# Robot Framework Introduction

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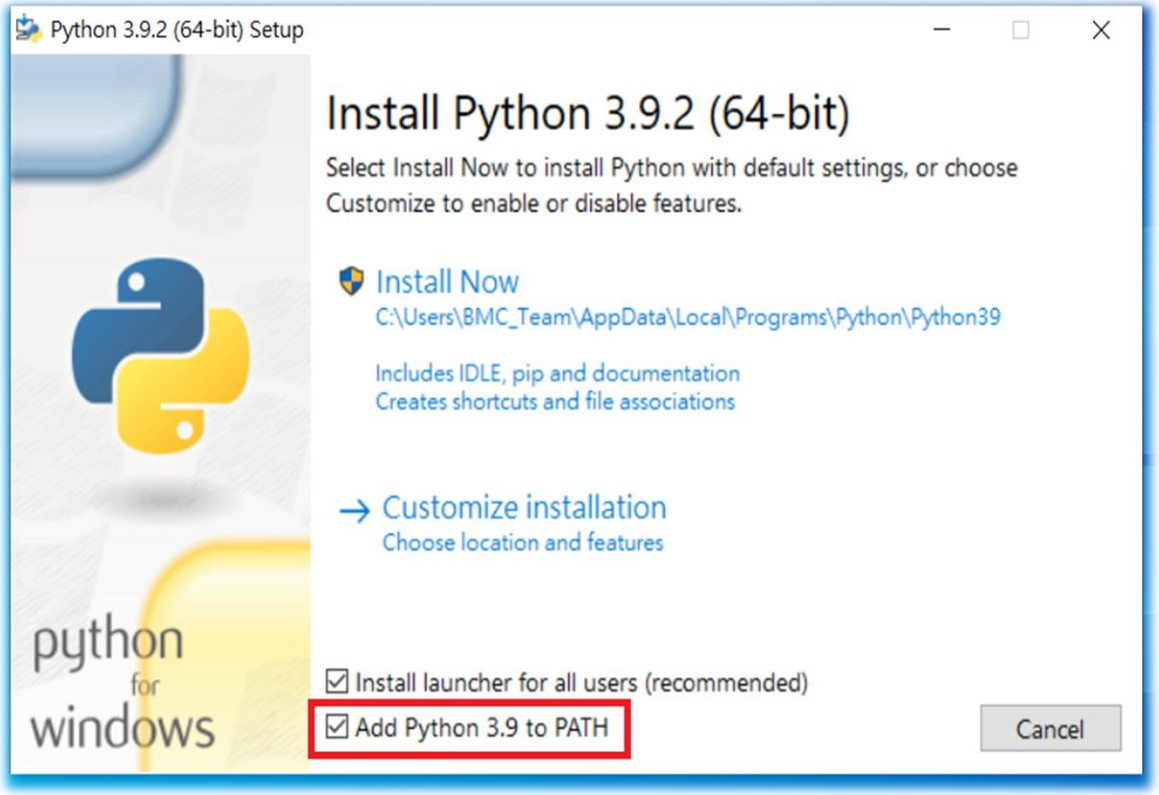
# Agenda

- VS Code & Python Installation
- Robot Framework & Extensions Installation
- Robot Framework Introduction
- Automation Tool Introduction
- Demo

