# Experiment 06 - Jenkins Pipeline

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|---|---|
| Roll No. | 70 |
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| Class | D15-B |
| Subject | DevOps Lab |
| LO Mapped | LO1: To understand the fundamentals of DevOps engineering and be fully proficient with DevOps terminologies, concepts, benefits, and deployment options to meet your business requirements<br>LO3: To understand the importance of Jenkins to Build and deploy Software Applications on server environment |
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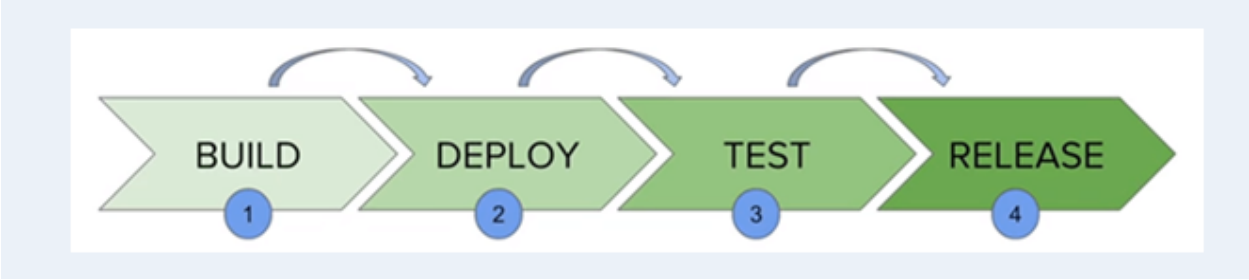
**Aim**: To Build the pipeline of jobs using Maven / Gradle / Ant in Jenkins, create a pipeline script to build and deploy an application over the tomcat server.

## Introduction:

The Jenkins pipeline in CI/CD automates many tasks and makes the CI/CD pipeline tasks reliable, efficient, repeatable, and high in quality.
The connection of jobs in a particular format in the pipeline is done by Jenkins.
It represents the continuous delivery and continuous integration of the jobs in the SDLC and DevOps life cycle management in the pipeline.
The below diagram shows the Jenkins pipeline. This includes continuous integration and continuous delivery of jobs namely the Build, Deploy, Test, and Release. It is done as these jobs are interdependent and forms the pipeline in a particular format. This involves continuous automation from one stage to another to bring down the cost, time, and number of iterations without affecting the quality.




It is also about the version control as the software applications which are being developed goes through the complex processes from the build to release.
The software is developed in a scalable, reliable, and repeatable manner.

**Advantages:-**
The Jenkins pipeline in CI/CD automates many tasks and makes the CI/CD pipeline tasks reliable, efficient, repeatable, and high in quality.
It has made the process code easier for iterative development with other features such as audit trails, code review, and access control and has sound approval and promotion process by many project members. Multiple jobs from a single project can be managed easily.
Other Advantages are as follows,

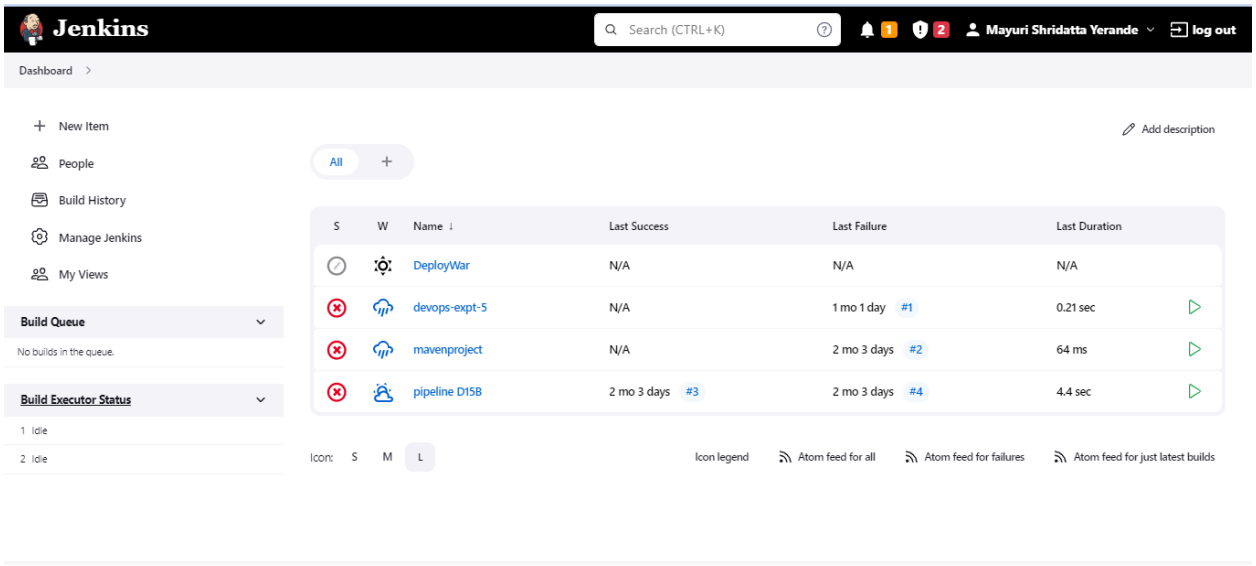
- Review of code on the pipeline is possible
- Make many pipelines automatically for all the branches with a single Jenkins file.
- The Jenkins pipeline can be reviewed
- Single source for the pipeline and be customized for multiple users.
- We can use the Web User interface or Jenkins file directly.

