understand this command, first I am trying to launch jenkins using some commands:

```
C:\apache-maven-3.9.9>D:

D:\SatyaWS>java -jar jenkins.war

Running from: D:\SatyaWS\jenkins.war

webroot: C:\Users\satya\.jenkins\war

2025-05-18 10:59:27.495+0000 [id=1]     INFO    winstone.Logger#logInternal: Beginning
extraction from war file

2025-05-18 10:59:27.663+0000 [id=1]     WARNING
o.e.j.ee9.nested.ContextHandler#setContextPath: Empty contextPath

2025-05-18 10:59:27.791+0000 [id=1]     INFO    org.eclipse.jetty.server.Server#doStart:
jetty-12.0.19; built: 2025-04-01T13:28:40.005Z; git:
23436cd577b4238238eb192683dfc2b1476c6b87; jvm 21.0.7+8-LTS-245

2025-05-18 10:59:28.554+0000 [id=1]     INFO
o.e.j.e.w.StandardDescriptorProcessor#visitServlet: NO JSP Support for /, did not find
org.eclipse.jetty.ee9.jsp.JettyJspServlet

2025-05-18 10:59:28.620+0000 [id=1]     INFO    o.e.j.s.DefaultSessionIdManager#doStart:
Session workerName=node0

2025-05-18 10:59:29.197+0000 [id=1]     INFO    hudson.WebAppMain#contextInitialized:
Jenkins home directory: C:\Users\satya\.jenkins found at: $user.home/.jenkins

2025-05-18 10:59:29.322+0000 [id=1]     INFO    o.e.j.s.handler.ContextHandler#doStart:
Started oeje9n.
ContextHandler$CoreContextHandler@5cbf9e9f{Jenkins
v2.504.1,/,b=file:///C:/Users/satya/.jenkins/war/,a=AVAILABLE,h=oeje9n.ContextHandler$Cor
eContextHandler$CoreToNestedHandler@18e8473e{STARTED}}

2025-05-18 10:59:29.357+0000 [id=1]     INFO    o.e.j.server.AbstractConnector#doStart:
Started ServerConnector@e041f0c{HTTP/1.1, (http/1.1)}{0.0.0.0:8080}

2025-05-18 10:59:29.377+0000 [id=1]     INFO    org.eclipse.jetty.server.Server#doStart:
Started oejs.Server@5f058f00{STARTING}[12.0.19,sto=0] @2483ms

2025-05-18 10:59:29.378+0000 [id=58]    INFO    winstone.Logger#logInternal: Winstone
Servlet Engine running: controlPort=disabled

2025-05-18 10:59:29.557+0000 [id=54]    INFO    jenkins.model.Jenkins#<init>: Starting
version 2.504.1

2025-05-18 10:59:29.706+0000 [id=68]    INFO    jenkins.InitReactorRunner$1#onAttained:
Started initialization

2025-05-18 10:59:29.782+0000 [id=88]    INFO    jenkins.InitReactorRunner$1#onAttained:
Listed all plugins

2025-05-18 10:59:31.302+0000 [id=97]    INFO    jenkins.InitReactorRunner$1#onAttained:
Prepared all plugins

2025-05-18 10:59:31.311+0000 [id=99]    INFO    jenkins.InitReactorRunner$1#onAttained:
Started all plugins

2025-05-18 10:59:31.312+0000 [id=69]    INFO    jenkins.InitReactorRunner$1#onAttained:
Augmented all extensions

2025-05-18 10:59:31.722+0000 [id=82]    INFO    jenkins.InitReactorRunner$1#onAttained:
System config loaded

2025-05-18 10:59:31.723+0000 [id=84]    INFO    jenkins.InitReactorRunner$1#onAttained:
System config adapted
```

```
48   2025-05-18 10:59:31.724+0000 [id=88]    INFO    jenkins.InitReactorRunner$1#onAttained:
     Loaded all jobs
49
50   2025-05-18 10:59:31.728+0000 [id=88]    INFO    jenkins.InitReactorRunner$1#onAttained:
     Configuration for all jobs updated
51
52   2025-05-18 10:59:31.792+0000 [id=120]   INFO    hudson.util.Retrier#start: Attempt #1 to
     do the action check updates server
53
54   2025-05-18 10:59:31.812+0000 [id=102]   INFO    jenkins.install.SetupWizard#init:
55
56
57   *************************************************************
58   *************************************************************
59   *************************************************************
60
61   Jenkins initial setup is required. An admin user has been created and a password
     generated.
62   Please use the following password to proceed to installation:
63
64   aec54d9c86764955bd8b73901e7e980d
65
66   This may also be found at: C:\Users\satya\.jenkins\secrets\initialAdminPassword
67
68   *************************************************************
69   *************************************************************
70   *************************************************************
71
72   2025-05-18 10:59:38.981+0000 [id=102]   INFO    jenkins.InitReactorRunner$1#onAttained:
     Completed initialization
73
74   2025-05-18 10:59:39.013+0000 [id=54]    INFO    hudson.lifecycle.Lifecycle#onReady:
     Jenkins is fully up and running
75
76   2025-05-18 10:59:39.809+0000 [id=120]   INFO    h.m.DownloadService$Downloadable#load:
     Obtained the updated data file for hudson.tasks.Maven.
77   MavenInstaller
78   2025-05-18 10:59:39.810+0000 [id=120]   INFO    hudson.util.Retrier#start: Performed the
     action check updates server successfully at the
79   attempt #1
80
81   Without closing above command prompt I am trying to open one more cmd prompt and
