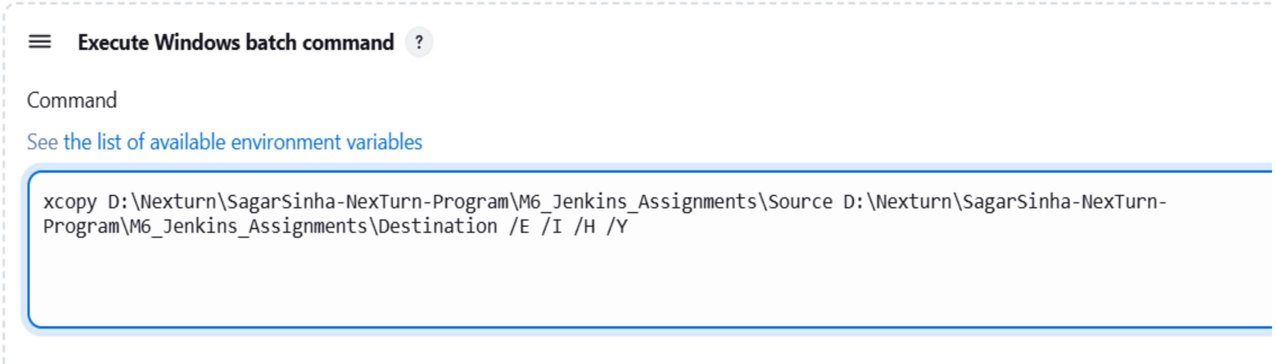
MODULE-6: Jenkins Exercises

Exercise 1: Freestyle Job - Windows File Transfer Automation

Steps:

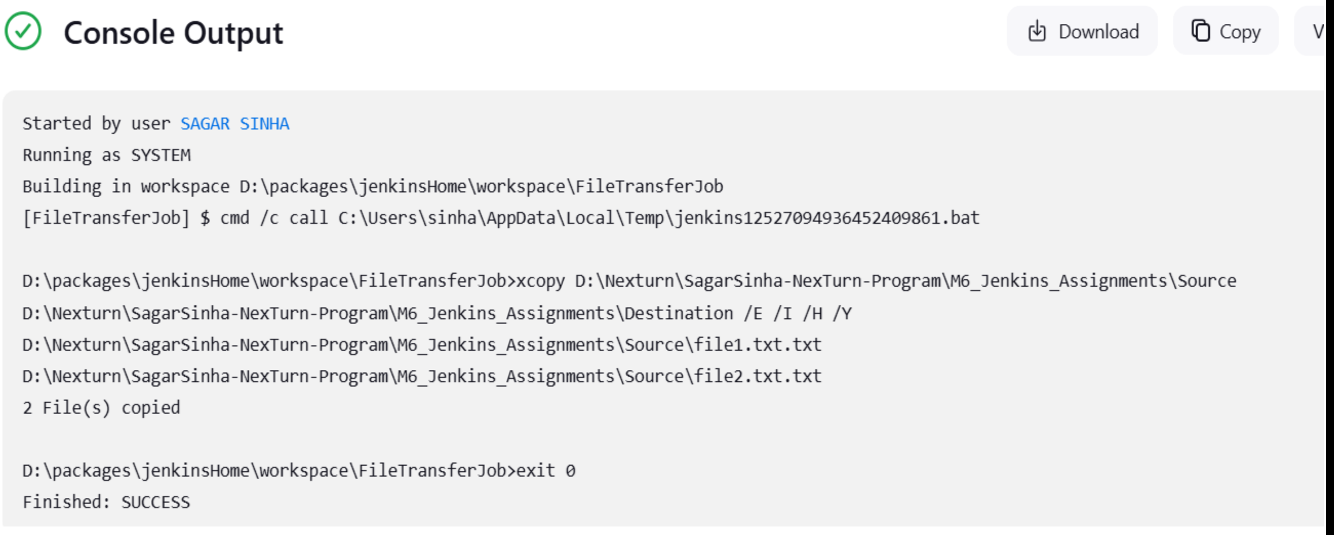
- A freestyle job is created through the Jenkins dashboard and is named as FileTransferJob.
- Under Build Steps > > Execute Windows batch command**,** the following command is added:



Execute Windows batch command
?
Command
See the list of available environment variables

```
xcopy D:\Nexturn\SagarSinha-NexTurn-Program\M6_Jenkins_Assignments\Source D:\Nexturn\SagarSinha-NexTurn-
Program\M6_Jenkins_Assignments\Destination /E /I /H /Y
```