## Build Tool:

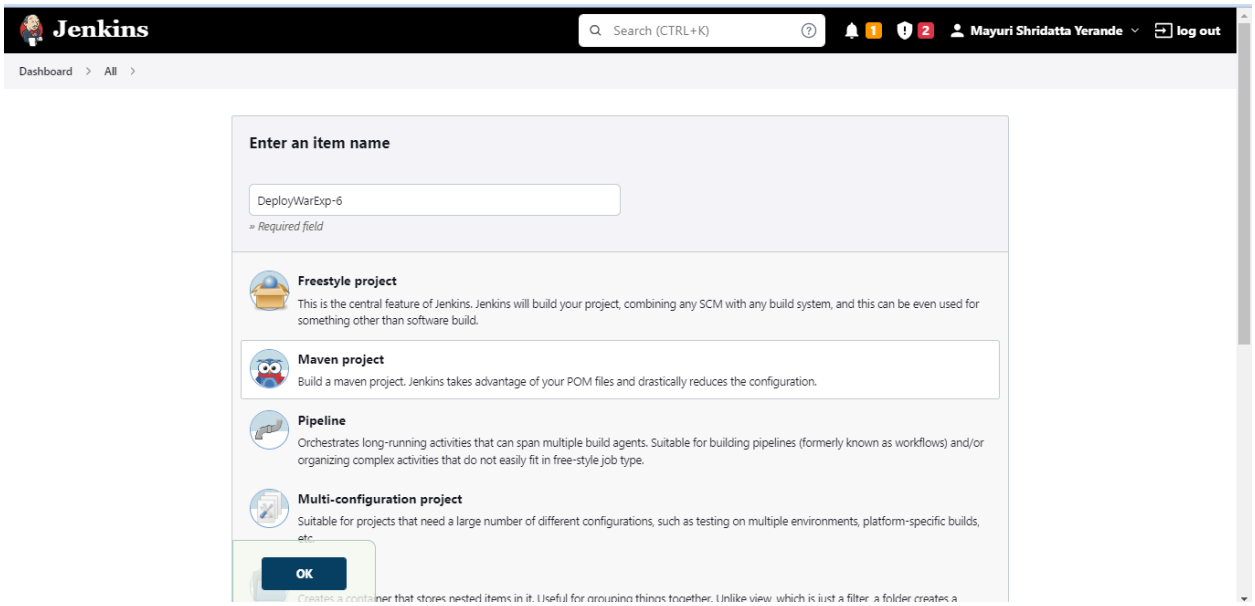
- The Build Now Tool is used to create the pipeline.
- The following example shows a successful build of a pipeline created with a one-line script that uses the “echo” step to output the phrase, “hello from pipeline:”
- Started by user anonymous [Pipeline] echo
- hello from Pipeline
- [Pipeline] End of Pipeline
- Finished: SUCCESS

## Pipeline Jobs:

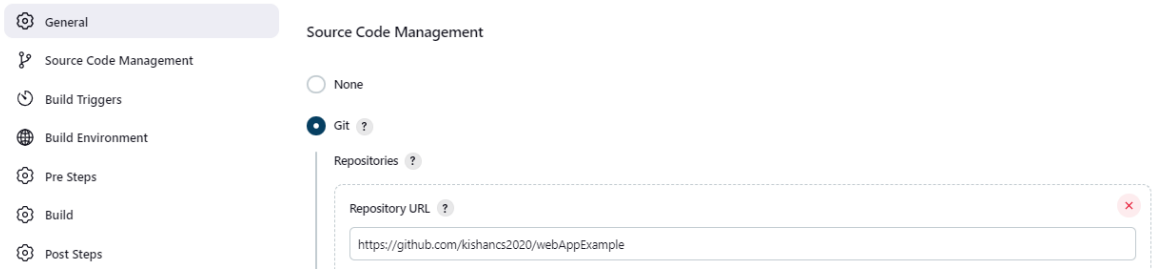
- Log into Jenkins and select ‘New item’ from the dashboard

