

# QA Automation & Practical Work Methodology

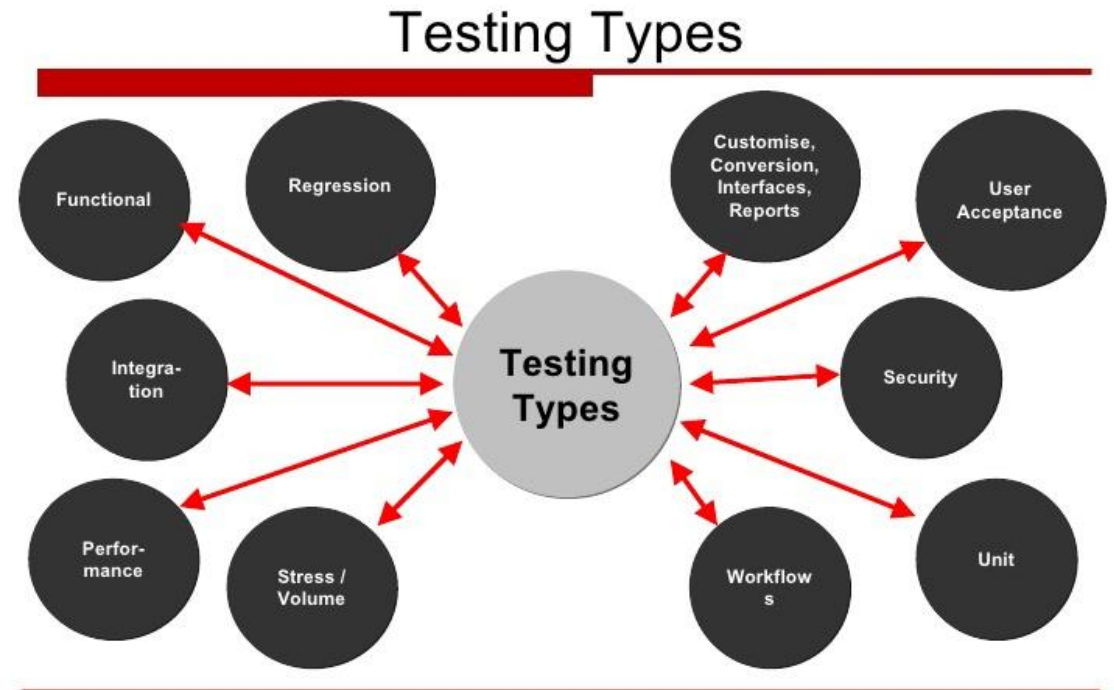
By Ilana Bikel

# What is QA Automation?

- Quality Assurance => “Checking that the product works well”
- Automation => “Automating manual processes”
- Full time occupation
- A standalone project

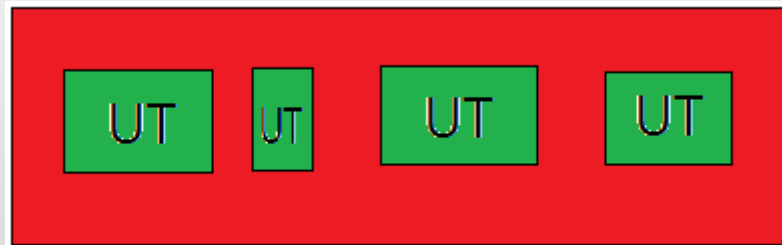
# QA testing types

- Functionality, security, load,
- HW/FW/SW
- Desktop/Mobile



# Unit Tests by Developers

- According to the SRS the developer defines unit-test (UT)
- Developer writes list of tests which is relevant for the feature. The tests are very specific to the feature. They almost don't check things around.