- Then under post build actions, email notification is added to check the success of build.
- OUTPUT:

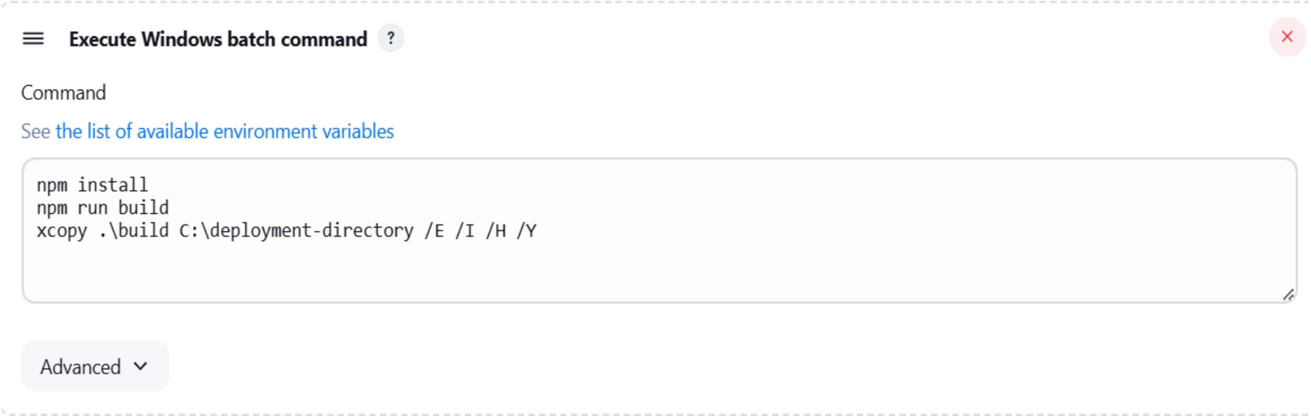


```
Started by user SAGAR SINHA
Running as SYSTEM
Building in workspace D:\packages\jenkinsHome\workspace\FileTransferJob
[FileTransferJob] $ cmd /c call C:\Users\sinha\AppData\Local\Temp\jenkins12527094936452409861.bat

D:\packages\jenkinsHome\workspace\FileTransferJob>xcopy D:\Nexturn\SagarSinha-NexTurn-Program\M6_Jenkins_Assignments\Source
D:\Nexturn\SagarSinha-NexTurn-Program\M6_Jenkins_Assignments\Destination /E /I /H /Y
D:\Nexturn\SagarSinha-NexTurn-Program\M6_Jenkins_Assignments\Source\file1.txt.txt
D:\Nexturn\SagarSinha-NexTurn-Program\M6_Jenkins_Assignments\Source\file2.txt.txt
2 File(s) copied

D:\packages\jenkinsHome\workspace\FileTransferJob>exit 0
Finished: SUCCESS
```