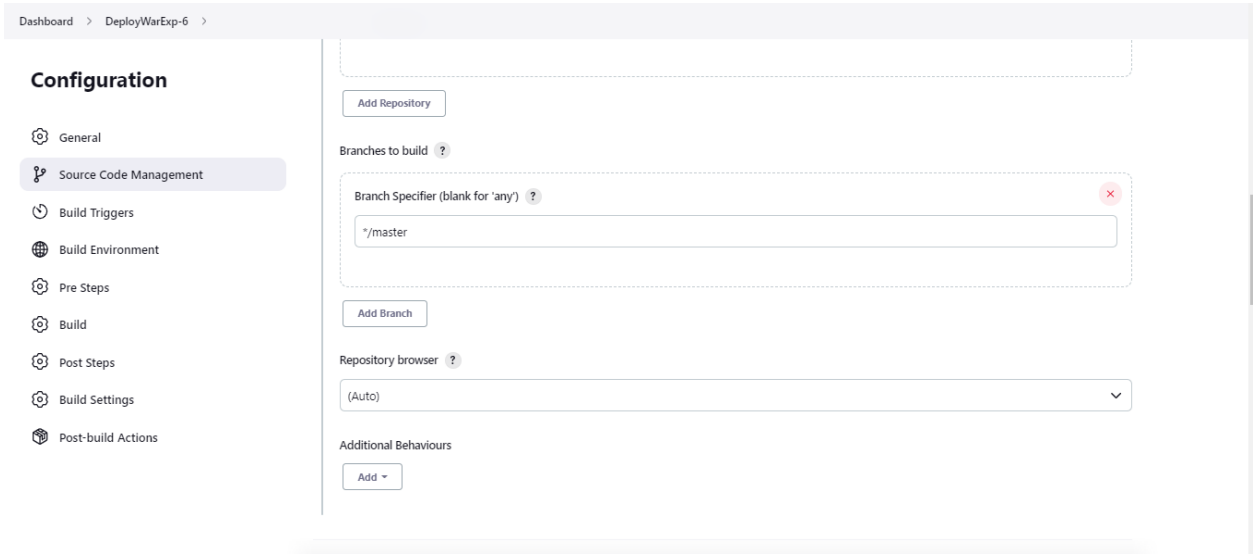


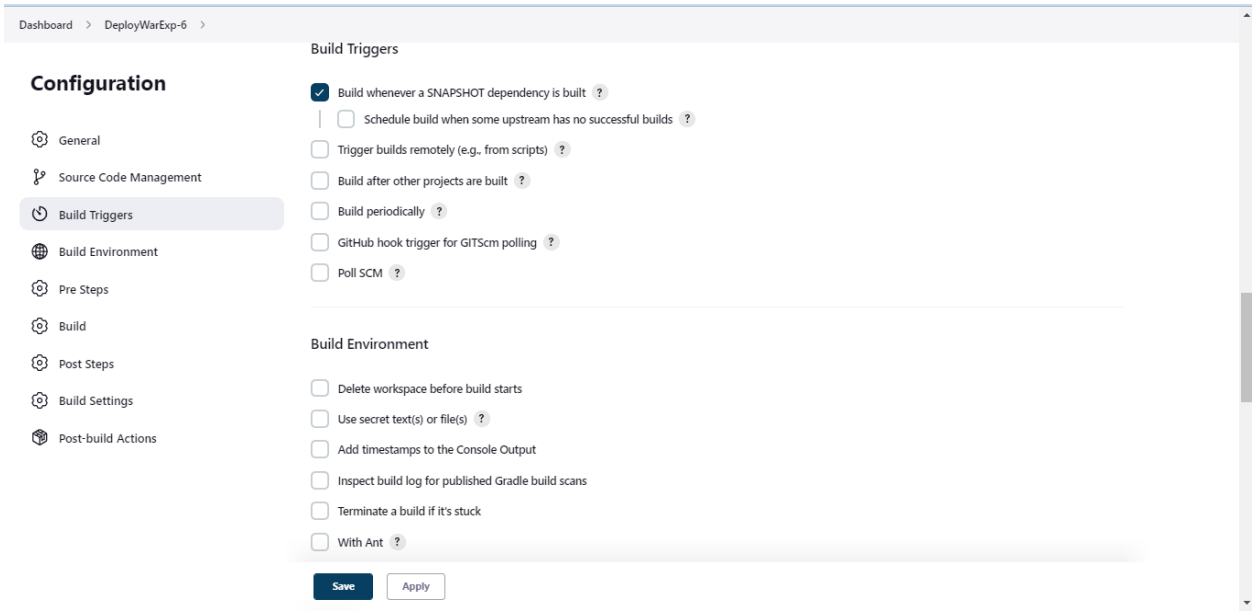

- Next, enter a name for your pipeline and select ‘maven’ project. Click on ‘ok’ to proceed proceed



