Ferramenta Selenium

O que é

- A ferramenta Selenium permite que se realizam testes automatizados de aplicativos Web
- Em particular, teste de regressão
- IDE Selenium
- Selenium WebDriver
- http://www.seleniumhq.org/

Os dois componentes

Which part of Selenium is appropriate for me?

Selenium WebDriver

If you want to

- create robust, browser-based regression automation suites and tests
- scale and distribute scripts across many environments

Then you want to use Selenium WebDriver; a collection of language specific bindings to drive a browser -- the way it is meant to be driven.

Selenium WebDriver is the successor of Selenium Remote Control which has been officially deprecated. The Selenium Server (used by both WebDriver and Remote Control) now also includes built-in grid capabilities.

Selenium IDE

If you want to

- create quick bug reproduction scripts
- create scripts to aid in automation-aided exploratory testing

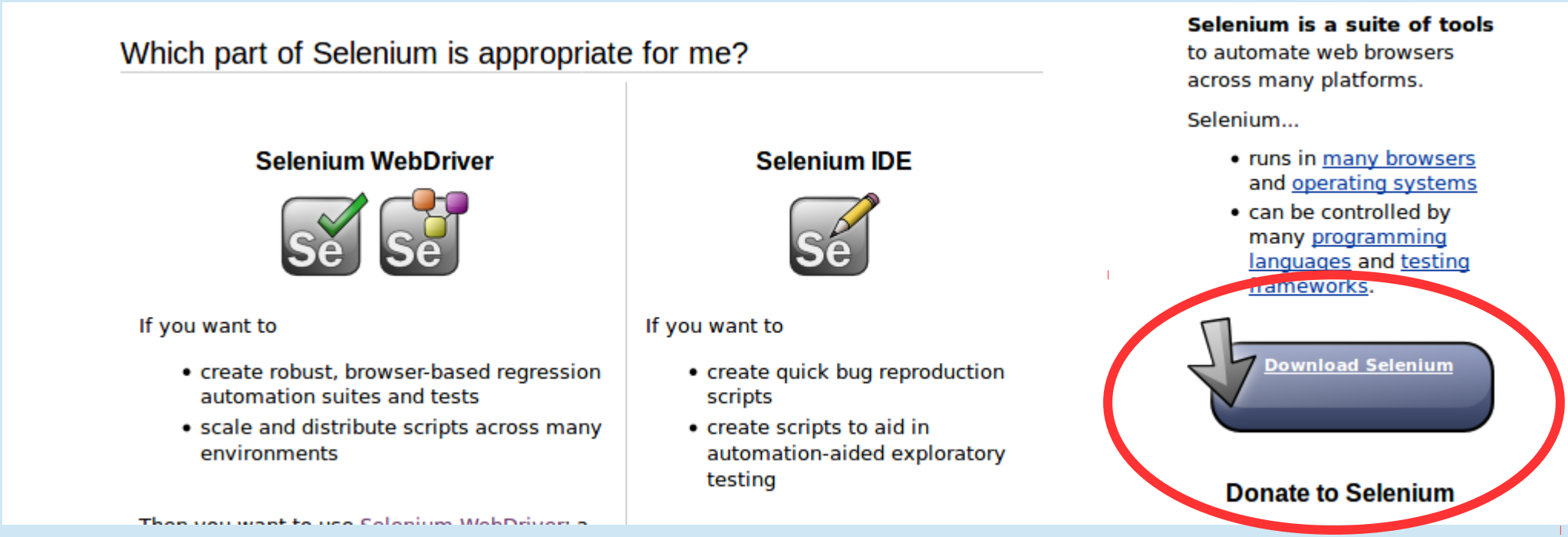
Then you want to use Selenium IDE; a Firefox add-on that will do simple record-and-playback of interactions with the browser.

Vamos começar com IDE

- O IDE permite que você navegue no browser
- E vá registrando todos os passos
  - clicar num link
  - digitar uma url
  - apertar botão back
- Ao finalizar a gravação, os passos podem ser gravados
- E depois reproduzidos

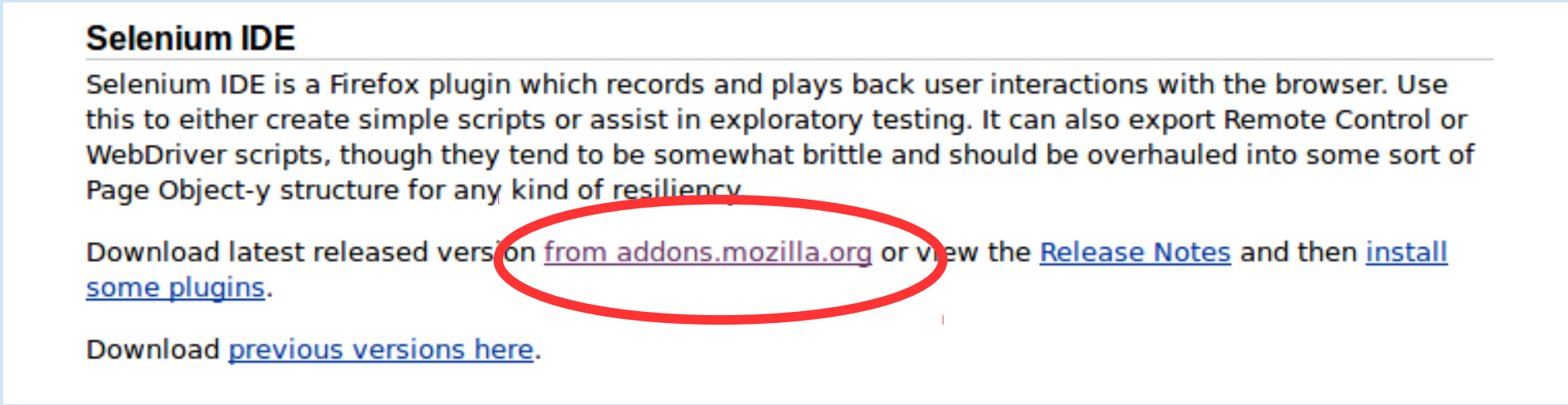
Instalação

- http://www.seleniumhq.org/



Instalação

- http://www.seleniumhq.org/download/



Selenium IDE

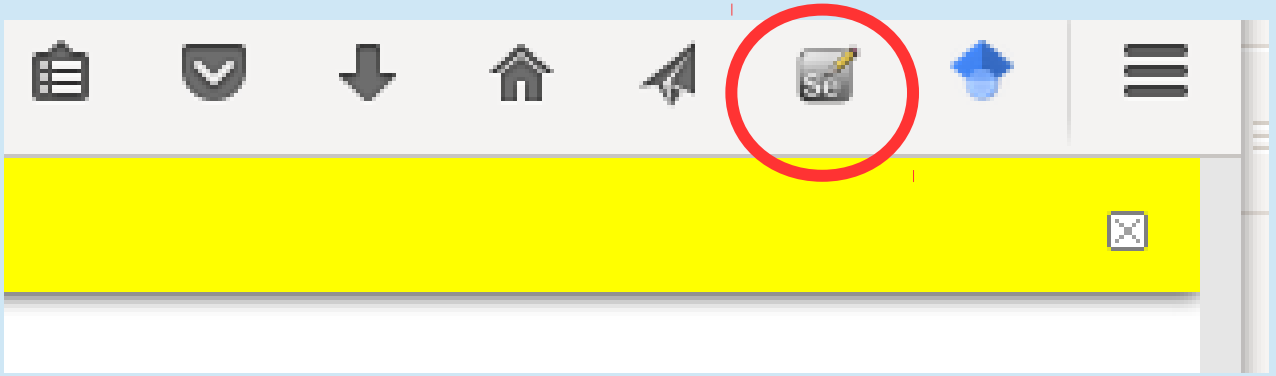
Selenium IDE is a Firefox plugin which records and plays back user interactions with the browser. Use this to either create simple scripts or assist in exploratory testing. It can also export Remote Control or WebDriver scripts, though they tend to be somewhat brittle and should be overhauled into some sort of Page Object-y structure for any kind of resiliency.

Download latest released version from addons.mozilla.org or view the Release Notes and then install some plugins.

Download previous versions here.

