
epam
TEST AUTOMATION INTRO
10 JAN 2018

DANILA MOROKOV

Lead QA Automation

In Testing Automation 6 years

UI WEB Testing

API REST Testing

Performance / Stability Testing

Security Testing

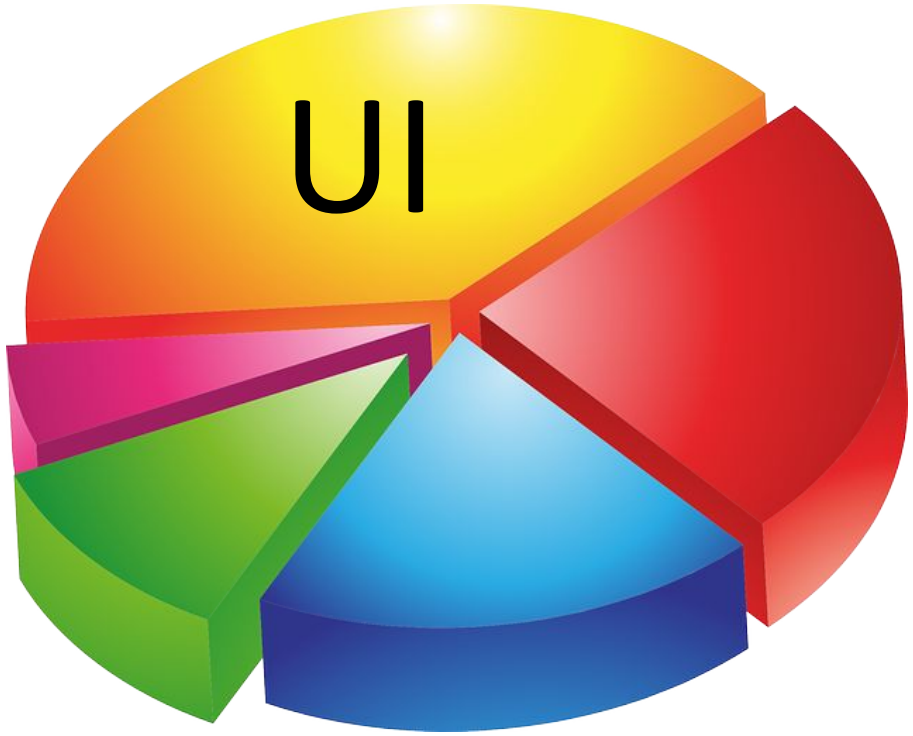
UI Automation. Selenium

- Test runs and project structure
  - Maven
  - TestNg / JUnit
- PageObjects, Locators. TestNg and Selenium
- Html Elements. Selenide. Best Practices UI Testing.
- CI. Jenkins. Allure Reporting
- BDD, TDD, KDT, DDT

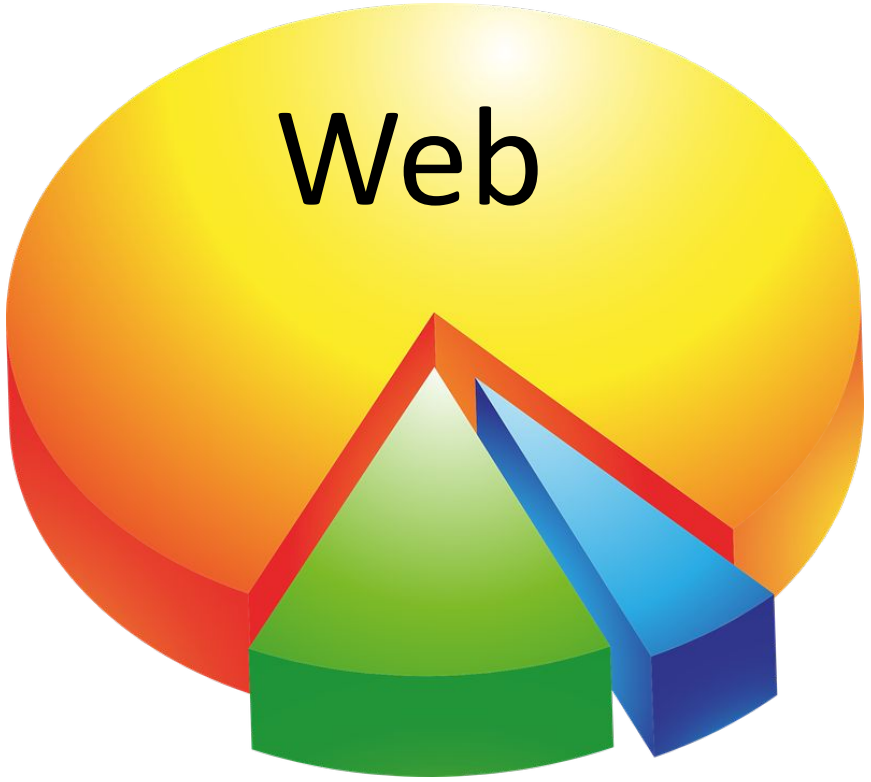
AGENDA

- Why Selenium
- Simple tests
- WebDriver features. Setup driver
- Work with WebElements
- Action builder
- JavaScript executor
- Screenshot maker