     launching mv and running a test using some commands:
82
83
84   C:\Users\satya>D:
85
86   D:\>cd D:\SatyaWS\FWjan2025POMSeries
87
88   D:\SatyaWS\FWjan2025POMSeries>mvn --version
89
90   Apache Maven 3.9.9 (8e8579a9e76f7d015ee5ec7bfcdc97d260186937)
91
92   Maven home: C:\apache-maven-3.9.9
93
94   Java version: 17.0.15, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-17
95
96   Default locale: en_IN, platform encoding: Cp1252
97
98   OS name: "windows 11", version: "10.0", arch: "amd64", family: "windows"
99
100  D:\SatyaWS\FWjan2025POMSeries>
101
102  D:\SatyaWS\FWjan2025POMSeries>mvn clean install -Denv="stage"
103
104  [INFO] Scanning for projects...
105
106  [INFO]
107
```

```
108    [INFO] ---------------< FWjan2025POMSeries:FWjan2025POMSeries >---------------

109
110    [INFO] Building FWjan2025POMSeries 0.0.1-SNAPSHOT

111
112    [INFO]   from pom.xml

113
114    [INFO] -----------------------------[ jar ]-----------------------------

115
116    [INFO]

117
118    [INFO] --- clean:3.2.0:clean (default-clean) @ FWjan2025POMSeries ---

119
120    [INFO] Deleting D:\SatyaWS\FWjan2025POMSeries\target

121
122    [INFO]

123
124    [INFO] --- resources:3.3.1:resources (default-resources) @ FWjan2025POMSeries ---

125
126    [INFO] Copying 0 resource from src\main\resources to target\classes

127
128    [INFO]

129
130    [INFO] --- compiler:3.14.0:compile (default-compile) @ FWjan2025POMSeries ---

131
132    [INFO] Recompiling the module because of changed source code.

133
134    [INFO] Compiling 22 source files with javac [debug release 17] to target\classes

135
136    [INFO]
       /D:/SatyaWS/FWjan2025POMSeries/src/main/java/com/qa/appName/factory/DriverFactory.java:
       D:\SatyaWS\FWjan2025POMSeries\src\main\java\com\qa\appName\factory\DriverFactory.java
       uses unchecked or unsafe operations.

137
138    [INFO]
       /D:/SatyaWS/FWjan2025POMSeries/src/main/java/com/qa/appName/factory/DriverFactory.java:
       Recompile with -Xlint:unchecked for details.

139
140    [INFO]

141
142    [INFO] --- resources:3.3.1:testResources (default-testResources) @ FWjan2025POMSeries ---

143
144    [INFO] Copying 8 resources from src\test\resources to target\test-classes

145
146    [INFO]

147
148    [INFO] --- compiler:3.14.0:testCompile (default-testCompile) @ FWjan2025POMSeries ---

149
150    [INFO] Recompiling the module because of changed dependency.

151
152    [INFO] Compiling 6 source files with javac [debug release 17] to target\test-classes

153
154    [INFO]

155
156    [INFO] --- surefire:3.1.2:test (default-test) @ FWjan2025POMSeries ---

157
158    [INFO] Using auto detected provider org.apache.maven.surefire.testng.TestNGProvider

159
160    [INFO]

161
162    [INFO] -------------------------------------------------------

163
164    [INFO]  T E S T S

165
166    [INFO] -------------------------------------------------------

167
168    [INFO] Running TestSuite

169
170    SLF4J(I): Connected with provider of type
       [ch.qos.logback.classic.spi.LogbackServiceProvider]
```

```
171
172    16:31:59.684 [main] DEBUG org.testng.TestNG -- suiteXmlPath:
       "D:\SatyaWS\FWjan2025POMSeries\src\test\resources\testrunners\testng.xml"
173
174    ...
175
176    ... TestNG 7.10.0 by Cédric Beust (cedric@beust.com)
177
178    ...
179
180
181    Test Suite started!
182
183    I am in onStart method Login Page Test
184
185    ------>Running test cases on environment-----> stage
186
187    Browser name is: firefox
188
189    loginPageTitleTest started!
190
191    I am in onTestStart method loginPageTitleTest start
192
193    Page title: Account Login
194
195    I am in onTestSuccess method loginPageTitleTest succeed
196
197    loginPageTitleTest passed!
198
199    loginPageUrlTest started!
200
201    I am in onTestStart method loginPageUrlTest start
202
203    Page url: https://naveenautomationlabs.com/opencart/index.php?route=account/login
204
205    I am in onTestSuccess method loginPageUrlTest succeed
206
207    loginPageUrlTest passed!
208
209    forgotPwdLinkTest started!
210
211    I am in onTestStart method forgotPwdLinkTest start
212
213    I am in onTestSuccess method forgotPwdLinkTest succeed
214
215    forgotPwdLinkTest passed!
216
217    dologinTest started!
218
219    I am in onTestStart method dologinTest start
220
221    rekha123@gmail.com   rekha123
222
223    I am in onTestSuccess method dologinTest succeed
224
225    dologinTest passed!
226
227    I am in onFinish method Login Page Test
228
229    Test Suite is ending!
230
