<epam>

TA TOOL EVALUATION — ROBOT FRAMEWORK

LASZLO SZIKSZAI



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TARTING SOON...



ABOUT THE SPEAKER



LASZLO SZIKSZAI

SOLUTION ARCHITECT I, AUTOMATED TESTING

- 15 years in IT
- 7 years in EPAM
- 6 years in QA/Test Automation
- JavaScript/TypeScript/Python
- Open Source GitHub/NPM/PyPi

AGENDA

- 1 WHAT IS THE ROBOT FRAMEWORK?
- 2 FEATURES
- 3 USAGE
- 4 PROS/CONS
- 5 WHEN TO/NOT TO USE IT?
- 6 FOR MORE INFO...



ROBOT FRAME WORK/

GETTING STARTED RESOURCES COMMUNITY DEVELOPMENT

RoboCon 2022 tickets available!

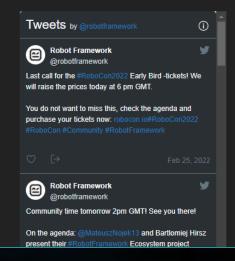
INTRODUCTION

Robot Framework is a generic open source automation framework. It can be used for test automation and robotic process automation (RPA).

Robot Framework is supported by <u>Robot Framework Foundation</u>. Many industry-leading companies use the tool in their software development.

Robot Framework is open and extensible. Robot Framework can be integrated with virtually any other tool to create powerful and flexible automation solutions. Robot Framework is free to use without licensing costs.

Robot Framework has an easy syntax, utilizing human-readable





BUILT-IN

ZJOOT

Separately developed external libraries that can be installed based on your needs. Creating your own libraries is a breeze. For instructions, see creating-test libraries in Robot Framework User Guide.

Filter by tag

Name	Description	Stars ~	Tags
<u>SeleniumLibrary</u>	Web testing library that uses popular Selenium tool internally.	1110	WEB, SELENIUM
<pre>HTTP RequestsLibrary (Python)</pre>	HTTP level testing using Python Requests internally.	381	HTTP
<u>AppiumLibrary</u>	Android and iOS testing. Uses Appium internally.	290	MOBILE
Browser Library	A modern web testing library powered by Playwright. Aiming for speed, reliability and visibility.	211	WEB
RESTinstance	Test library for HTTP JSON APIs.	172	HTTP
<u>Database Library</u> (<u>Python</u>)	Python based library for database testing. Works with any Python interpreter, including Jython.	117	
<u>SikuliLibrary</u>	Provides keywords to test UI through <u>Sikulix</u> . This library supports Python 2.x and 3.x.	117	

SHOW MORE

LIBRARIES
Libraries and provide the a

SHOW MORE

BUILT-IN

ZJOOT

Libraries and tools that are bundled with the framework. Libraries provide the actual automation and testing capabilities to Robot Framework by providing keywords.

Filter by tag

Name 🗸	Description	Tags
Builtin	Provides a set of often needed generic keywords. Always automatically available without imports.	LIBRARY
Collections	Provides a set of keywords for handling Python lists and dictionaries.	LIBRARY
<u>DateTime</u>	Library for date and time conversions.	LIBRARY
<u>Dialogs</u>	Provides means for pausing the execution and getting input from users.	LIBRARY
Libdoc	Generate keyword documentation for test libraries and resource files.	
<u>OperatingSystem</u>	Enables various operating system related tasks to be performed in the system where Robot Framework is running.	LIBRARY
Process	Library for running processes in the system.	LIBRARY

Supporting ton. Most of are built in

SHOW MORE

BUILT-IN

ZJOOT

Supporting tools ease automation: editing, running, building and so on. Most of these tools are developed as separate projects, but some are built into the framework itself.