# SRS tests by QA person

- The QA person has his own list of tests
- These tests would include use-cases (real scenarios from customers), positive/negative tests and many other types of relevant tests
- The QA testings are at a much higher level than UT

# Terminology

- Agile
- Release
- Regression defects
- Regression tests

# What is “Regression” defect?

- “Regression” in each company can be defined slightly different
- In general it is something that worked well and started to work wrong

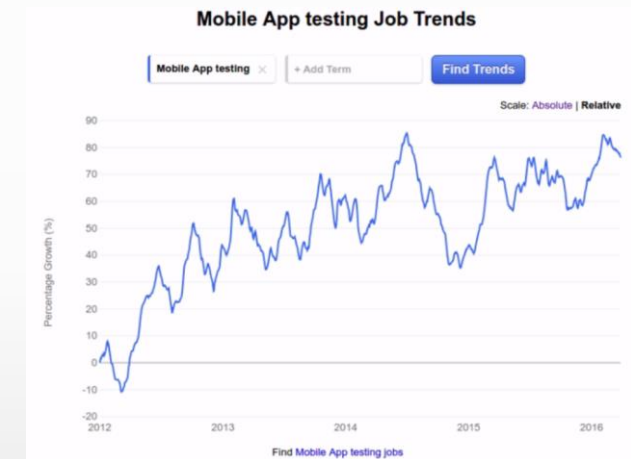
# What are “Regression” tests?

- “Regression” is a set of test-cases that their purpose is to find regression defects
- In **Agile** the number of regression test-cases is growing each **release**
- In some stage, **automation** is a must



# A little about Mobile Basics and Mobile QA

- Types of applications:
  - Native/Web/Hybrid
- Stages in mobile QA:
  - Design testing
  - Alpha (main tests)
  - Beta (crowd testing, a/b testing)
  - Post-deployment



Advanced tips:  
Automation in general  
and for the Web

# Definition of “automation tests”

- In software/firmware/hardware testing, **automation test** is the use of special software/hardware (separate from the software being tested) to control the execution of tests and the comparison of actual outcomes with predicted outcomes.

# Automation in the World – new field

Open Source / Commercial / Private  
Software / Firmware / Hardware  
Local / Cloud  
Text based / Picture based  
Desktop / Mobile

## Open source

[Selenium](#)  
[Sikuli](#)  
[Watir](#)  
[Windmill](#)  
[Ranorex](#)  
[SoapUI](#)  
[Sahi](#)  
[Tellurium](#)

## Commercial

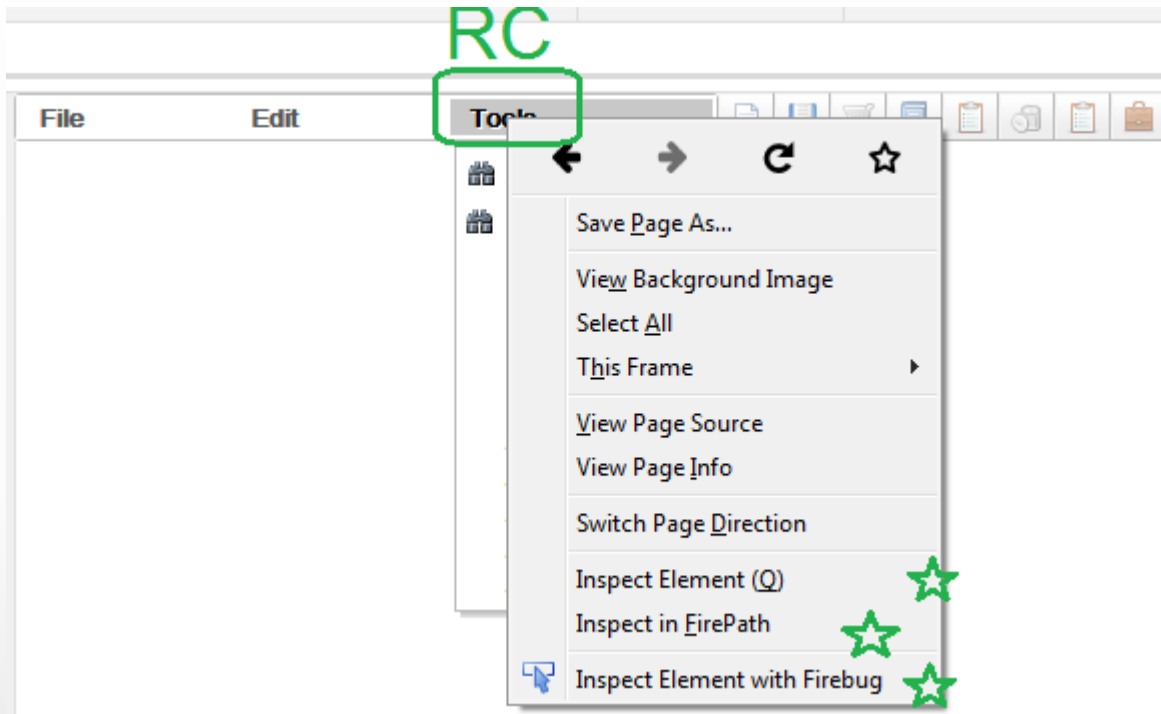
[Squish](#)  
[Ranorex](#)  
[TestComplete](#)  
[Studio](#)  
[eggplant](#)



