Jenkins Pipelines

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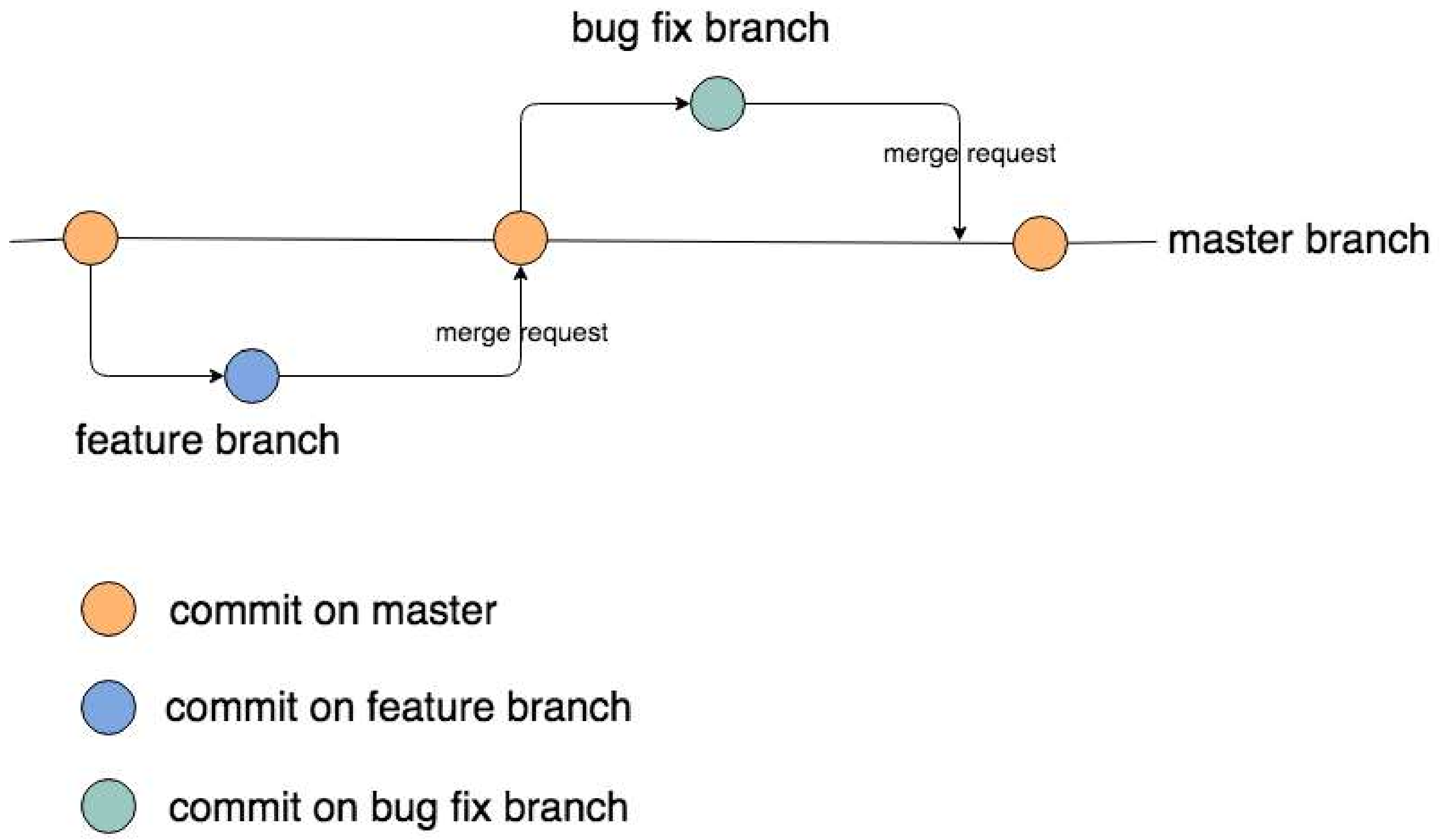
- Identify Git workflows that enable CI and easily integrate into Jenkins
- Use a version-controlled project with multiple branches and build it on Jenkins
- Use the declarative Jenkins pipeline and add pipeline to version control

The CI Workflow

CI Pipeline Steps

- Pulling Code from Source Control
- Preparing the Application Environment
- Testing
- Building
- Deployment

