

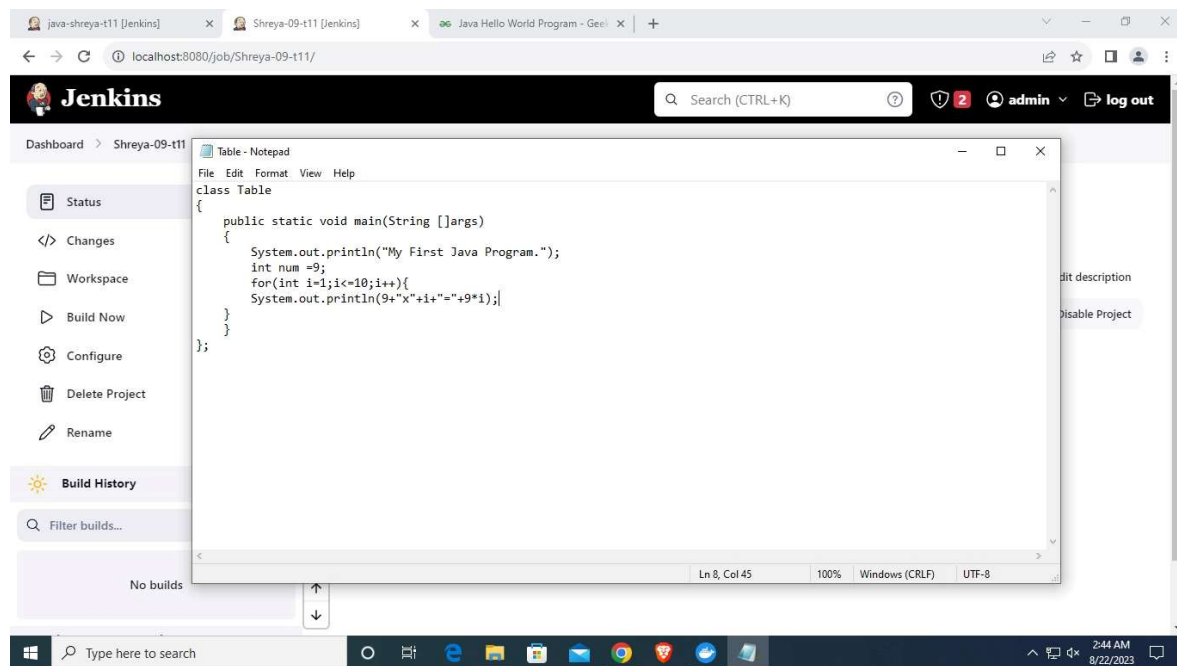
LAB ASSIGNMENT NO-05

Aim: To build Java program using Jenkins.

Theory:

Jenkins is an open-source automation server. With Jenkins, organizations can accelerate the software development process by automating it. Jenkins manages and controls software delivery processes throughout the entire lifecycle, including build, document, test, package, stage, deployment, static code analysis and much more.

1.Create java Program:

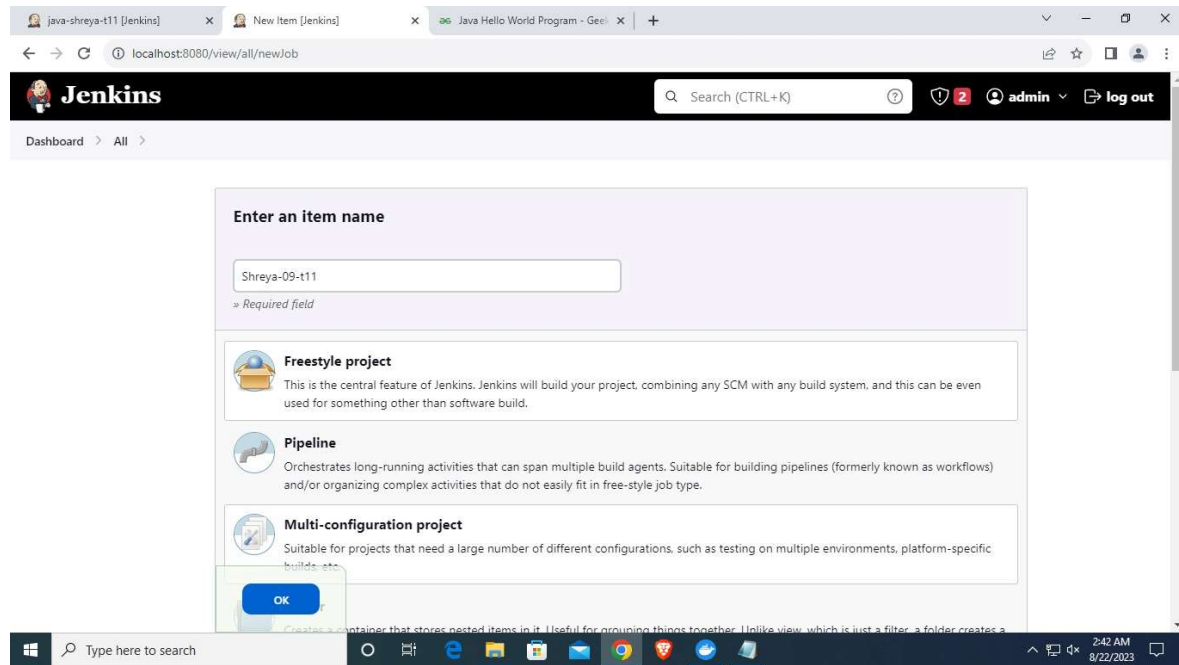


The screenshot shows a web browser window displaying the Jenkins dashboard for a job named 'Shreya-09-t11'. The dashboard includes a left sidebar with options like Status, Changes, Workspace, Build Now, Configure, Delete Project, and Rename. The main area shows the 'Build History' section with 'No builds' listed. Overlaid on the Jenkins interface is a 'Table - Notepad' window containing the following Java code:

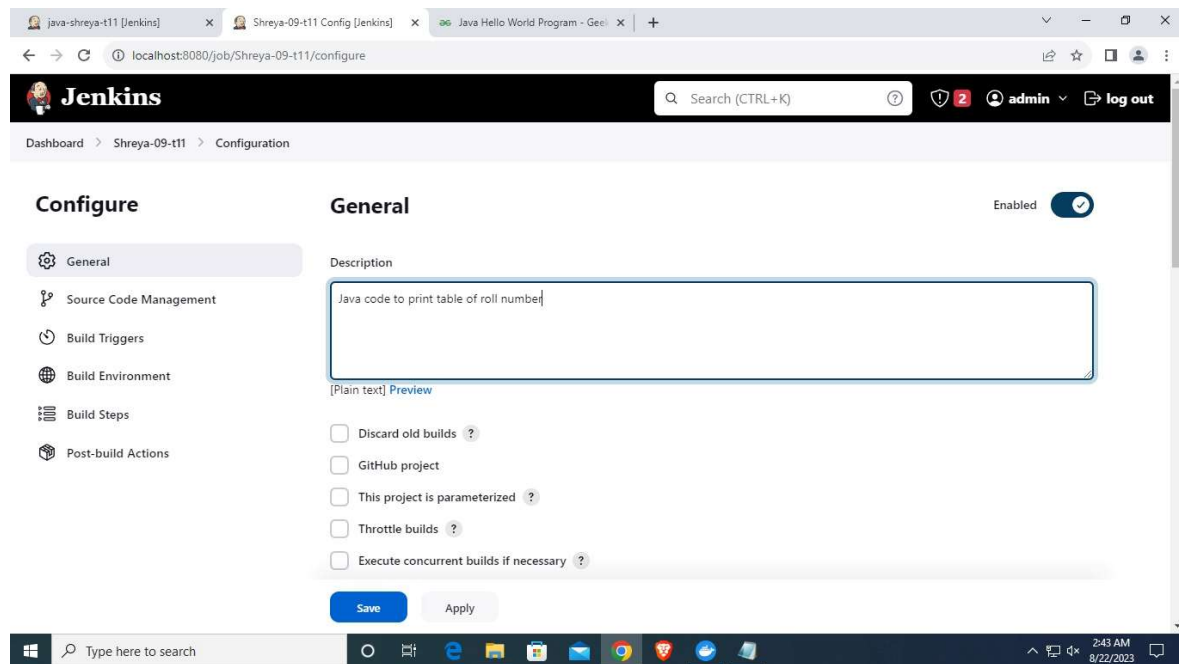
```
File Edit Format View Help
class Table
{
    public static void main(String []args)
    {
        System.out.println("My First Java Program.");
        int num =9;
        for(int i=1;i<=10;i++){
            System.out.println(9+"x"+i+"="+"9*1");
        }
    }
};
```