Filter by tag

Name	Description	Stars ~	Tags
RIDE	Standalone Robot Framework test data editor.	795	
<u>Pabot</u>	A parallel executor for Robot Framework tests and tasks.	378	
RED	Eclipse based editor with a debugger by Nokia.	327	
RCC	Share your Robot projects with ease. RCC allows you to create, manage, and distribute Python-based self-contained automation packages.	238	
Robot Framework Hub	Lightweight web server that provides access to the Robot Framework test assets via browser.	156	
Sublime assistant	A plugin for Sublime Text 2 & 3 by Andriy Hrytskiv.	109	EDITOR
Vim plugin	Vim plugin for development with Robot Framework.	86	

Robot Framework Quick Start Guide

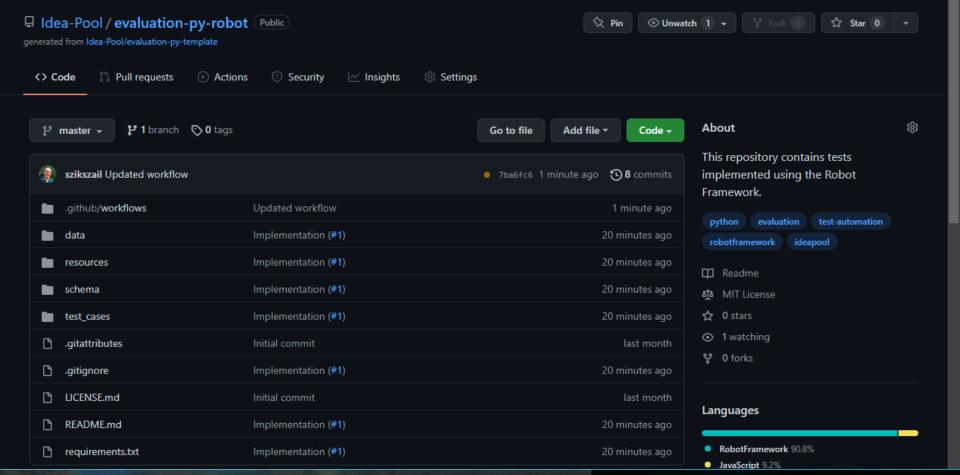
Copyright © Nokia Networks. Licensed under the Creative Commons Attribution 3.0 Unported license.

Table of contents:

- Introduction
 - About this guide
 - Robot Framework overview
 - Demo application
- · Executing this guide
 - Installations
 - Execution
 - Viewing results
- Test cases
 - Workflow tests
 - Higher-level tests
 - Data-driven tests
- Keywords
 - Library keywords
 - User keywords

```
QuickStart.rst
                                                                                                                    Indexing...
        Copyright © Nokia Networks. Licensed under the
           http://creativecommons.org/licenses/by/3.0/
         .. contents:: Table of contents:
        About this guide
         *Robot Framework Quick Start Guide* introduces the most important `Robot
        Framework <a href="http://robotframework.org">http://robotframework.org</a> features. You can simply browse
        through it and look at the examples, but you can also use the guide as an
         `executable demo`__. All features shown here are explained more thoroughly
         __ `Executing this guide`_
        Robot Framework overview
         Robot Framework is a generic open source test automation framework for
```

```
@ QuickStart.rst
                                                                                                       A6 ×4 ^ ~
        Robot Framework test cases are created using a simple tabular syntax. For
        example, the following table has two tests:
        - User can create an account and log in
        - User cannot log in with bad password
        .. code:: robotframework
            *** Test Cases ***
            User can create an account and log in
                Create Valid User
                                    fred P4ssw0rd
                Attempt to Login with Credentials
                                                    fred
                                                            P4ssw0rd
                Status Should Be
                                   Logged In
            User cannot log in with bad password
                Create Valid User
                                    betty P4ssw0rd
                Attempt to Login with Credentials
                                                    betty
                                                             wrong
                Status Should Be
                                   Access Denied
        Notice that these tests read like manual tests unitten in English rather
```