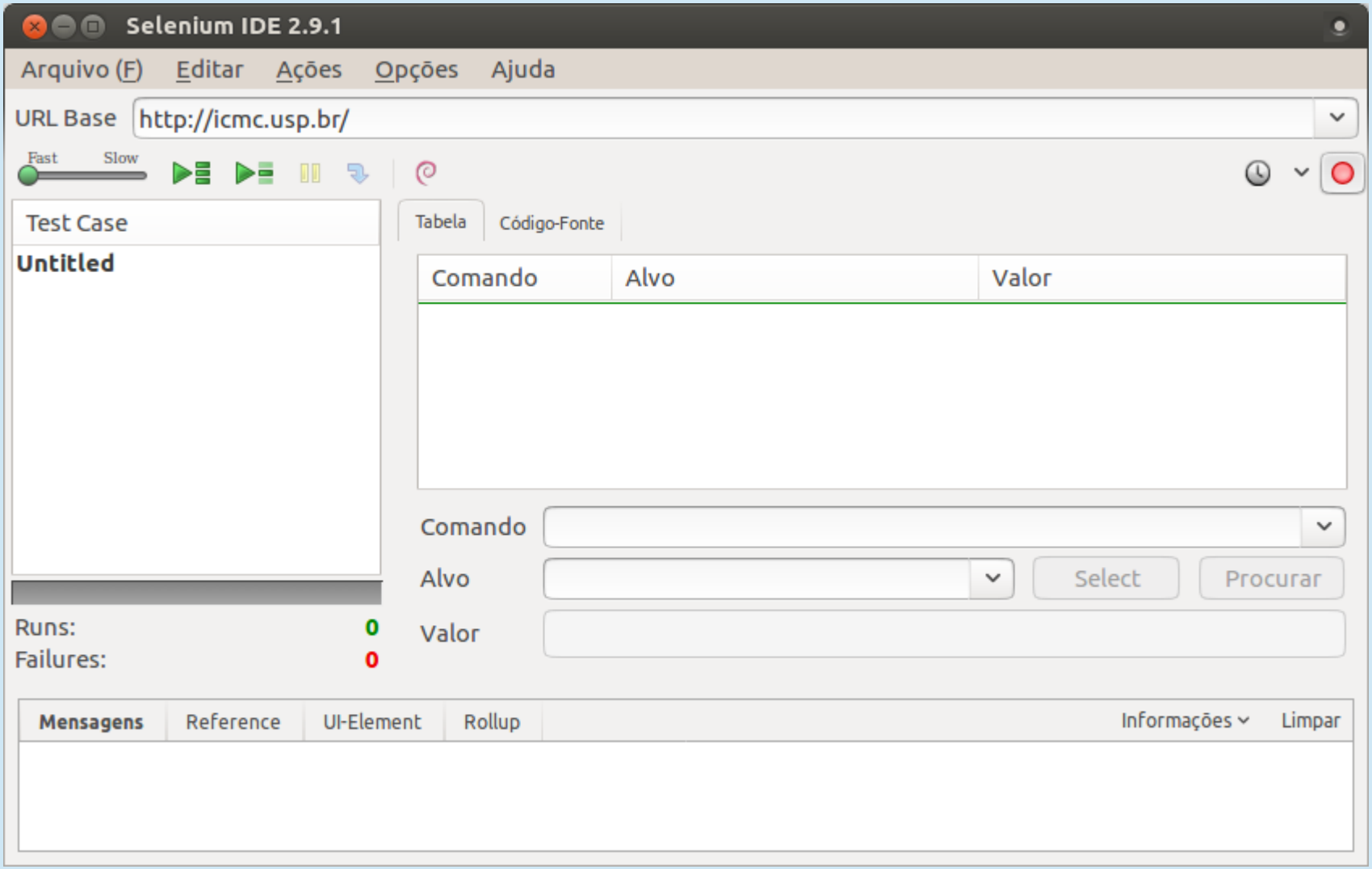
Usando IDE

- Feita a instalação aparece no canto superior direito o icone do IDE

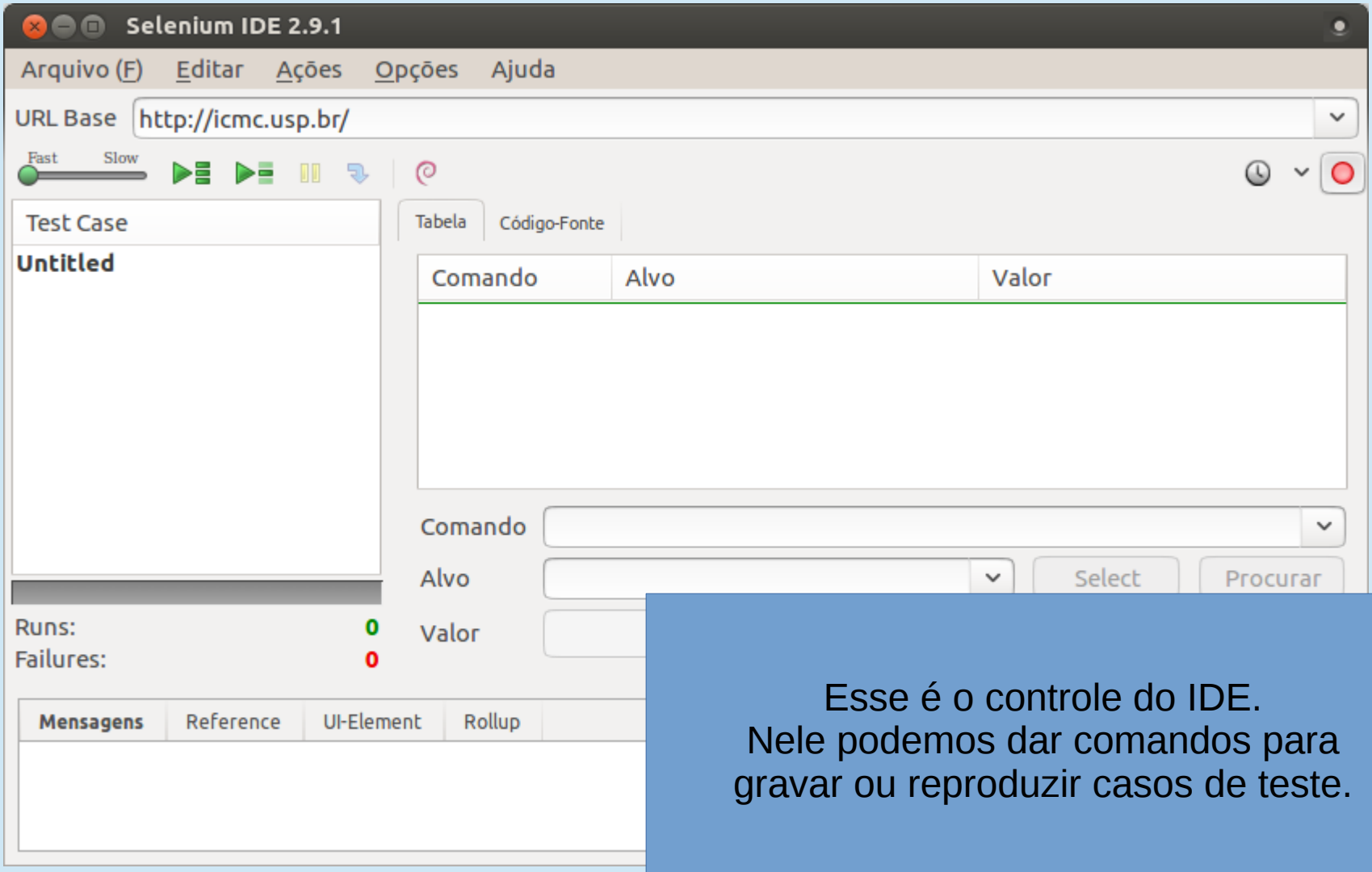


- Clique e veja o que acontece

Usando IDE – gravar

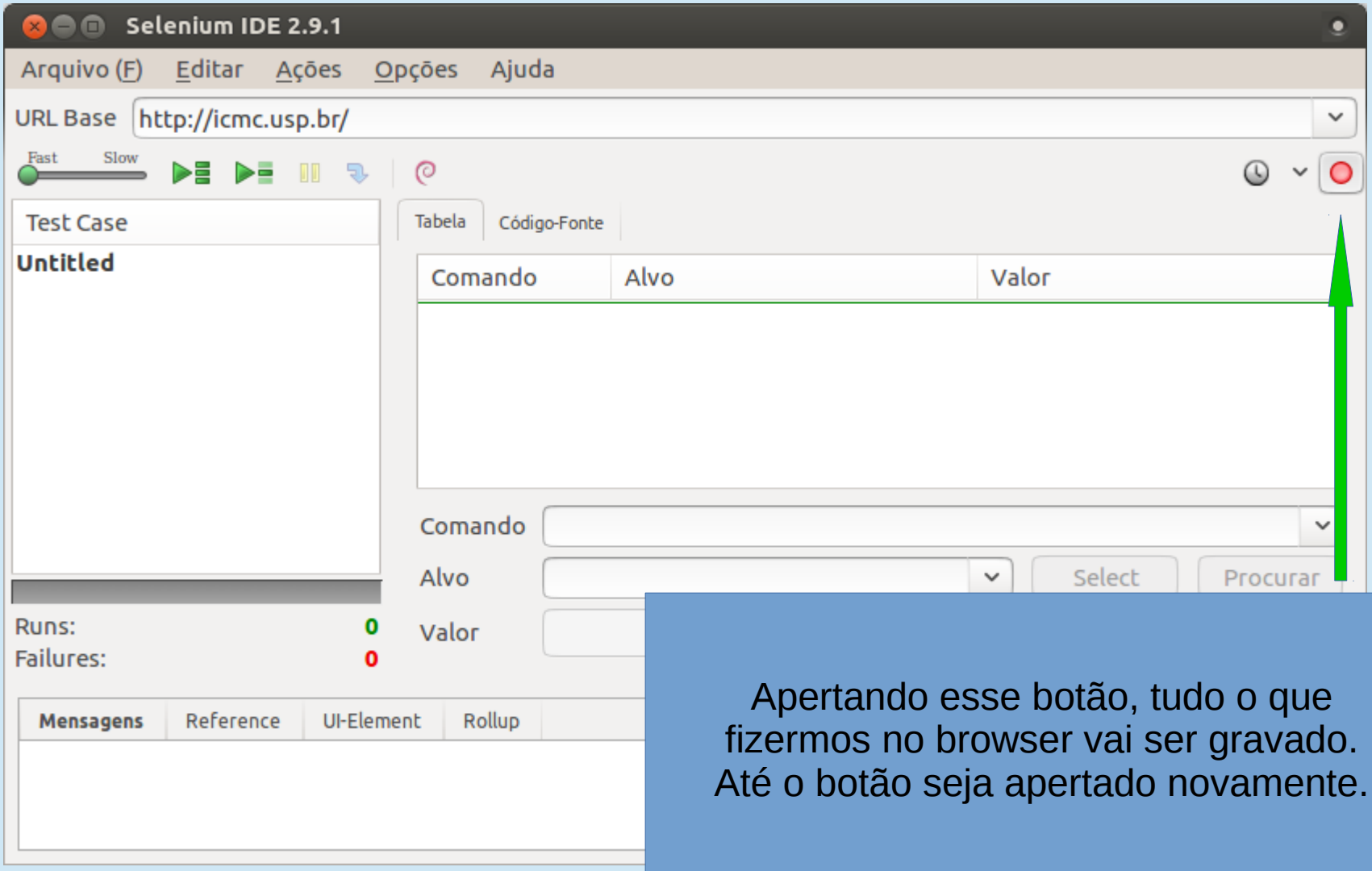


Usando IDE – gravar



Esse é o controle do IDE.
Nele podemos dar comandos para gravar ou reproduzir casos de teste.