The Notepad window also shows the status 'Ln 8, Col 45', '100%', 'Windows (CRLF)', and 'UTF-8'. The browser's address bar shows 'localhost:8080/job/Shreya-09-t11/'. The Windows taskbar at the bottom shows the time as 2:44 AM on 8/22/2023.

2.Create Jenkins job to run the program:



This screenshot shows the Jenkins 'New Item' page in a web browser. The browser's address bar indicates the URL is `localhost:8080/view/all/newJob`. The Jenkins header includes a search bar, a user profile for 'admin', and a 'log out' button. The main content area is titled 'Enter an item name' and features a text input field containing 'Shreya-09-t11'. Below this, there are three selectable project types: 'Freestyle project', 'Pipeline', and 'Multi-configuration project', each with a brief description. A blue 'OK' button is visible at the bottom of the selection area. The Windows taskbar at the bottom shows the system time as 2:42 AM on 8/22/2023.



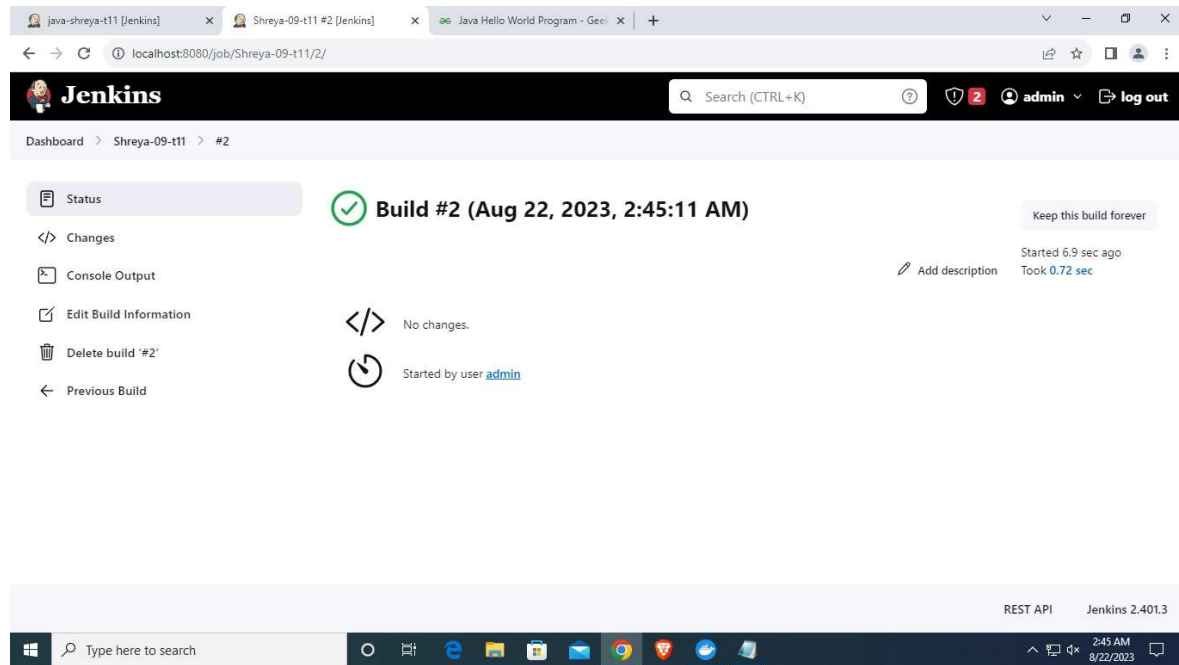
This screenshot displays the Jenkins 'Configure' page for the job 'Shreya-09-t11'. The browser address bar shows `localhost:8080/job/Shreya-09-t11/configure`. The page has a left-hand navigation menu with options like 'General', 'Source Code Management', 'Build Triggers', 'Build Environment', 'Build Steps', and 'Post-build Actions'. The 'General' tab is currently selected. In the 'General' section, the 'Description' field contains the text 'Java code to print table of roll number'. Below the description, there are several unchecked checkboxes: 'Discard old builds', 'GitHub project', 'This project is parameterized', 'Throttle builds', and 'Execute concurrent builds if necessary'. At the bottom of the configuration area, there are 'Save' and 'Apply' buttons. The Windows taskbar at the bottom shows the system time as 2:43 AM on 8/22/2023.