# Python – Robot Framework

## VS code & Python Installation

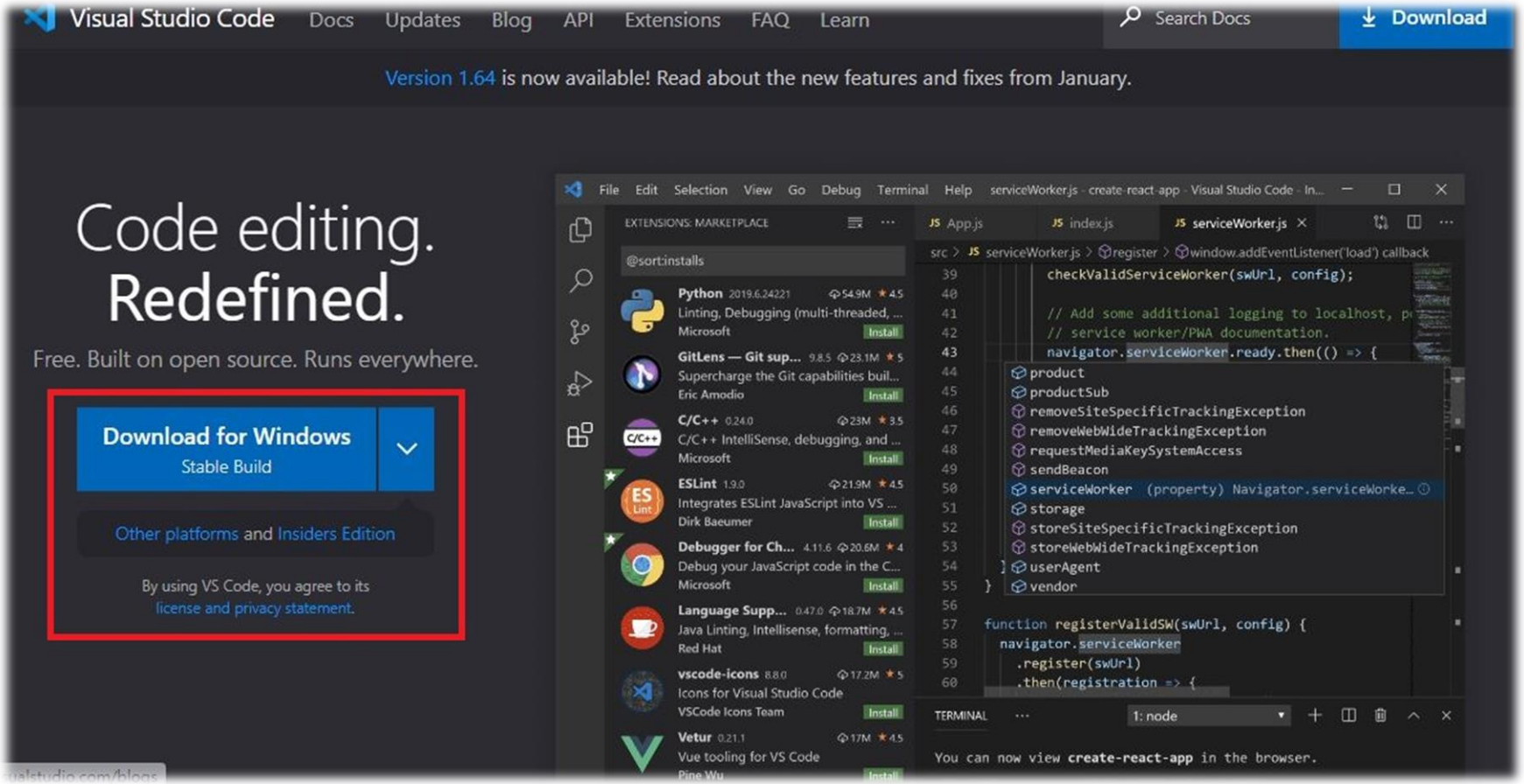
Download : ***https://www.python.org/downloads/***

# Python – Robot Framework

## VS code & Python Installation

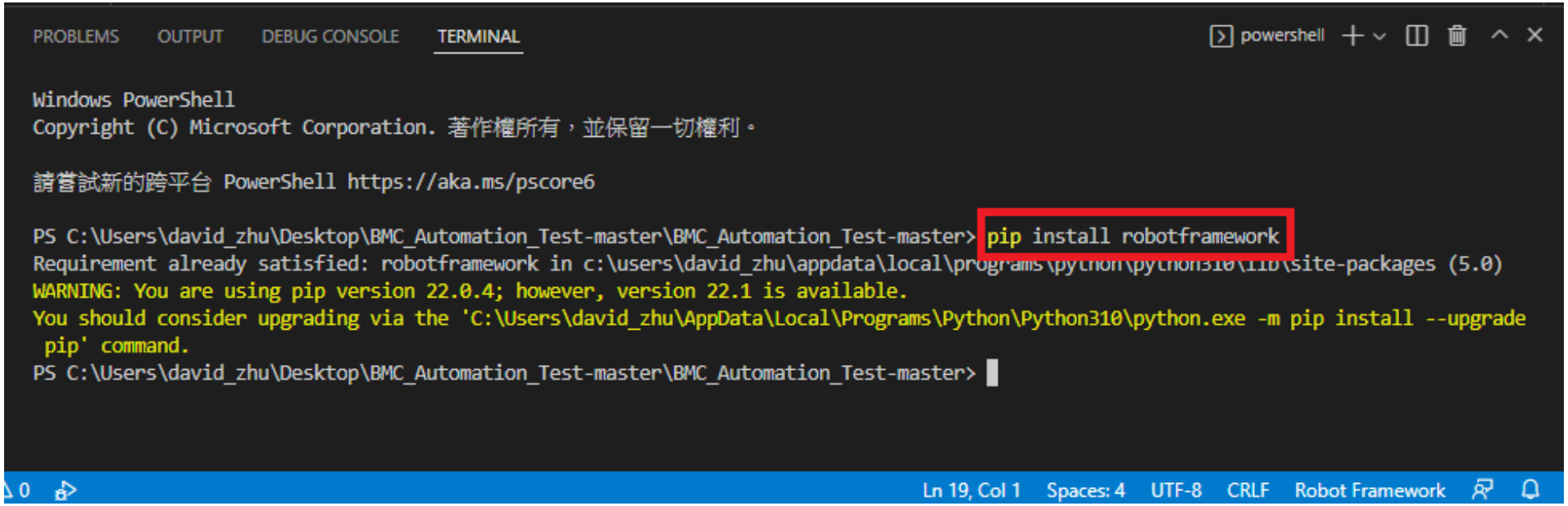
Download : ***https://code.visualstudio.com/***