Testing kinds



UI testing kinds

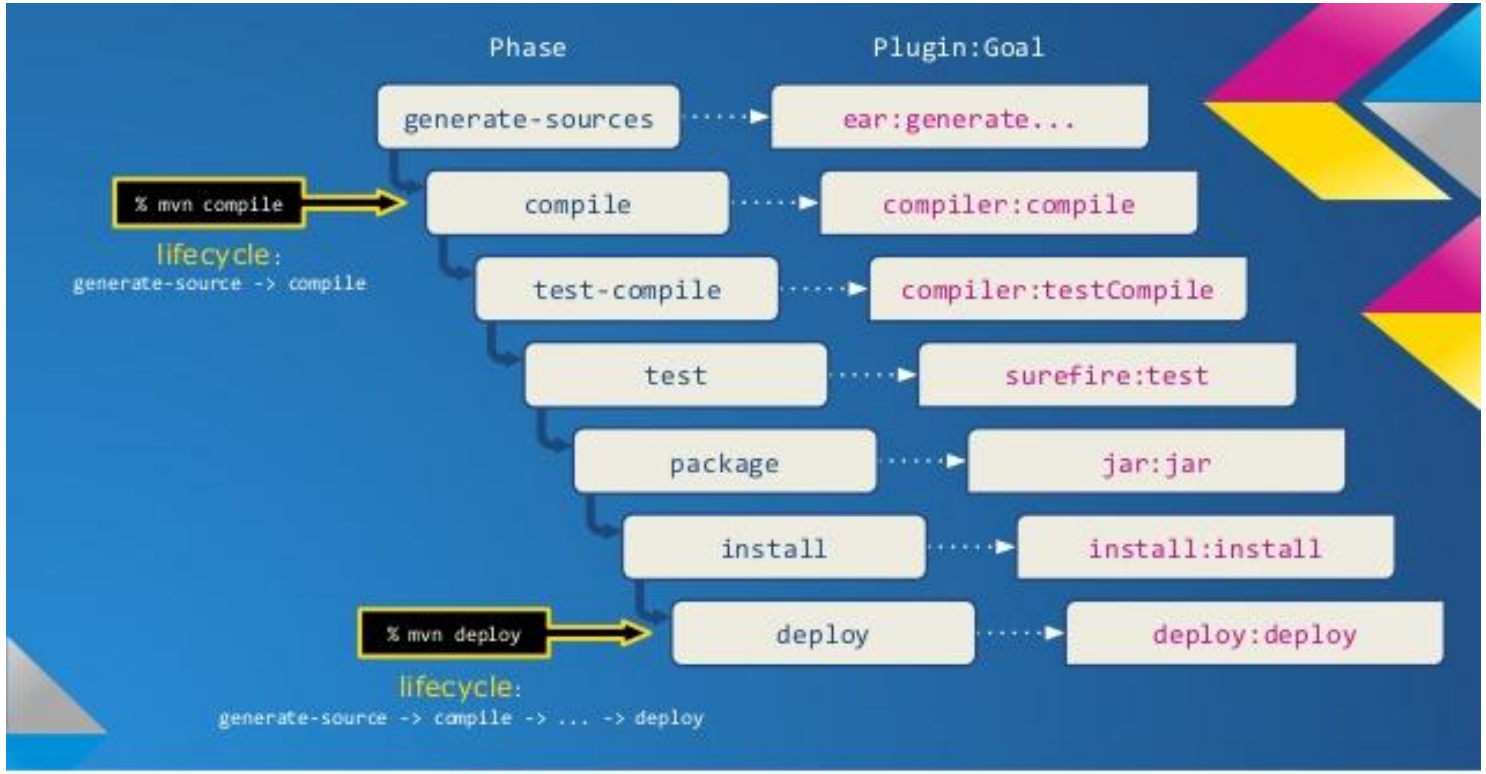


MAVEN

UI AUTOMATION?

