



Learning Objectives of CP-SAT v 4.0

“Knowledge with experience is power; certification is just a by-product”

Table of Contents

What is CP-SAT?.....	4
How is it useful?.....	4
Learning Objective Version tracking	5
What has changed in 4.0 Version?	5
What was changed in 2.0 Version?	5
What was changed in 1.31 version?.....	5
What was changed in 1.3 version?.....	6
Eligibility, Exam duration and Enrollment.....	6
1. Am I Eligible?.....	6
2. Duration of exam ?	6
3. How do I enroll myself?.....	6
Learning Objectives for CP-SAT Java Stream.....	7
1 Tool background and Initial Setup.....	7
1.1 Selenium Overview.....	7
1.2 Tool Setup.....	7
2 Selenium IDE.....	7
2.1 Record and Playback.....	7
2.2 Adding of validations.....	7
3. Locators	7
3.1 Walk through of Web Technologies.....	7



CP-SAT version 4.0

3.2	Learn about the Structure Dependent locators.....	8
3.3	Learn about the Attributes-based locators	8
3.4	Learn about the tools for locator formulation.....	8
3.5	Chrome developer tool and / or SelectorsHub.....	8
4	Selenium WebDriver.....	8
4.1	Setting up Selenium WebDrivers for various Browsers	8
4.2	Headless browser Testing and driver capabilities.....	8
4.3	Fundamental Pillars (By, WebElement, FindElement, FindElements etc.)	8
4.4	Handling Frames, Popups and Alerts	8
4.5	Synchronization	9
5.0	Working with Advance html elements.....	9
5.1	Working with Tables, Dynamic Tables, paginations, Context menus, Action Class, Dropdowns, Dynamic lists.	9
5.2	Working with Java Script Executor and Handling exceptions	9
6.0	Unit Test Framework(s)- TestNG and Junit 5	9
7.0	Frameworks.....	9
7.1	Data Driven Framework.....	9
7.2	Page Factory and Page Object Model.....	9
7.3	Helper Utility functions and Classes	10
7.4	Wrapper methods	10
8.0	Selenium Grid	10
8.1	Selenium Grid on local machine	10
8.2	Selenium Grid on cloud machine using Docker.....	10
9.0	Test Reports using Allure and TestNG	10
9.1	Using Allure for Reporting.....	10
9.2	TestNg Reports.....	10
10.0	Running Selenium Tests in Continuous Integration Environment ...	11
10.1	Using Cloud based Jenkins server with Maven plugin	11
10.2	Triggering tests on code push to Git repository	11
11.0	Selenium 4.X Additions	11
11.1	Relative Locators	11
11.1.1	above().....	11
11.1.2	below()	11
11.1.3	near().....	11
11.1.4	toLeftOf()	11
11.1.5	toRightOf().....	11



CP-SAT version 4.0

11.2	Handling New Windows and Tabs.....	11
11.3	Modified Action Class.....	11
11.4	Enhanced Selenium Grid.....	11
11.5	Browser Options instead of Desired Capabilities	11
11.6	Modified Screenshot method, which now allows capturing of web element.....	11
11.7	Selenium now allows using Chrome Dev Tools Protocol	12
	CP-SAT Mock Exams.....	12



What is CP-SAT?

CP-SAT stands for “Certified Professional - Selenium Automation Testing” certification prepared and honored by “Agile Testing Alliance”

- CP-SAT certification exam can be taken by anyone without going through the training program covering the learning objectives below.
- CP-SAT certification exam is the only globally accepted certification exam covering practical assessment.
- CP-SAT learning objective gives the coverage topics for anyone who want to give the exam. Any training covering the CP-SAT Syllabus would be covering the learning objectives in a practical manner.
- CP-SAT exam can be taken in three language streams
 - Java
 - C#
 - Python

If you want to be accredited license trainer or partner get in touch with us at CPSATSupport@ATAEvents.org

How is it useful?

CP-SAT is designed to train testing professionals with the concepts of testing web applications using Selenium.

These learning objectives focus on the most challenging areas for testing web applications using the **latest Selenium 4.x**, using JUnit and TestNG. There is an extensive coverage on **Data Driven Testing**, Page Object Model, Selenium Grid, Continuous Integration (CI) with Jenkins and Maven. We have added GIT (SCM tool) integration with Jenkins and basics of Docker. How to use Selenium Grid on cloud is a new addition to the program

Learning and getting practically assessed on the most relevant topics or Selenium would be the key take aways.