# Automation (Web)

- Tools: WebDriver/Selenium IDE
  - Skills: html exploring, xpath, firepath, firebug
  - Frameworks: TestNG/Junit
- 
- OOP code patterns: Page Object/PageFactory

# Locators, xpath, IDs – inspect with FireBug/FirePath



XPath: `html/body/div[3]/div[2]/div/div[2]/div/div[2]/table/tbody/tr/td/table/tbody/tr[4]/td/div/div/table/tbody/tr[1]/td/div/div[2]/div/div[1]/div/img`

VS

XPath: `//*[@id='marcAdditionalServicesMenuId']`

File Edit **Tools**

- Search External Resources
- View Versions
- Validate Ctrl+U
- Browse call numbers Alt+C
- View Notes
- Release All Records for User
- MARC Bibliographic
- MARC21 Authorities
- MARC21 Holdings
- Dublin Core
- Set Management Tags

DOM Net Cookies FirePath

Search by text or CSS selector

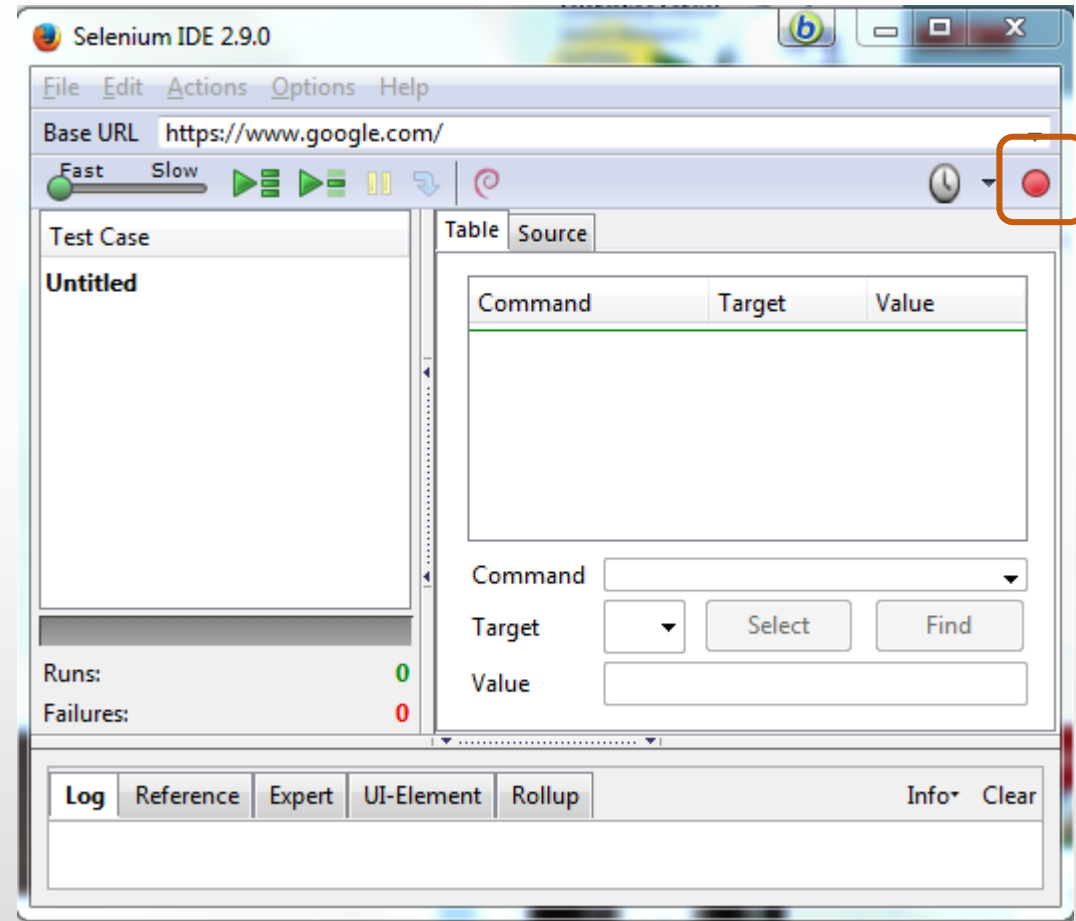
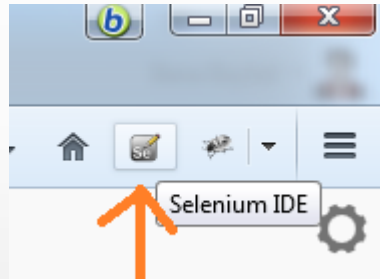
```
ble < div.gwt-M horizontal < td < tr < tbody < table < td < tr < tbody < table < div < div.gwt-S...outPanel < div < div.gwt-S...outPanel < div < div < div < div < body < html < iframe <
  <div class="gwt-MenuBar gwt-MenuBar-horizontal" tabindex="0" role="menubar" style="outline: 0px none; width:
    350px;" hidefocus="true" aria-activedescendant="additionalSvcsMenuId">
      <input type="text" tabindex="-1" role="presentation" style="opacity: 0; height: 1px; width: 1px; z-index:
        position: absolute;">
      <table>
        <tbody>
          <tr>
            <td id="fileMenuId" class="gwt-MenuItem" role="menuitem" aria-haspopup="true">File</td>
            <td id="gwt-uid-136" class="gwt-MenuItem" role="menuitem" aria-haspopup="true">Edit</td>
            <td id="additionalSvcsMenuId" class="gwt-MenuItem gwt-MenuItem-
              selected" role="menuitem" aria-haspopup="true">Tools</td>
          </tr>
        </tbody>
      </table>
    </div>
  </td>
  <td align="left" style="vertical-align: top;">
</tr>
</tbody>
</table>
```

