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Experiment No. 05

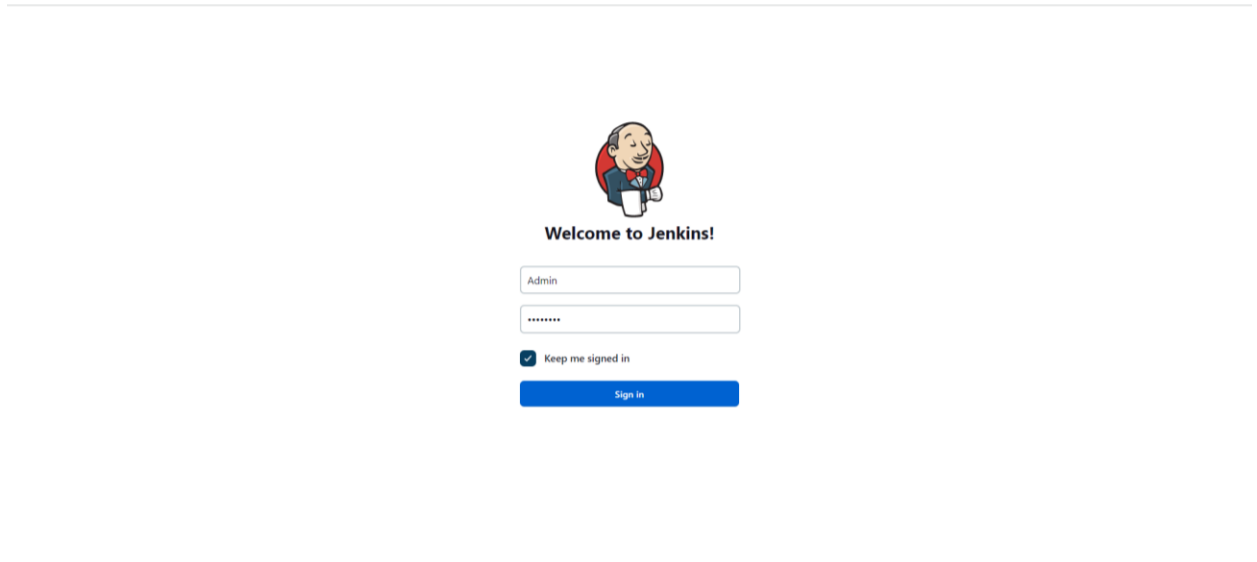
Aim: To perform a pipeline using Jenkins.

Theory:

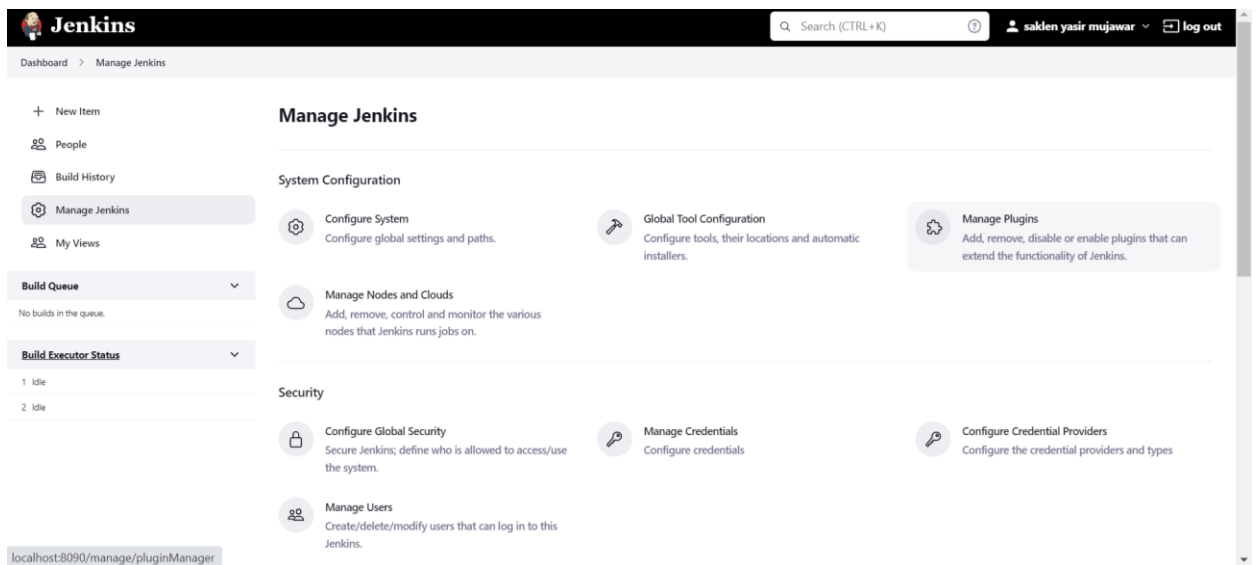
- Jenkins Pipeline (or simply "Pipeline" with a capital "P") is a suite of plugins which supports implementing and integrating continuous delivery pipelines into Jenkins.
- A continuous delivery (CD) pipeline is an automated expression of your process for getting software from version control right through to your users and customers.
- Pipeline provides an extensible set of tools for modeling simple-to-complex delivery pipelines "as code" via the Pipeline domain-specific language (DSL) syntax.
- Creating a Jenkinsfile and committing it to source control provides a number of immediate benefits:
 1. Automatically creates a Pipeline build process for all branches and pull requests.
 2. Code review/iteration on the Pipeline (along with the remaining source code).
 3. Audit trail for the Pipeline.
 4. Single source of truth for the Pipeline, which can be viewed and edited by multiple members of the project.
- Jenkins is, fundamentally, an automation engine which supports a number of automation patterns. Pipeline adds a powerful set of automation tools onto Jenkins, supporting use cases that span from simple continuous integration to comprehensive CD pipelines.
- By modeling a series of related tasks, users can take advantage of the many features of Pipeline discussed below:
 1. Code: Pipelines are implemented in code and typically checked into source control, giving teams the ability to edit, review, and iterate upon their delivery pipeline.
 2. Durable: Pipelines can survive both planned and unplanned restarts of the Jenkins master.
 3. Pausable: Pipelines can optionally stop and wait for human input or approval before continuing the Pipeline run.
 4. Versatile: Pipelines support complex real-world CD requirements, including the ability to fork/join, loop, and perform work in parallel.
 5. Extensible: The Pipeline plugin supports custom extensions to its DSL and multiple options for integration with other plugins.

Steps:

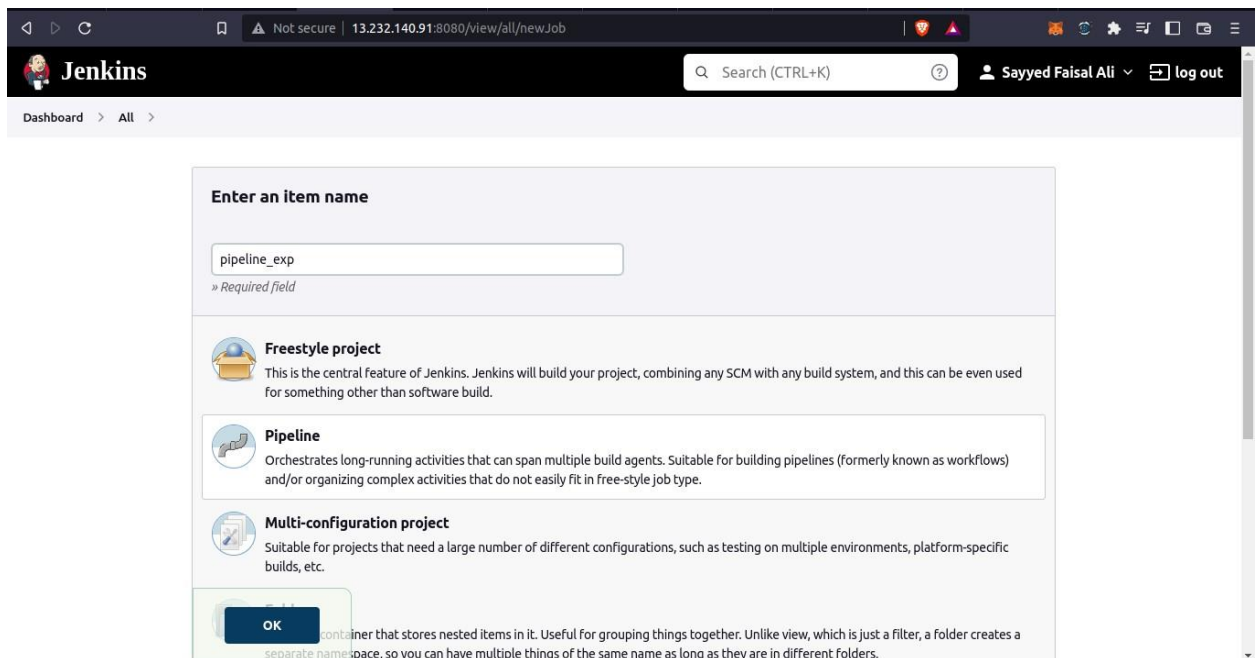
- a. Fire Up your terminal and type "sudo service jenkins start" to start jenkins server and go to localhost:8080 in my case it will be 13.232.140.91:8080 and login to your account