Usando IDE – gravar

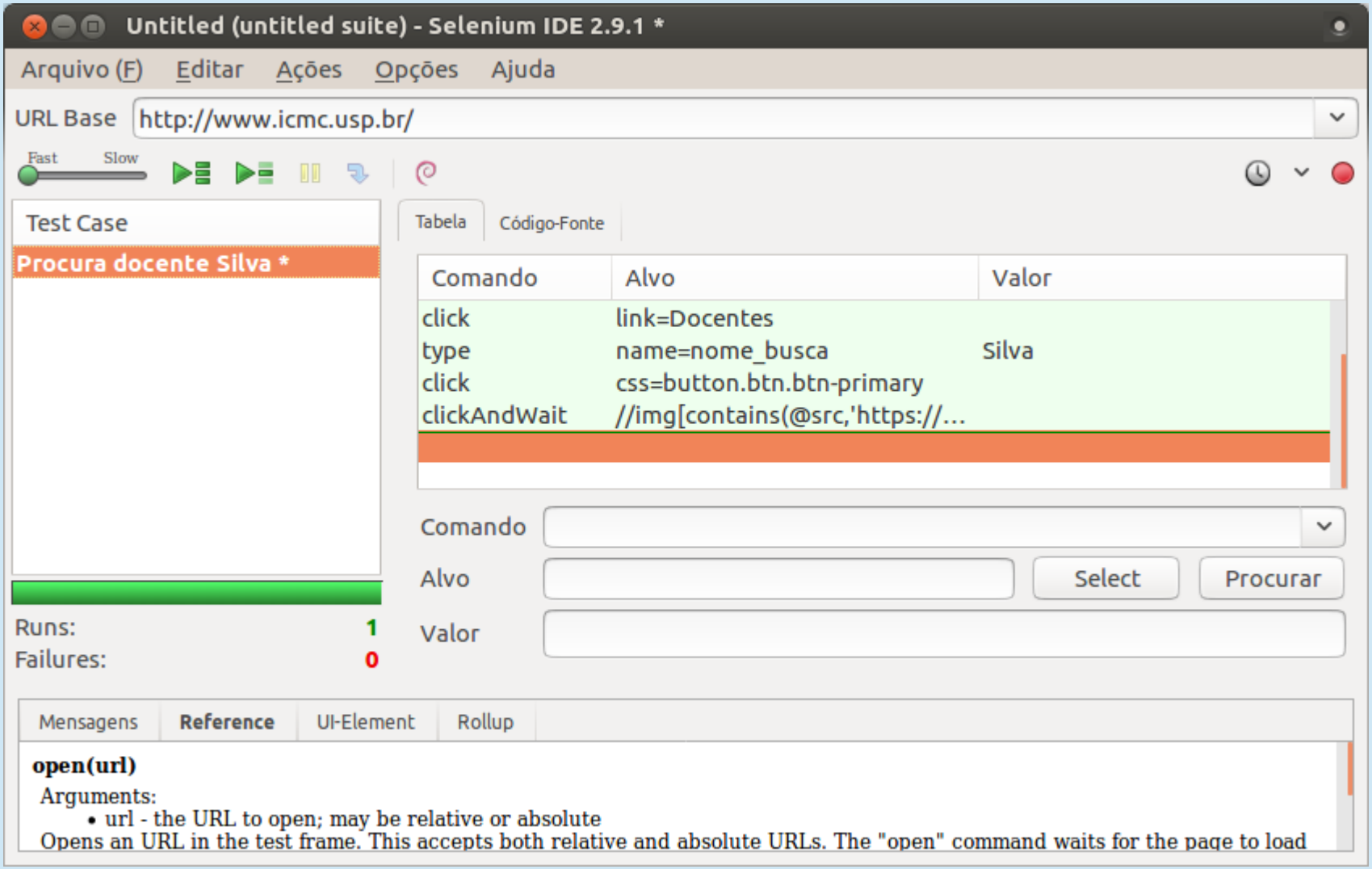


Apertando esse botão, tudo o que fizermos no browser vai ser gravado. Até o botão seja apertado novamente.

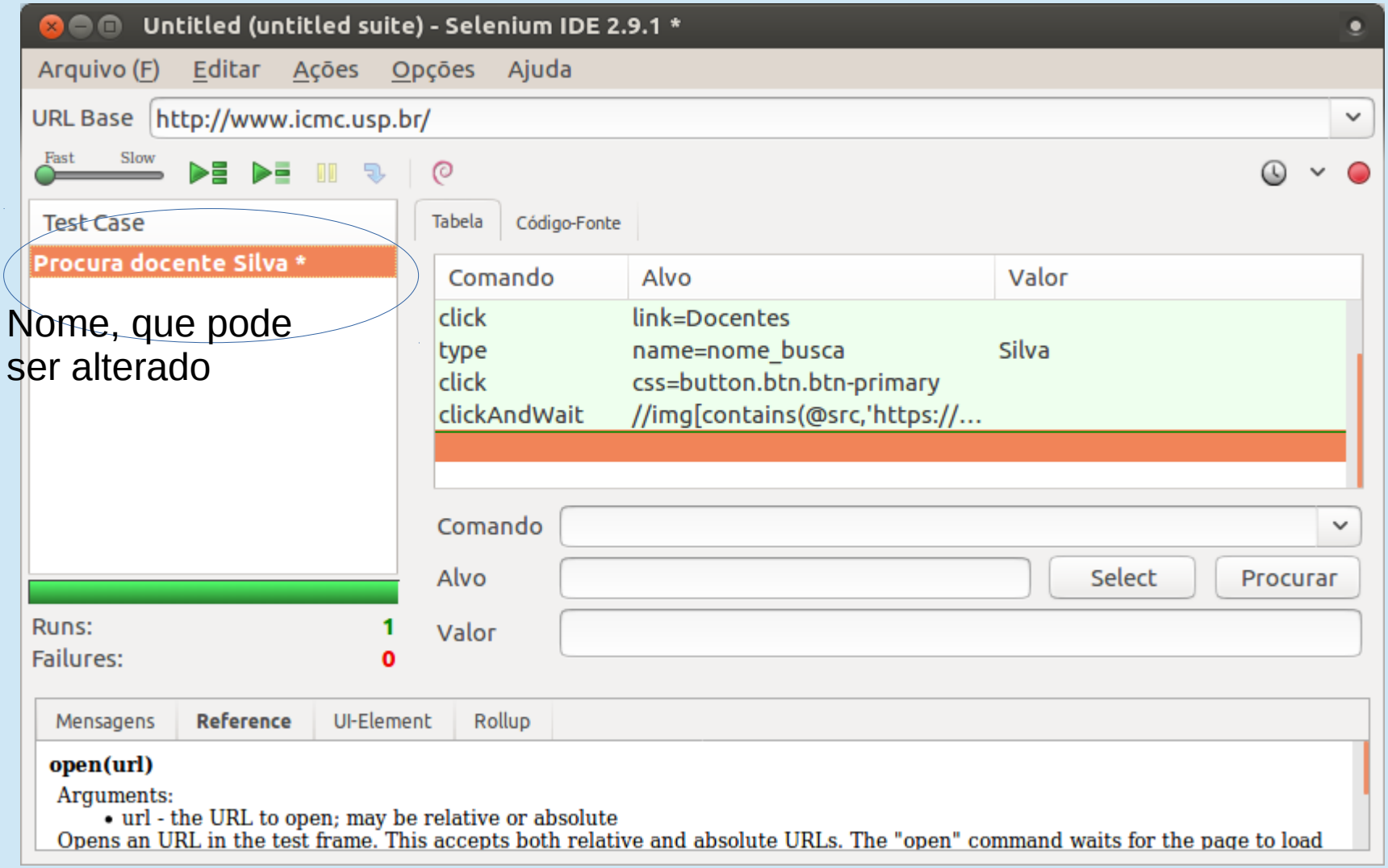
Vamos tentar

- Inicie a gravação
- Digite a url: www.icmc.usp.br
- Clique em “Pessoas”
- Clique em “Docentes”
- Procure o nome “Silva”
- Selecione um professor
- Termine a gravação

Resultado

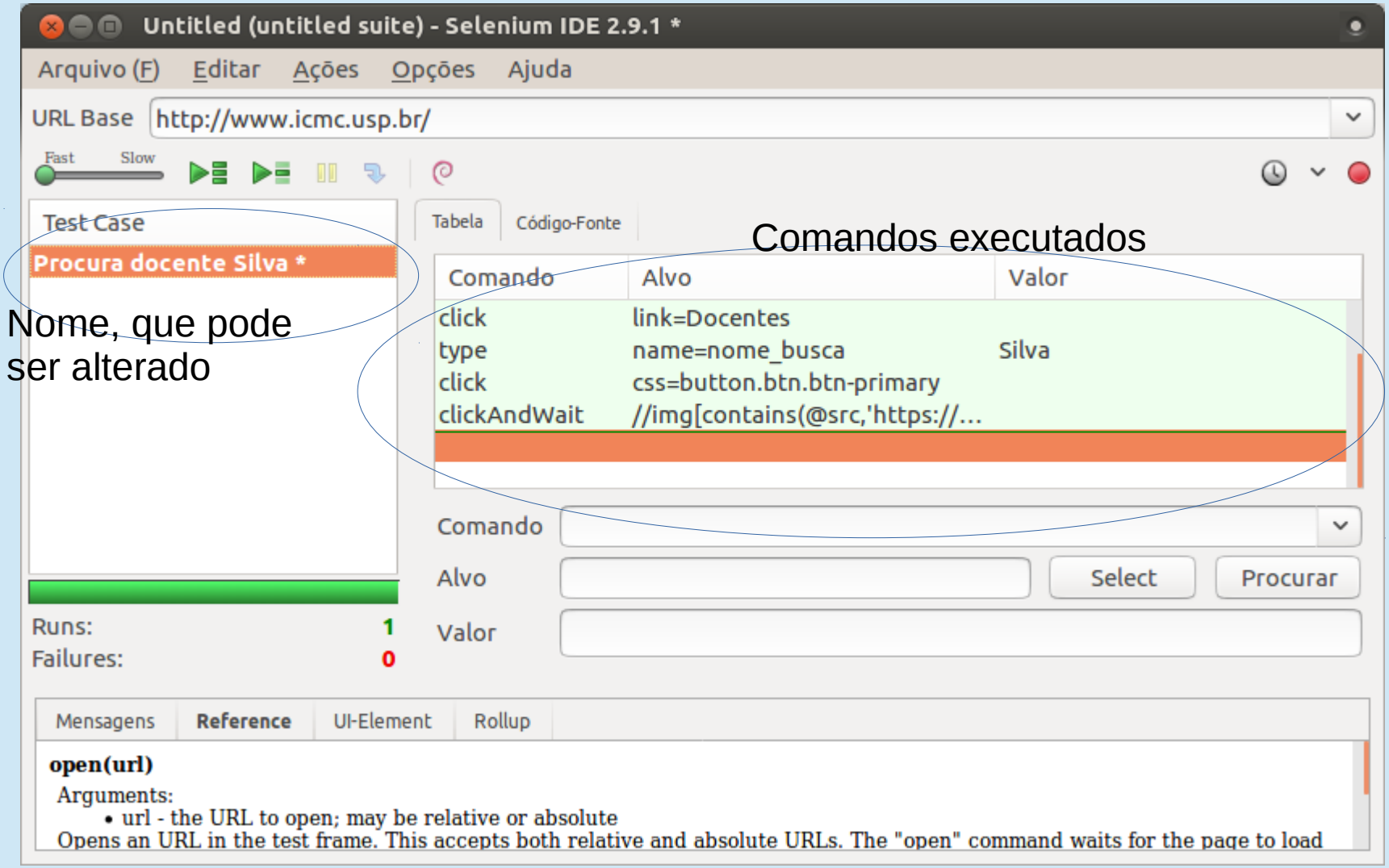

Untitled (untitled suite) - Selenium IDE 2.9.1 *
Arquivo (F) Editar Ações Opções Ajuda
URL Base http://www.icmc.usp.br/
Fast Slow
Test Case
Procura docente Silva *
Tabela Código-Fonte
Comando Alvo Valor
click link=Docentes
type name=nome_busca Silva
click css=button.btn.btn-primary
clickAndWait //img[contains(@src,'https://...
Comando
Alvo
Select
Procurar
Valor
Runs: 1
Failures: 0
Mensagens Reference UI-Element Rollup
open(url)
Arguments:
• url - the URL to open; may be relative or absolute
Opens an URL in the test frame. This accepts both relative and absolute URLs. The "open" command waits for the page to load