Exercise 2: Freestyle Job - Build and Deploy a JavaScript Project

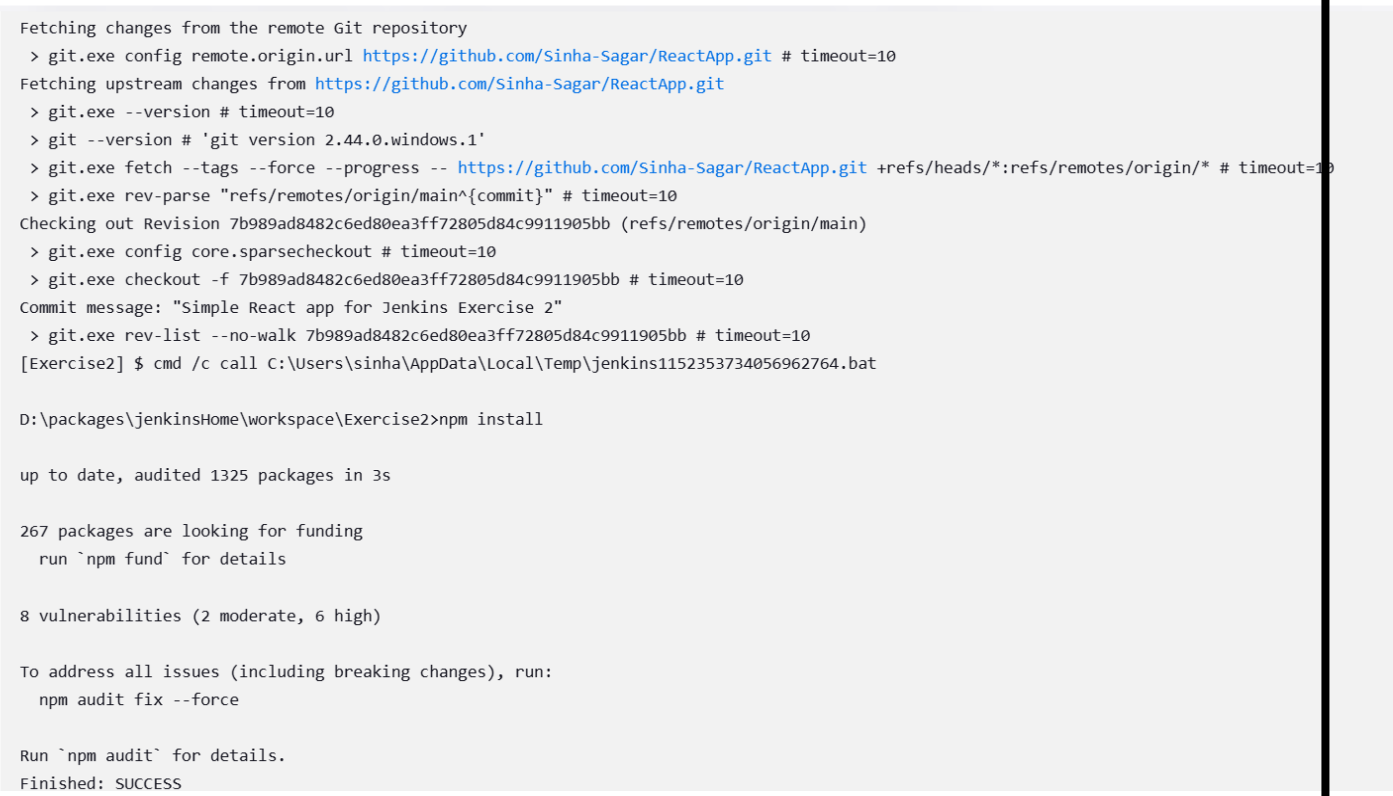
Steps:

- A freestyle job is created through the Jenkins dashboard and is named as Exercise2.
- Under Build Steps > > Execute Windows batch command, the following command is added:


Execute Windows batch command ?
×
Command
See the list of available environment variables
Advanced

```
npm install
npm run build
xcopy .\build C:\deployment-directory /E /I /H /Y
```

- OUTPUT:



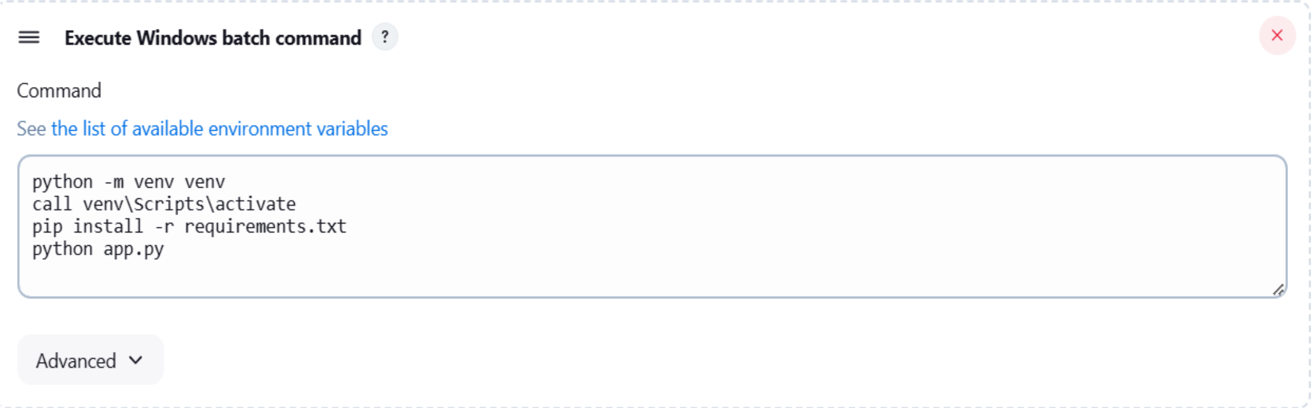
```
Fetching changes from the remote Git repository
 > git.exe config remote.origin.url https://github.com/Sinha-Sagar/ReactApp.git # timeout=10
Fetching upstream changes from https://github.com/Sinha-Sagar/ReactApp.git
 > git.exe --version # timeout=10
 > git --version # 'git version 2.44.0.windows.1'
 > git.exe fetch --tags --force --progress -- https://github.com/Sinha-Sagar/ReactApp.git +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git.exe rev-parse "refs/remotes/origin/main^{commit}" # timeout=10
Checking out Revision 7b989ad8482c6ed80ea3ff72805d84c9911905bb (refs/remotes/origin/main)
 > git.exe config core.sparsecheckout # timeout=10
 > git.exe checkout -f 7b989ad8482c6ed80ea3ff72805d84c9911905bb # timeout=10
Commit message: "Simple React app for Jenkins Exercise 2"
 > git.exe rev-list --no-walk 7b989ad8482c6ed80ea3ff72805d84c9911905bb # timeout=10
[Exercise2] $ cmd /c call C:\Users\sinha\AppData\Local\Temp\jenkins1152353734056962764.bat

D:\packages\jenkinsHome\workspace\Exercise2>npm install

up to date, audited 1325 packages in 3s

267 packages are looking for funding
  run `npm fund` for details

8 vulnerabilities (2 moderate, 6 high)

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
Finished: SUCCESS
```