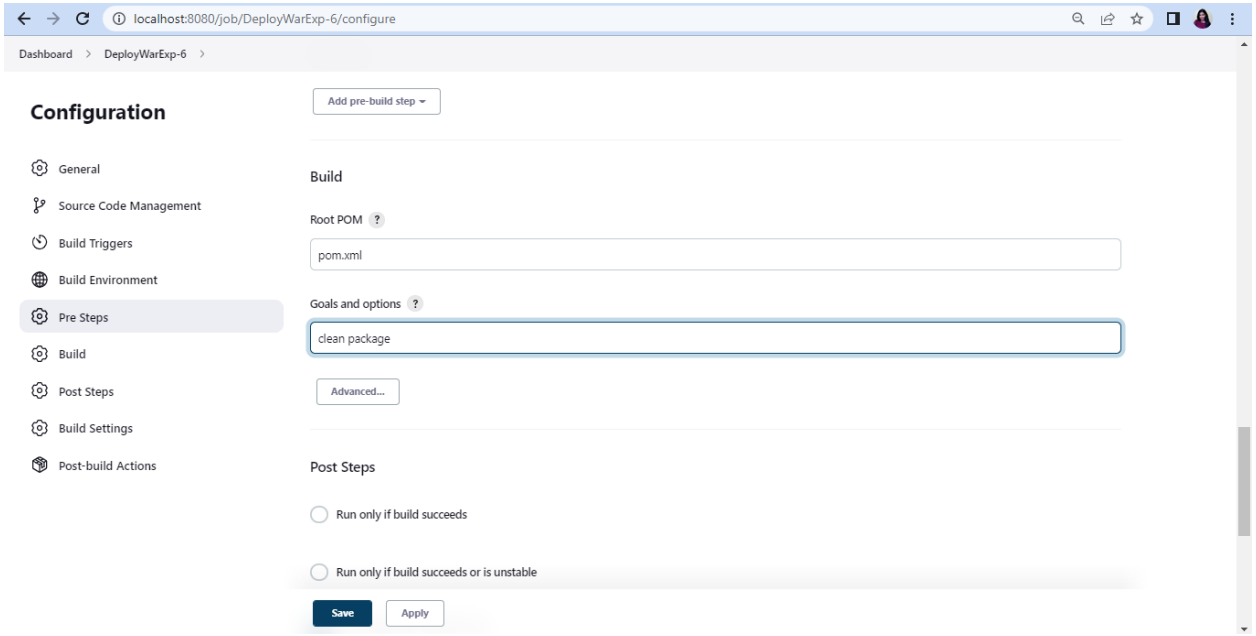

- Next if the source code is from a github repository paste the URL of the repository in the source code management section after selecting git
  **Github repository that I used:** https://github.com/kishancs2020/webAppExample