231    [INFO] Tests run: 4, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 12.18 s -- in
       TestSuite
232
233    [INFO]
234
235    [INFO] Results:
236
237    [INFO]
```

```
238
239   [INFO] Tests run: 4, Failures: 0, Errors: 0, Skipped: 0
240
241   [INFO]
242
243   [INFO]
244
245   [INFO] --- jar:3.4.1:jar (default-jar) @ FWjan2025POMSeries ---
246
247   [INFO] Building jar:
      D:\SatyaWS\FWjan2025POMSeries\target\FWjan2025POMSeries-0.0.1-SNAPSHOT.jar
248
249   [INFO]
250
251   [INFO] --- install:3.1.2:install (default-install) @ FWjan2025POMSeries ---
252
253   [INFO] Installing D:\SatyaWS\FWjan2025POMSeries\pom.xml to C:\Users\satya\.
      m2\repository\FWjan2025POMSeries\FWjan2025POMSeries\0.0.1-SNAPSHOT\FWjan2025POMSeries-0.0
      .1-SNAPSHOT.pom
254
255   [INFO] Installing
      D:\SatyaWS\FWjan2025POMSeries\target\FWjan2025POMSeries-0.0.1-SNAPSHOT.jar to
      C:\Users\satya\.
      m2\repository\FWjan2025POMSeries\FWjan2025POMSeries\0.0.1-SNAPSHOT\FWjan2025POMSeries-0.0
      .1-SNAPSHOT.jar
256
257   [INFO] ------------------------------------------------------------------------
258
259   [INFO] BUILD SUCCESS
260
261   [INFO] ------------------------------------------------------------------------
262
263   [INFO] Total time:  20.730 s
264
265   [INFO] Finished at: 2025-05-18T16:32:12+05:30
266
267   [INFO] ------------------------------------------------------------------------
268
269
270   D:\SatyaWS\FWjan2025POMSeries>
271
272
273
274   Here's a detailed, beginner-friendly summary explaining everything you did step-by-step,
      along with real-time interview questions and answers at the end. This guide will be
      useful both in interviews and practical work.
275
276   ☑ Summary Note: Running Jenkins and Maven to Execute Automation Tests
277   ◦ 1. What You Did: Step-by-Step Explanation
278   ▦ Part A: Launching Jenkins
279   Command Used:
280
281   bash
282   Copy
283   Edit
284   java -jar jenkins.war
285   Explanation:
286
287   You're starting Jenkins by running the jenkins.war file directly using Java.
288
289   Jenkins is a Continuous Integration/Continuous Delivery (CI/CD) tool used to automate
      builds and test execution.
290
291   What Happened Internally:
292
293   Jenkins is extracted and initialized from the .war file.
294
295   Jetty server (a lightweight web server) is used to host Jenkins locally.
296
```

```
297    Jenkins starts on port 8080 (0.0.0.0:8080), meaning you can open http://localhost:8080 in
        your browser.
298
299    It creates a Jenkins Home directory at:
300
301    makefile
302    Copy
303    Edit
304    C:\Users\satya\.jenkins
305    This is where all Jenkins configs, plugins, and job data will be saved.
306
307    It prints a random admin password (you'll need this to unlock Jenkins on first-time
        setup):
308
309    nginx
310    Copy
311    Edit
312    aec54d9c86764955bd8b73901e7e980d
313    ⚙ Part B: Running Automation Tests Using Maven
314    What You Did in the Second CMD Prompt:
315
316    Checked Maven version with:
317
318    bash
319    Copy
320    Edit
321    mvn --version
322    ☑ Confirms Maven is installed correctly and Java is linked.
323
324    Navigated to your automation framework directory:
325
326    bash
327    Copy
328    Edit
329    cd D:\SatyaWS\FWjan2025POMSeries
330    Ran the test suite:
331
332    bash
333    Copy
334    Edit
335    mvn clean install -Denv="stage"
336    🔍 Breakdown of mvn clean install -Denv="stage"
337    Section Meaning
338    mvn Runs Maven
339    clean   Deletes the target folder (to remove old compiled code)
340    install Compiles the code, runs tests, and installs the .jar in local repo
341    -Denv="stage"   Passes an environment parameter to your framework (for config control)
342
343    📑 Maven Lifecycle & Plugin Summary
344    Phase   What Happened
345    clean   Deleted the target folder
346    compile Compiled your Java source code
347    test    Ran your TestNG test suite (testng.xml)
348    package Created a .jar file of your framework
349    install Installed that .jar in your local Maven repo (.m2)
350
351    ☑ Test Results Summary:
352    4 test cases executed:
353    ☑ loginPageTitleTest
354    ☑ loginPageUrlTest
355    ☑ forgotPwdLinkTest
356    ☑ dologinTest
357
358    All tests passed successfully. TestNG reported no errors or failures.
359
360    🗂 Real-time Interview Questions and Answers
361    ⚙ Basic-Level Q&A
362    Q1. What is Jenkins and how did you start it in your system?
363    A: Jenkins is a CI/CD tool used to automate code integration and test execution. I
```