Git Branches

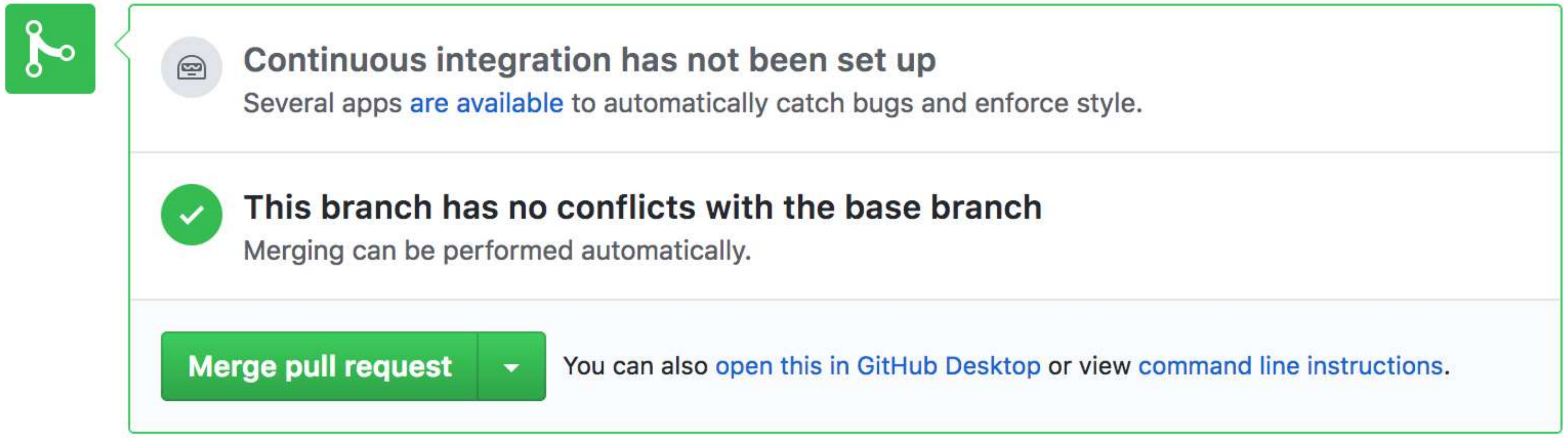


Setting up our Repository

- Create a New Github Repo named – IBM_JenkinsPipelines
- Clone Github repo to our local repository
- Create a new branch called **add-functions-and-tests**.
  - git checkout -b add-functions-and-tests
- Create the files in the root folder of the project and push to Remote
  - git commit -m "add functions plus unit tests"
  - git push origin add-functions-and-tests
- Going back to our project dashboard on GitHub, we can see that a new branch has been added

Setting up our Repository

- Let's create a pull request to our master branch, allowing us to merge the changes from our new branch.
  - Select the **Compare & pull request** button to create and configure our pull request



Continuous integration has not been set up
Several apps are available to automatically catch bugs and enforce style.

This branch has no conflicts with the base branch
Merging can be performed automatically.

You can also open this in GitHub Desktop or view command line instructions.