Resultado



Nome, que pode ser alterado

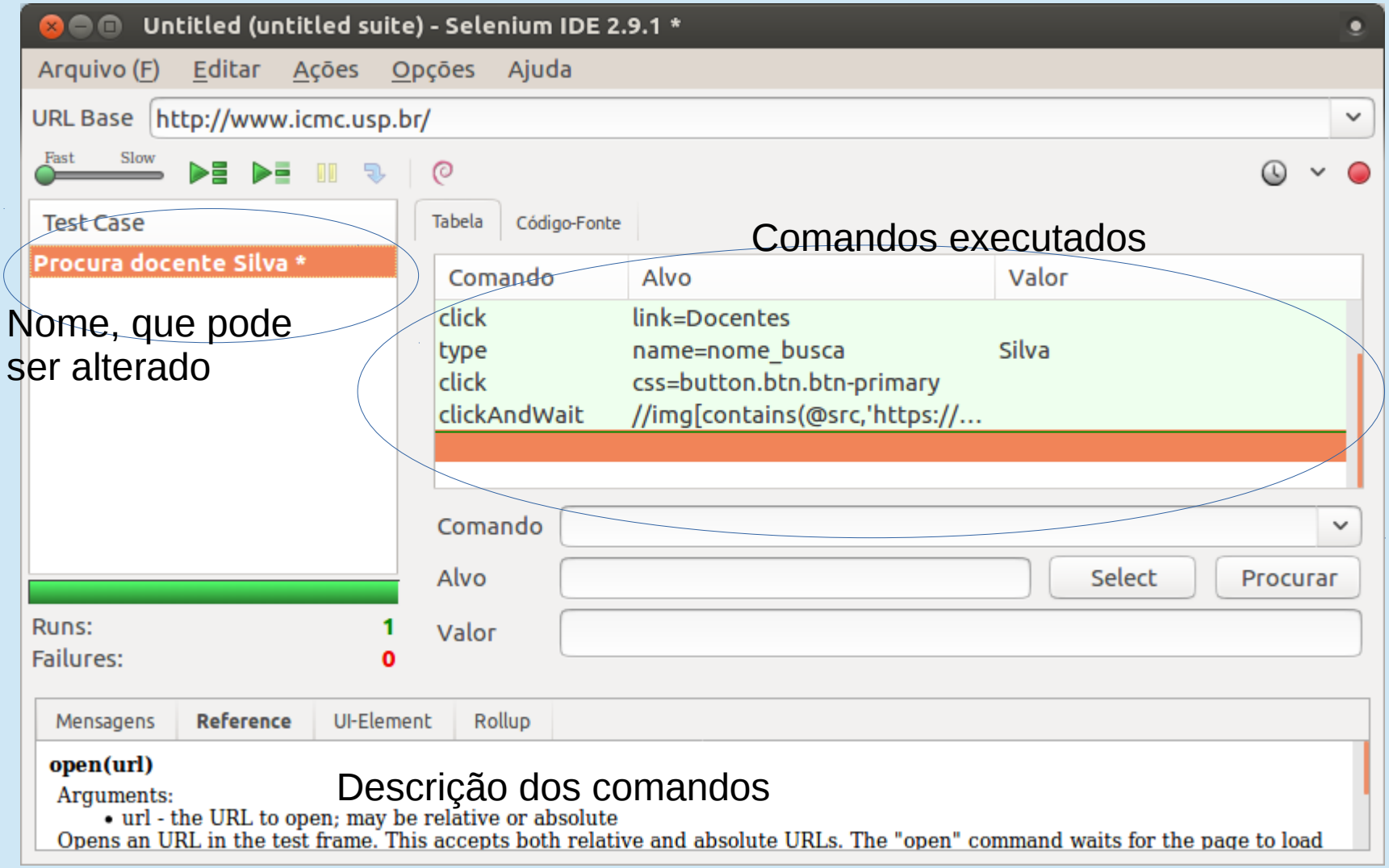
Resultado



Nome, que pode ser alterado

Comandos executados

Resultado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URL Base http://www.icmc.usp.br/
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Test Case
Procura docente Silva *
Tabela Código-Fonte
Comandos executados
Comando Alvo Valor
click link=Docentes
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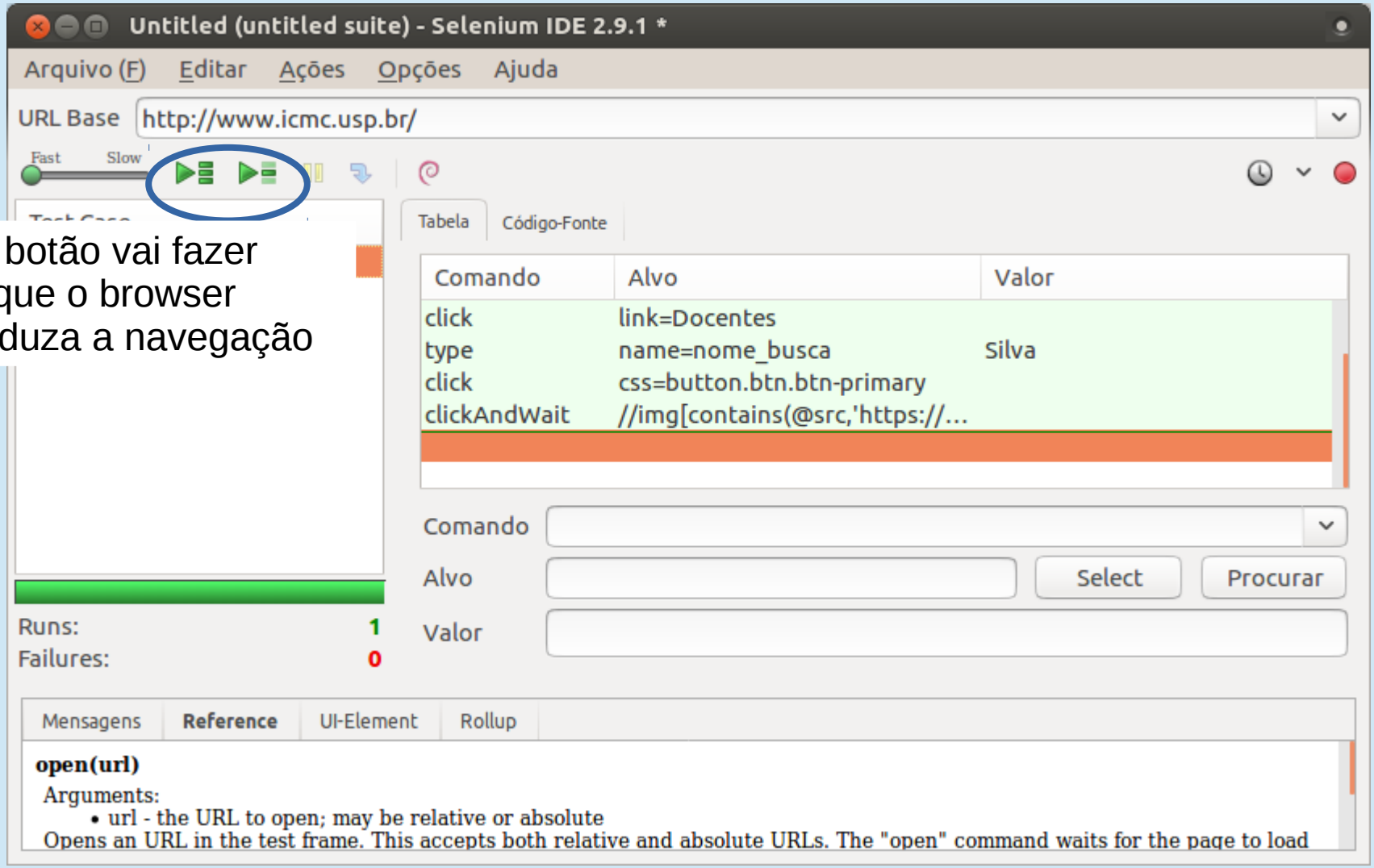
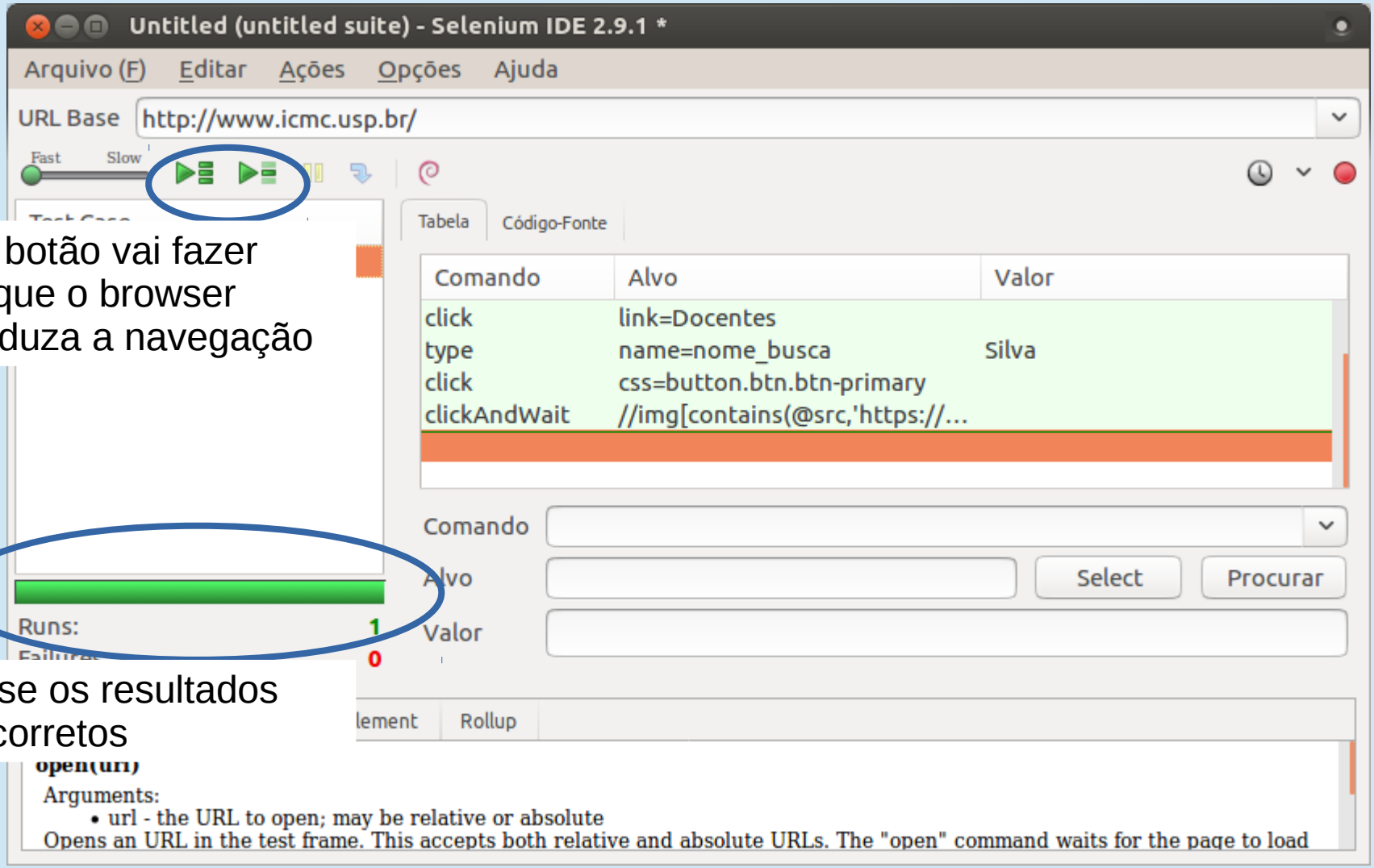
click css=button.btn.btn-primary
clickAndWait //img[contains(@src,'https://...
Nome, que pode ser alterado
Comando
Alvo
Select
Procurar
Valor
Runs: 1
Failures: 0
Mensagens Reference UI-Element Rollup
open(url)
Arguments:
• url - the URL to open; may be relative or absolute
Opens an URL in the test frame. This accepts both relative and absolute URLs. The "open" command waits for the page to load
Descrição dos comandos