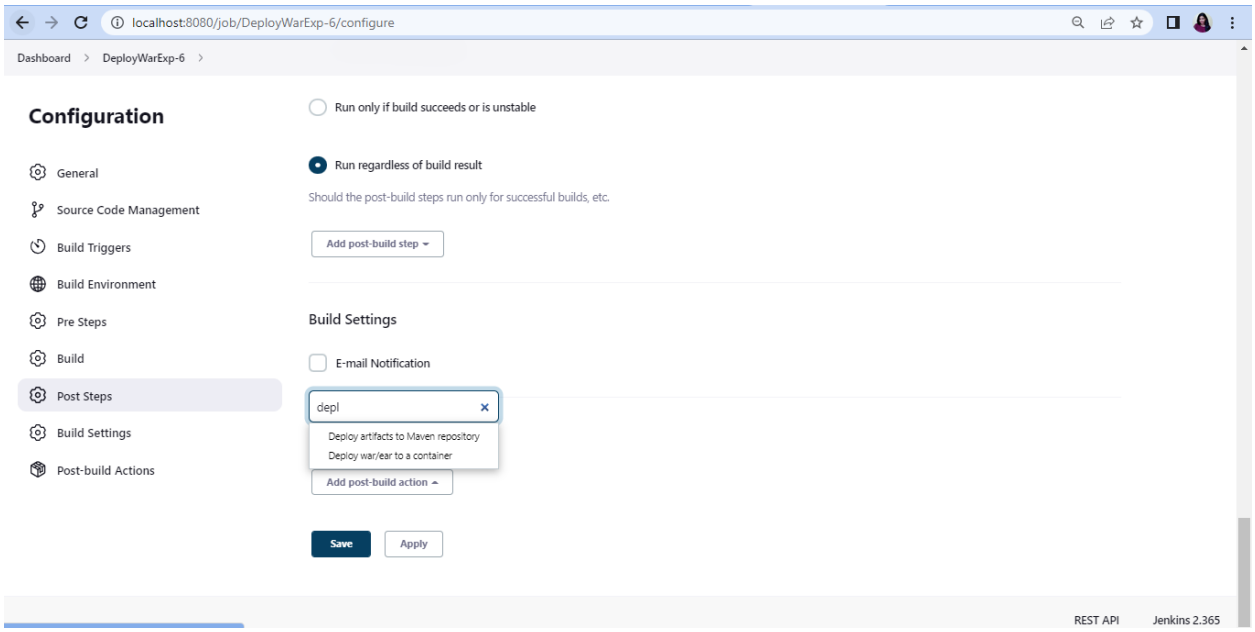





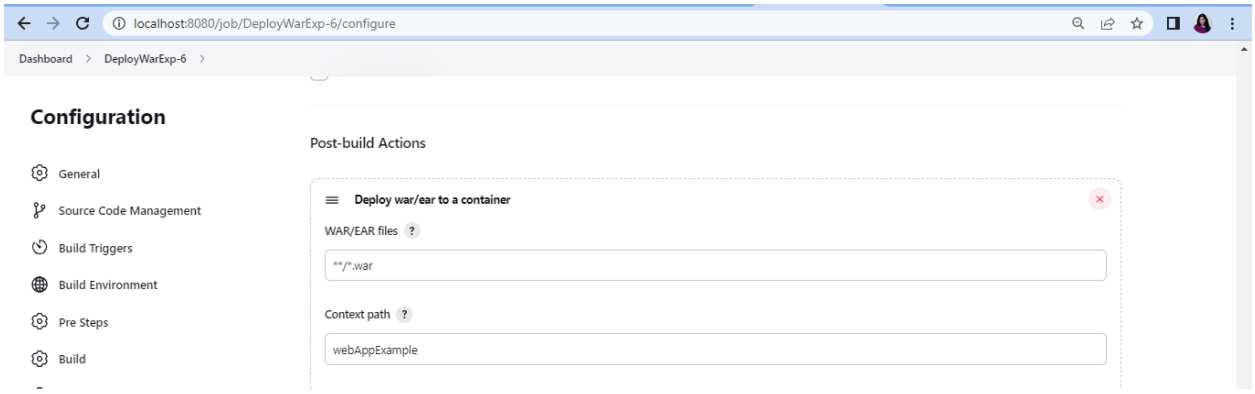

- In the ”goals and options” section, write “clean package”.



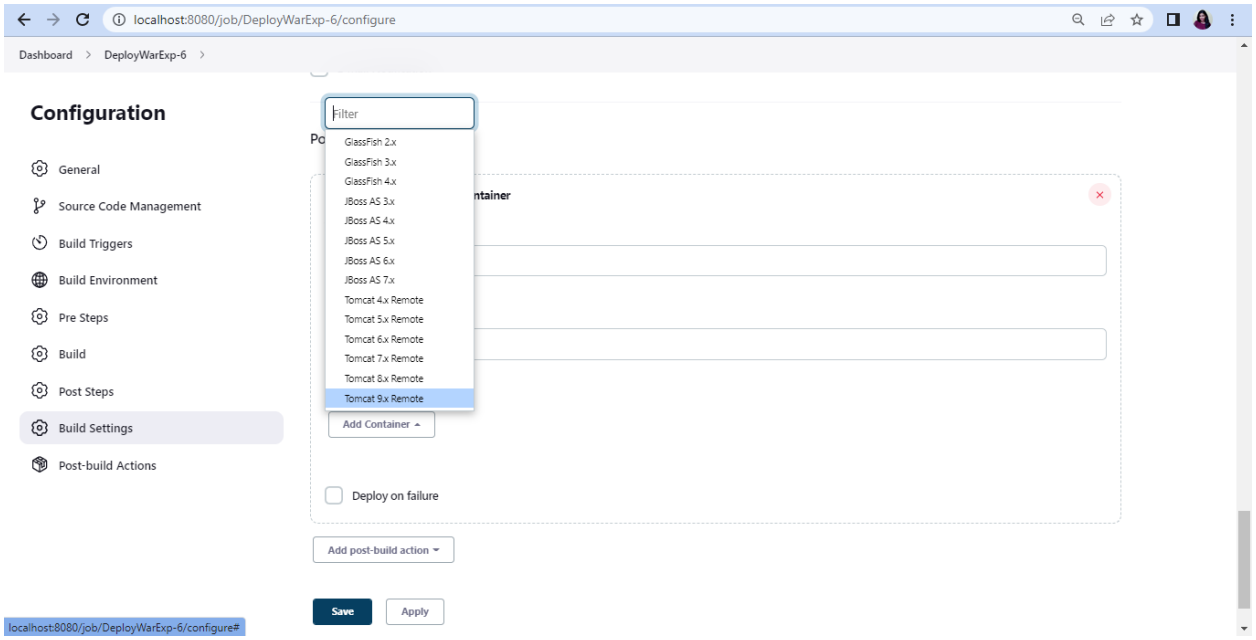
- Next in the post build actions choose deploy war/ear to a container and enter “**/*war” in the input box



