



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

Experiment No.5
To Create a new build job in Jenkins.
Date of Performance:
Date of Submission:



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Aim: To Create a new build job in Jenkins.

Objective: The objective of creating a new build job in Jenkins is to set up an automated process that fetches the latest source code from a version control repository, compiles the code, executes tests

Theory:

What is a Jenkins Freestyle Project?

Jenkins Freestyle Project is a repeatable build job, script, or pipeline that contains steps and post-build actions. It is an improved job or task that can span multiple operations. It allows you to configure build triggers and offers project-based security for your Jenkins project. It also offers plugins to help you build steps and post-build actions.

The types of actions you can perform in a Jenkins build step or post-build action are quite limited. There are many standard plugins available within a Jenkins Freestyle Project to help you overcome this problem.



Fig 5.1 How to Create a Job in Jenkins

Features of Jenkins:

Some of the crucial features of Jenkins are the following:

- It is a free and open-source automation tool
- Jenkins provides a vast number of plugins
- It is easy to set up and install on multiple operating systems
- Provides pipeline support
- Fast release cycles
- Easy upgrades

Steps to Create a New Build Job in Jenkins:

Step 1: Login to Jenkins

To create a Jenkins freestyle job, log on to your Jenkins dashboard by visiting your Jenkins installation path. Usually, it will be hosted on localhost at <http://localhost:8080>



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Step 2: Create New Item

Click on “New Item” at the top left-hand side of your dashboard.



Step 3: Enter Item details

In the next screen,

1. Enter the name of the item you want to create. We shall use the “Hello world” for this demo.
2. Select Freestyle project
3. Click Okay



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Enter an item name

Hello World **1**

Freestyle project **2**

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any tool used for something other than software build.

Pipeline

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines and/or organizing complex activities that do not easily fit in free-style job type.

Multi-configuration project

Suitable for projects that need a large number of different configurations, such as testing on multiple builds, etc.

Folder

Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, separate namespace, so you can have multiple things of the same name as long as they are in different folders.

GitHub Organization

Scans a GitHub organization (or user account) for all repositories matching some defined markers.

Multibranch Pipeline

Creates a set of Pipeline projects according to detected branches in one SCM repository.

OK **3**

Step 4: Enter Project details

Enter the details of the project you want to test.

General Source Code Management Build Triggers Build Environment Build Post-build Actions

Description

Hello world java test program

[Plain text] [Preview](#)

☐ Discard old builds

☐ GitHub project

☐ This project is parameterized

☐ Throttle builds

☐ Disable this project

☐ Execute concurrent builds if necessary

[Advanced...](#)

Step 5: Enter repository URL



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Under Source Code Management, Enter your repository URL. We have a test repository located at <https://github.com/kriru/firstJava.git>

It is also possible for you to use a local repository.

The screenshot shows the Jenkins 'Source Code Management' configuration page. The 'Git' option is selected under the 'Source Code Management' tab. The 'Repository URL' field is filled with 'https://github.com/kriru/firstJava.git'. The 'Credentials' dropdown is set to '- none -'. The 'Branches to build' section has the 'Branch Specifier (blank for 'any')' set to '*/master'. There are buttons for 'Advanced...', 'Add Repository', and 'Add Branch'.

If your GitHub repository is private, Jenkins will first validate your login credentials with GitHub and only then pull the source code from your GitHub repository.

Step 6: Tweak the settings

Now that you have provided all the details, it's time to build the code. Tweak the settings under the **build** section to build the code at the time you want. You can even schedule the build to happen periodically, at set times.

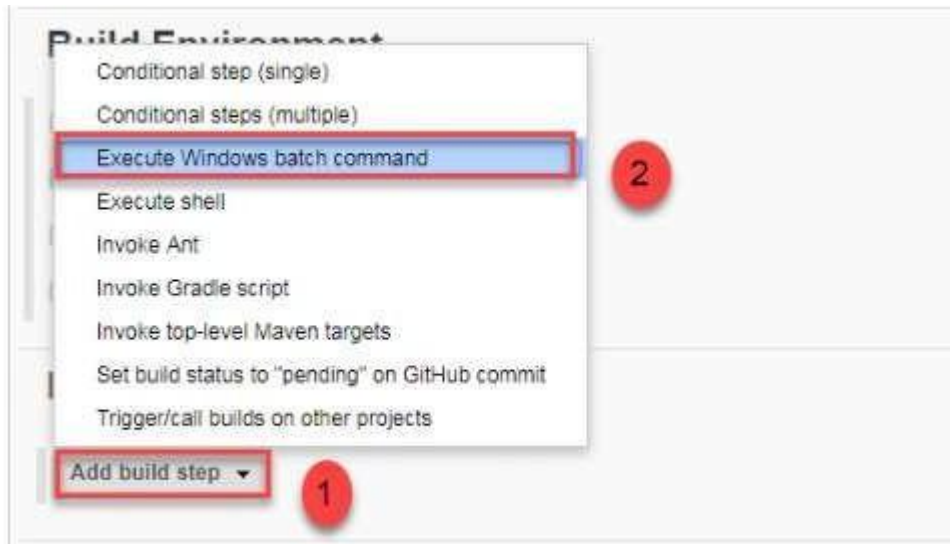
Under **build**,

1. Click on “**Add build step**”
2. Click on “**Execute Windows batch command**” and add the commands you want to execute during the build process.