The screenshot shows the Jenkins configuration page for a job named 'Shreya-09-t11'. The 'Build Steps' tab is selected in the left sidebar. The main area displays a single build step named 'Execute Windows batch command'. The command field contains the following text:

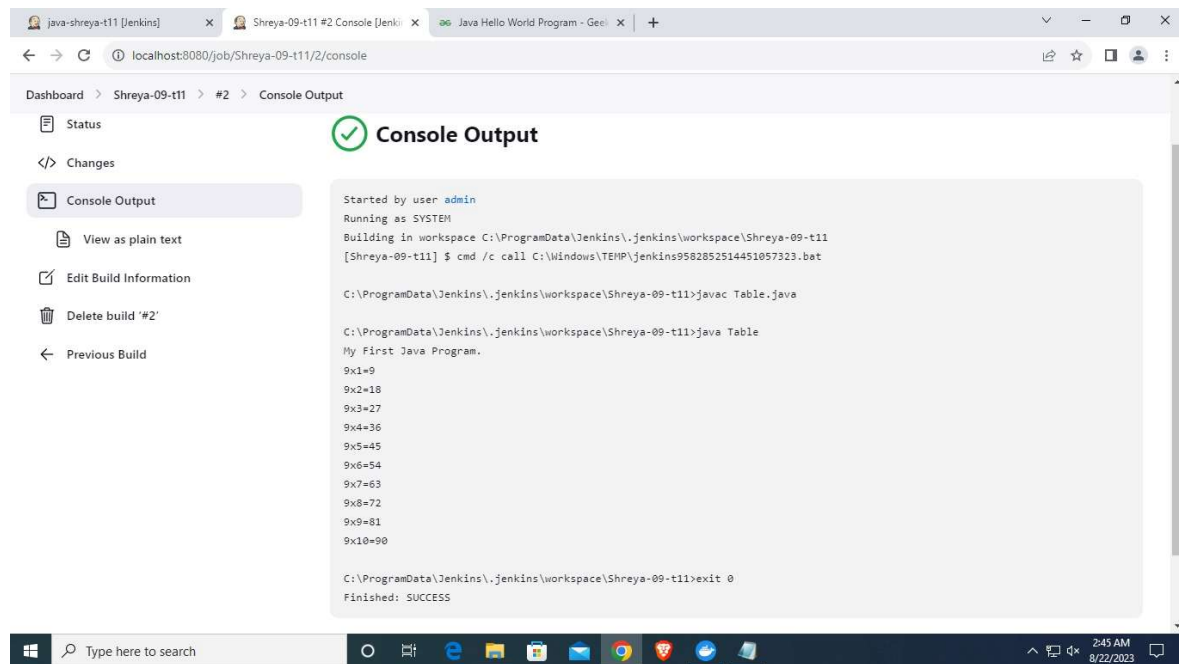
```
javac Table.java  
java Table
```

Below the command field is an 'Advanced' dropdown menu and an 'Add build step' button. At the bottom of the configuration page are 'Save' and 'Apply' buttons. The browser's address bar shows the URL 'localhost:8080/job/Shreya-09-t11/configure'.