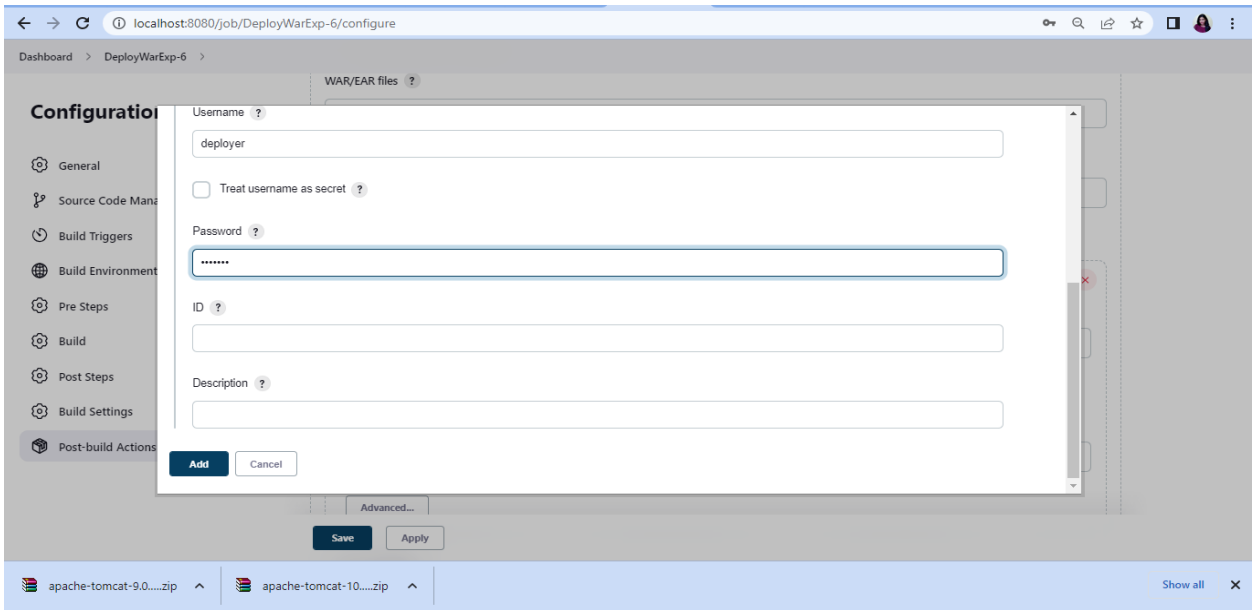

- Add war/ear files name as “**/*.war
- Context Path name as “webAppExample



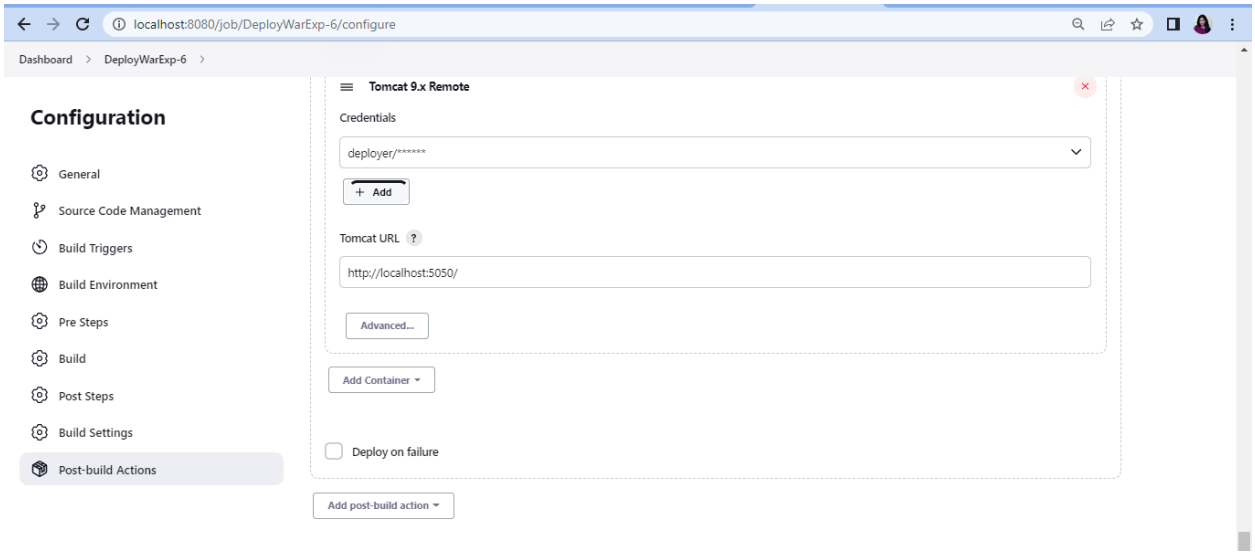

- Choose “tomcat 9x”