Advanced tips: Selenium/WebDriver



# Selenium IDE

- Recording of steps



# Selenium IDE: Java format

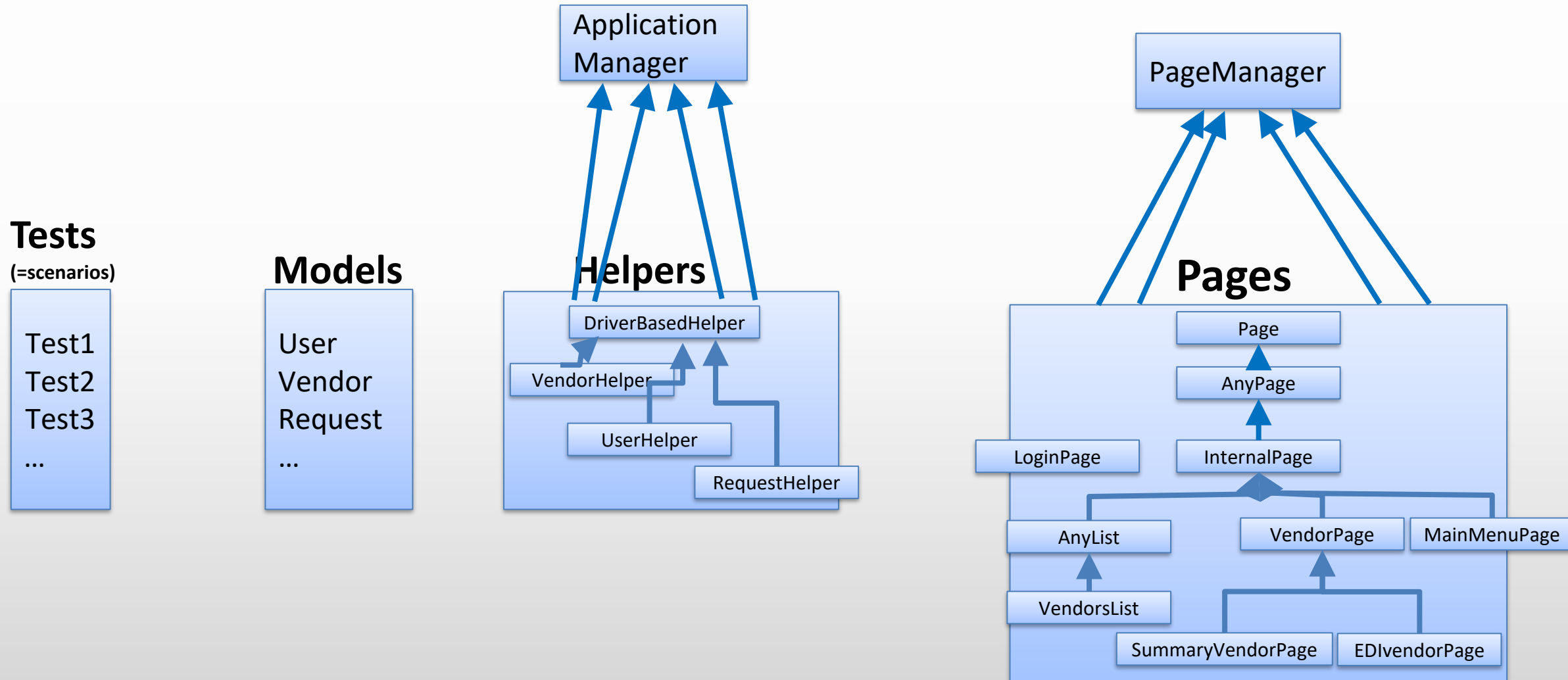
```
package ilana.archetype.group;

import java.util.regex.Pattern;
import java.util.concurrent.TimeUnit;
import org.testng.*;
import org.testng.annotations.*;
import static org.junit.Assert.*;
import static org.hamcrest.CoreMatchers.*;
import org.openqa.selenium.*;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.support.ui.Select;

public class EditMovieTest extends ilana.archetype.group.pages.TestBase {
    private boolean acceptNextAlert = true;
    private StringBuffer verificationErrors = new StringBuffer();

    → @Test
    public void testEditMovie() throws Exception {
        driver.get(baseUrl + "/php4dvd/");
        driver.findElement(By.id("username")).clear();
        driver.findElement(By.id("username")).sendKeys("admin");
        driver.findElement(By.name("password")).clear();
        driver.findElement(By.name("password")).sendKeys("admin");
        driver.findElement(By.name("submit")).click();
        driver.findElement(By.cssSelector("img[alt=\"Add movie\"]")).click();
        driver.findElement(By.id("imdbsearch")).clear();
        driver.findElement(By.id("imdbsearch")).sendKeys("");
        driver.findElement(By.cssSelector("input[type=\"submit\"]")).click();