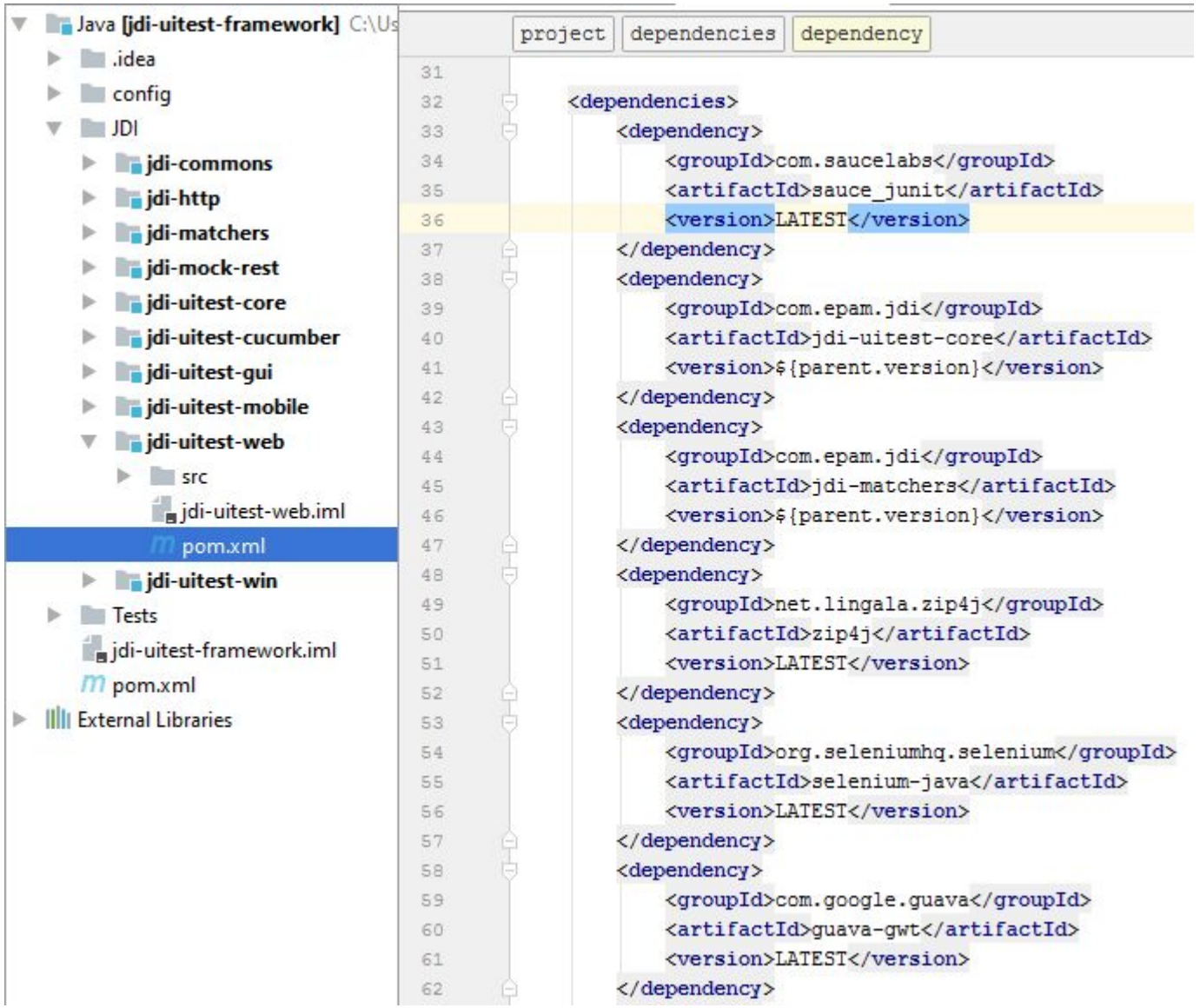
- Build Java project
- Resolve dependencies
- Manage project modules
- POM.xml inheritance