Reproduzindo



Esse botão vai fazer com que o browser reproduza a navegação

Reproduzindo



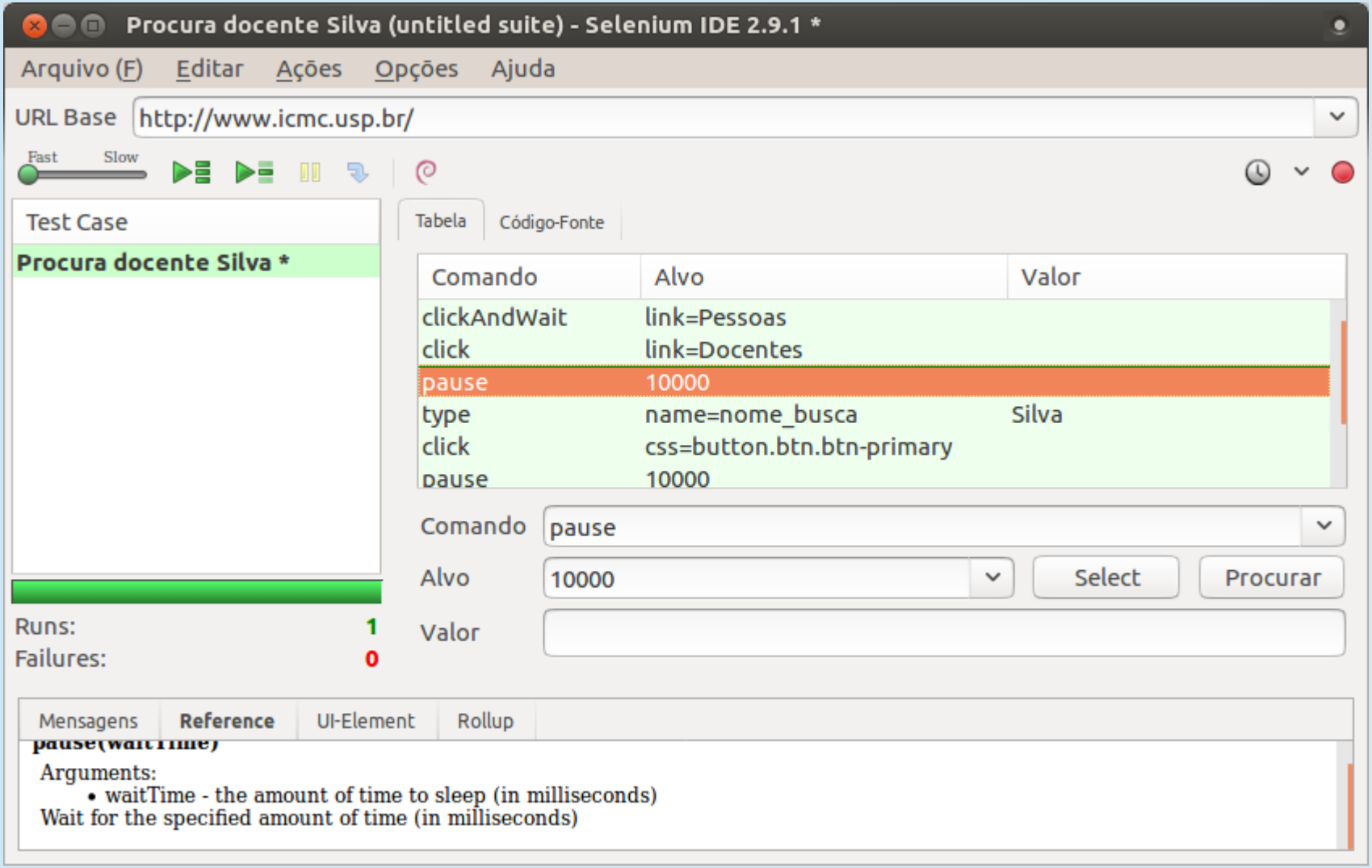
Esse botão vai fazer com que o browser reproduza a navegação

Indica se os resultados estão corretos

O que são resultados corretos

- Por exemplo, no nosso script é possível que o último comando não possa ser executado
- Ao clicar no link “Docente” a página não é alterada
- Ela apenas muda. Mas o script não espera isso acontecer