# Python – Robot Framework

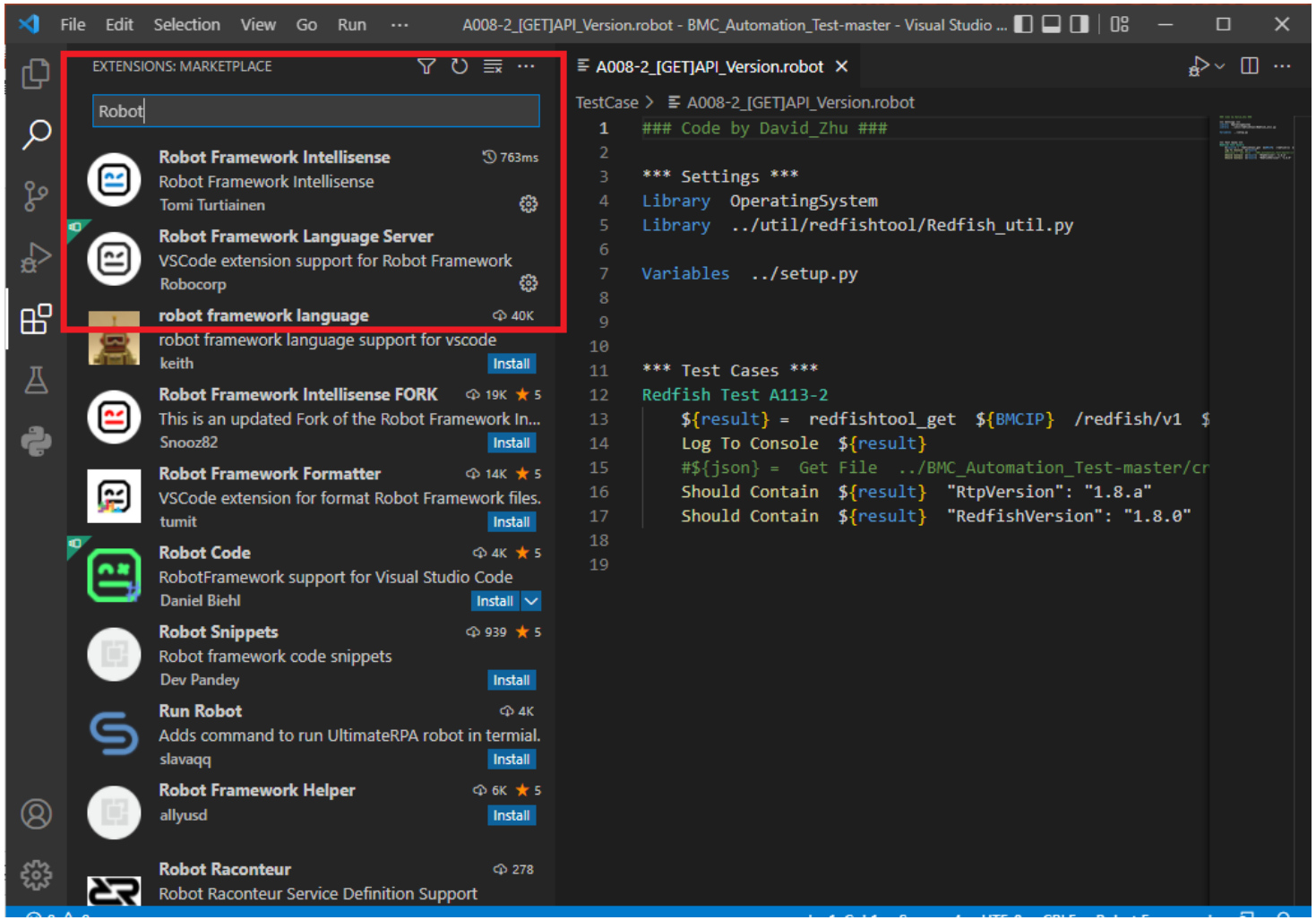
## Robot Framework Installation

**$ pip install -r requirements.txt**



# Python – Robot Framework

## Robot Framework Extensions Installation



# Python – Robot Framework

## Robot Framework

- Base on Python Language to implement.
- Robot Framework program grammar easy for automation used.
- Robot Framework have below function.
  - ✓ Automation test report creation
  - ✓ Automation test case execution
  - ✓ Pass / Fail result determination

# Python – Robot Framework

## Robot Framework Format

```
*** Settings ***
Library          value
Resource         value
Variables        value
Suit Setup       value
Suit Teardown    value
```

```
*** Variable ***
${Var}      value
```

```
*** Keyword ***
Function_Name      Action
```

```
*** Test Case ***
Test_Case      Step_Action
```

# Python – Robot Framework

## Robot Framework (Settings block)

- ✓ Used for package import
- ✓ Keyword
  - ***Library*** : Import python package
  - ***Resource*** : Import robot package
  - ***Suit Setup*** : Execute the test preliminary work before test
  - ***Suit Teardown*** : Recovery the setting after test

| Settings | Value | Value | Value |
|---|---|---|---|
| Library | ../util/ipmitool/IPMI_util.py | | |
| Resource | ../util/ipmitool/IPMI_Power_Control.robot | | |
| Variables | ../setup.py | | |
| Suit Setup | Launch Browser and Login GUI | | |
| Suit Teardown | Close Browser | | |

# Python – Robot Framework

## Robot Framework (Variable block)

- ✓ Used for variable declare.
- ✓ Variable can be named by user.
- ✓ Used *${ }* format to define variable name.