evaluation-py-robot

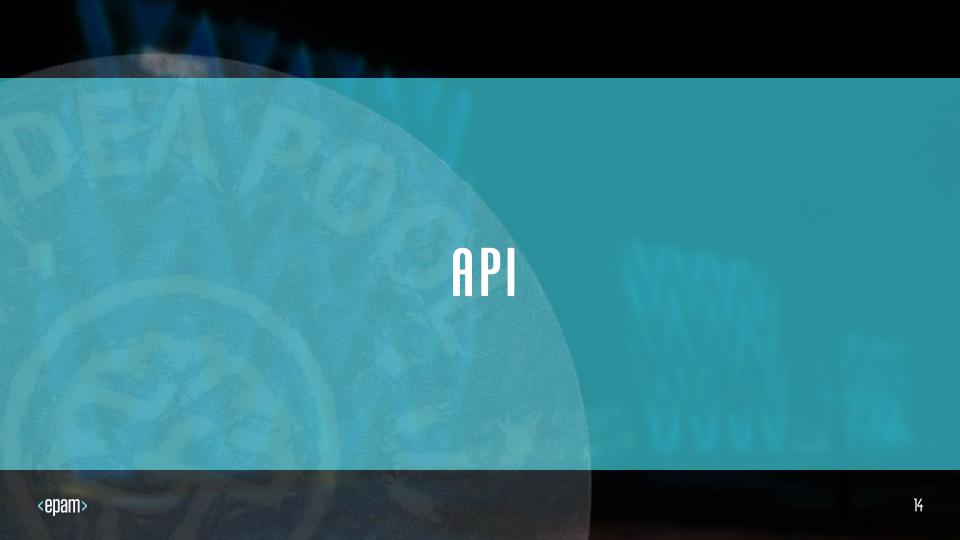
This repository contains tests implemented using the Robot Framework.

Prerequisites

- 1. Python 3.8+
- 2. Pip

Framework used

- · Name: Robot Framework
- Home page: https://robotframework.org/
- User Guide: https://robotframework.org/robotframework/latest/RobotFrameworkUserGuide.html
- Libraries: https://robotframework.org/?tab=libraries#resources
 - Standard libraries: http://robotframework.org/robotframework/#standard-libraries
 - o robotframework-requests: https://github.com/MarketSquare/robotframework-requests
 - o robotframework-jsonschemalibrary: https://github.com/jstaffans/robotframework-jsonschemalibrary
 - o robotframework-selenium2library: https://github.com/robotframework/SeleniumLibrary
 - o RESTinstance: https://github.com/asyrjasalo/RESTinstance/



Test cases

Precondition

1. Given the API key is set for all requests

TC-1 A movie can be retrieved by ID

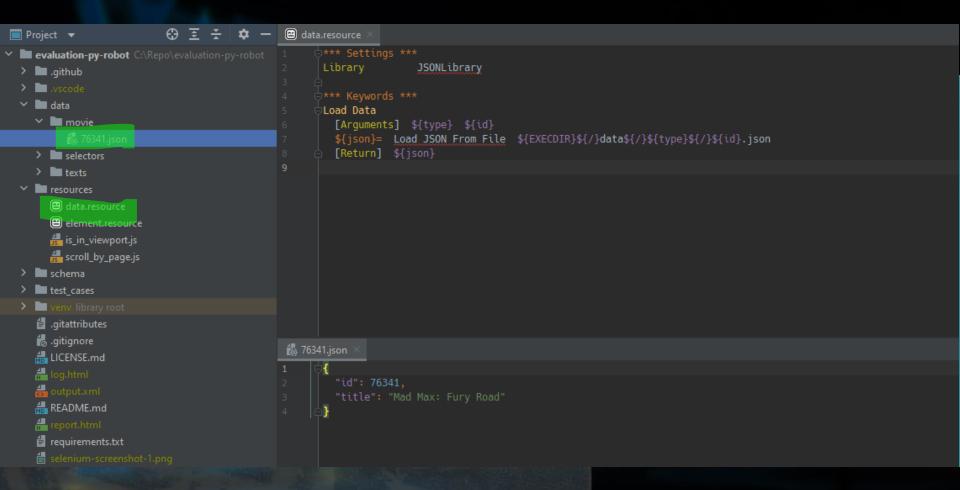
- 1. Given the {movie_id} is added to the GET request
- 2. When the "GET movie by id" request is sent
- 3. Then the response should contain status code 200