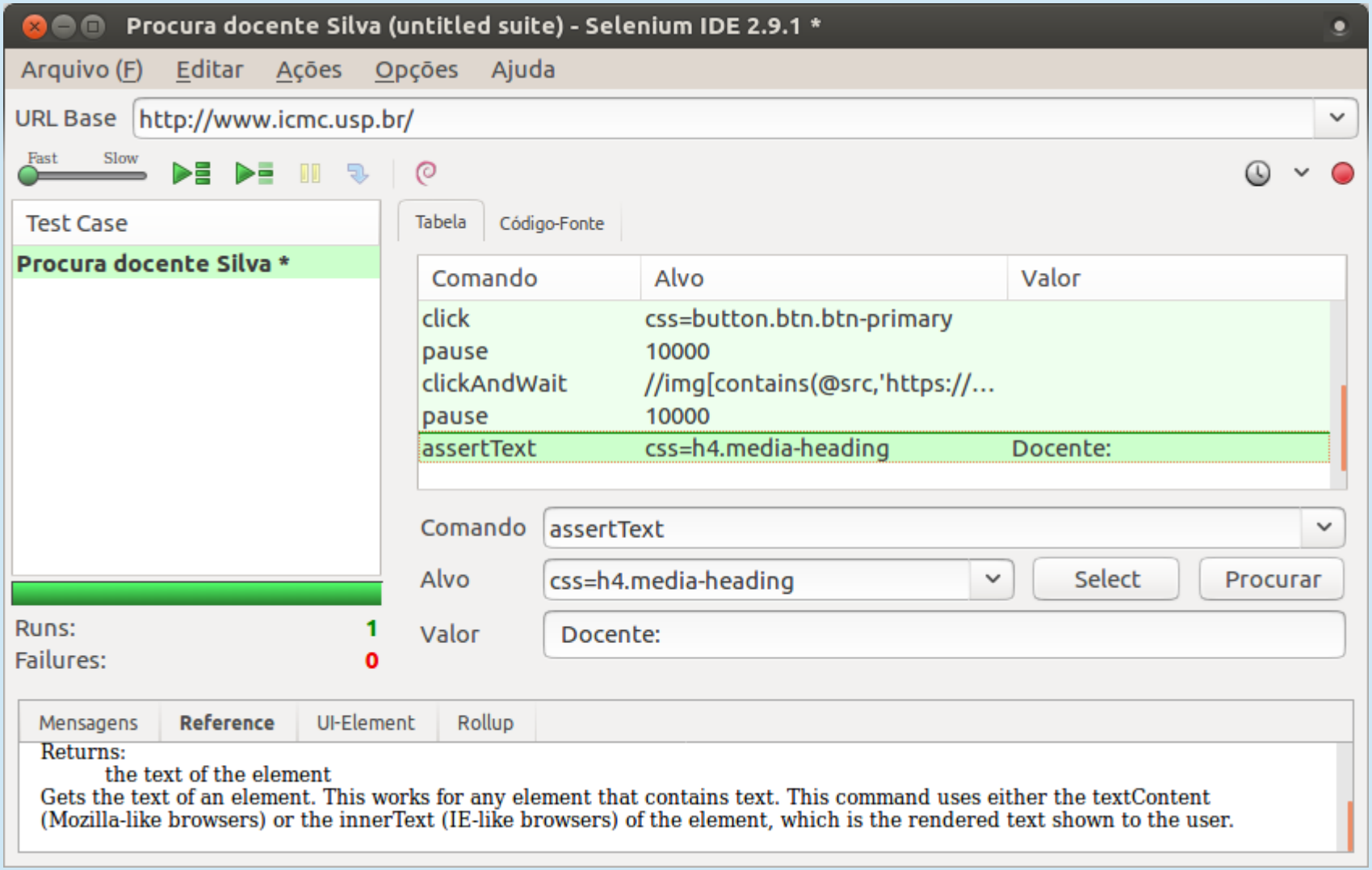
Consertando o script



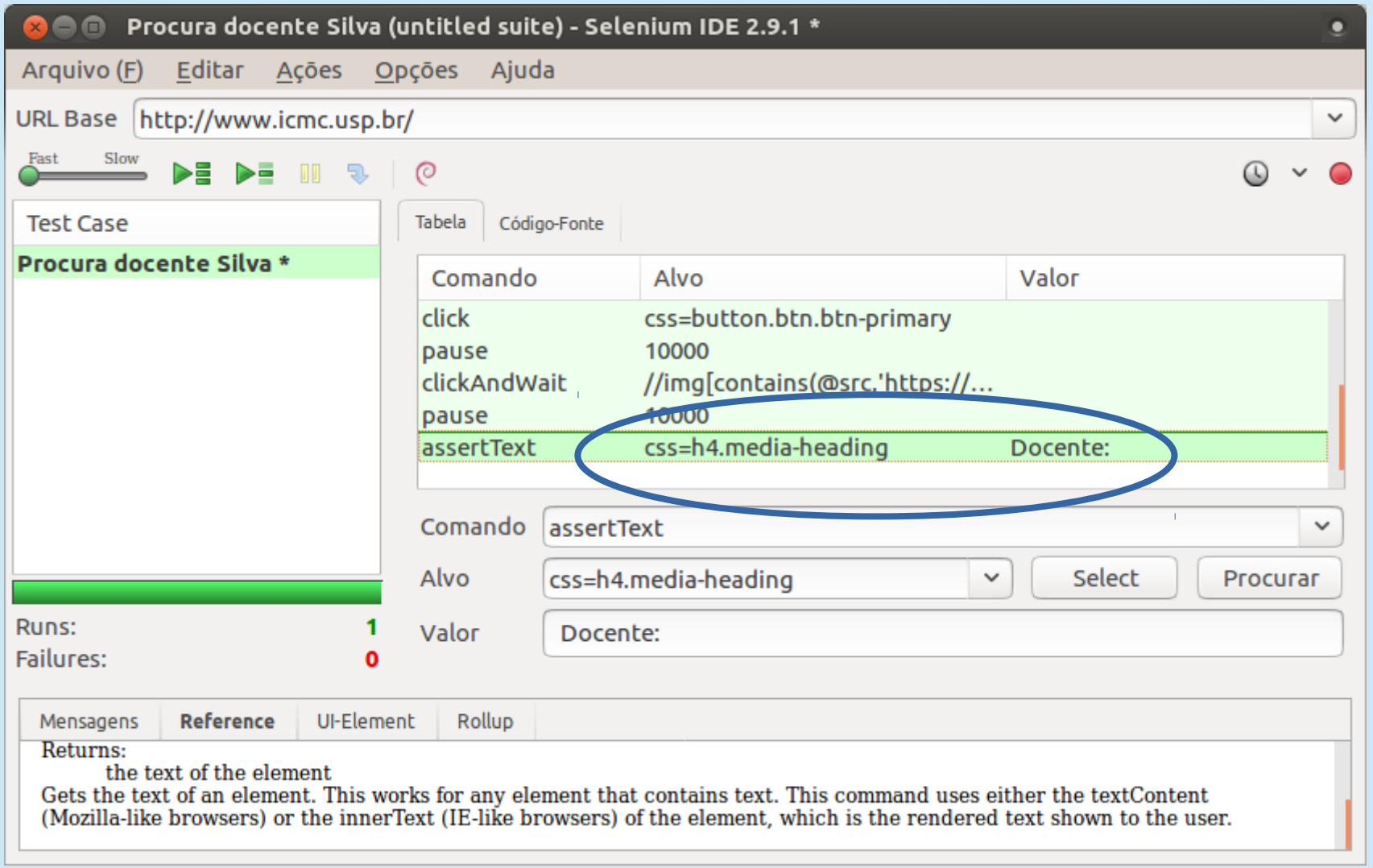
Verificando resultados

- Ao criar casos de teste, podemos acrescentar comandos que façam verificações dos resultados que aparecem no browser.
- Ao final da pesquisa, queremos verificar se lá em cima aparece a categoria “Docente”

Verificando resultados



Verificando resultados



Salvando

- O caso de teste pode ser salvo
- Vários casos de teste podem ser salvos salvos como uma “Test suite”
- E casos de teste ou teste suites podem ser exportados
- Arquivo → Exportar teste como → Java/JUnit4/Webdriver

JUnit

```
public class ProcuraDocenteSilva {
  private WebDriver driver;
  private String baseUrl;
  private boolean acceptNextAlert = true;
  private StringBuffer verificationErrors = new StringBuffer();

  @Before
  public void setUp() throws Exception {
    driver = new FirefoxDriver();
    baseUrl = "http://www.icmc.usp.br/";
    driver.manage().timeouts().implicitlyWait(30, TimeUnit.SECONDS);
  }
```

JUnit

```
 @Test
  public void testProcuraDocenteSilva() throws Exception {
    driver.get(baseUrl + "/");
    driver.findElement(By.linkText("Pessoas")).click();
    driver.findElement(By.linkText("Docentes")).click();
    driver.findElement(By.name("nome_busca")).clear();
    driver.findElement(By.name("nome_busca")).sendKeys("Silva");
    driver.findElement(By.cssSelector("button.btn.btn-primary")).click();

driver.findElement(By.xpath("//img[contains(@src,'https://web.icmc.usp.br/
SCAPINST/fotos_pessoas/5765587.jpg')]")).click();
    assertEquals("Docente:", driver.findElement(By.cssSelector("h4.media-
heading")).getText());
  }
```

JUnit

```
@Test
 public void testProcuraDocenteSilva() throws Exception {
   driver.get(baseUrl + "/");
   driver.findElement(By.                    s")).click();
   driver.findElement(By.linkText("Docentes")).click();
   driver.findElement(By.name("nome_busca")).clear();
   driver.findElement(By.name("nome_busca")).sendKeys("Silva");
   driver.findElement(By.cssSelector("button.btn.btn-primary")).click();

driver.findElement(By.xpath("//img[contains(@src,'https://web.icmc.usp.br/
SCAPINST/fotos_pessoas/5765587.jpg')]")).click();
    assertEquals("Docente:", driver.findElement(By.cssSelector("h4.media-
heading")).getText());
  }
```

WEbDriver

WebDriver

- É uma biblioteca que vai permitir que você controle a execução do browser de dentro de um programa Java
- Ou outra linguagem
- Fazer o download

WebDriver – download

- http://www.seleniumhq.org/download/

Selenium Client & WebDriver Language Bindings

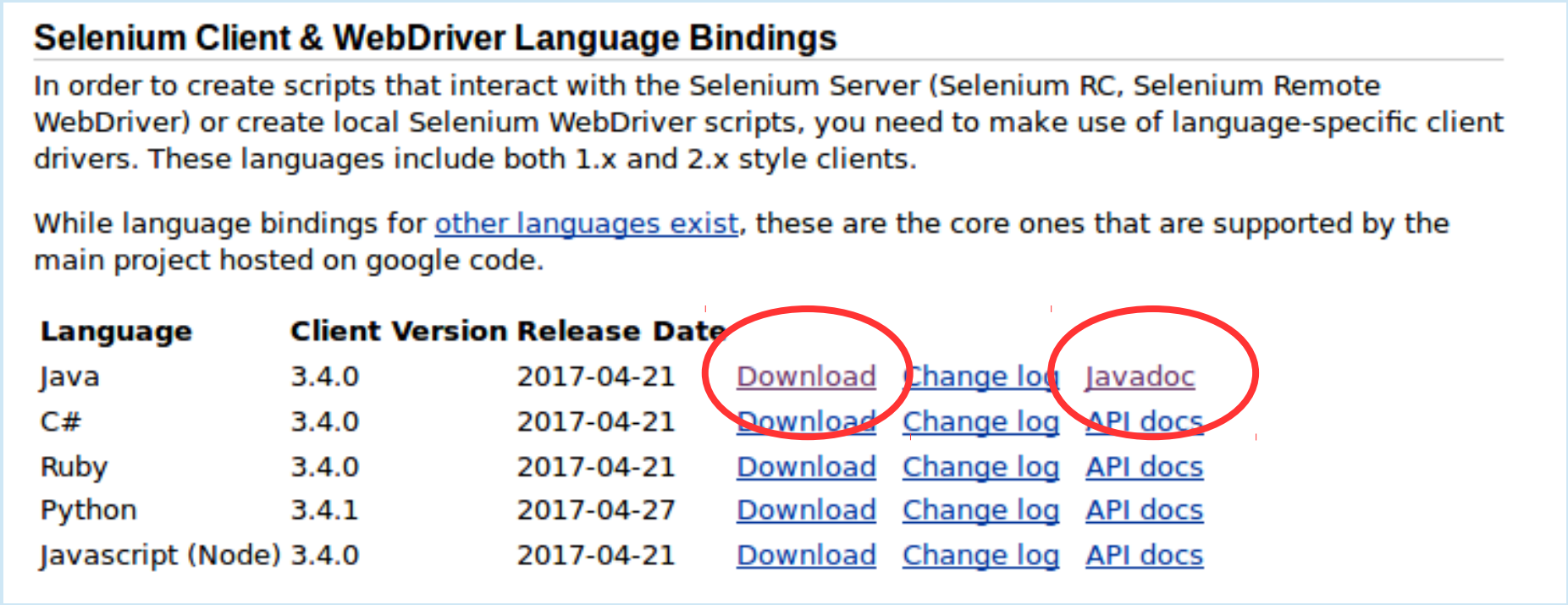
In order to create scripts that interact with the Selenium Server (Selenium RC, Selenium Remote WebDriver) or create local Selenium WebDriver scripts, you need to make use of language-specific client drivers. These languages include both 1.x and 2.x style clients.

While language bindings for other languages exist, these are the core ones that are supported by the main project hosted on google code.