b. After login click on New Item

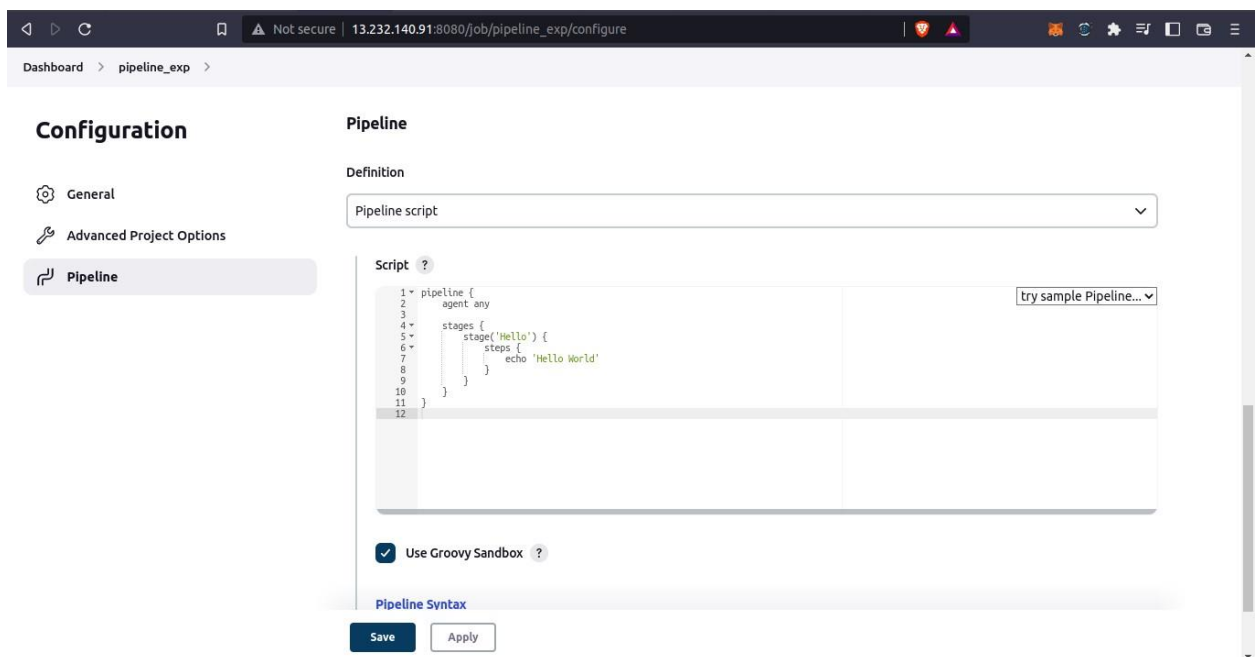


- c. Select a name for your project and select Pipeline then click ok button



The screenshot shows the Jenkins 'Enter an item name' dialog. The browser address bar indicates the URL `13.232.140.91:8080/view/all/newJob`. The Jenkins header shows the user 'Sayyed Faisal Ali' and a 'log out' button. The dialog has a text input field containing 'pipeline_exp' with a 'Required field' message below it. Three options are listed: 'Freestyle project', 'Pipeline', and 'Multi-configuration project'. The 'Pipeline' option is highlighted. At the bottom, there is an 'OK' button and a note: 'container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.'