| Variable | Value | Value |
|---|---|---|
| ${xpath_hardware_status_heading} | //*[@id="main"]/div/div/aside[1]/div/section/ul/li[11]/a | |
| ${BMCWeb} = | https://${BMCIP} | |

# Python – Robot Framework

## Robot Framework (Keyword block)

- ✓ Function declare for used.
- ✓ Function can be named by user.
- ✓ Used Robot Framework Keyword ***[Arguments]*** to define function arguments.

| Keyword | Action | Argument | Argument | Argument | Argument | Argument | Argument |
|---|---|---|---|---|---|---|---|
| Chassis Power On | [Arguments] | (Optional) | | | | | |
| | ${result} = | ipmicmd | lanplus | ${USERID} | ${PASSWORD} | ${BMCIP} | chassis power on |
| | Log To Console | ${result} | | | | | |
| | Should Contain | ${result} | Up/On | | | | |
| | …… | | | | | | |

# Python – Robot Framework

## Robot Framework - In common use Keyword

- ✓ *Run Keyword and Return Status*
- ✓ *Wait Until Page Contains Element*
- ✓ *Should Be Equal*
- ✓ *Set Test Variable*
- ✓ *Run Keyword If*
- ✓ *Click Element*
- ✓ *Double Click Element*
- ✓ *Sleep*
- ✓ *Element Attribute Should Contain Text*

# Python – Robot Framework

## Robot Framework (Test Case block)

- ✓ Test Case step defined.
- ✓ Test Case check point defined.
- ✓ Test Case step can call Function (*Keyword*) what you want to test.
- ✓ Used Robot Framework Keyword ***[Documentation]*** to define test description

| Test Case | Action | Argument | Argument |
|---|---|---|---|
| BMC Web Power Off Server Immediate | [Documentation] | Verify BMC Power Control From WebUI | |
| | Wait Until Element Is Visible | //*[@id="main"]/div/header/label | |
| | Click Element | //*[@id="main"]/div/div/aside[1]/div/section/ul/li[11]/a | |
| | Sleep | ${OSDelay} | |
| | Capture Page Screenshot | | |
| | …… | | |

# Python – Robot Framework

## Robot Framework – Redfish PATCH Test

C: > Users > david_zhu > Desktop > BMC_Automation_Test-master > BMC_Automation_Test-master > redfish > A008-12_[PATCH]Computer_System.robot

```
### Code by David_Zhu ###

*** Settings ***
Library  OperatingSystem
Library  Collections
Library  ../util/redfishtool/Redfish_util.py
Variables  ../setup.py


*** Test Cases ***
Redfish Test A008-12
    ${json} =  Get File  ../BMC_Automation_Test-master/criteria/redfish/A008-12.json
    Log To Console  ${json}
    ${dict} =  json_to_dict  ${json}

    ${result} =  redfishtool_patch  ${BMCIP}  /redfish/v1/Systems/Self  ${USERID}  ${PASSWORD}  ${dict}
    Log To Console  ${result}
    Should Be Equal  "${result}"  "204"

    #Should Be Equal  ${json}  ${result}
    #Should Not Be Empty  ${result}

    ${result} =  redfishtool_get  ${BMCIP}  /redfish/v1/Systems/Self  ${USERID}  ${PASSWORD}
    Should Contain  ${result}  "IndicatorLED": "Blinking"
    Should Contain  ${result}  "PowerRestorePolicy": "AlwaysOn"
```

Settings : Used to Import the python package or other Robot script witch need to used.

Test Cases : Used to design the test step of the test target, it can be assigned the multiple test case to do the sequential test.

Redfish Function test : Call Redfish function to do the PATCH test, used Robot Framework Keyword ***"Should Be Equal "*** to compare the response.

# Python – Robot Framework

## Robot Framework- Web UI Test

C: > Users > david_zhu > Desktop > BMC_Automation_Test-master > BMC_Automation_Test-master > gui > BMC_Web_Power_Control.robot > ...

```
### robot_test_keywords.robot ###

*** Settings ***
Library  OperatingSystem
Library  Selenium2Library
Library  ../util/ipmitool/IPMI_util.py
Resource  ../util/ipmitool/IPMI_Power_Control.robot
Resource  ../util/gui/BMC_Web_Login.robot

Variables  ../setup.py
Suite Teardown  Close Browser

*** Test Cases ***
BMC Web Power Off Server Immediate
    BMC Web Login
    Wait Until Element Is Visible  //*[@id="main"]/div/header/label
    Click Element  //*[@id="main"]/div/div/aside[1]/div/section/ul/li[11]/a

    Wait Until Element Is Visible  //*[@id="main"]/div/div/aside[2]/div/section[1]/h1
    Click Element  //*[@id="main"]/div/div/aside[2]/div/section[2]/div/div/div[2]/form/div[1]/label/div/ins
    Click Element  //*[@id="save"]
    Handle Alert

    Sleep  ${OSDelay}

    ${result} =  ipmicmd  lanplus  ${USERID}  ${PASSWORD}  ${BMCIP}  chassis power status
    Log To Console  ${result}
    Should Contain  ${result}  off

    Capture Page Screenshot
    Close Browser
```

Variables : Used for variable declare, If test on WebUI, it can used to declare the WebUI source code. (Press F12 to get the Web item *Xpath*)

WebUI Control : Base on ***Selenium2 Framework*** and used Robot Framework Keyword ***"Click Element "*** control WebUI to click items.

