ESSA Learning Programmes and Materials (EQF 4-7)

Jr. DevOps Expert

EQF level 6

A brief overview of Software testing

30.11.2023 I Status: Draft version

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Skills Alliance

About ESSA

The **European Software Skills Alliance** (ESSA) is a four-year transnational project funded under the EU's Erasmus+ programme. It ensures the skills needs of the rapidly evolving Software sector can be met — today and tomorrow.

ESSA provides current and future software professionals, learning providers and organisations with software needs with the educational and training instruments they need to meet the demand for software skills in Europe.

ESSA will develop a **European Software Skills Strategy** and **learning programmes** for Europe. It will address skill mismatches and shortages by analysing the sector in depth and delivering future-proof curricula and mobility solutions; tailored to the European software sector's reality and needs.

The ESSA consortium is led by DIGITALEUROPE. It is composed of academic and non-academic partners from the education, training, and software sectors.

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Software Testing

Content

- Intro
  - automation tools
  - e2e tests with Selenium and Playwright
- Playwright showcase
  - setup
  - writing tests
  - running tests
- Practical part

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Intro

Test automation tools

Top 15 Automation Testing Tools

Top 15 automation testing tools

Katalon · Ranorex Studio · TestComplete · LAMBDATEST · POSTMAN

Protractor · Perfecto · Selenium · eggplant · SoapUI

Tricentis · cypress · Apache JMeter · ROBOT FRAMEWORK/ · appium

Source: https://katalon.com/resources-center/blog/automation-testing-tools
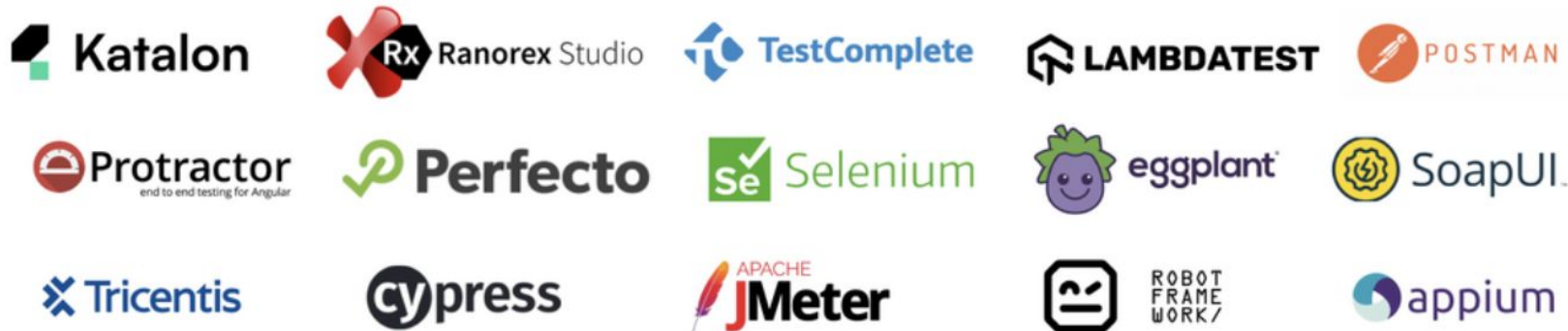
Product	🔲 Katalon	🟢 Selenium	🔵 appium	🔵 TestComplete	⚫ cypress
Application Under Test	Web/API/ Mobile/Desktop	Web	Mobile (Android/iOS)	Web/Mobile/ Desktop	Web
Supported platform(s)	Windows/ macOS/ Linux	Windows/ macOS/ Linux/Solaris	Windows/ macOS	Windows	Windows/ macOS/ Linux
Setup & configuration	Easy	Coding Required	Coding Required	Easy	Coding Required
Low-code & Scripting mode	Both	Scripting Only	Scripting Only	Both	Scripting Only
Supported language(s)	Java & Groovy	Java, C#, Python, JavaScript, Ruby, PHP, Perl	Java, C#, Python, JavaScript, Ruby, PHP, Perl	JavaScript, Python, VBScript, JScript, Delphi, C++, C#	JavaScript
Advanced test reporting	✔	✘	✘	✘	✔
Pricing	Free and Paid	Free	Free	Paid	Free and Paid
Ratings & Reviews (Gartner)	4.4/5 740 reviews	4.5/5 443 reviews	4.4/5 90 reviews	4.4/5 45 reviews	4.6/5 27 reviews

Source: https://katalon.com/resources-center/blog/automation-testing-tools

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e2e web testing

- Selenium
- Playwright

Selenium

- What is Selenium?
- Components
  - Webdriver, Grid, IDE
- Uses
  - Web applications
- Benefits
  - Browsers, programming languages
- Notable Features
  - Recording, parallel execution

Playwright

- What is Playwright?
- Browser support
- Languages
- Key features
  - Headless, cross-browser testing, auto-wait
- Advantages
  - Speed, reliability, accuracy

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Criteria	Playwright	Selenium
Language	Supports multiple languages such as JavaScript, Java, Python, and .NET C#	Supports multiple languages such as Java, Python, C#, Ruby, Perl, PHP, and JavaScript
Ease of Installation	Easy to Install	Easy to Install
Test Runner Frameworks Supported	Mocha, Jest, Jasmine	Mocha, Jest, Jasmine, Protractor, and WebDriverIO
Prerequisites	NodeJS should be installed	Java, Eclipse IDE, SeleniumStandalone Server, Client Language Bindings, and Browser Drivers should be installed
Operating Systems Supported	Windows, Linux, and Mac OS	Windows, Linux, Solaris, and Mac OS
Open Source	Open Source and Free	Open Source and Free
Architecture	Headless Browser with event-driven architecture	Layered Architecture based on JSON Wire Protocol
Browsers Supported	Chromium, Firefox, and WebKit	Chrome, Firefox, IE, Edge, Opera, Safari, and more
Support	Since Playwright is fairly new, the support from the community is limited as compared to Selenium	Provides commercial support for its users via its sponsors in Selenium Ecosystem and self-support documents. Strong community support from professionals across the world
Real Devices Support	It does not support real devices but supports emulators	Supports real device clouds and remote servers

Playwright vs Selenium

Playwright vs Selenium

Functionality	Selenium	Playwright
Support for dynamic element waiting	NO	YES
Test recording	LIMITED	YES
Ease of installation and usage	CHALLENGING	EASY

Playwright showcase

Playwright showcase

- How to install
  - Prerequisites (Node.js 18+, VS Code)
  - Using command, using VS Code extension
    - npm init playwright@latest
- Running tests and debugging
- Writing tests
  - https://dev-editor.true-bar.si/
- Generating tests
  - npx playwright codegen demo.playwright.dev/todomvc
- Trace viewer

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Practical part