- d. Head to Pipeline > Pipeline script > try simple pipeline > Hello World then click on save

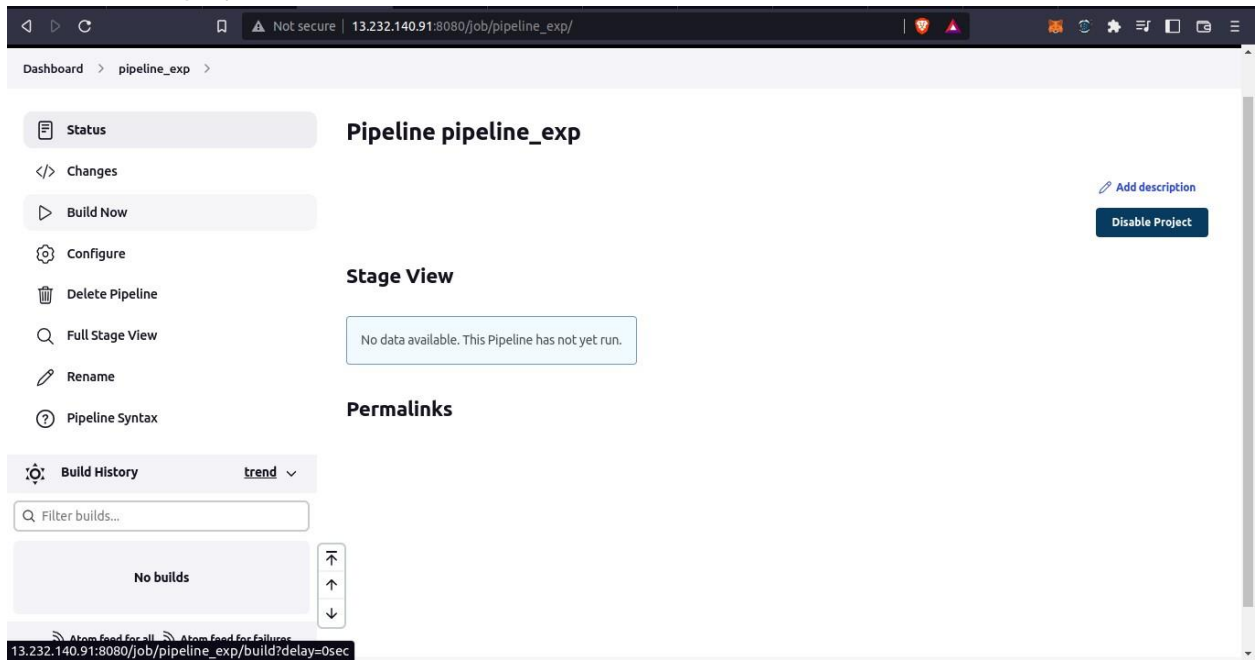


The screenshot shows the Jenkins 'Configuration' page for the 'pipeline_exp' job. The browser address bar shows `13.232.140.91:8080/job/pipeline_exp/configure`. The left sidebar has 'Pipeline' selected. The 'Definition' dropdown is set to 'Pipeline script'. The 'Script' section contains a Groovy script:

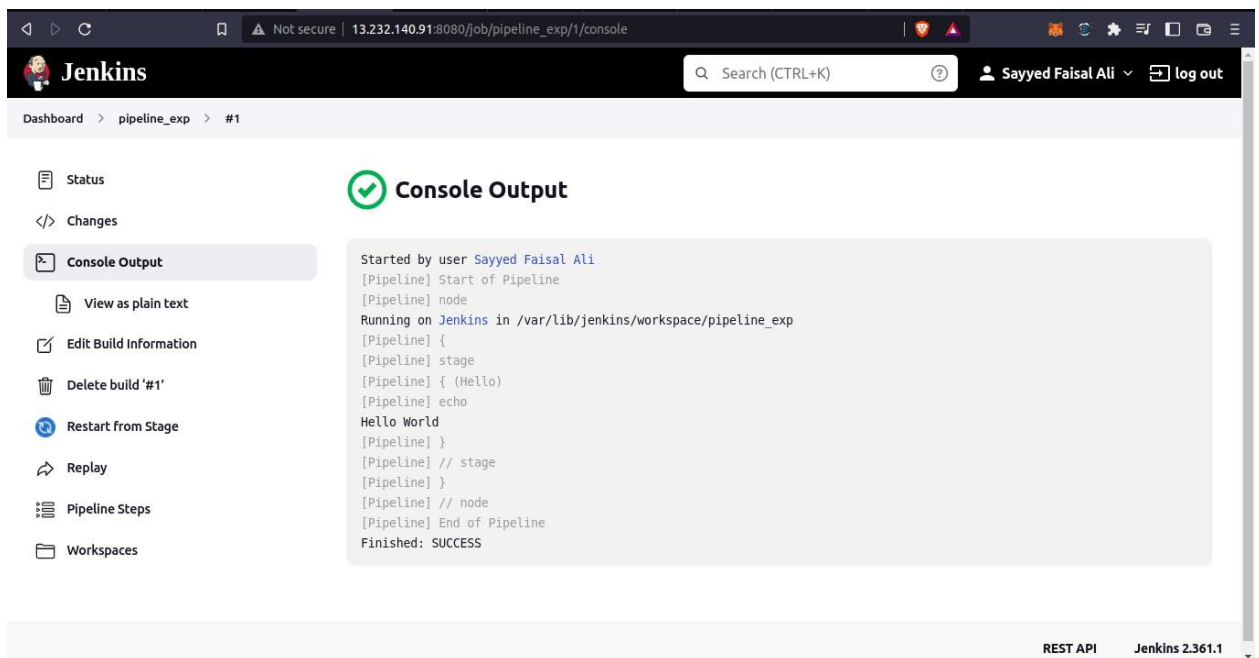
```
1 pipeline {  
2   agent any  
3  
4   stages {  
5     stage('Hello') {  
6       steps {  
7         echo 'Hello World'  
8       }  
9     }  
10  }  
11 }  
12
```

 A 'try sample Pipeline...' button is on the right. The 'Use Groovy Sandbox' checkbox is checked. At the bottom are 'Save' and 'Apply' buttons.

e. Now view the project and click on Build Now button on left sidebar



f. Head to Build History > #1 > Console Output and here we get our output which is Hello World



g. To view stage view of a project go to project view

The screenshot shows the Jenkins web interface for a project named 'pipeline_exp'. The left sidebar contains navigation options: Status, Changes, Build Now, Configure, Delete Pipeline, Full Stage View, Rename, and Pipeline Syntax. Below these is the 'Build History' section with a search bar and a list of builds. The main content area is titled 'Pipeline pipeline_exp' and shows the 'Stage View'. It displays a table with stage names and their average times. The 'Hello' stage has an average time of 338ms. Below the table, there are 'Permalinks' for the last build, stable build, successful build, and completed build, all showing a time of 3 min 8 sec ago.

Dashboard > pipeline_exp >

Pipeline pipeline_exp

Add description
Disable Project

Stage View

Stage	Average stage times:
Hello	338ms

Average stage times:
(Average full run time: ~5s)

#1
Oct 01 14:35 No Changes

Permalinks

- Last build (#1), 3 min 8 sec ago
- Last stable build (#1), 3 min 8 sec ago
- Last successful build (#1), 3 min 8 sec ago
- Last completed build (#1), 3 min 8 sec ago

Conclusion: We have successfully performed a pipelining process using Jenkins.