launched it using the command java -jar jenkins.war. It runs on a Jetty server and starts a web UI on port 8080.

Q2. What is the purpose of the .jenkins folder?
A: It stores Jenkins configuration, jobs, plugins, and logs. It is the default home directory for Jenkins data.

Q3. What is Maven and how is it useful in automation testing?
A: Maven is a build automation tool. In testing, it helps compile source code, manage dependencies, run tests using plugins like Surefire (for TestNG), and package results.

Q4. What does the mvn clean install command do?
A:

clean: removes old build files.

install: compiles code, runs tests, creates a .jar, and stores it in the local .m2 repo.

Q5. What is the -Denv="stage" parameter used for?
A: It sets the environment to "stage" so that environment-specific configurations (like URLs, credentials) can be loaded in your framework.

☺ Advanced-Level Q&A
Q6. How does Jenkins fit into your automation workflow?
A: Jenkins automates the execution of test cases every time code is pushed or on a schedule. I configure a Jenkins job to git pull the latest code and run mvn clean install to execute tests.

Q7. Can Jenkins run Maven commands automatically? How?
A: Yes. In a Jenkins job configuration, we can choose "Invoke top-level Maven targets" and add commands like clean install -Denv="stage" to run tests automatically during a build.

Q8. What is the role of Surefire plugin in your framework?
A: Surefire is used to execute test cases written in TestNG or JUnit. It detects the testng.xml file and manages test execution and reporting.

Q9. How do you handle environment-specific configurations in Maven?
A: I pass them using -Denv="stage" and read this value in code using System.getProperty("env") to load the correct config file.

Q10. How would you trigger Jenkins build automatically when code changes?
A: By integrating Jenkins with GitHub using webhooks. Every time code is pushed, GitHub triggers a Jenkins build.

📝 Summary You Can Use in Resume or Interviews
"In my local setup, I launched Jenkins using the .war file and configured it to run on port 8080. I also integrated Maven with my automation framework using TestNG. I used mvn clean install -Denv="stage" to compile the code, run test cases, and generate test reports. I am comfortable using the Jenkins UI and configuring jobs to trigger Maven builds. I also handle environment-specific setups using Maven parameters and config files."