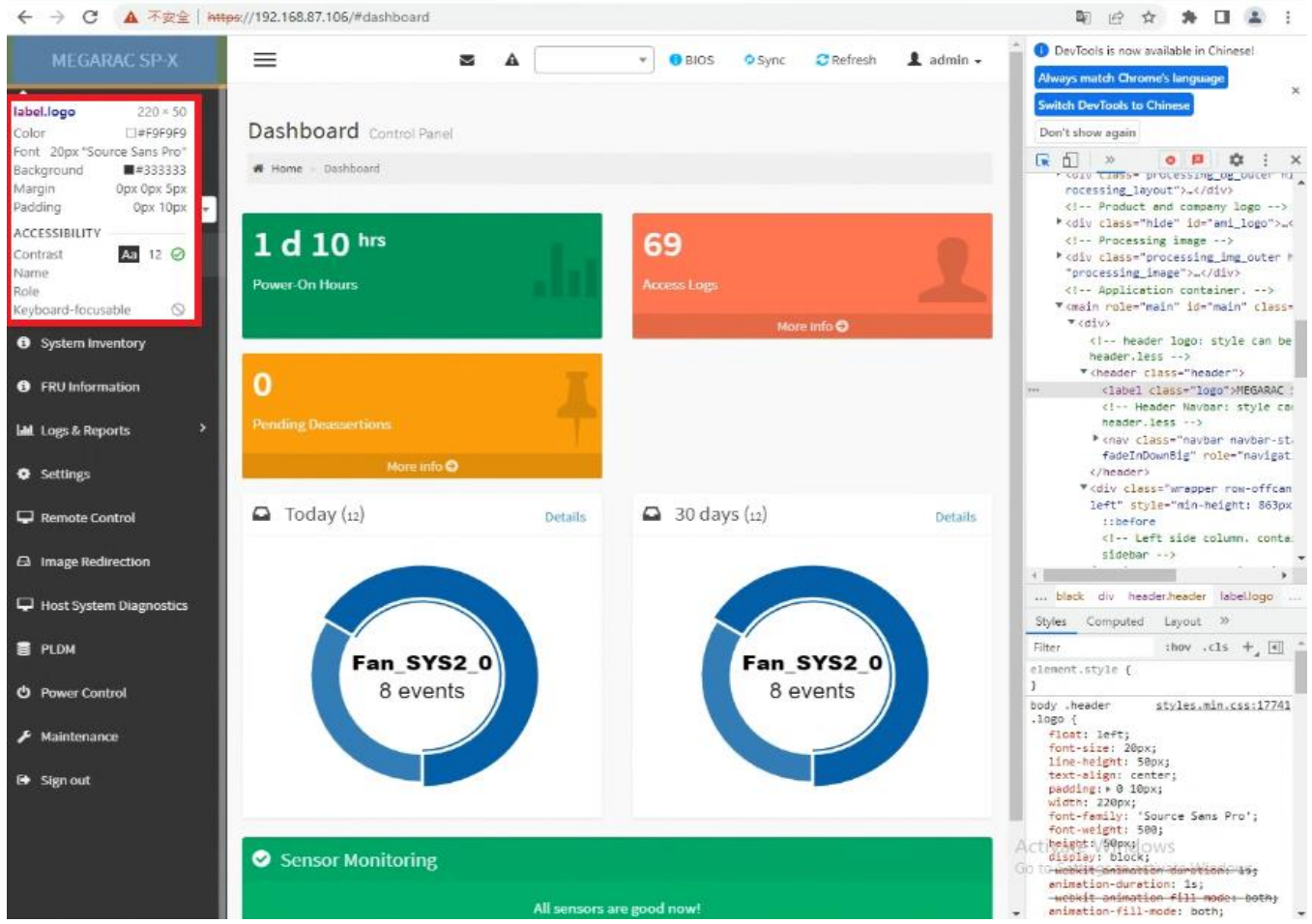
WebUI Test : After WebUI Test finished, can used Robot Framework Keyword ***"Capture Page Screenshot"*** to capture the Web page and then Close the Broswer

# Python – Robot Framework

Selenium Framework- Web UI Control

Web Source code : Press F12 to get the Web item Xpath, ***Selenium framework*** need to get the web item Xpath and depend on WebDriver to control the web.

Chrome : *ChromeDriver*
Firefox : *FirefoxDriver*



# Automation Tool Introduction

# Automation Tool Introduction

## Automation Related Technical

- Environment requirement as below

- Windows OS
- Python 3
- Robot Framework
  - ✓ For automation test and test report creation
- Ipmitool
  - ✓ For IPMI command used
- Redfishtool
  - ✓ For REST method GET / POST / PATCH / DEL used
- Selenium2Library
  - ✓ For Web GUI automation test control (Web motion control)

# Automation Tool Introduction

## Automation Tool Environment Setting

- The newest python installation.
- Need to execute "pip install -r requirements.txt" at the BMC_Automation_Test folder to install the related python package.
- "BMC_Automation_Test/drivers" folder need to add the environment variable on Windows OS.
- "util" folder need to add the environment variable on Windows OS.
- Google Chrome need to used Version 100.0.4896.127 above.