The screenshot shows the Jenkins Project Overview page for 'Project Shreya-09-t11'. The page includes a sidebar with navigation options: Status, Changes, Workspace, Build Now, Configure, Delete Project, and Rename. The main content area displays the project name, a description 'Java code to print table of roll number', and a 'Permalinks' section. Below this is the 'Build History' section, which shows a list of builds. The first build is highlighted, showing a green status icon, build number #2, and the timestamp 'Aug 22, 2023, 2:45 AM'. The second build is partially visible, showing a red status icon and build number #1. The browser's address bar shows the URL 'localhost:8080/job/Shreya-09-t11/'.



The screenshot shows the Jenkins web interface for a build named 'Shreya-09-t11 #2'. The browser tabs include 'java-shreya-t11 [Jenkins]', 'Shreya-09-t11 #2 [Jenkins]', and 'Java Hello World Program - Geel'. The address bar shows 'localhost:8080/job/Shreya-09-t11/2/'. The Jenkins header includes a search bar, a shield icon with a red '2', the user 'admin', and a 'log out' button. The breadcrumb trail is 'Dashboard > Shreya-09-t11 > #2'. On the left, a sidebar contains links: 'Status' (selected), 'Changes', 'Console Output', 'Edit Build Information', 'Delete build '#2'', and 'Previous Build'. The main content area features a green checkmark icon and the text 'Build #2 (Aug 22, 2023, 2:45:11 AM)'. To the right of this text are buttons for 'Keep this build forever', 'Add description', and 'Started 6.9 sec ago Took 0.72 sec'. Below the build title, there are two icons: a code icon with the text 'No changes.' and a clock icon with the text 'Started by user admin'. At the bottom of the page, there is a Windows taskbar with a search bar and various application icons. The system tray shows the time as 2:45 AM on 8/22/2023.



The screenshot shows the Jenkins web interface for the 'Console Output' of build 'Shreya-09-t11 #2'. The browser tabs include 'java-shreya-t11 [Jenkins]', 'Shreya-09-t11 #2 Console [Jenkins]', and 'Java Hello World Program - Geel'. The address bar shows 'localhost:8080/job/Shreya-09-t11/2/console'. The breadcrumb trail is 'Dashboard > Shreya-09-t11 > #2 > Console Output'. On the left, a sidebar contains links: 'Status', 'Changes', 'Console Output' (selected), 'View as plain text', 'Edit Build Information', 'Delete build '#2'', and 'Previous Build'. The main content area features a green checkmark icon and the text 'Console Output'. Below this, there is a large text area containing the console output. The output starts with 'Started by user admin', followed by 'Running as SYSTEM', 'Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\Shreya-09-t11', and a command prompt session: '[Shreya-09-t11] \$ cmd /c call C:\Windows\TEMP\jenkins9582852514451057323.bat'. The output then shows the execution of 'C:\ProgramData\Jenkins\.jenkins\workspace\Shreya-09-t11>javac Table.java' and 'C:\ProgramData\Jenkins\.jenkins\workspace\Shreya-09-t11>java Table'. The program output is 'My First Java Program.' followed by a 10x10 grid of numbers from 1 to 90. The console output ends with 'C:\ProgramData\Jenkins\.jenkins\workspace\Shreya-09-t11>exit 0' and 'Finished: SUCCESS'. At the bottom of the page, there is a Windows taskbar with a search bar and various application icons. The system tray shows the time as 2:45 AM on 8/22/2023.

The screenshot shows the Jenkins Dashboard interface. The top navigation bar includes the Jenkins logo, a search bar, and user information (admin, log out). The left sidebar contains links to 'New Item', 'People', 'Build History', 'Manage Jenkins', and 'My Views'. The main content area displays the 'Build Queue' and 'Build Executor Status' sections. The 'Build Queue' section shows a table of builds with columns for status, name, last success, last failure, and last duration. The 'Build Executor Status' section shows the status of build executors (Idle).

S	W	Name	Last Success	Last Failure	Last Duration
✓	☁	java-shreya-t11	17 min #2	20 min #1	1.7 sec
✓	☁	java-shreya-t11-09	6 min 22 sec #2	7 min 10 sec #1	1 sec
✓	☁	Shreya-09-t11	19 sec #2	53 sec #1	0.72 sec

Build Queue: No builds in the queue.

Build Executor Status: 1 Idle, 2 Idle.