BUILD JAVA PROJECT

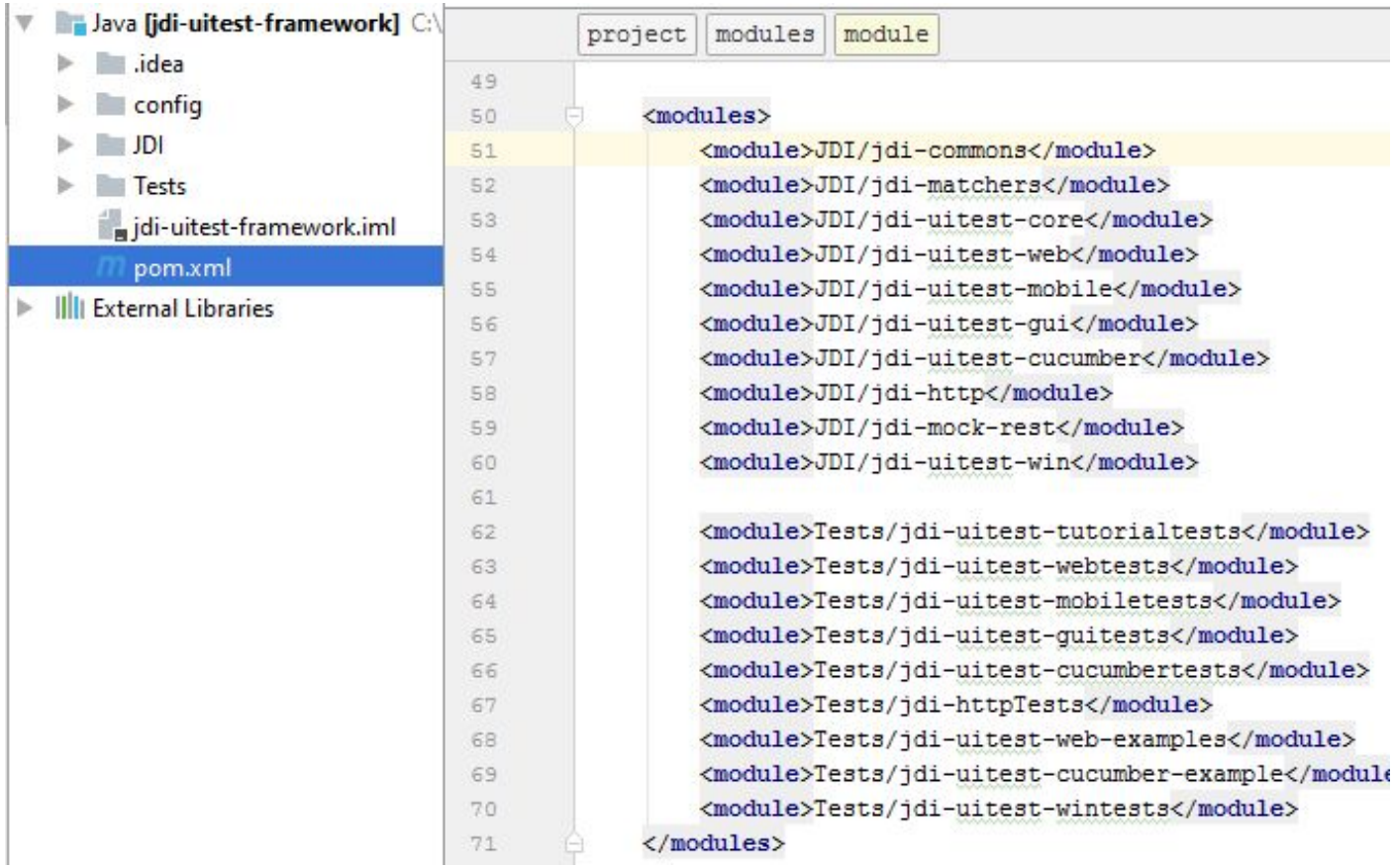


Lifecycle is just like a lazy package that is made of **Phases**. It helps you to execute multiple **Goals** sequentially.