        driver.findElement(By.linkText("Black Swan")).click();
        driver.findElement(By.name("year")).clear();
        driver.findElement(By.name("year")).sendKeys("2013");
        driver.findElement(By.name("duration")).clear();
        driver.findElement(By.name("duration")).sendKeys("125");
        driver.findElement(By.id("own_no")).click();
        driver.findElement(By.id("seen_no")).click();
        driver.findElement(By.id("loaned_yes")).click();
        driver.findElement(By.id("submit")).click();
        driver.findElement(By.cssSelector("img[alt=\"Edit\"]")).click();
        driver.findElement(By.linkText("Update")).click();
        driver.findElement(By.linkText("Log out")).click();
        assertTrue(closeAlertAndGetItsText().matches("^Are you sure you want to log out[\\s\\S]$"));
    }
}
```

# [PageObject pattern in few words]



Advanced tips: CI=Continuous Integration

# From a single test to CI – Theory

Continuous Integration Server:	Jenkins
Build automation (organizer):	Maven
Testing framework:	JUnit/TestNG
	Tests
Testing system driver:	WebDriver
Browser/HTTP Client (API)/DB SQLs:	Firefox/...
SUT:	Alma

# Test jobs on Jenkins- examples

New Job

People

Build History

Edit View

Delete View

Manage Jenkins

My Views

Shelved Projects

Global Build Stats

Xrondo

Wall Display

Build Queue

No builds in the queue.