# Automation Tool Introduction

## Automation Tool Setup and Run

- Set the related parameter about BMC IP, Username, Password and others on GUI interface.
- Execute the GUIsetup.py by command "Python GUIsetup.py" to launch the GUI interface.
- Execute the command "robot TestCase\\${TestCaseName}" to used by command line.
- After test finished, you can check the Test report under the "BMC_Automation_Test" folder.
- This tool can test BMC function which TestCase you add in the TestCase folder.

# Automation Tool Introduction

## Automation Tool  Architecture

Criteria Define

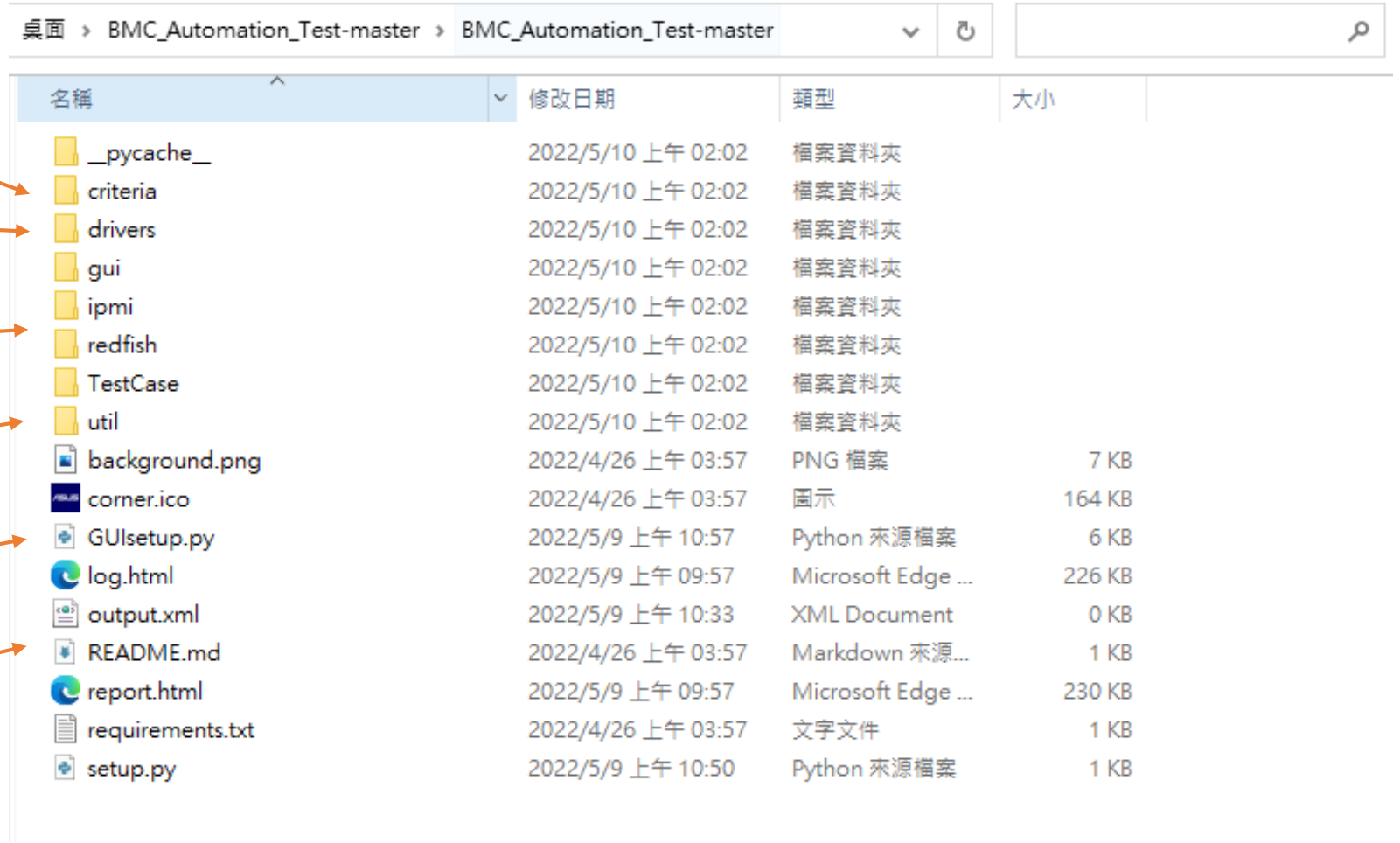
Web Driver

Test Case Define

Related Tool

GUI Setup

Test Report



# Automation Tool Introduction

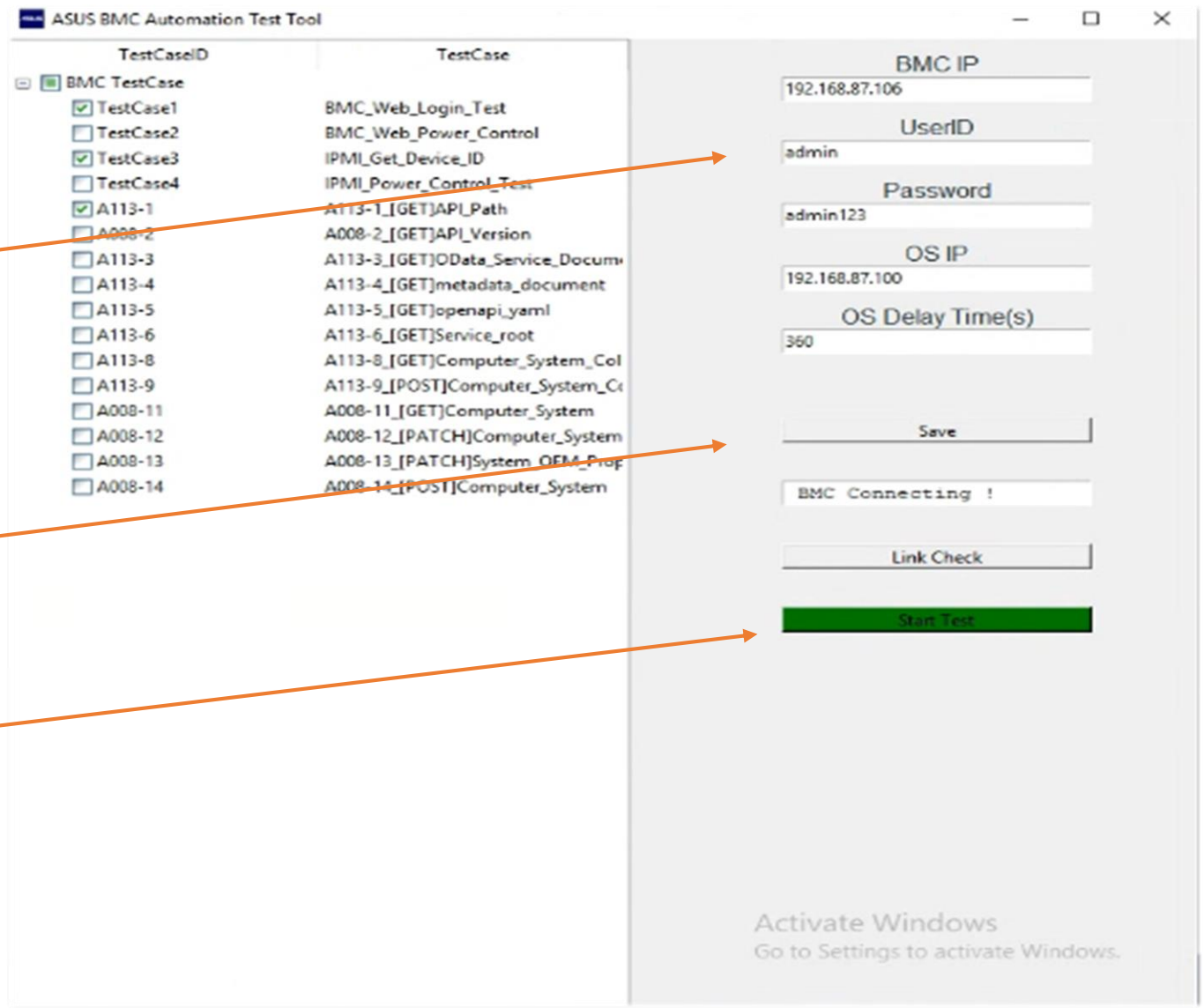
## Automation Tool GUI

Test Case Selection

Configure Setup

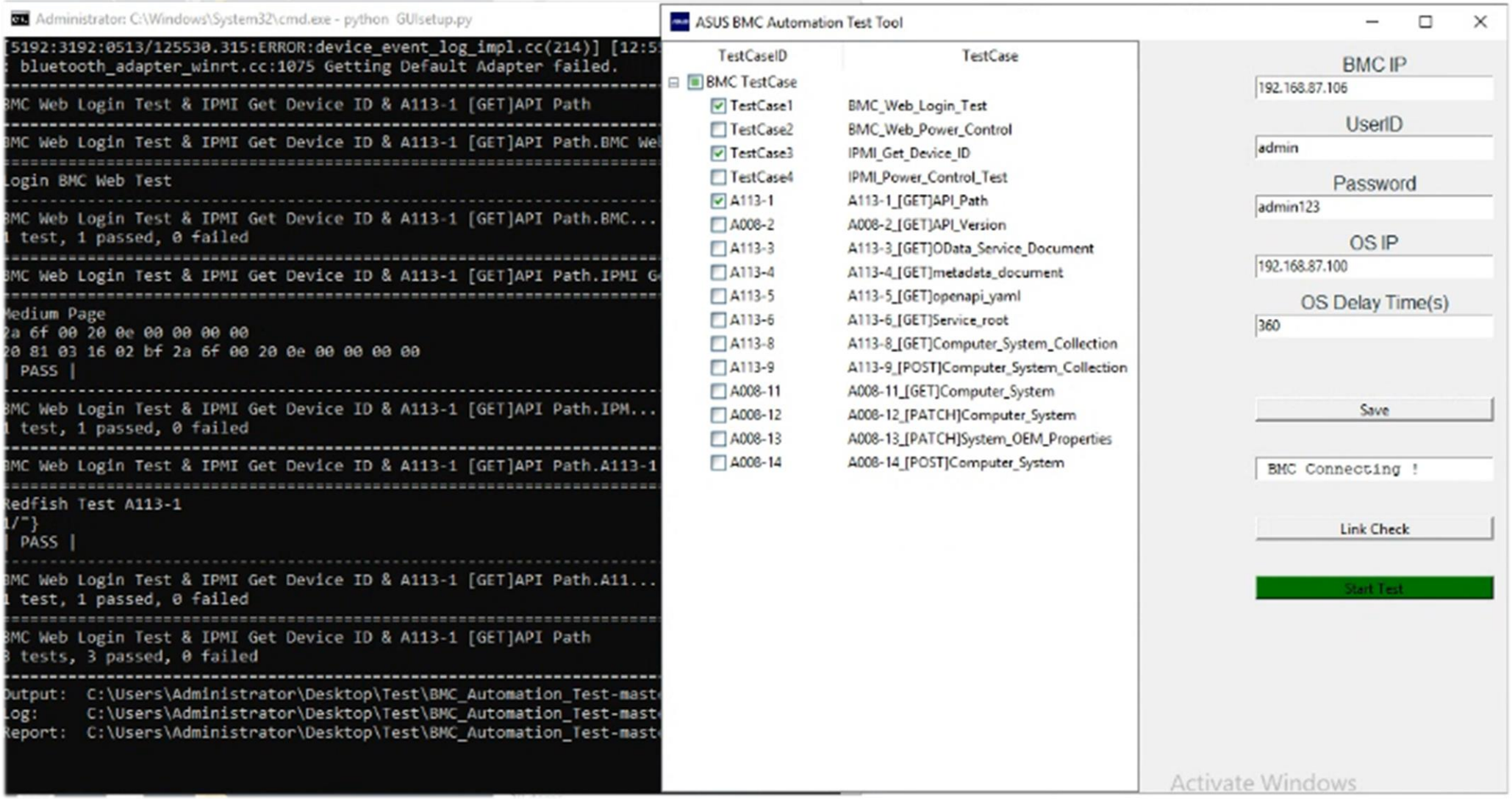
BMC Connection Check

Start Test



# Automation Tool Introduction

## Automation Tool Test Run



# Automation Tool Introduction

## Automation Tool Test Report

REPORT

### BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path Log

Generated
20220513 12:55:40 UTC-07:00
2 minutes 53 seconds ago