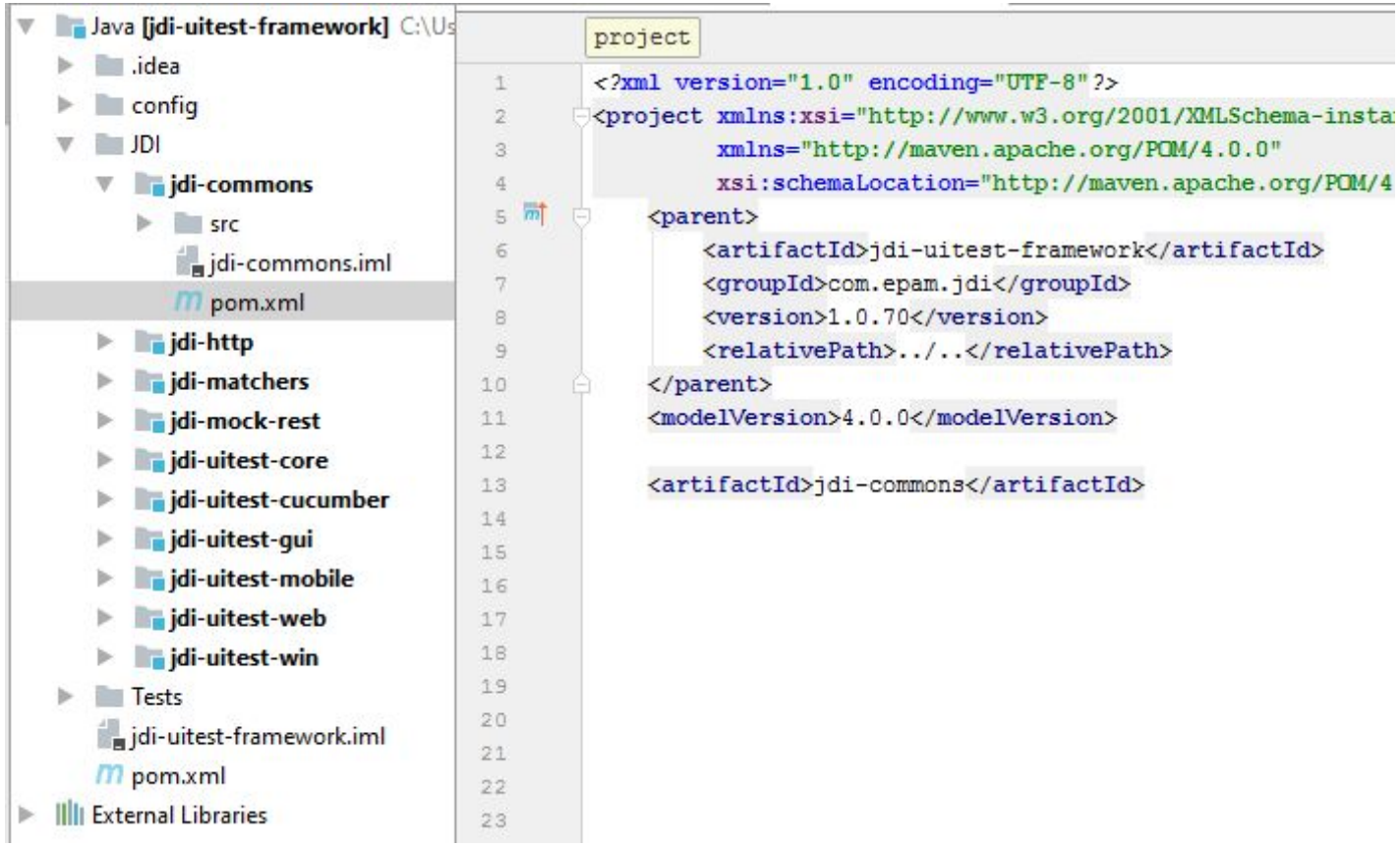
DEPENDENCIES



MODULES AND INHERITANCE



MODULES AND INHERITANCE



TESTNG

PURPOSE

TestNG is a testing framework inspired from JUnit and NUnit but introducing some new functionalities that make it more powerful and easier to use.

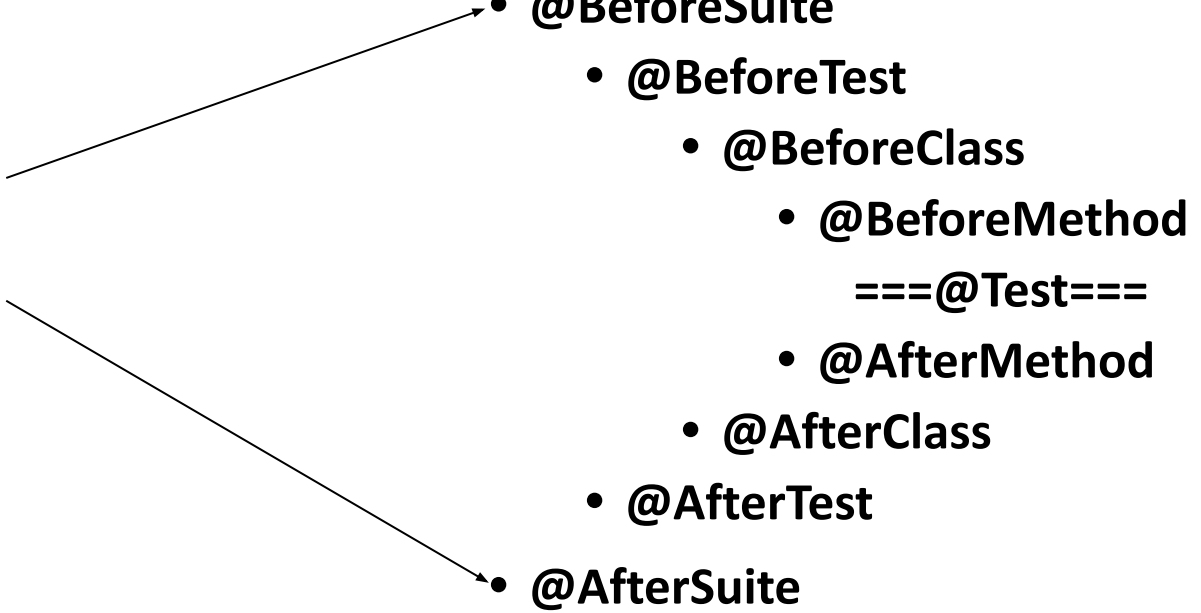
TestNG is designed to cover all categories of tests: unit, functional, end-to-end, integration, etc...