TC-2 The retrieved movie has a proper schema

- 1. Given the {movie_id} is added to the GET request
- 2. When the "GET movie by id" request is sent
- 3. Then the response should contain the proper movie title
- 4. And the response should have a proper schema

```
api_movie_db.robot
                        RequestsLibrary
                        JSONSchemaLibrary
                                            schema
                       type:positive
                       Run Keywords
                                      Create A Guest Session
                        AND Load Movie
                        ../../resources/data.resource
       *** Variables ***
                        e231ae412af0eaab685d11c26505bda6
                       https://api.themoviedb.org/3
                       Load JSON From File data/movie/76341
                       Mad Max: Fury Road
       *** Test Cases ***
      TC-01 A movie can be retrived by ID
          Get A Movie By ID ${MOVIE}[id]
                                              200
      TC-02 The retrieved movie has a proper schema
          ${response}= Get A Movie By ID ${MOVIE}[id]
          Validate Json movie.json ${response.json()}
      TC-03 A rating can be added to a movie
          [Template] Rate A Movie
          FOR ${rate} IN RANGE 1 11
              ${MOVIE}[id] ${rate} 201
```

```
api_movie_db.robot
                                         404
       *** Keywords ***
       Get A Movie By ID
          [Arguments]
                                      ${status}=200
                              ${BASE_URL}/movie/${movie_id}
                 params=api_key=${API_KEY}
                 expected_status=${status}
       Rate A Movie
                      ${movie_id} ${rating} ${status}=201
          [Arguments]
          &{params}= Create Dictionary api_key=${API_KEY}
                                                                quest_session_id=${GUEST_SESSION_ID}
          &{body}= Create Dictionary value=${rating}
                         POST ${BASE URL}/movie/${movie id}/rating
                 params=${params}
                 expected_status=${status}
                                      ${status}=200
                       Create Dictionary api key=${API KEY}
                                                                quest session id=${GUEST SESSION ID}
                         DELETE ${BASE_URL}/movie/${movie_id}/rating
                 params=${params}
                 expected_status=${status}
```

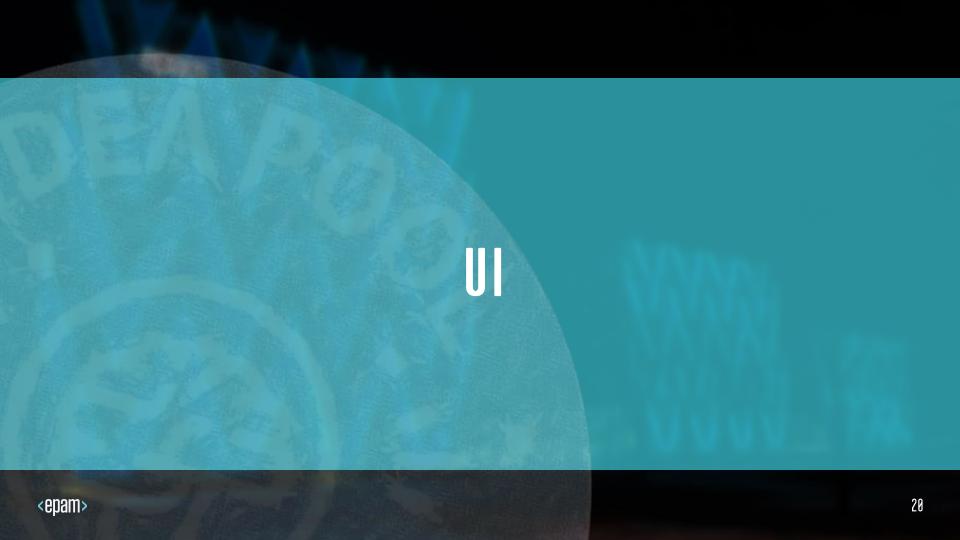




```
Project ▼
                                              api_movie_db.robot
                                                     Library
                                                                       RequestsLibrary

    evaluation-py-robot C:\Repo\evaluation-py-robot

  > 🖿 .github
                                                                       Process
  > .vscode
  > 🖿 data
                                                                       Run Keywords
                                                                                      Create A Guest Session
  > resources
                                                                              Load Movie
                                                                       ../../resources/data.resource
    test_cases
                                                     *** Variables ***
    ✓ api
                                                                       e231ae412af0eaab685d11c26505bda6
          # API.md
                                                                       https://api.themoviedb.org/3
                                                                       Load JSON From File data/movie/76341
                                                                       76341
                                                                       Mad Max: Fury Road
  > library root
     gitattributes
                                                      *** Test Cases ***
     agitignore.
                                                     TC-01 A movie can be retrived by ID
    # LICENSE.md
                                                         Get A Movie By ID ${MOVIE}[id]
    ₽ log.html
                                                     TC-02 The retrieved movie has a proper schema
    🚜 output.xml
                                                          ${response}= Get A Movie By ID ${MOVIE}[id]
    ## README.md
                                                         Should Be Equal As Strings ${MOVIE}[title] ${response.json()}[title]
    ## report.html
                                                          Validate Json movie.json
    requirements.txt
 III External Libraries
  Scratches and Consoles
```