Build Executor Status

#	Status
1	Idle
2	Idle
3	Idle
4	Idle

Isotope11's open source projects should show up in this tab

All

Client Work

Deploys

Open Source

+

S	W	Name	Last Success	Last Failure	Last Duration	
		<a href="#">client_app</a>	12 hr (#76)	12 days (#61)	3 min 45 sec	
		<a href="#">contract_acceptance_framework</a>	12 hr (#26)	12 days (#13)	1 min 13 sec	
		<a href="#">CSS3 Progress Bar Rails</a>	12 hr (#51)	12 days (#37)	51 sec	
		<a href="#">data_science_theater_3000</a>	12 hr (#26)	12 days (#13)	1 min 22 sec	
		<a href="#">isotope_contacts</a>	12 hr (#66)	12 days (#49)	2 min 31 sec	
		<a href="#">isotope_subscriptions</a>	12 hr (#34)	3 days 20 hr (#25)	1 min 31 sec	
		<a href="#">missives</a>	12 hr (#21)	12 days (#6)	1 min 30 sec	
		<a href="#">opencurriculum</a>	12 hr (#48)	12 days (#35)	3 min 32 sec	
		<a href="#">quote_app</a>	11 hr (#61)	12 days (#46)	5 min 38 sec	
		<a href="#">Whereabouts</a>	11 hr (#55)	12 days (#42)	42 sec	

Icon: [S](#) [M](#) [L](#)

Legend

RSS for all

RSS for failures

RSS for just latest builds

Help us localize this page

Page generated: Feb 27, 2012 12:17:22 PM Jenkins ver. 1.450

# Email with report



Jenkins Automation <nobody@nowhere.corp.exlibrisgroup.com>

URM08-Fulfillment - Build # 1186 - Still Unstable!

To: Jenkins Automation <nobody@nowhere.corp.exlibrisgroup.com>

Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Message

summary.html (39 KB)



## BUILD UNSTABLE

Build URL: <http://il-almabuild02:8080/jenkins/job/URM08-Fulfillment/1186/>

Project: URM08-Fulfillment

Date of build: Thu, 16 Jun 2016 14:50:13 +0300

Build duration: 2 hr 17 min

### CHANGES

No Changes

### BUILD ARTIFACTS

#### Integration Tests

- [com.exlibris.alma/test-full-sanity/release-URM/test-full-sanity-release-URM.pom](http://com.exlibris.alma/test-full-sanity/release-URM/test-full-sanity-release-URM.pom)

#### JUnit Tests

Name: com.exlibris.urm.itest.Fullfilment.API Failed: 1 test(s), Passed: 4 test(s), Skipped: 0 test(s), Total: 5 test(s)

- Failed: com.exlibris.urm.itest.Fullfilment.API.CreateCourseAndReadingList.testCreateCourseAndReadingList**

Name: com.exlibris.urm.itest.Fullfilment.BlocksAndLimits Failed: 0 test(s), Passed: 2 test(s), Skipped: 0 test(s), Total: 2 test(s)

Name: com.exlibris.urm.itest.Fullfilment.BookingRequests Failed: 1 test(s), Passed: 6 test(s), Skipped: 0 test(s), Total: 7 test(s)

- Failed: com.exlibris.urm.itest.Fullfilment.BookingRequests.BookingRequestsMultipleItems.testBookingRequestsMultipleItems**

Name: com.exlibris.urm.itest.Fullfilment.Calendar Failed: 1 test(s), Passed: 1 test(s), Skipped: 0 test(s), Total: 2 test(s)

- Failed: com.exlibris.urm.itest.Fullfilment.Calendar.DefineCalendar.testDefineCalendar**

Name: com.exlibris.urm.itest.Fullfilment.Configuration Failed: 2 test(s), Passed: 3 test(s), Skipped: 0 test(s), Total: 5 test(s)

- Failed: com.exlibris.urm.itest.Fullfilment.Configuration.FulfillmentConfigurations.testFulfillmentConfigurations**

- Failed: com.exlibris.urm.itest.Fullfilment.Configuration.WorkOrder.testWorkOrder**