The screenshot shows the Jenkins Configuration page for Source Code Management. The left sidebar contains links to 'General', 'Source Code Management', 'Build Triggers', 'Build Environment', 'Build Steps', and 'Post-build Actions'. The main content area displays the 'Source Code Management' configuration, which includes a 'Repository URL' field and a 'Credentials' dropdown menu. The 'Repository URL' field contains the value 'https://github.com/shreyabagade/java.git'. The 'Credentials' dropdown menu is set to 'none'. A red error message is displayed below the 'Repository URL' field: 'Please enter Git repository.'.

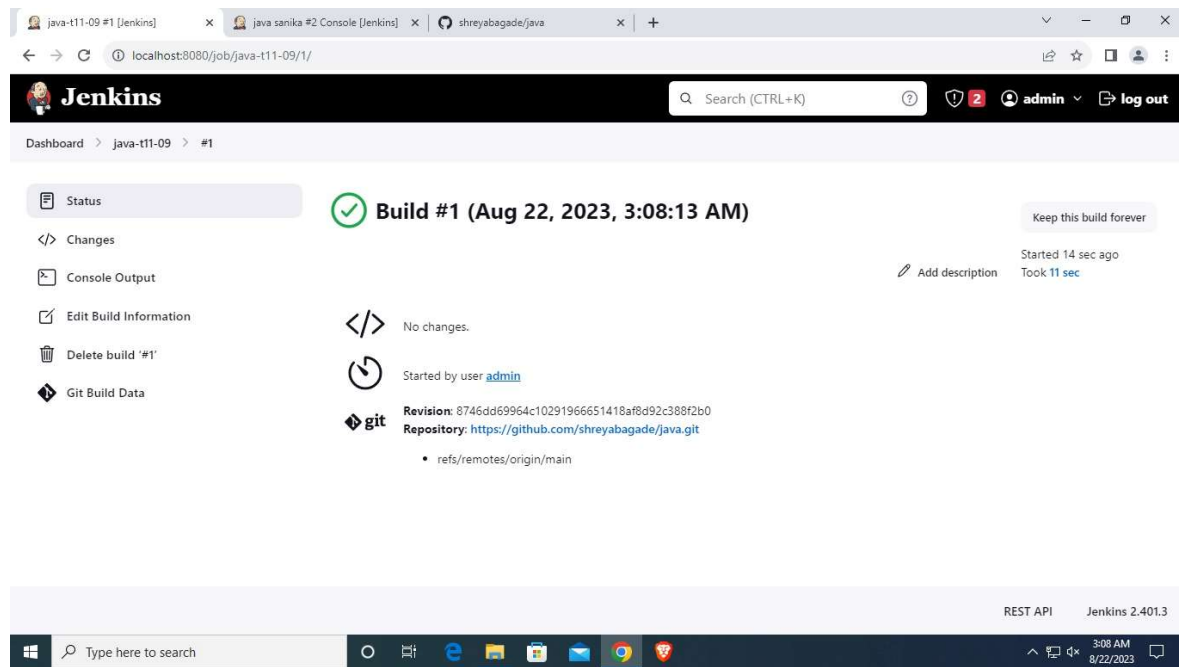
Configure

Source Code Management

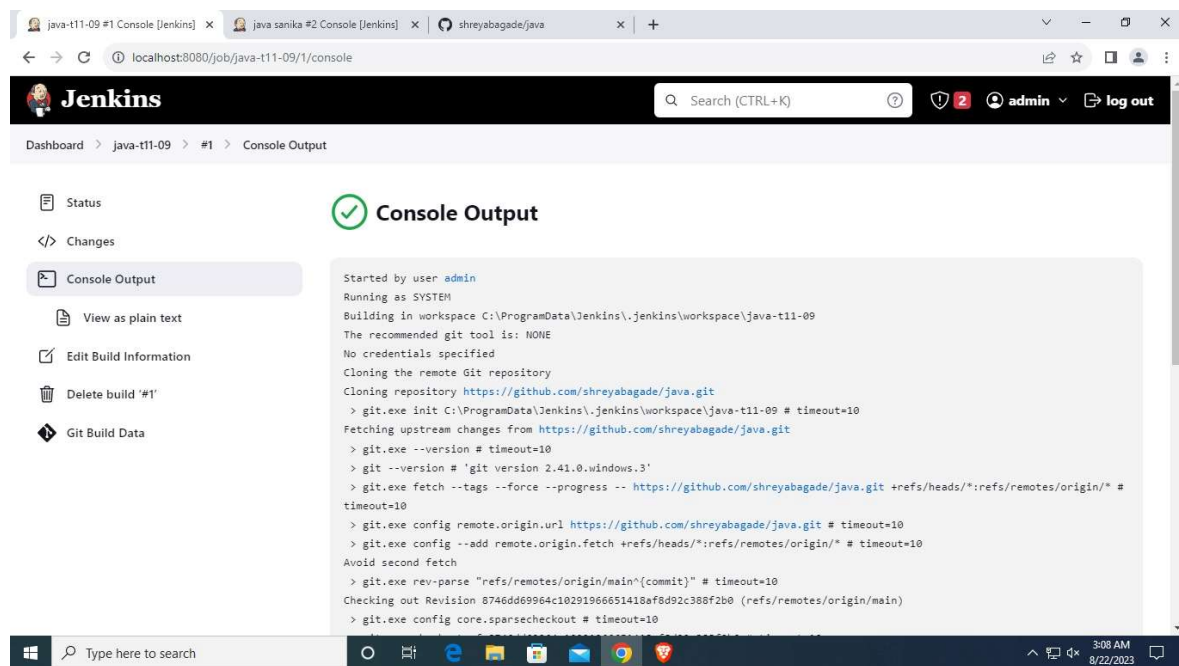
Repository URL:

Credentials:

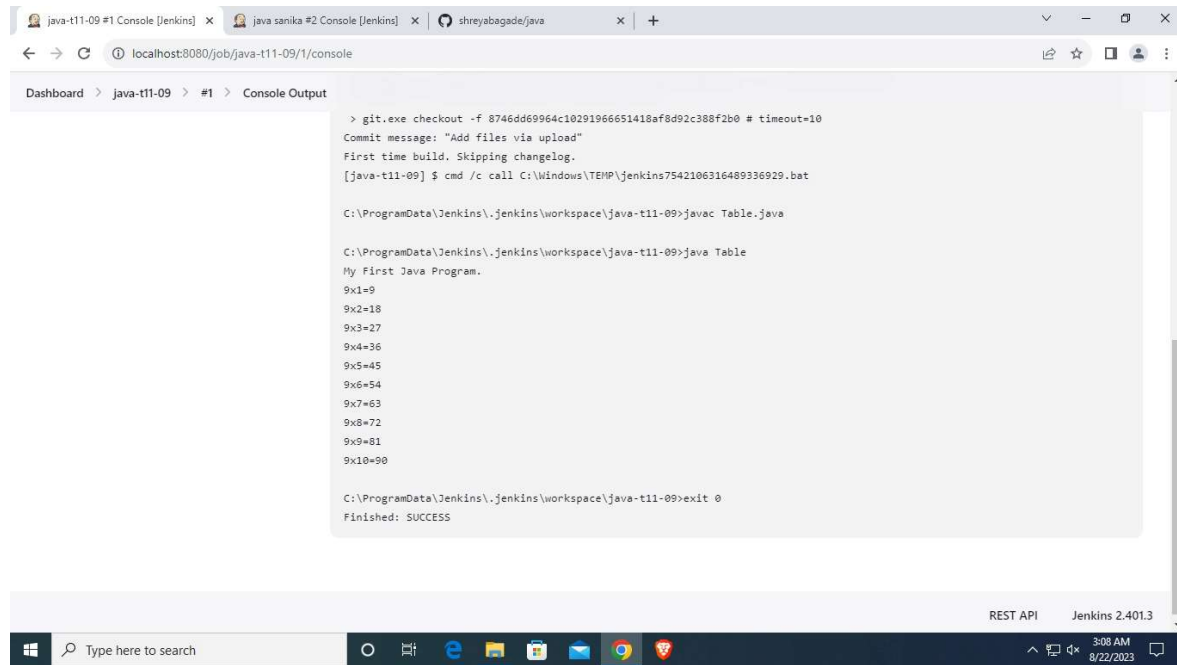
Save Apply



This screenshot shows the Jenkins web interface for a build named 'java-t11-09 #1'. The browser tabs include 'java-t11-09 #1 [Jenkins]', 'java sanika #2 Console [Jenkins]', and 'shreyabagade/java'. The address bar shows 'localhost:8080/job/java-t11-09/1/'. The Jenkins header includes a search bar, a notification badge with the number '2', and a user profile for 'admin' with a 'log out' link. The breadcrumb trail is 'Dashboard > java-t11-09 > #1'. On the left, a sidebar contains links for 'Status', 'Changes', 'Console Output', 'Edit Build Information', 'Delete build '#1'', and 'Git Build Data'. The main content area features a green checkmark icon and the title 'Build #1 (Aug 22, 2023, 3:08:13 AM)'. To the right of the title are buttons for 'Keep this build forever', 'Add description', and 'Started 14 sec ago' with a link to 'Took 11 sec'. Below the title, it states 'No changes.' and 'Started by user admin'. A 'git' icon is followed by 'Revision: 8746dd69964c10291966651418af8d92c388f2b0' and 'Repository: https://github.com/shreyabagade/java.git', with a link to 'refs/remotes/origin/main'. At the bottom right, it says 'REST API' and 'Jenkins 2.401.3'. The Windows taskbar at the bottom shows the search bar and various application icons.



This screenshot shows the Jenkins web interface for the 'Console Output' of the same build. The browser tabs and address bar are identical to the previous screenshot. The breadcrumb trail is 'Dashboard > java-t11-09 > #1 > Console Output'. The sidebar is the same, but the 'Console Output' link is highlighted. The main content area features a green checkmark icon and the title 'Console Output'. The console output text is as follows:
Started by user admin
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\jenkins\workspace\java-t11-09
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/shreyabagade/java.git
> git.exe init C:\ProgramData\Jenkins\jenkins\workspace\java-t11-09 # timeout=10
