



## Learning Objectives of CP-SAT v 4.1 Foundation, Advanced and Expert levels

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

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### What is CP-SAT?

CP-SAT stands for "Certified Professional - Selenium Automation Testing". It is #1 globally recognized Selenium Certification.

The certification is not only about Selenium but the Selenium Ecosystem which includes testing frameworks, tools and technology which brings the best out of Selenium.

After completing 9 years of existence CP-SAT certification is going through a re-structuring. CP-SAT certification now has three levels. **Foundation, Advanced and Expert.**

The earlier CPSAT certification had a single level, with a two parts exam, A. Multiple-choice question assessment and b. A practical assessment. These have now been broken into separate levels, foundation and advanced.

The expert level certification exam has been added to give option to selenium experts to get themselves assessed at expert level

CP-SAT certification exam can be taken in any of the technology streams (Java, Python or C#)

CP-SAT is brought to you by **Agile Testing Alliance**, a global body which excels in community driven program development and assessment.

- Learning objective remains common for all three levels CP-SAT Foundation, CP-SAT Advanced and CP-SAT Expert
- The exam coverage for all three certifications are from the below mentioned topics.
- **CP-SAT Foundation** exam is designed to assess your Selenium Eco System knowledge using Multiple choice questions
- **CP-SAT Advanced** is designed to assess your Selenium Eco System knowledge using Practical Scenario based questions
- **CP-SAT Expert** is designed to assess how you can design an end to end, cross browser scalable, continuous testing automation solution
- 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 exam can be taken in any of the three language streams
  - Java
  - C#
  - Python



# CP-SAT Foundation: Eligibility, Exam duration and Enrollment

## 1. Am I Eligible?

Any Selenium professional can appear for the Foundation Level Exam. You can choose Java or Python or C# as your choice of programming language.

## 2. Duration and Type of exam?

CP-SAT Foundation exam is 60 minutes only. The exam is based on Multiple choice questions. There would be 50 total questions that needs to be answered in 60 minutes. There is no negative marking.

## 3. Passing Marks

70% and above would be considered as passing marks. Everyone who gets 70% or more will be awarded a CP-SAT Foundation certificate.

## 4. Validity of the certificate

Certificate validity is 3 years from the date of issue.

## 5. How do I enroll myself?

You can visit the CP-SAT website.  
<https://CP-SAT.agiletestingalliance.org/> and find out more information on how to register for the exam

# CP-SAT Advanced: Eligibility, Exam duration and Enrollment

## 1. Am I Eligible?

Any Selenium professional who has successfully cleared CP-SAT Foundation Exam can appear for the advanced level exam.

## 2. Duration and Type of exam?

CP-SAT Advanced exam is 150 minutes (2.5 hours) only.

There would be 6-7 scenario-based questions which would need participants to solve the questions and submit the codebase for evaluation.



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### 3. Passing Marks

60% and above would be considered as passing marks for CP-SAT Advanced Exam.

### 4. Validity of the certificate

Certificate validity is 3 years from the date of issue.

### 5. How do I enroll myself?

You can visit the CP-SAT website.

<https://CP-SAT.agiletestingalliance.org/> and find out more information on how to register for the exam

## CP-SAT Expert: Eligibility, Exam duration and Enrollment

### 1. Am I Eligible?

Any Selenium professional who has successfully cleared CP-SAT advanced level Exam can appear for the Expert level exam.

### 2. Duration and Type of exam?

CP-SAT Expert exam is 180 minutes (3 hours) only.

The exam will be case study driven. This would involve participant to automate key objectives as per the examination paper. The assessment would be not only on the selenium automation but the ability to design an end to end solution which is cross browser, continuous testing driven automation solution. Solution has to be scalable and should have a solid reporting mechanism. There would be a total of 100 marks for the exam.

### 3. Passing Marks

75% and above would be considered as passing marks for CP-SAT Expert Exam.

### 4. Validity of the certificate

Certificate validity is 3 years from the date of issue.



### 5. How do I enroll myself?

You can visit the CP-SAT website.

<https://CP-SAT.agiletestingalliance.org/> and find out more information on how to register for the exam

### 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 Nunit. 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 4.1 Version?

The 4.1 version has been curated for CP-SAT Foundation, Advanced and Expert Level. There are no major changes in the coverage of topics from earlier version 4.0. This version includes the new CP-SAT Program changes.

## 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 1<sup>st</sup> 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 Csharp certification program requires participants to be familiar with the Csharp 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
- 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
- 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
- IDE and RC/Webdriver Backed references have been completely withdrawn



# Learning Objectives for CP-SAT CSharp 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 Visual Studio and setting selenium dependencies. (Please note any other CSharp supporting IDE could also be used)
- 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)- NUnit

- a. Test Case and Test Suite
- b. Annotations, Grouping
- c. Parameterization

### 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

### 9.1 Using Allure for Reporting

## 10.0 Running Selenium Tests in Continuous Integration Environment

### 10.1 Concept of Continuous Integration (30 mins)

- Learn about the concept of Automating the Automation
- Learn about the Continuous Integration practice and merging automated Selenium test scripts on CI server

### 10.2 NUget/MSBuild task in Jenkins/Hudson (90 mins)

- Learn to prepare Jenkins/Hudson to run NUGet/MSBuild task with Selenium tests
- Learn various triggering events for the test
- Learn to prepare test output reports



### 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.

#### 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.



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### CP-SAT Mock Exams

Mock exams are available on CP-SAT website

<https://cpsat.agiletestingalliance.org>