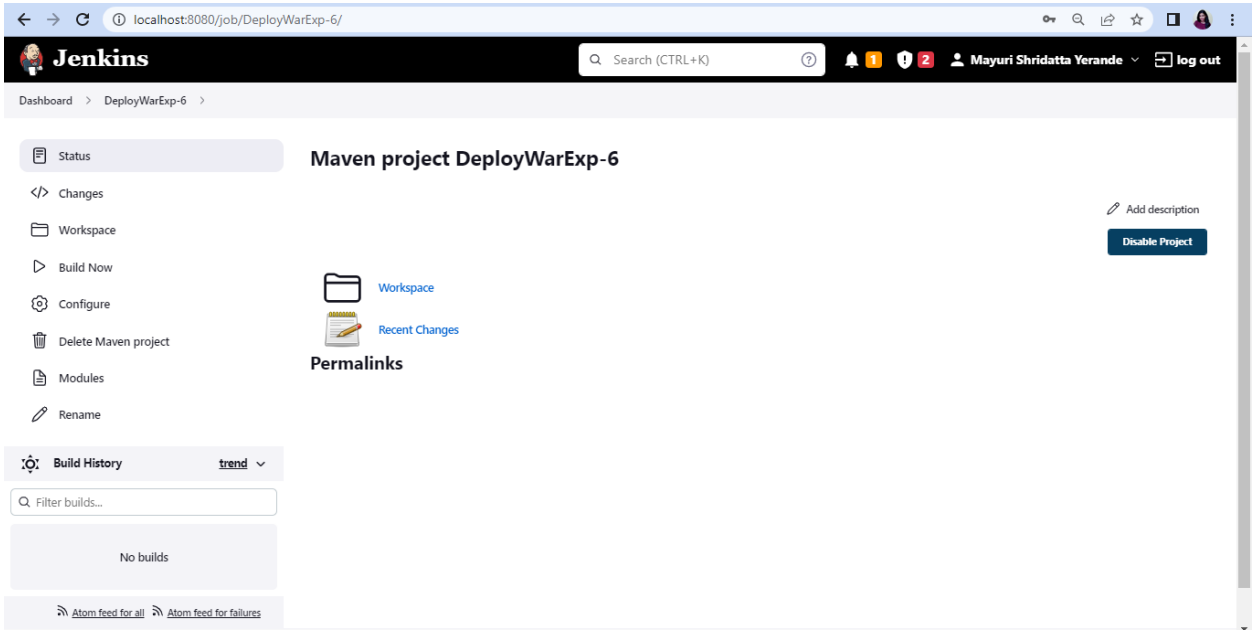

- Add the username and password which was added into “tomcat users file”
- Add this file in tomcat user first:
  **<user username="deployer" password="yourpassword" roles="manager-script" />**



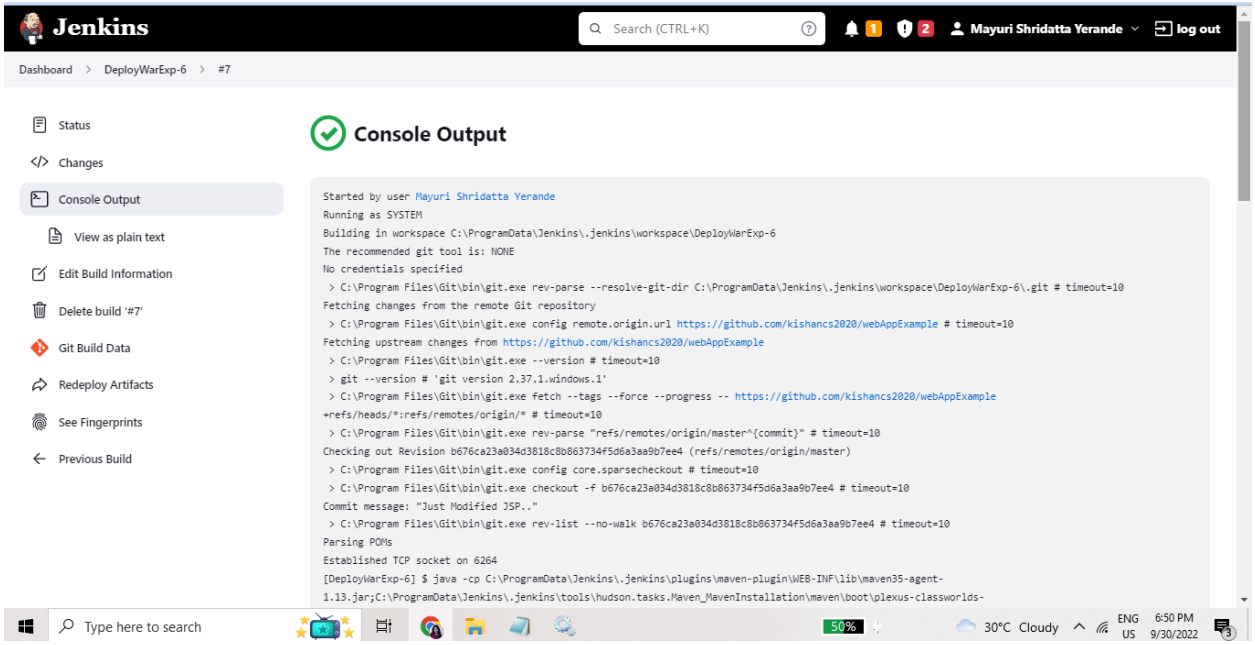
- Add the local host port of your tomcat server into “tomcat url” section