Creating a GitHub Repository & Integrating Jenkins

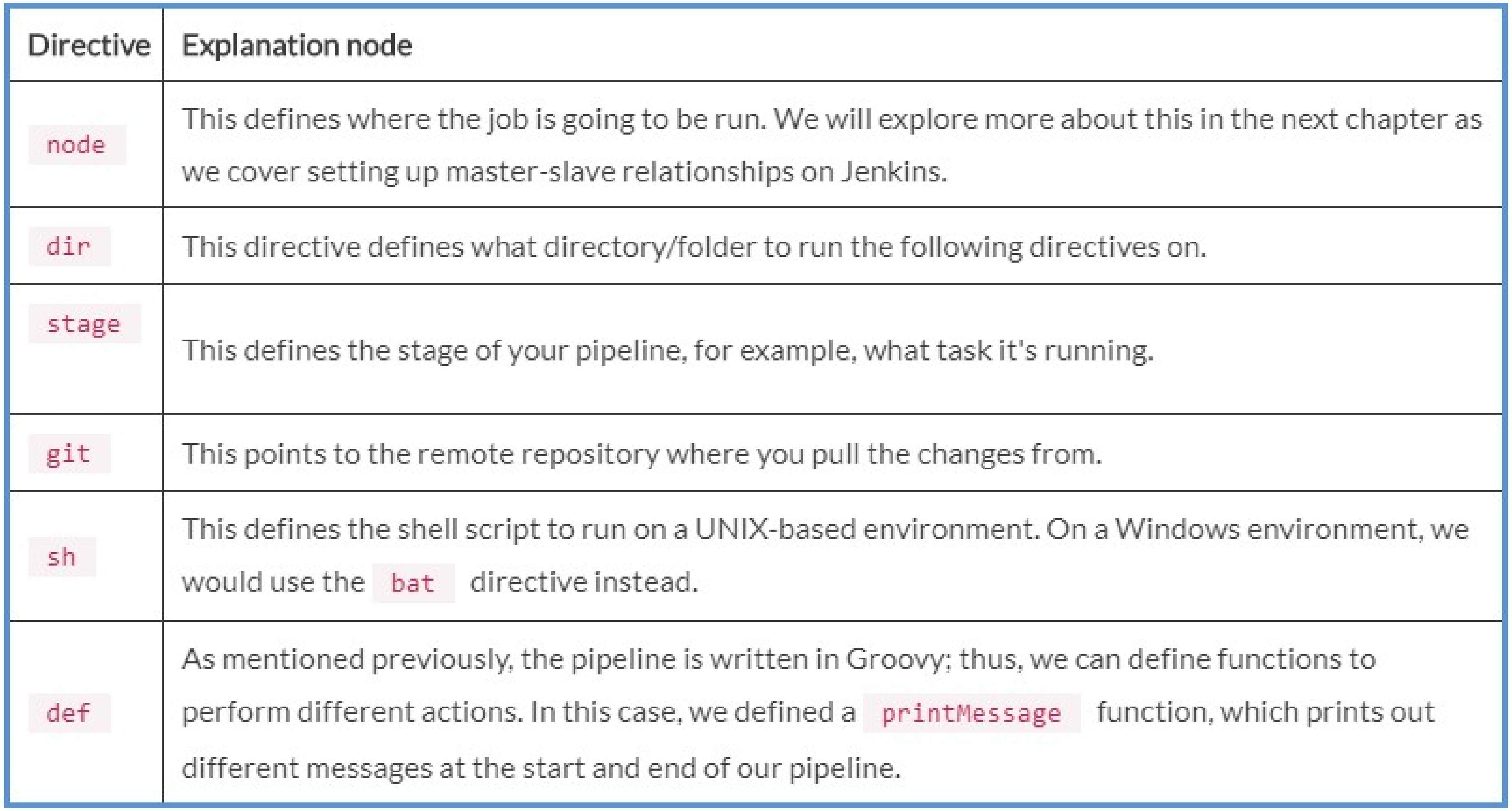
- To create a pipeline project by integrating Jenkins with a GitHub repository, follow these steps:
  - Go to the GitHub dashboard and create a new repository.
  - On the repository configuration page, initialize the project with a README file.
  - Clone remote repo locally
  - Checkout to a new branch called add-code-files. Add the provided code samples to your project while under this branch and push the changes to the remote repository.
  - Create a pull request from your new branch to the base branch of master.
  - Go to the repository settings and add webhook
  - For the Payload URL **http://your-jenkins-url/github-webhook/**

The Jenkinsfile

The Jenkinsfile

- A pipeline in Jenkins is defined using a script called the **Jenkinsfile**
- While working with the Jenkins scripted pipeline, we use standard Groovy syntax
- The scripted pipeline has some special directives that perform different functions

The Jenkinsfile



Directive	Explanation node
`node`	This defines where the job is going to be run. We will explore more about this in the next chapter as we cover setting up master-slave relationships on Jenkins.
`dir`	This directive defines what directory/folder to run the following directives on.
`stage`	This defines the stage of your pipeline, for example, what task it's running.
`git`	This points to the remote repository where you pull the changes from.
`sh`	This defines the shell script to run on a UNIX-based environment. On a Windows environment, we would use the `bat` directive instead.
`def`	As mentioned previously, the pipeline is written in Groovy; thus, we can define functions to perform different actions. In this case, we defined a `printMessage` function, which prints out different messages at the start and end of our pipeline.

Creating the Pipeline

- Go to the Jenkins dashboard and select New Item.
- Enter an appropriate name(PipeLine-Project-1) for the project and select Pipeline for the project type
- In the project configuration, under the **General** tab, select **GitHub project** and enter the appropriate URL
  - https://github.com/atingupta2005/Jenkins-5-Days-Training-Material
- Under the **Build Triggers** section, select the **GitHub hook trigger for GITScm polling**
  - Need to create a Webhoob in Github Repo – Settings->Webhook
    - http://52.142.55.134:8080/github-webhook
- Under the **Pipeline** section, select **Pipeline script** under **Definition**.
- In the script section of the configuration, add the snippet of code:

Creating the Pipeline

```
node('master') {
    stage("Fetch Source Code") {
        git 'https://github.com/atingupta2005/Jenkins-5-Days-Training-Material.git'
    }
    dir('Hands-On/Participants/7. Jenkins in Action/8. Jenkins Pipelines') {
        printMessage('Running Pipeline')
        stage("Testing") {
            sh 'python test_functions.py'
        }
        printMessage('Pipeline Complete')
    }
}
def printMessage(message) {
    echo "${message}"
}
```

Creating the Pipeline

- Press Apply
- Select Save
- Select Build Now
- On the project dashboard, after running our build, the Stage View shows up.

Global Variables

- A global variable is accessible in any scope within our program
- There are pre-defined global variables. Examples:
  - BRANCH_NAME
  - BUILD_NUMBER
  - BUILD_ID
  - JOB_NAME
  - NODE_NAME
  - JENKINS_HOME
  - BUILD_URL

Thanks