Learning Objective Version tracking

What has changed in 4.0 Version?

We are moving to version 4.0 of CPSAT learning objectives keeping in mind that Selenium has moved to version 4.X. This is to help us keep the most popular certificate in Selenium synchronized with the latest in Selenium ecosystem.

- Version 4.0 of learning objectives now includes Selenium 4.X topics
 - Relative Locators
 - Windows and Tab Management
 - Modified Action class
 - Enhanced Selenium Grid
 - Browser Options, as desired capabilities deprecated
 - Improved screenshot method, which now also allows capturing just a web element
 - Chrome Dev Tools Protocol can now be used with Selenium
- Version 4.0 of learning objectives will start impacting the upcoming CPSAT theory and practical exams from 1st March 2022 onwards.
- ATA has released an ebook - [Selenium 4 - A Quick and Practical Guide](https://leanpub.com/selenium4practicalGuide/). <https://leanpub.com/selenium4practicalGuide/> (We urge you to get this book to quickly onboard with Selenium 4.X.)

What was changed in 2.0 Version?

- CPSAT Java certification program requires participants to be familiar with the java programming language constructs.
- Selenium IDE has been re-introduced
- Tools for locator creation - developer tools from Chrome and/or Selectors hub reference is now added
- Selenium grid execution using docker containers has been added
- Managing project through GIT and Continuous testing using GIT and Jenkins has been added
- Reporting section has been added
- Junit 5 has been added
- Handling CSV and Json files for Data Driven testing has been added
- Keyword driven framework has been removed

What was changed in 1.31 version?

- Starting with this version CP-SAT is now available in three different language streams- 1. Java 2. C# and 3. Python



CP-SAT version 4.0

- In Java stream - Use of JXL library for Data Driven Testing has been removed. Participants can use the library but it is not mandatory to know the library from this version onwards
- Reference to some theoretical concepts including WebDriver being flexible and having a lightweight API has been removed from the section “Running WebDriver tests section”.

What was changed in 1.3 version?

- ANT as a build tool has been removed
- Headless browser execution is included
- Maven now is the choice of build tool
- Helper Utility class has now been included in the framework section
- Page object Model is given more focus and time
- Data Driven Framework Using JXL and POI library has been given more focus
- IDE and RC/Webdriver Backed references have been completely withdrawn

Eligibility, Exam duration and Enrollment

1. Am I Eligible?

Anyone having basic experience in Java programming and manual testing can go for this certification.

2. Duration of exam ?

CP-SAT exam has two parts, theory exam is 60 minutes. Practical exam is 150 minutes. Pass percentage of 60% is required in both the exams to qualify for CP-SAT certificate.

3. How do I enroll myself?

You can enroll yourself by writing an email to CPSATSupport@ATAEvents.org

Or

You can visit the CP-SAT website.

<https://cpsat.agiletestingalliance.org/> and register for the program or the exam.



Learning Objectives for CP-SAT Java Stream

Below learning objectives / concepts must be practiced throughout the program using practical case studies.

1 Tool background and Initial Setup

1.1 Selenium Overview

Learn about the definition and usage of the tool. Get aware of the cross-language, cross-platform, cross-browser capabilities of the tool. Learn about the Selenium tool license policy. Elaborate on the two parts of the Selenium toolkit. Introduction to Selenium IDE, WebDriver and Selenium Grid. Learn the importance of test automation in the Agile and Continuous testing environment.

1.2 Tool Setup

- Learn how to setup relevant Java IDE (e.g. Eclipse/IntelliJ etc.) and Maven
 - Installation of Java IDE and creation of workspace
 - Importing Maven projects
 - Learn about dependencies of the Maven goals
 - Installation of TestNG in Java IDE plugin

- GIT setup (SCM Tool)

2 Selenium IDE

Learn about

2.1 Record and Playback

2.2 Adding of validations

3. Locators

3.1 Walk through of Web Technologies

- HTML
- XML
- DOM
- CSS



3.2 Learn about the Structure Dependent locators

- XPath
- CSS

3.3 Learn about the Attributes-based locators

- Id
- Name
- Link Text
- Partial Link Text
- Tag Name
- Class Name

3.4 Learn about the tools for locator formulation

3.5 Chrome developer tool and / or SelectorsHub

4 Selenium WebDriver

4.1 Setting up Selenium WebDrivers for various Browsers

- Firefox Driver (Gecko driver)
- Chrome Driver
- Edge Driver
- Learning about WebDriverManager

4.2 Headless browser Testing and driver capabilities

- Learn about
- Headless Browser Testing
- Learn to manage driver capabilities

4.3 Fundamental Pillars (By, WebElement, FindElement, FindElements etc.)

Learn about:

- By
- WebElement
- FindElement
- FindElements
- Window switching and navigation
- How to handle form elements
- Keyboard user interactions

4.4 Handling Frames, Popups and Alerts

- Learn how to handle
- Frames
- Alerts
- Popups



4.5 Synchronization

Learn how important it is to use asynchronous waits rather than hard coded waits.