FEATURES

- Annotations.
- Run your tests in pools with various policies available.
- Flexible test configuration.
- Support for data-driven testing (with @DataProvider).
- Support for parameters.
- Powerful execution model (no more TestSuite).
- Supported by a variety of tools and plug-ins (IDEA, Maven, ...).

ANNOTATIONS

- @Test
- @Before
- @After



JUNIT VS TESTNG

Functionality - JUnit 4 vs TestNG

	Annotation Support	Exception Test	Ignore Test	Timeout Test	Suite Test	Group Test	Parameterized (primitive value)	Parameterized (object)	Dependency Test
TestNG	✓	✓	✓	✓	✓	✓	✓	✓	✓
JUnit 4	✓	✓	✓	✓	✓	✗	✓	✗	✗

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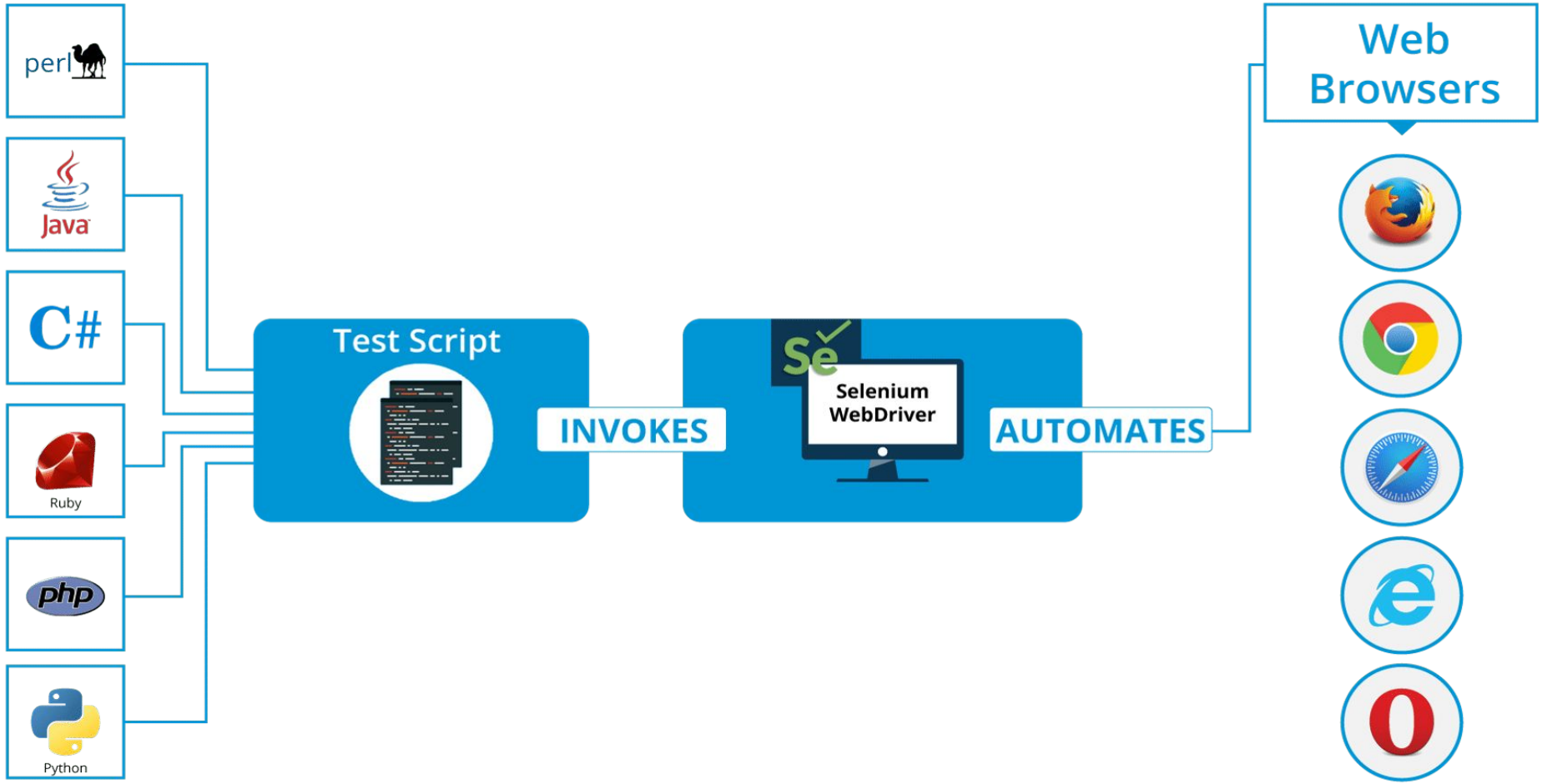
SELENIUM