Language	Client Version	Release Date			
Java	3.4.0	2017-04-21	Download	Change log	Javadoc
C#	3.4.0	2017-04-21	Download	Change log	API docs
Ruby	3.4.0	2017-04-21	Download	Change log	API docs
Python	3.4.1	2017-04-27	Download	Change log	API docs
Javascript (Node)	3.4.0	2017-04-21	Download	Change log	API docs

WebDriver – download

- http://www.seleniumhq.org/download/



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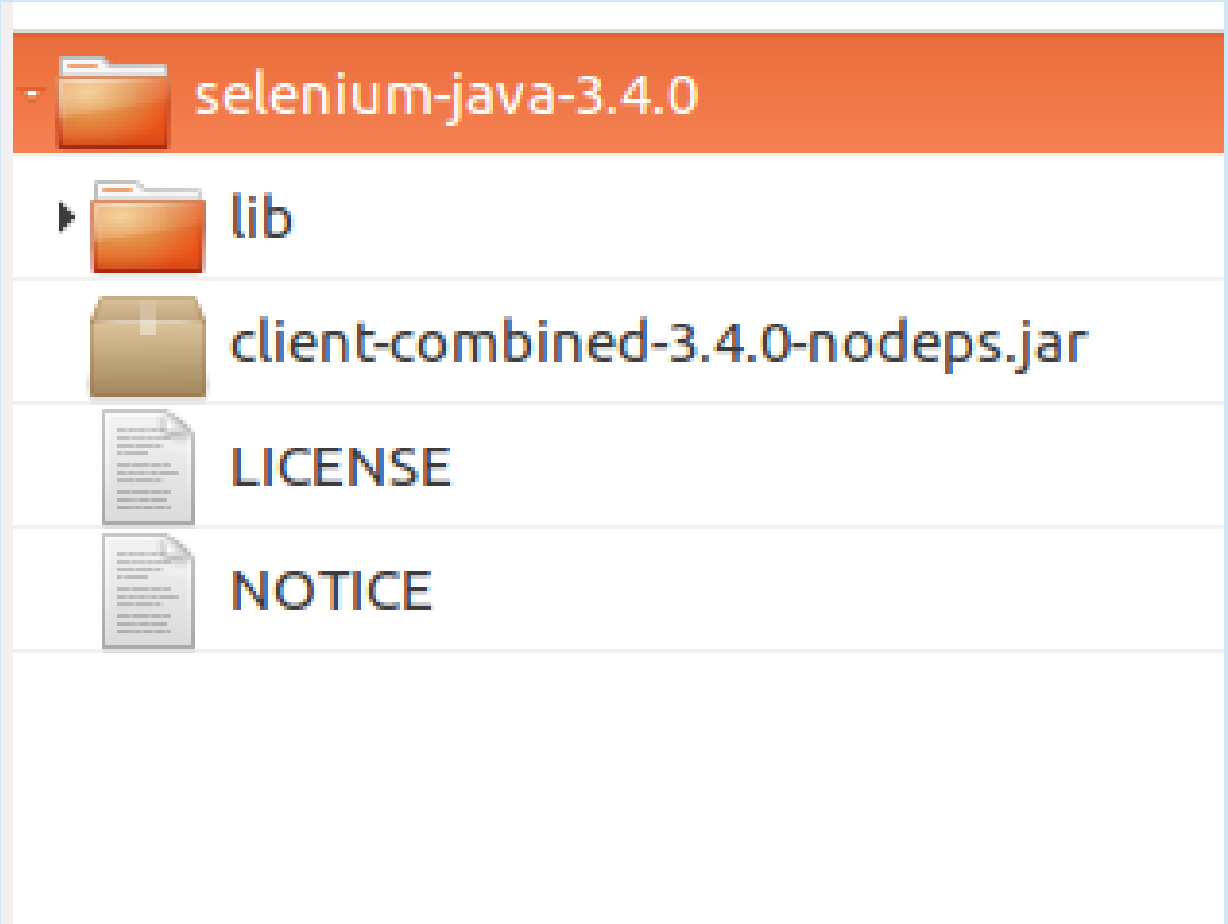
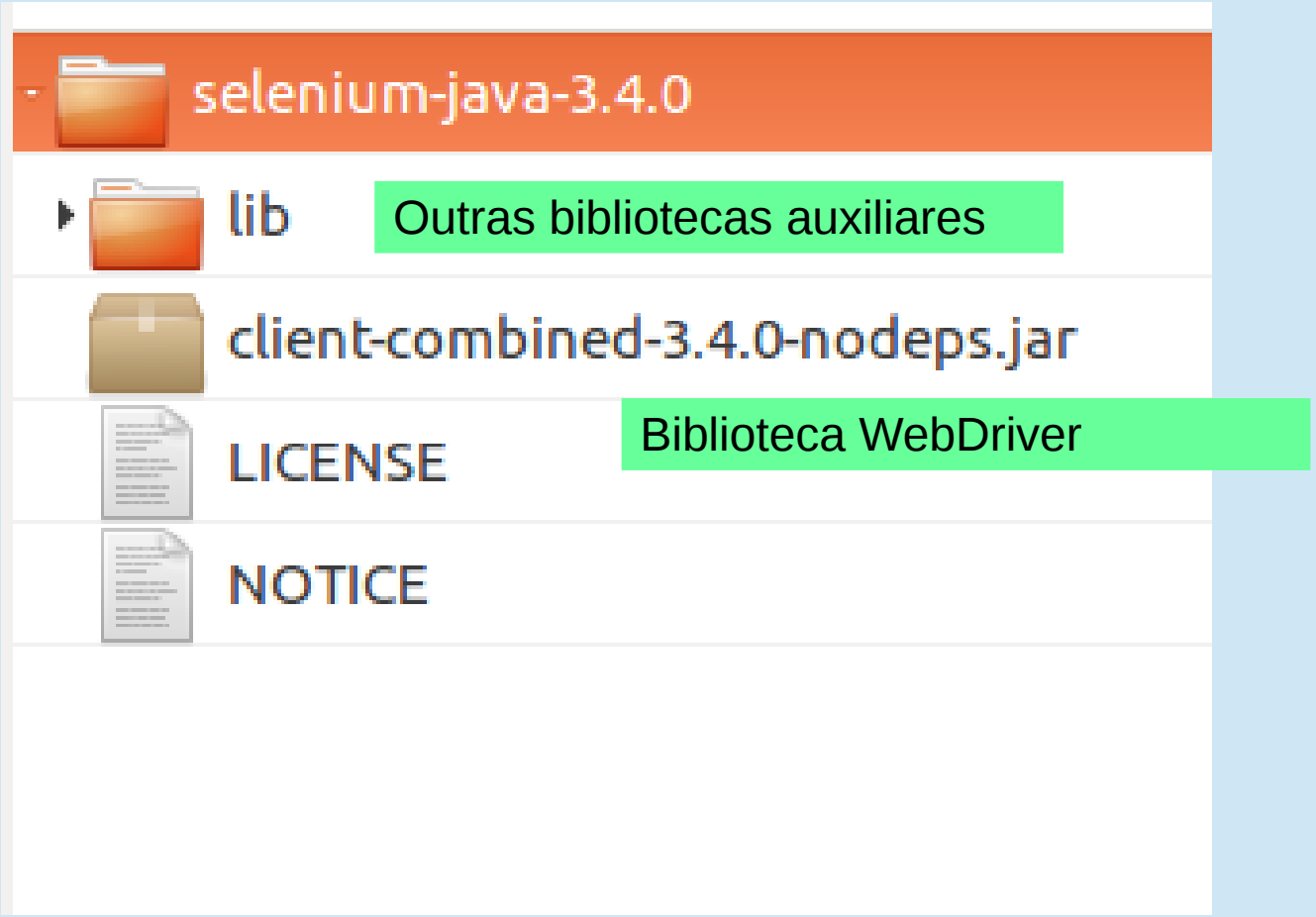
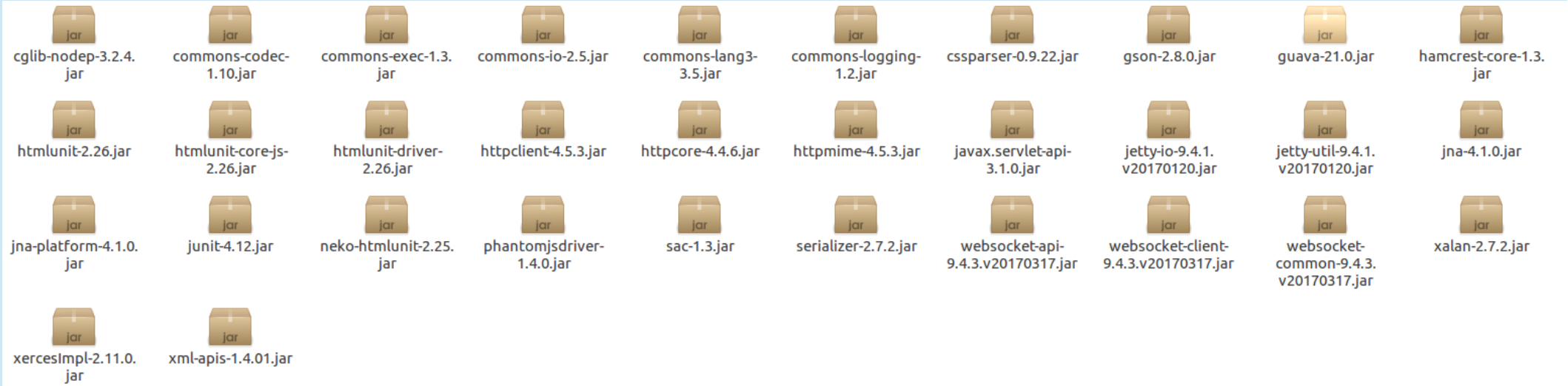
WebDriver – conteúdo



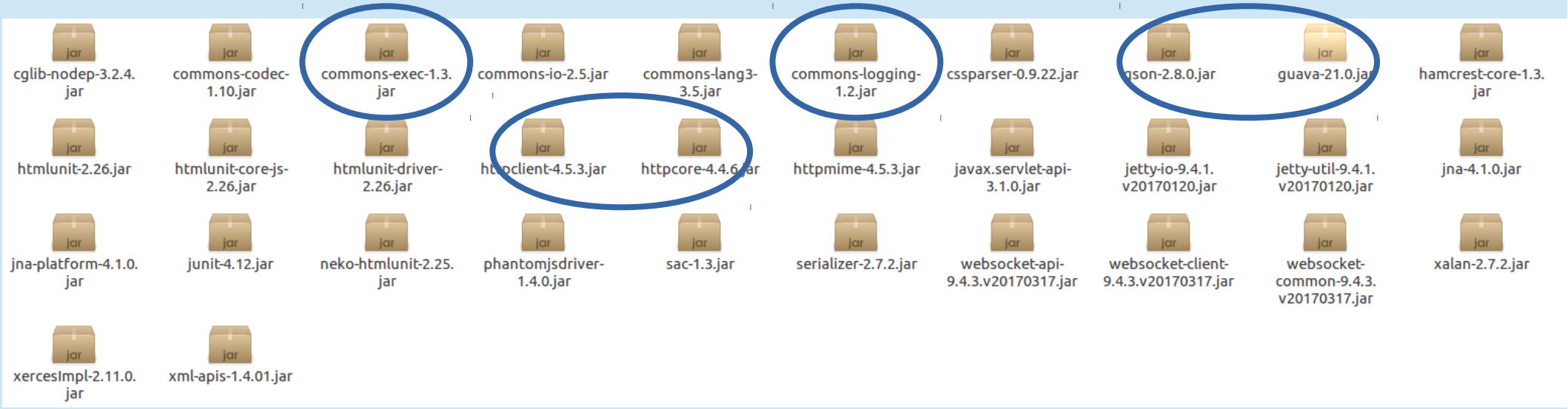
WebDriver – conteúdo



WebDriver – conteúdo



WebDriver – conteúdo



Mais algumas coisinhas

- Usar Java8
- Fazer download geckodriver e descompactar
  - https://github.com/mozilla/geckodriver/releases
- Registrar o driver no código
- Corrigir o código
- Executar como JUnit