Test cases

TC-1 Checking landing pages elements

- 1. Given https://angular.io URL is opened
- 2. Then Angular logo in the top navbar should be visible
- 3. And Angular logo in the hero section should be visible
- 4. And text in hero section should be "One framework. Mobile & desktop."
- 5. And Get started button should be visible in the hero section
- 6. When Get started button is clicked in the hero section
- 7. Then the URL should be https://angular.io/start
- 8. And the title on the content should be "Getting Started with Angular: Your First App"

TC-2 Checking search field on the landing page

- 1. Given https://angular.io URL is opened
- 2. Then Search input in the top navbar should be visible
- 3. And it should be empty
- 4 And it should be "Search" as a placeholder



```
angular.robot
■ Project ▼
                                                       *** Settings ***

    evaluation-py-robot C:\Repo\evaluation-py-robot

                                                                       SeleniumLibrary
  > 🖿 .github
                                                                       String
  > .vscode
    data
    resources
                                                                       Load Page Data

✓ schema

                                                                       Close Browser
       movie.json
                                                                       ../../resources/data.resource

✓ limit test cases

                                                       *** Variables ***
    > 🖿 api
    V 🖿 ui
                                                                       Chrome
          angular.robot
          bootstrap.robot
                                                       *** Test Cases ***
                                                       TC-01 Checking landing page elements
          # Ul.md
  > library root
                                                         Then Element Should Be Visible ${PAGE}[angular_logo_navbar]
    gitattributes
                                                         And Element Should Be Visible ${PAGE}[angular_logo_hero]
     👼 .gitignore
                                                         And Element Text Should Be ${PAGE}[hero_text] ${TEXTS}[hero]
    # LICENSE.md
                                                         And Element Should Be Visible ${PAGE}[hero_button]
    all log.html
                                                         When Click Element ${PAGE}[hero_button]
                                                         And Wait Until Element Is Visible ${PAGE}[title]
    # output.xml
                                                         Then Location Should Be ${BASE URL}/start
    # README.md
                                                         And Element Text Should Be ${PAGE}[title] ${TEXTS}[getting_started_title]
    ## report.html
    requirements.txt
                                                       TC-02 Checking search field on the landing page
     selenium-screenshot-1.png
                                                         Given Angular.io is opened
                                                         Then Element Should Be Visible ${PAGE}[search input]
     selenium-screenshot-2.png
                                                         And Element Text Should be ${PAGE}[search_input] ${EMPTY}
                                                         And Element Attribute Value Should Be ${PAGE}[search_input] placeholder Search
                                                         When Click Element ${PAGE}[search_input]
                                                         And Input Text ${PAGE}[search_input] directive
> Ill External Libraries
                                                         Then Element Should Be Visible ${PAGE}{search clear iconl
  Scratches and Consoles
```



```
*** Keywords ***
 Open Browser ${BASE_URL} ${BROWSER}
 Maximize Browser Window
Load Page Data