SELENIUM

- Most popular UI testing Framework
- Every OS, Browser and Platform
- Open Source
- Large Community
- Very flexible to operate with any UI
- Support Multithreading

SELENIUM


perl
Java
C#
Ruby
php
Python
Test Script
INVOKES
Selenium
WebDriver
AUTOMATES
Web
Browsers

WEB DRIVER

SIMPLE WEBDRIVER

```
@Test
public void simpleTest() {
        WebDriver driver = new FirefoxDriver();
        driver.navigate().to("https://www.epam.com");
}
```

```
@Test
public void simpleTest() {
        setProperty("webdriver.chrome.driver",
          "C:/Selenium/chromedriver.exe");
        WebDriver driver = new ChromeDriver();
        driver.navigate().to("https://www.epam.com");
}
```

SIMPLE SELENIUM TEST

```
@Test
public void simpleTest() {
    setProperty("webdriver.chrome.driver", "C:/Selenium/chromedriver.exe");
    WebDriver driver = new ChromeDriver();
    driver.navigate().to("https://www.epam.com");
    Assert.assertEquals(driver.getTitle(), "EPAM | Software Product
Development Services");
    driver.close();
}
```

DEMO: SIMPLE TEST

WEB DRIVER KINDS

```
@Test
public void simpleTest() {
    new FirefoxDriver();
    new ChromeDriver();
    new InternetExplorerDriver();
    new HtmlUnitDriver();
    new SafariDriver();
    new RemoteWebDriver(remoteUrl, remoteCapabilities);
}
```

CAPABILITIES

```
@Test
public void simpleTest() {
    DesiredCapabilities cap = DesiredCapabilities.internetExplorer();
    cap.setJavascriptEnabled(true);
    cap.setBrowserName("chrome");
    cap.setPlatform(Platform.ANDROID);
    cap.setVersion("37.0");
    new InternetExplorerDriver(cap);
}
```

WEB DRIVER MANAGE

```
@Test
public void simpleTest() {
    driver.manage().window().getPosition();
    driver.manage().window().maximize();
    driver.manage().window().setSize(new Dimension(1024, 768));
    driver.manage().timeouts().implicitlyWait(2, TimeUnit.SECONDS);
    driver.manage().timeouts().pageLoadTimeout(10, TimeUnit.SECONDS);
    driver.manage().timeouts().setScriptTimeout(3, TimeUnit.SECONDS);
    driver.manage().deleteAllCookies();
    driver.manage().addCookie(new Cookie("name", "value"));
}
```

DEMO: DRIVER SETUP

WEB DRIVER FUNCTIONS

```
@Test
public void simpleTest() {
    driver.get("https://www.epam.com");
    assertEquals(driver.getCurrentUrl(), Url);
    assertEquals(driver.getTitle(), Title);


    driver.getMouse();
    driver.getKeyboard();
    driver.getCommandExecutor();
    assertTrue(driver.getPageSource().contains("<meta>google-analytics"));
    driver.quit();
}
```

WINDOW HANDLES

```
@Test
public void simpleTest() {
    String windowHandler = driver.getWindowHandle();
    Set<String> windows = driver.getWindowHandles();
    driver.switchTo().window(windowHandler);
    driver.switchTo().frame("frame-id");
    driver.switchTo().alert();
}
```