- The deployment is verified by accessing the web application from the deployment directory.

Exercise 3: Freestyle Job - Flask Application Deployment

Steps:

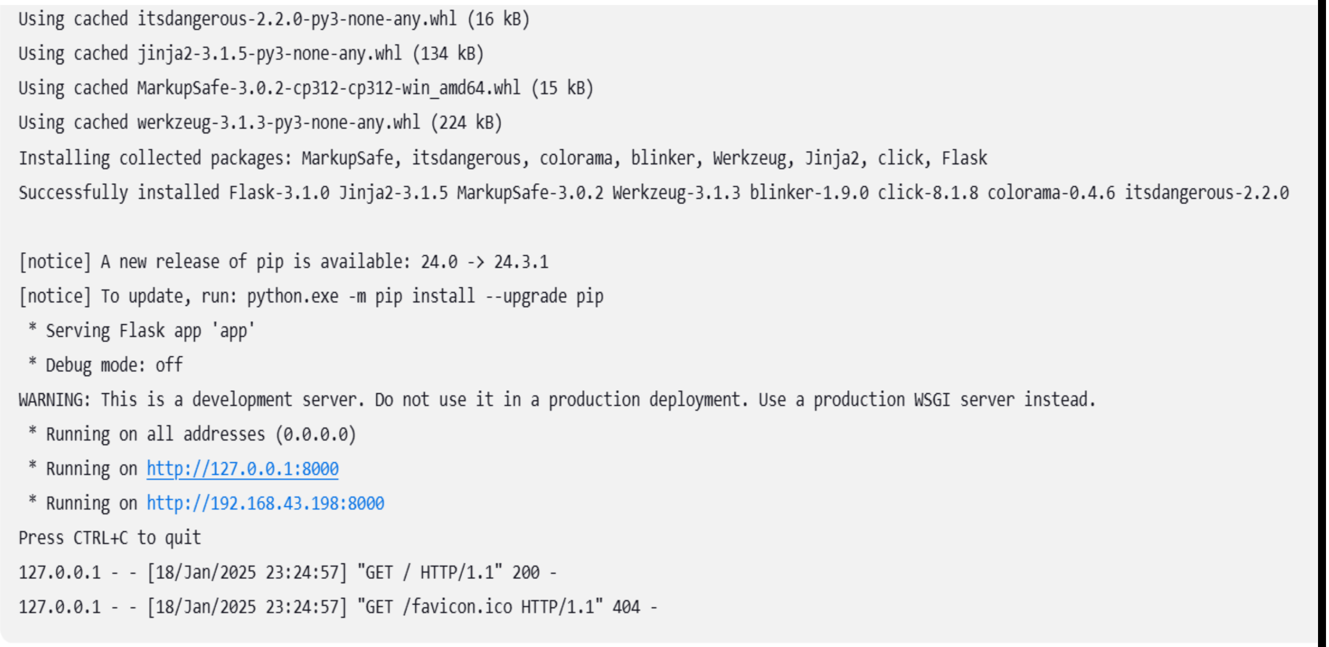
- A freestyle job is created through the Jenkins dashboard and is named as Exercise3.
- Under Build Steps > > Execute Windows batch command, the following command is added:



Execute Windows batch command
?
Command
See the list of available environment variables
Advanced

```
python -m venv venv
call venv\Scripts\activate
pip install -r requirements.txt
python app.py
```

- OUTPUT:



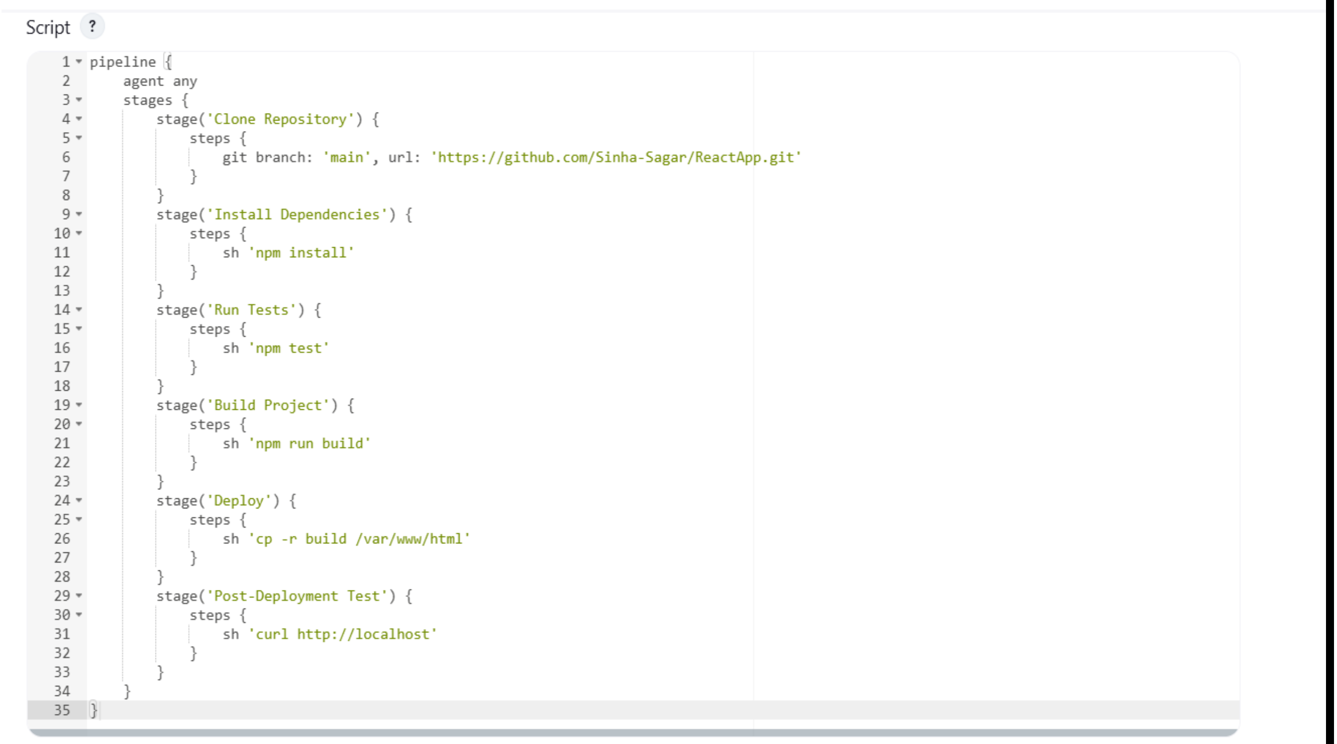
```
Using cached itsdangerous-2.2.0-py3-none-any.whl (16 kB)
Using cached jinja2-3.1.5-py3-none-any.whl (134 kB)
Using cached MarkupSafe-3.0.2-cp312-cp312-win_amd64.whl (15 kB)
Using cached werkzeug-3.1.3-py3-none-any.whl (224 kB)
Installing collected packages: MarkupSafe, itsdangerous, colorama, blinker, Werkzeug, Jinja2, click, Flask
Successfully installed Flask-3.1.0 Jinja2-3.1.5 MarkupSafe-3.0.2 Werkzeug-3.1.3 blinker-1.9.0 click-8.1.8 colorama-0.4.6 itsdangerous-2.2.0

[notice] A new release of pip is available: 24.0 -> 24.3.1
[notice] To update, run: python.exe -m pip install --upgrade pip
 * Serving Flask app 'app'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:8000
 * Running on http://192.168.43.198:8000
Press CTRL+C to quit
127.0.0.1 - - [18/Jan/2025 23:24:57] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [18/Jan/2025 23:24:57] "GET /favicon.ico HTTP/1.1" 404 -
```

- The deployment is verified by going to http://192.168.43.198:8000/ in browser.