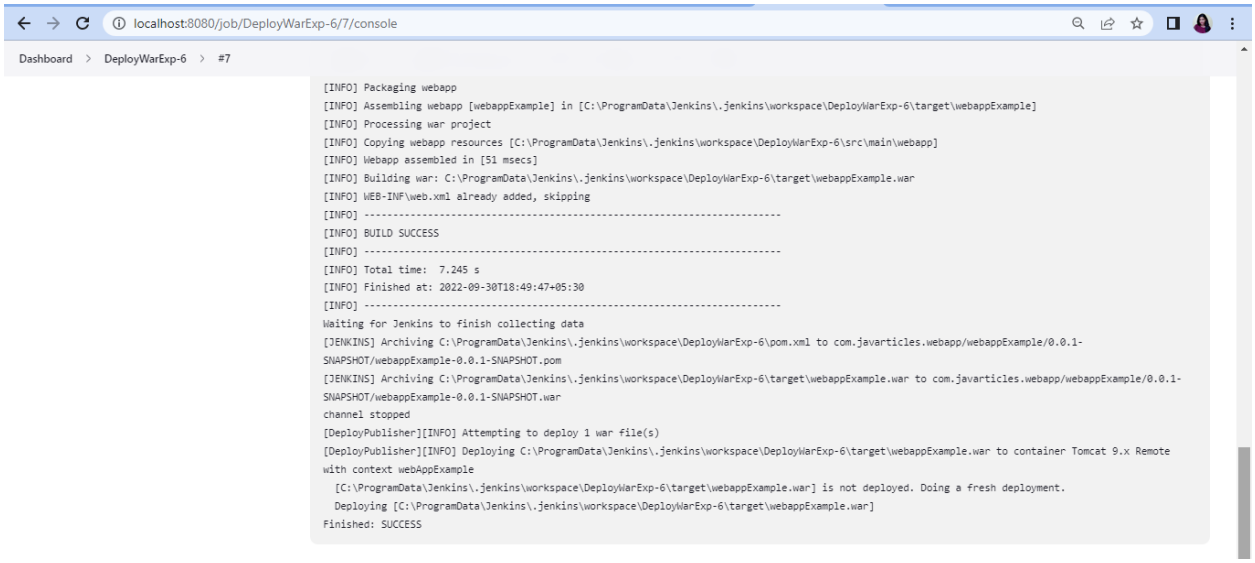



- Apply and save project



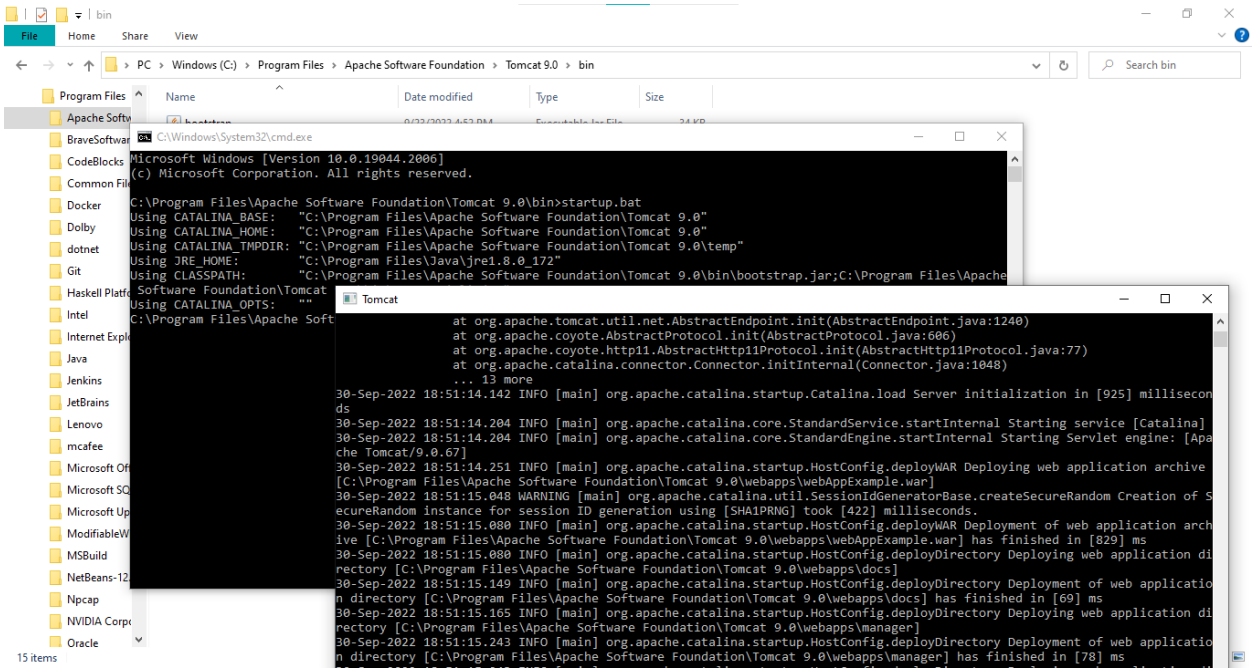
- (Keep running tomcat in your machine)
- Click on build now



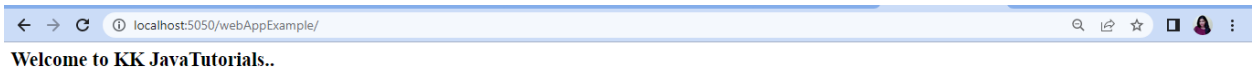




- Project has been built successfully.

- Go to the path “C:\Program Files\Apache Software Foundation\Tomcat 9.0\bin”
- And put the following command: “startup.bat”




- Pipeline build is successful and the site is deployed successfully and working

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**Conclusion** We successfully built the pipeline of jobs using Maven in jenkins and created a pipeline script to build and deploy an application over the tomcat server.