Registrar o driver

```
@Before
 public void setUp() throws Exception {


  System.setProperty("webdriver.firefox.marionette", <gecko>);
  driver = new FirefoxDriver();
  baseUrl = "http://www.icmc.usp.br/";
  driver.manage().timeouts().implicitlyWait(30,
                                            TimeUnit.SECONDS);
 }
```

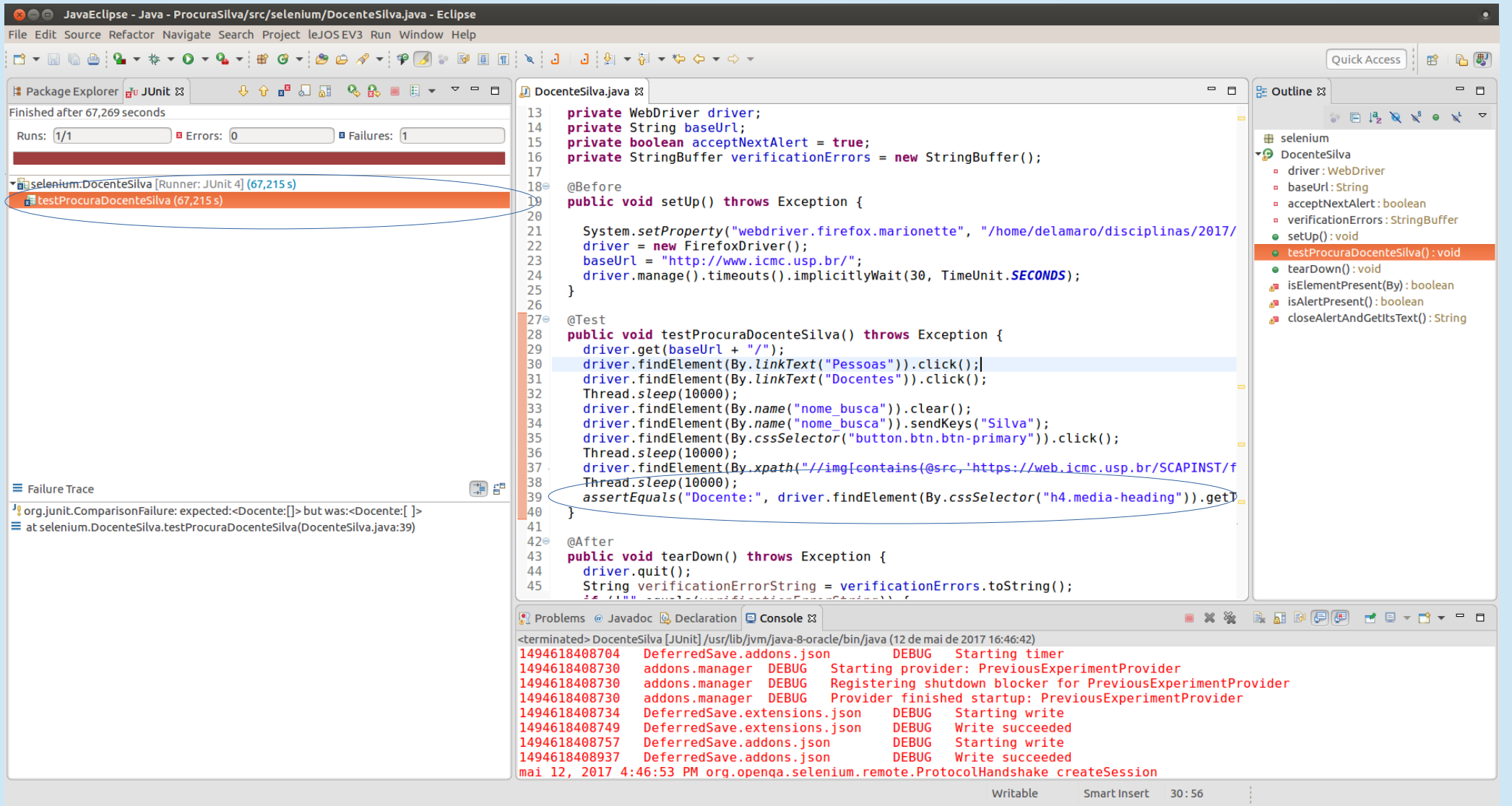
Corrigir o código

```
@Test
  public void testProcuraDocenteSilva() throws Exception {
    driver.get(baseUrl + "/");
    driver.findElement(By.linkText("Pessoas")).click();
    driver.findElement(By.linkText("Docentes")).click();
    Thread.sleep(10000);
```

Executar


JavaEclipse - Java - ProcuraSilva/src/selenium/DocenteSilva.java - Eclipse
File Edit Source Refactor Navigate Search Project leJOS EV3 Run Window Help
Package Explorer
JUnit
selenium.DocenteSilva - testProcuraDocenteSilva
Runs: 1/1
Errors: 0
Failures: 0
selenium.DocenteSilva [Runner: JUnit 4]
testProcuraDocenteSilva
Failure Trace
ICMC - Instituto de Ciências Matemáticas e de Computação - Mozilla Firefox
www.icmc.usp.br//
Pesquisar
Buscar...
GRADUAÇÃO
PÓS-GRADUAÇÃO
PESQUISA
CULTURA E EXTENSÃO
A voz de quem chega ao ICMC
Estude Conosco
Departamentos
Relações Internacionais
Biblioteca
Bolsas e Auxílios
Licitações
NOTÍCIAS Veja todas
Oportunidade na USP: mestrado profissional voltado à indústria abre inscrições
Como um enxame de abelhas, um bando de aves e um cardume de peixes inspiraram a robótica
7ª SEst
Semana da Estatística UFSCar/USP
De 06 a 09 de Junho de 2017
USP e UFSCar promovem Semana da Estatística
EVENTOS Veja todos
15 Mai
Pint of Science São Carlos 2017
05 Jun
Minicurso Programming Emerging Heterogeneous Computing: The HARP System
06 Jun
7ª Semana da Estatística (SEst 2017)
12 Jun
2º Workshop de Iniciação Científica do SME
Conectado a translate.googleapis.com...
Writable
Smart Insert
28 : 42

Executar


JavaEclipse - Java - ProcuraSilva/src/selenium/DocenteSilva.java - Eclipse
File Edit Source Refactor Navigate Search Project leJOS EV3 Run Window Help
Quick Access
Package Explorer
JUnit
Finished after 67,269 seconds
Runs: 1/1
Errors: 0
Failures: 1
selenium.DocenteSilva [Runner: JUnit 4] (67,215 s)
testProcuraDocenteSilva (67,215 s)
Failure Trace
org.junit.ComparisonFailure: expected:<Docente:[]> but was:<Docente:[ ]>
at selenium.DocenteSilva.testProcuraDocenteSilva(DocenteSilva.java:39)
DocenteSilva.java
13 private WebDriver driver;
14 private String baseUrl;
15 private boolean acceptNextAlert = true;
16 private StringBuffer verificationErrors = new StringBuffer();
17
18 @Before
19 public void setUp() throws Exception {
20
21 System.setProperty("webdriver.firefox.marionette", "/home/delamaro/disciplinas/2017/
22 driver = new FirefoxDriver();
23 baseUrl = "http://www.icmc.usp.br/";
24 driver.manage().timeouts().implicitlyWait(30, TimeUnit.SECONDS);
25 }
26
27 @Test
28 public void testProcuraDocenteSilva() throws Exception {
29 driver.get(baseUrl + "/");
30 driver.findElement(By.linkText("Pessoas")).click();
31 driver.findElement(By.linkText("Docentes")).click();
32 Thread.sleep(10000);
33 driver.findElement(By.name("nome_busca")).clear();
34 driver.findElement(By.name("nome_busca")).sendKeys("Silva");
35 driver.findElement(By.cssSelector("button.btn.btn-primary")).click();
36 Thread.sleep(10000);
37 driver.findElement(By.xpath("//img[contains(@src,'https://web.icmc.usp.br/SCAPINST/f
38 Thread.sleep(10000);
39 assertEquals("Docente:", driver.findElement(By.cssSelector("h4.media-heading")).getT
40 }
41
42 @After
43 public void tearDown() throws Exception {
44 driver.quit();
45 String verificationErrorString = verificationErrors.toString();
Outline
selenium
DocenteSilva
driver : WebDriver
baseUrl : String
acceptNextAlert : boolean
verificationErrors : StringBuffer
setUp() : void
testProcuraDocenteSilva() : void
tearDown() : void
isElementPresent(By) : boolean
isAlertPresent() : boolean
closeAlertAndGetItsText() : String
Problems Javadoc Declaration Console
<terminated> DocenteSilva [JUnit] /usr/lib/jvm/java-8-oracle/bin/java (12 de mai de 2017 16:46:42)
1494618408704 DeferredSave.addons.json DEBUG Starting timer
1494618408730 addons.manager DEBUG Starting provider: PreviousExperimentProvider
1494618408730 addons.manager DEBUG Registering shutdown blocker for PreviousExperimentProvider
1494618408730 addons.manager DEBUG Provider finished startup: PreviousExperimentProvider
1494618408734 DeferredSave.extensions.json DEBUG Starting write
1494618408749 DeferredSave.extensions.json DEBUG Write succeeded
1494618408757 DeferredSave.addons.json DEBUG Starting write
1494618408937 DeferredSave.addons.json DEBUG Write succeeded
mai 12, 2017 4:46:53 PM org.openqa.selenium.remote.ProtocolHandshake createSession
Writable
Smart Insert
30 : 56