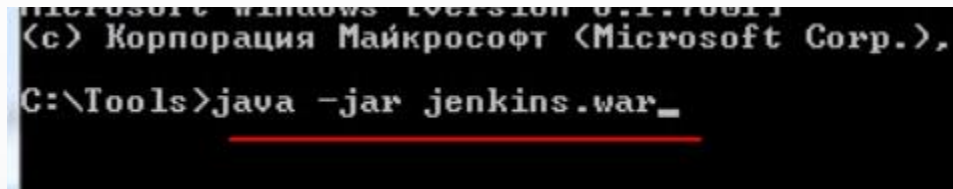
Name: com.exlibris.urm.itest.Fullfilment.Course Failed: 0 test(s), Passed: 1 test(s), Skipped: 0 test(s), Total: 1 test(s)

Name: com.exlibris.urm.itest.Fullfilment.Fines Failed: 0 test(s), Passed: 2 test(s), Skipped: 0 test(s), Total: 2 test(s)

Name: com.exlibris.urm.itest.Fullfilment.General Failed: 0 test(s), Passed: 3 test(s), Skipped: 0 test(s), Total: 3 test(s)

# From a single test to CI – Practice

- Go to <https://jenkins.io>
- Download and run .war file for Unix/Win/...



```
Microsoft Windows [Version 6.1.7601]  
<с> Корпорация Майкрософт (Microsoft Corp.),  
C:\Tools>java -jar jenkins.war_  
_____
```

- Connect localhost:8080/Jenkins (ask IT to add the machine to DNS)





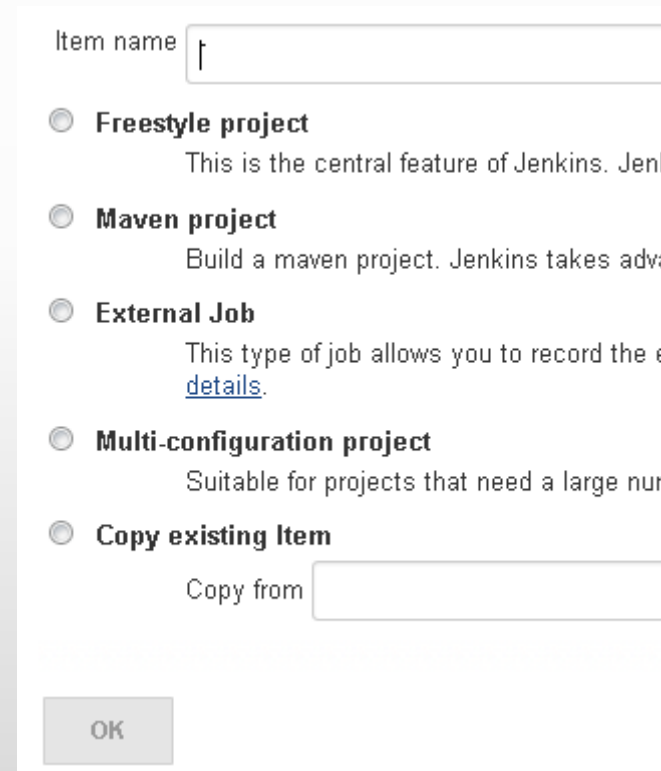
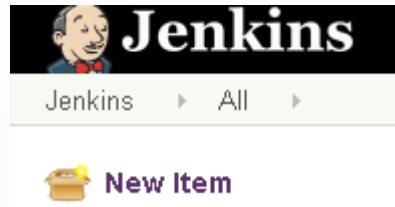
# From a single test to CI – Practice




Configurations (mail server, maven, java, users, etc.)



Making views/tabs for separating jobs to groups

A screenshot of the 'New Item' dialog box in Jenkins. It has a text input field for 'Item name' with a cursor. Below it are five radio button options: 'Freestyle project' (described as the central feature), 'Maven project' (for building Maven projects), 'External Job' (for recording external details), 'Multi-configuration project' (for projects needing a large number of configurations), and 'Copy existing Item' (with a 'Copy from' text input field). An 'OK' button is at the bottom.

# From a single test to CI – Practice

- Configure job:  Configure
  - Code source (CVS, SVN, GitHub, GoogleCode, ...)
  - Pom
  - Xvfb
  - Mail
  - Parameters

Q&A