 ${selectors}= Load Data type=selectors id=angular
 ${texts}= Load Data type=texts id=angular
 Set Suite Variable ${TEXTS} ${texts}
Menu Item Should Be In Section
 [Arguments] ${item} ${section}
 Wait Until Element Is Visible ${PAGE}[search_results]
 ${section_selector}= Replace String ${PAGE}[section_by_text] TEXT ${section}
 ${item_selector}= ReplaceString ${PAGE}[item_by_text] TEXT ${item}
 Element Should Be Visible ${section_selector} >> ${item_selector}
Menu Item Is Clicked In Section
 [Arguments] ${item} ${section}
 Wait Until Element Is Visible ${PAGE}[search_results]
 ${section_selector}= Replace String ${PAGE}[section_by_text] TEXT ${section}
 ${item_selector}= ReplaceString ${PAGE}[item_by_text] TEXT ${item}
 Wait Until Location Contains ${item}
```

```
✓ ■ evaluation-py-robot C:\Repo\evaluation-py-robot
                                                                        SeleniumLibrary implicit wait=2
  > 🖿 .github
                                                                        OperatingSystem
  > .vscode
                                                                        String
  > data
  > resources

✓ I schema

                                                                       Load Page Data
                                                                       Close Browser
        movie.json
                                                                        ../../resources/data.resource

✓ lest cases

                                                                        ../../resources/element.resource
     > 🖿 api
     ∨ 🖿 ui
                                                       *** Variables ***
          angular.robot
                                                                       https://getbootstrap.com/docs/4.4
          bootstrap.robot
                                                                        Chrome
          # Ul.md
                                                       *** Test Cases ***
  > wenv library root
                                                       TC-03 Checking form elements
     gitattributes
                                                          Given Bootstrap is opened forms
     gitignore.
     # LICENSE.md
                                                          # Then Title Should Be ${TEXTS}[forms_title]
     # log.html
                                                          Then Title Should Be Forms · Bootstrap
                                                          And Element Should Not Be In View ${PAGE}[readonly_input]
     autput.xml
                                                          When Scroll Element Into View ${PAGE}[readonly_input]
     ## README.md
                                                          And Sleep 2s
     ## report.html
                                                          Then Element Should Be In View ${PAGE}[readonly input]
     requirements.txt
                                                          And Element Should Be ReadOnly ${PAGE}[readonly input]
     selenium-screenshot-1.png
                                                       TC-04 Interaction with checkbox form elements
     selenium-screenshot-2.png
                                                          Given Bootstrap is opened forms checkboxes-and-radios
     selenium-screenshot-3.png
                                                          Then Element Should Be Enabled ${PAGE}[default checkbox]
     selenium-screenshot-4.png
                                                          And Element Should Be Disabled ${PAGE}[disabled_checkbox]
     selenium-screenshot-5.png
                                                          And Checkbox Should Not Be Selected ${PAGE}[default_checkbox]
> IllI External Libraries
                                                          When Select Checkbox ${PAGE}[default_checkbox]
  Scratches and Consoles
                                                          Then Checkbox Should Be Selected ${PAGE}[default checkbox]
```