Fetching upstream changes from https://github.com/shreyabagade/java.git
> git.exe --version # timeout=10
> git --version # 'git version 2.41.0.windows.3'
> git.exe fetch --tags --progress -- https://github.com/shreyabagade/java.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe config remote.origin.url https://github.com/shreyabagade/java.git # timeout=10
> git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> git.exe rev-parse "refs/remotes/origin/main^{commit}" # timeout=10
Checking out Revision 8746dd69964c10291966651418af8d92c388f2b0 (refs/remotes/origin/main)
> git.exe config core.sparsecheckout # timeout=10



The screenshot shows a web browser window displaying the Jenkins console output for a job named 'java-t11-09'. The browser tabs include 'java-t11-09 #1 Console [Jenkins]', 'java sanika #2 Console [Jenkins]', and 'shreyabagade/java'. The address bar shows 'localhost:8080/job/java-t11-09/1/console'. The console output shows the following commands and results:

```
> git.exe checkout -f 8746dd69964c10291966651418af8d92c388f2b0 # timeout=10
Commit message: "Add files via upload"
First time build. Skipping changelog.
[java-t11-09] $ cmd /c call C:\Windows\TEMP\jenkins7542106316489336929.bat

C:\ProgramData\Jenkins\.jenkins\workspace\java-t11-09>javac Table.java

C:\ProgramData\Jenkins\.jenkins\workspace\java-t11-09>java Table
My First Java Program.
9x1=9
9x2=18
9x3=27
9x4=36
9x5=45
9x6=54
9x7=63
9x8=72
9x9=81
9x10=90

C:\ProgramData\Jenkins\.jenkins\workspace\java-t11-09>exit 0
Finished: SUCCESS
```

The bottom of the screenshot shows a Windows taskbar with the search bar, task view button, and several application icons. The system clock shows 3:08 AM on 8/22/2023.

Conclusion: In this experiment We had executed java project on Jenkins.

Lab Outcome: 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.

LO3-To understand the importance of Jenkins to Build and deploy Software Applications on server environment.