Learn about

- Implicit wait

- Explicit waits using

 - Wait.Until

 - ExpectedConditions

5.0 Working with Advance html elements

5.1 Working with Tables, Dynamic Tables, paginations, Context menus, Action Class, Dropdowns, Dynamic lists.

5.2 Working with Java Script Executor and Handling exceptions

Learn how to scroll on the page and how to handle exceptions like stale element exception or element not interactable exception.

- Scrolling using Java Script Executor

- Clicking for hidden elements using Java Script Executor

- Understanding and handling stale element exception

6.0 Unit Test Framework(s)- TestNG and Junit 5

- Test Case and Test Suite
- Prioritizing and Sequencing
- Annotations, Grouping
- Parameterization in Suit file for TestNG
- Comparison of Junit 5 and TestNG

7.0 Frameworks

7.1 Data Driven Framework

- Data Driven Testing using

 - Excel Files (Using .xls and .xlsx)
 - CSV files
 - Json Files

7.2 Page Factory and Page Object Model

- Importance of page object model
- Implementing Page Object model using design patterns and page factory.



7.3 Helper Utility functions and Classes

Understanding the importance of modularizing the reusable functions and creating a utility classes / functions.

For creating browser specific drivers
For scrolling
Taking screenshots of page and web elements
Common / Reusable Functions

7.4 Wrapper methods

Understanding the need for wrapper methods and implementing / using wrapper methods

8.0 Selenium Grid

8.1 Selenium Grid on local machine

- Learn about the Selenium Grid setup
- Learn to distribute the tests on several machines and do parallel execution
- Learn to run the tests in parallel on multiple combinations of browser and OS from a central hub

8.2 Selenium Grid on cloud machine using Docker

- Learn how to create Selenium Grid on cloud machine
- Understand the basics of Docker containers
- Using docker compose creating Grid
- Learn how to distribute the tests on the remote docker grid

9.0 Test Reports using Allure and TestNG

9.1 Using Allure for Reporting

9.2 TestNg Reports



10.0 Running Selenium Tests in Continuous Integration Environment

- 10.1 Using Cloud based Jenkins server with Maven plugin
- 10.2 Triggering tests on code push to Git repository

11.0 Selenium 4.X Additions

11.1 Relative Locators

- 11.1.1 `above()`
- 11.1.2 `below()`
- 11.1.3 `near()`
- 11.1.4 `toLeftOf()`
- 11.1.5 `toRightOf()`

Learn how to use Relative locators in your code, to enhance and simplify web element identification.

11.2 Handling New Windows and Tabs

Selenium now allows opening of another window as a new window or a tab. Learn how to manage windows with Selenium 4 .

11.3 Modified Action Class

The action class in Selenium helps in automating complex gestures of mouse and keyboard. With Selenium 4 the Action class in modified. Learn how to use the new methods of the Action class in Selenium 4.

11.4 Enhanced Selenium Grid

Selenium Grid was completely overhauled with the Selenium 4 release. Learn the new Selenium Grid which now comprises of much more components than just hub and node.

11.5 Browser Options instead of Desired Capabilities

Learn how in Selenium 4 you can use the Option class available for different browsers to manage the browser level environmental settings.

11.6 Modified Screenshot method, which now allows capturing of web element.

Learn how to capture both screen and a particular web element with the modified screenshot method in Selenium 4.



CP-SAT version 4.0

11.7 Selenium now allows using Chrome Dev Tools Protocol

Selenium 4 supports Chrome Dev Tools Protocol using which many activities could be performed. Learn how to use CDP with Selenium 4 to mock geo locations, check website performance and more.

CP-SAT Mock Exams

Mock exams for both Theory / Multiple Choice Section and Practical section are available on the website on the following URL

<https://cpsat.agiletestingalliance.org/downloads>