Exercise 4: Pipeline Job - End-to-End CI/CD for a React Application

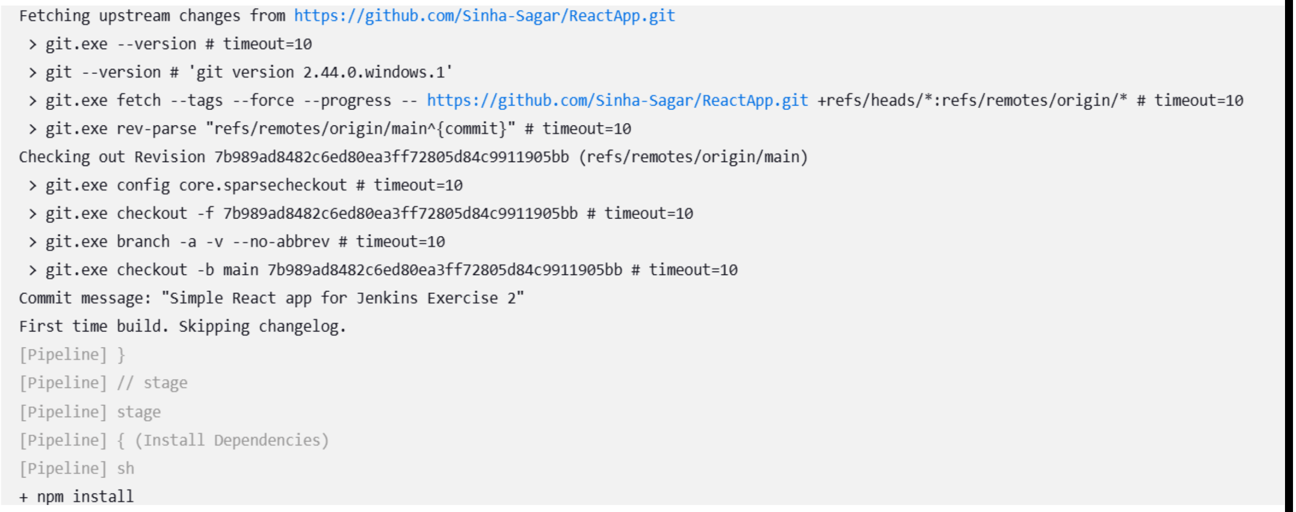
Steps:

- A Pipeline job is created through the Jenkins dashboard and is named as Exercise4.
- Under Pipeline > > Pipeline script, the following code is added:



```
pipeline {
    agent any
    stages {
        stage('Clone Repository') {
            steps {
                git branch: 'main', url: 'https://github.com/Sinha-Sagar/ReactApp.git'
            }
        }
        stage('Install Dependencies') {
            steps {
                sh 'npm install'
            }
        }
        stage('Run Tests') {
            steps {
                sh 'npm test'
            }
        }
        stage('Build Project') {
            steps {
                sh 'npm run build'
            }
        }
        stage('Deploy') {
            steps {
                sh 'cp -r build /var/www/html'
            }
        }
        stage('Post-Deployment Test') {
            steps {
                sh 'curl http://localhost'
            }
        }
    }
}
```

- OUTPUT:



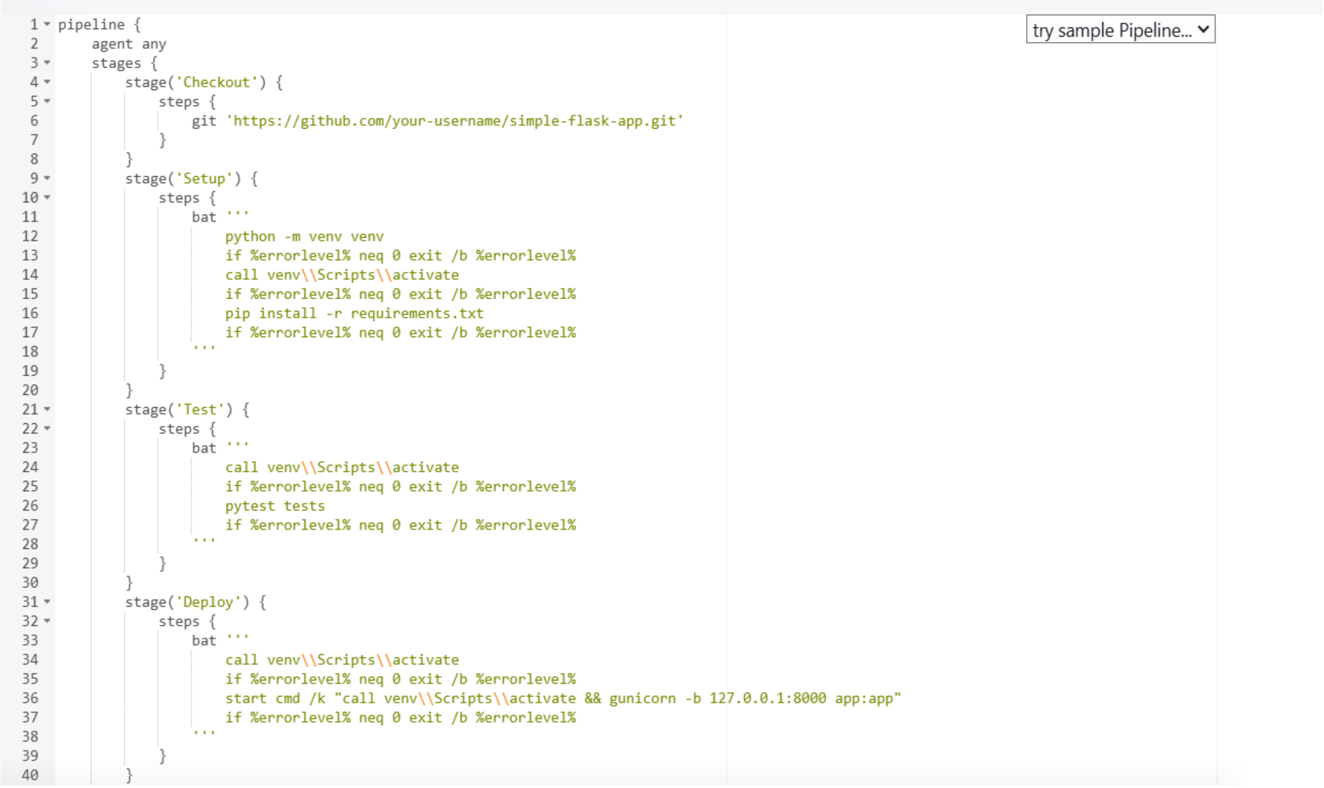
```
Fetching upstream changes from https://github.com/Sinha-Sagar/ReactApp.git
 > git.exe --version # timeout=10
 > git --version # 'git version 2.44.0.windows.1'
 > git.exe fetch --tags --force --progress -- https://github.com/Sinha-Sagar/ReactApp.git +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git.exe rev-parse "refs/remotes/origin/main^{commit}" # timeout=10
Checking out Revision 7b989ad8482c6ed80ea3ff72805d84c9911905bb (refs/remotes/origin/main)
 > git.exe config core.sparsecheckout # timeout=10
 > git.exe checkout -f 7b989ad8482c6ed80ea3ff72805d84c9911905bb # timeout=10
 > git.exe branch -a -v --no-abbrev # timeout=10
 > git.exe checkout -b main 7b989ad8482c6ed80ea3ff72805d84c9911905bb # timeout=10
Commit message: "Simple React app for Jenkins Exercise 2"
First time build. Skipping changelog.
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Install Dependencies)
[Pipeline] sh
+ npm install
```

- The deployment is verified by going to localhost in browser.