WEB DRIVER NAVIGATE

```
@Test
public void simpleTest() {
    driver.navigate().to("https://www.epam.com");
    driver.navigate().refresh();
    driver.navigate().back();
    driver.navigate().forward();
}
```

DEMO: WINDOWS HANDLE

WEB ELEMENTS

FIND ELEMENT(S)

```
@Test
public void simpleTest() {
    WebElement element = driver.findElement (By.id("submit-id"));
    List<WebElement> elements = driver.findElements (By.tagName("li"));

    driver.findElement (By.className("options-class"));
    driver.findElement (By.name("button-name"));
    driver.findElement (By.cssSelector(".options"));
    driver.findElement (By.xpath("//li[@name='button-name']"));
    driver.findElement (By.linkText("Contact Us"));
    driver.findElement (By.partialLinkText("Contact"));
}
```

WEB ELEMENT ACTIONS

```
@Test
public void simpleTest() {
    element.click();
    element.sendKeys("Admin007");
    element.clear();
}
```

WEB ELEMENT PROPERTIES

```
@Test
public void simpleTest() {
    element.click();
    element.sendKeys("Admin007");
    element.clear();

    assertEquals(element.getText(), "Ages");
    assertEquals(element.getAttribute("el-value"), "Save Product");
    assertEquals(element.getCssValue("font-size"), "12");
}
```

WEB ELEMENT PROPERTIES

```
@Test
public void simpleTest() {
        assertTrue(element.isDisplayed());
        assertTrue(element.isEnabled());
        assertTrue(element.isSelected());

        Point point = element.getLocation();
        assertEquals(format("(%s,%s)", point.getX(), point.getY()), "(100,220)");
        Dimension size = element.getSize();
        assertEquals(format("%sX%s", size.height, size.width), "150X300");
}
```

HARD & SOFT ASSERTS

```
import org.testng.asserts.SoftAssert


@Test
public void simpleTest() {
        assertTrue(element.isDisplayed());

        SoftAssert softAssert = new SoftAssert();
        softAssert.assertTrue(element.isDisplayed())
}
```

DEMO: WEB ELEMENTS

ACTIONS BUILDER

ACTION BUILDER

```
@Test
public void simpleTest() {
    Actions action = new Actions(driver);
    action.moveToElement(element)
        .click()
        .build()
        .perform();
    action.click().perform();
    action.sendKeys("Text").perform();
}
```

ACTIONS

```
@Test
public void simpleTest() {
    action.clickAndHold().perform();
    action.doubleClick().perform();
    action.dragAndDrop(element, toElement).perform();
    action.dragAndDropBy(element, 100, 500).perform();
    action.keyDown(Keys.ALT).perform();
    action.keyUp(Keys.TAB).perform();
    action.moveByOffset(100, 500).perform();
    action.moveToElement(toElement).perform();
}
```

DEMO: ACTION BUILDER

JS EXECUTOR

JS EXECUTOR

```
@Test
public void simpleTest() {
    WebDriver driver = new ChromeDriver();
    JavascriptExecutor js = (JavascriptExecutor) driver;
    js.executeScript("alert('Hi!');");
    js.executeAsyncScript("alert('Hi, async!');");
}
```

USEFUL SCRIPTS

```
@Test
public void simpleTest() {
   // 1. Upload file on page
   js.executeScript("document.getElementById('elementid') .value='" + filePath + "';");
   // 2. Scroll down 500
   js.executeScript("window.scrollBy(0,500)"); //scroll up "window.scrollBy(0,-500)“
   //scroll left "window.scrollBy(-200,0)“        //scroll right "window.scrollBy(200,0)“
   // 3. Get element source
   String html = (String) js.executeScript("document.getElementById('elementid').innerHtml;");
   // 4. Click on invisible element
   js.executeScript("arguments[0].click();", element);
}
```

DEMO: EXECUTE JS

MAKE SCREENSHOTS

SCREENSHOT MAKER

```
@Test
public void simpleTest() {
    TakesScreenshot sc = (TakesScreenshot)driver;
    File screensFile = sc.getScreenshotAs(FILE);
    FileUtils.copyFile(screensFile, new File(screensFilePath));
}
```

PLAN

- Intro. Automation testing
- UI Automation. Selenium
- **Test runs and project structure.**
  - **Maven**
  - **TestNg / JUnit**
- **PageObjects. Locators. Page Factory.**
- **Html Elements. Selenide. Best Practices UI Testing.**
- **CI. Jenkins. Allure Reporting**
- **BDD, TDD, KDT, DDT**

QUESTIONS

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danila_morokov@epam.com