bootstrap.robot



■ Project ▼

```
TC-05 Interaction with radio form elements
 Given Bootstrap is opened forms checkboxes-and-radios
 Then Element Should Be Enabled ${PAGE}[default_radio]
 And Element Should Be Disabled ${PAGE}[disabled_radio]
 And Radio Button Should Be Set To ${TEXTS}[radio group]
                                                          option1
 # A radio button cannot be checked if selected
 When Click Element ${PAGE}[second_default_radio]
 Then Radio Button Should Be Set To ${TEXTS}[radio_group] option2
```

```
⊕ ₹ ;
                                    element.resource
Project ▼

✓ ■ evaluation-py-robot C:\Repo\evaluati

                                                            SeleniumLibrary
                                                                              implicit wait=2
                                            Library
  > 🖿 .github
                                            Library
  > .vscode
                                            Library
    ■ data
                                            Library

✓ Image: Yesources

    data.resource

                                            Is Element In View
       element.resource
                                              [Arguments] ${element}
       # is_in_viewport.js
                                              ${js}= Get File resources${/}is_in_viewport.js
       # scroll_by_page.js
                                              ${visible}= Execute JavaScript ${js} return isInViewport(arguments[0]); ARGUMENTS ${element}

✓ schema

                                              [Return] ${visible}
        movie.ison

✓ lest cases

                                            Page Is Scrolled Down By Page
                                              [Arguments] ${n}=1
     > 🖿 api
                                              ${js}= Get File resources${/}scroll_by_page.js
     > 🖿 ui
                                              Execute JavaScript ${is} scrollByPage(arguments[0]); ARGUMENTS ${n}
  > wenv library root
     gitattributes
                                            Element Should Be In View
     agitignore.
                                              [Arguments] ${element}
     # LICENSE.md
                                    is_in_viewport.js
     alog.html
     autput.xml
     README.md
     ## report.html
     requirements.txt
                                            var isInViewport = function (elem) {
                                                if (typeof elem === "string") {
     selenium-screenshot-1.png
                                                    elem = document.querySelector(elem.replace("css:", ""))
     selenium-screenshot-2.png
     selenium-screenshot-3.png
                                                var bounding = elem.getBoundingClientRect();
     selenium-screenshot-4.png
                                                var top = 0, bottom = window.innerHeight || document.documentElement.clientHeight;
```



26



Api Movie Db Report

Generated 20220226 13:06:53 UTC+01:00 27 minutes 50 seconds ago

Summary Information

 Status:
 All tests passed

 Start Time:
 20220226 13:06:47.148

 End Time:
 20220226 13:06:53.143

 Elapsed Time:
 00:00:05.995

Log File: log.html

Test Statistics

Total Statistics	\$	Total \$	Pass +	Fail \$	Skip \$	Elapsed \$	Pass / Fail / Skip
All Tests		8	8	0	0	00:00:05	
Challada bu Tan		Total A	D +	E-II A	Chilm A	Element A	D / F-II / 61-1-
Statistics by Tag	ф	Total	Pass +	Fail 💠	Skip ¢	Elapsed	Pass / Fail / Skip
level:api		8	8	0	0	00:00:05	
type:negative		2	2	0	0	00:00:01	
type:positive		6	6	0	0	00:00:05	
Statistics by Suite	\$	Total +	Pass +	Fail +	Skip \$	Elapsed \$	Pass / Fail / Skip
Api Movie Db		8	8	0	0	00:00:06	

Test Details

	All	Tags	Suites	Search
9	Suite:		Api Mo	vie Db 🗸
I,				
	Status:			otal, 8 passe
9	Start / En	d Time:	202202	26 13:06:47.1
E	lapsed	Time:	00:00:0	5.995
L	og File:		log.html	#s1