Exercise 5: Pipeline Job - Deploy a Flask Application with Gunicorn

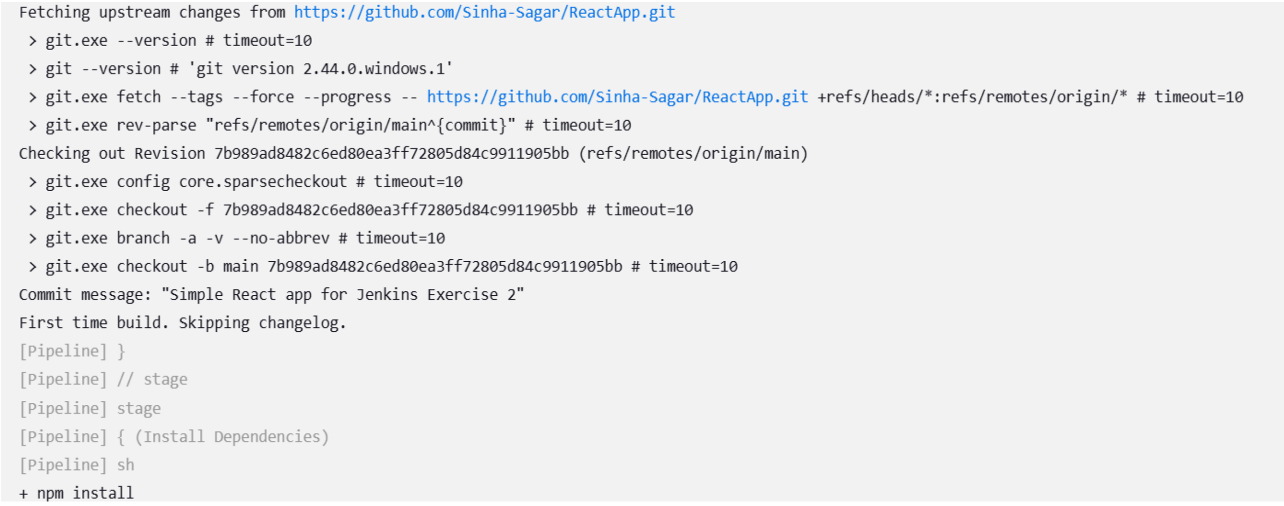
Steps:

- A Pipeline job is created through the Jenkins dashboard and is named as Exercise4.
- Under Pipeline > > Pipeline script, the following code is added:



```
pipeline {
    agent any
    stages {
        stage('Checkout') {
            steps {
                git 'https://github.com/your-username/simple-flask-app.git'
            }
        }
        stage('Setup') {
            steps {
                bat '''
                    python -m venv venv
                    if %errorlevel% neq 0 exit /b %errorlevel%
                    call venv\\Scripts\\activate
                    if %errorlevel% neq 0 exit /b %errorlevel%
                    pip install -r requirements.txt
                    if %errorlevel% neq 0 exit /b %errorlevel%
                '''
            }
        }
        stage('Test') {
            steps {
                bat '''
                    call venv\\Scripts\\activate
                    if %errorlevel% neq 0 exit /b %errorlevel%
                    pytest tests
                    if %errorlevel% neq 0 exit /b %errorlevel%
                '''
            }
        }
        stage('Deploy') {
            steps {
                bat '''
                    call venv\\Scripts\\activate
                    if %errorlevel% neq 0 exit /b %errorlevel%
                    start cmd /k "call venv\\Scripts\\activate && gunicorn -b 127.0.0.1:8000 app:app"
                    if %errorlevel% neq 0 exit /b %errorlevel%
                '''
            }
        }
```

- OUTPUT:



```
Fetching upstream changes from https://github.com/Sinha-Sagar/ReactApp.git
 > git.exe --version # timeout=10
 > git --version # 'git version 2.44.0.windows.1'
 > git.exe fetch --tags --force --progress -- https://github.com/Sinha-Sagar/ReactApp.git +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git.exe rev-parse "refs/remotes/origin/main^{commit}" # timeout=10
Checking out Revision 7b989ad8482c6ed80ea3ff72805d84c9911905bb (refs/remotes/origin/main)
 > git.exe config core.sparsecheckout # timeout=10
 > git.exe checkout -f 7b989ad8482c6ed80ea3ff72805d84c9911905bb # timeout=10
 > git.exe branch -a -v --no-abbrev # timeout=10
 > git.exe checkout -b main 7b989ad8482c6ed80ea3ff72805d84c9911905bb # timeout=10
Commit message: "Simple React app for Jenkins Exercise 2"
First time build. Skipping changelog.
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Install Dependencies)
[Pipeline] sh
+ npm install
```

- The deployment is verified by going to http://127.0.0.1:8000 in browser.