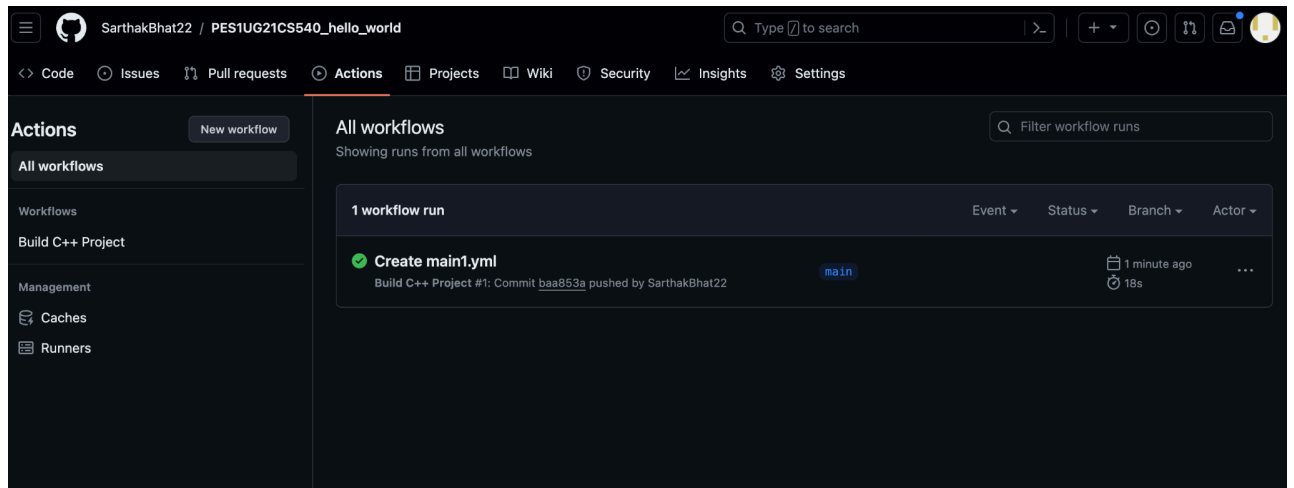


2. Create the GitHub Actions Workflow:

(b)

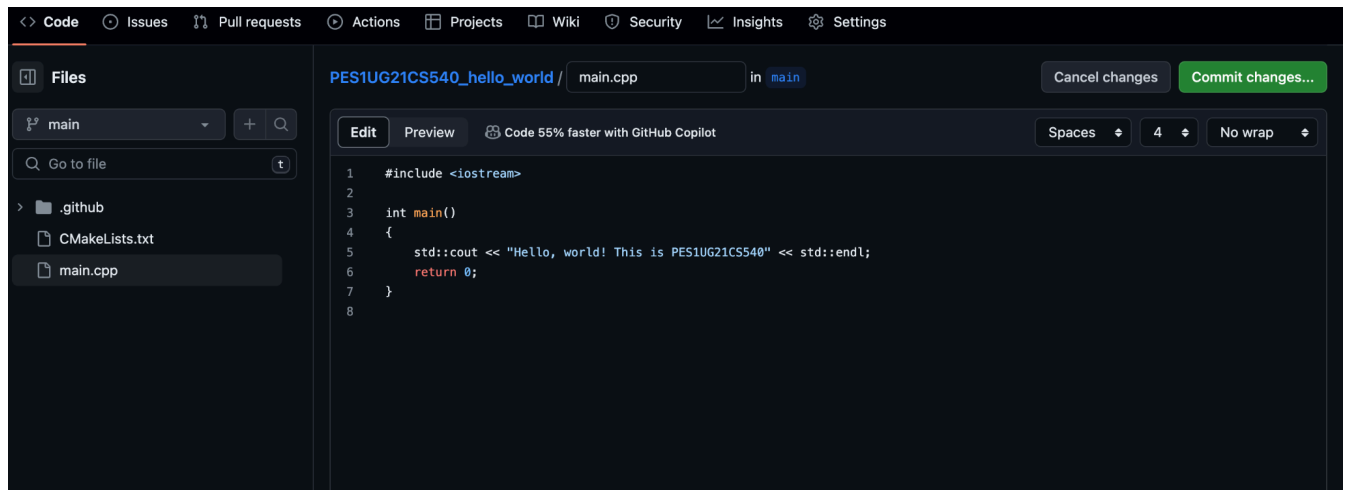


(c)



3. Monitor the Workflow:

(d)



(e)