#### Test Statistics

| Total Statistics | Total | Pass | Fail | Skip | Elapsed | Pass / Fail / Skip |
|---|---|---|---|---|---|---|
| All Tests | 3 | 3 | 0 | 0 | 00:00:15 | |

| Statistics by Tag | Total | Pass | Fail | Skip | Elapsed | Pass / Fail / Skip |
|---|---|---|---|---|---|---|
| No Tags | | | | | | |

| Statistics by Suite | Total | Pass | Fail | Skip | Elapsed | Pass / Fail / Skip |
|---|---|---|---|---|---|---|
| BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path | 3 | 3 | 0 | 0 | 00:00:18 | |
| BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path . BMC Web Login Test | 1 | 1 | 0 | 0 | 00:00:18 | |
| BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path . IPMI Get Device ID | 1 | 1 | 0 | 0 | 00:00:00 | |
| BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path . A113-1 [GET]API Path | 1 | 1 | 0 | 0 | 00:00:00 | |

#### Test Execution Log

SUITE BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path — 00:00:18.163
Full Name: BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path
Start / End / Elapsed: 20220513 12:55:22.279 / 20220513 12:55:40.442 / 00:00:18.163
Status: 3 tests total, 3 passed, 0 failed, 0 skipped

SUITE BMC Web Login Test — 00:00:17.577