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In the command window, enter the following commands and then click on the Save button.

```
Javac HelloWorld.java  
Java HelloWorld
```



Step 7: Save the project

When you have entered all the data,

1. Click **Apply**
2. **Save** the project.

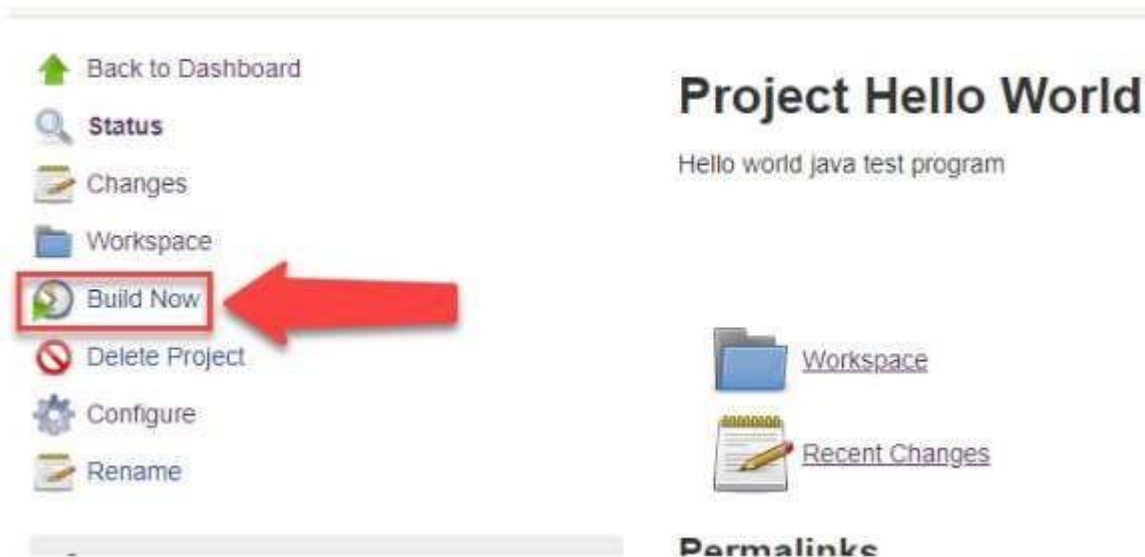
Step 8: Build Source code

Now, in the main screen, Click the **Build Now** button on the left-hand side to build the source code.



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Step 9: Check the status

After clicking on **Build now**, you can see the status of the build you run under **Build History**.



Step 10: See the console output

Click on the **build number** and then Click on **console output** to see the status of the build you run. It should show you a success message.



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The screenshot shows the Jenkins web interface for a build named 'Hello World' (build #1). On the left sidebar, the 'Console Output' tab is selected and highlighted with a red box. A green dashed arrow points from this tab to the console output area. The console output displays the following commands and their results:

```
Started by user The Guru99
Building in workspace C:\Program Files (x86)\Jenkins\workspace\Hello World
Cloning the remote Git repository
Cloning repository https://github.com/kriru/firstJava.git
> git.exe init C:\Program Files (x86)\Jenkins\workspace\Hello World # timeout=10
Fetching upstream changes from https://github.com/kriru/firstJava.git
> git.exe --version # timeout=10
> git.exe fetch --tags --progress https://github.com/kriru/firstJava.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe config remote.origin.url https://github.com/kriru/firstJava.git # timeout=10
Fetching upstream changes from https://github.com/kriru/firstJava.git
> git.exe fetch --tags --progress https://github.com/kriru/firstJava.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe rev-parse --abbrev-ref HEAD # timeout=10
> git.exe rev-parse --abbrev-ref HEAD # timeout=10
> git.exe rev-parse --abbrev-ref HEAD # timeout=10
C:\Program Files (x86)\Jenkins\workspace\Hello World>javac HelloWorld.java

C:\Program Files (x86)\Jenkins\workspace\Hello World>java HelloWorld
Hello World

Finished: SUCCESS
```

Conclusion:

1. Which SCM tools Jenkins supports?

Ans: Git
Subversion (SVN)
Mercurial
Perforce
CVS (Concurrent Versions System)
AccuRev
ClearCase
RTC (IBM Rational Team Concert)
TFS (Team Foundation Server)
Bitbucket
GitHub

2. What are the various ways in which build can be scheduled in Jenkins?

Ans:

1. Polling SCM: Jenkins can periodically check the version control system (e.g., Git, SVN) for changes and trigger a build if new changes are detected.
2. Cron Syntax: Builds can be scheduled using cron syntax, allowing for flexible scheduling based on specific times, intervals, or patterns.



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3. Triggered by Other Builds: Builds can be triggered by the completion of other builds, either upstream or downstream in the pipeline.
4. Webhooks: Jenkins can be configured to listen for webhook notifications from version control systems or other external systems, triggering builds automatically when events occur.