Name \$	× Documentation \$	× Tags \$	Status + × Message	× Elapsed \$	× Start / End +
Api Movie Db. TC-01 A movie can be retrived by ID		level:api, type:positive	PASS	00:00:00.187	20220226 13:06:47.795 20220226 13:06:47.982
Api Movie Db. TC-02 The retrieved movie has a proper schema		level:api, type:positive	PASS	00:00:00.164	20220226 13:06:47.982 20220226 13:06:48.146
Api Movie Db. TC-03 A rating can be added to a movie		level:api, type:positive	PASS	00:00:03.161	20220226 13:06:48.146 20220226 13:06:51.307
ApiMovieDb.TC-04 The movie rating should return a proper message		level:api, type:positive	PASS	00:00:00.268	20220226 13:06:51.308 20220226 13:06:51.576
Api Movie Db. TC-05 Invalid rating cannot be aded to a movie		level:api, type:negative	PASS	00:00:00.260	20220226 13:06:51.576 20220226 13:06:51.836
Api Movie Db. TC-06 Movie rating can be deleted		level:api, type:positive	PASS	00:00:00.504	20220226 13:06:51.837 20220226 13:06:52.341
ApiMovie Db. TC-07 Proper status message should be returned when rating is deleted		level:api, type:positive	PASS	00:00:00.513	20220226 13:06:52.350 20220226 13:06:52.863
ApiMovie Db. TC-08 Missing ID should be handled properly		level:api, type:negative	PASS	00:00:00.274	20220226 13:06:52.863 20220226 13:06:53.137



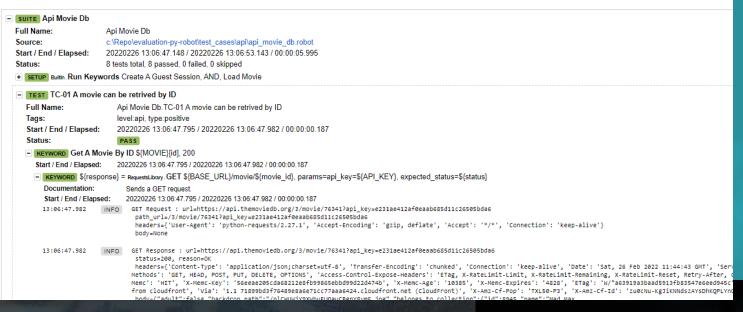
Api Movie Db Log

Generated 20220226 13:06:53 UTC+01:00 26 minutes 27 seconds ago

Test Statistics

Total Statistics	\$	Total +	Pass \$	Fail +	Skip \$	Elapsed \$	Pass / Fail / Skip
All Tests		8	8	0	0	00:00:05	
Statistics by Tag	\$	Total \$	Pass \$	Fail \$	Skip \$	Elapsed \$	Pass / Fail / Skip
level:api		8	8	0	0	00:00:05	
type:negative		2	2	0	0	00:00:01	
type:positive		6	6	0	0	00:00:05	
Statistics by Suite	\$	Total \$	Pass \$	Fail \$	Skip \$	Elapsed \$	Pass / Fail / Skip
Api Movie Db		8	8	0	0	00:00:06	

Test Execution Log



PROS / CONS

PROS

- ✓ Detailed report
- ✓ General test automation framework for all levels and test types: UI, API, Unit, Hardware, etc.
- ✓ Huge set of libraries and tools
- ✓ Keyword and Data Driven
- ✓ Fits for non-technical team as well
- Multiple formats to define tests:Documentation and tests integrated

CONS

- Bigger learning curve to use effectively
- Python (and JS) knowledge is needed for more complex tests

WHEN TO USE IT?

- ✓ Internal, Enterprise, and POC projects
- ✓ TAF covering multiple test automation types and test levels
- ✓ Team is less technical, or test automation visibility and easy understandability is necessary





WHEN NOT TO USE IT?

- Test automation has to be done in other thanPython
- Team is highly technical



MORE INFO

- Idea Pool Community: https://epa.ms/idea-pool
- TA Tool evaluation project:
 https://epa.ms/idea-pool-tool-evaluation
- TA Tool evaluation playlist: https://epa.ms/idea-pool-tool-evaluation-playlist
- Robot Framework: https://robotframework.org/
- Robot Framework User Guide: https://robotframework.org/robotframework/latest/RobotFramework
 kUserGuide.html
- Evaluation repository:
 https://github.com/Idea-Pool/evaluation-py-robot





(harks: THANK YOU!