Full Name: BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path.BMC Web Login Test
Source: C:\Users\Administrator\Desktop\Test\BMC_Automation_Test-master\TestCase\BMC_Web_Login_Test.robot
Start / End / Elapsed: 20220513 12:55:22.322 / 20220513 12:55:39.899 / 00:00:17.577
Status: 1 test total, 1 passed, 0 failed, 0 skipped

TEARDOWN Selenium2Library . Close Browser — 00:00:02.054

TEST Login BMC Web Test — 00:00:14.852

SUITE IPMI Get Device ID — 00:00:00.124
Full Name: BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path.IPMI Get Device ID
Source: C:\Users\Administrator\Desktop\Test\BMC_Automation_Test-master\TestCase\IPMI_Get_Device_ID.robot
Start / End / Elapsed: 20220513 12:55:39.902 / 20220513 12:55:40.026 / 00:00:00.124
Status: 1 test total, 1 passed, 0 failed, 0 skipped

TEST Medium Page — 00:00:00.114

SUITE A113-1 [GET]API Path — 00:00:00.413
Full Name: BMC Web Login Test & IPMI Get Device ID & A113-1 [GET]API Path.A113-1 [GET]API Path

# Automation Tool Introduction

# Demo

# Automation Tool Introduction

## Reference

Robot Framework User Guide
**https://robotframework.org/#development**

Python Download
***https://www.python.org/downloads/***

VS Code Download
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