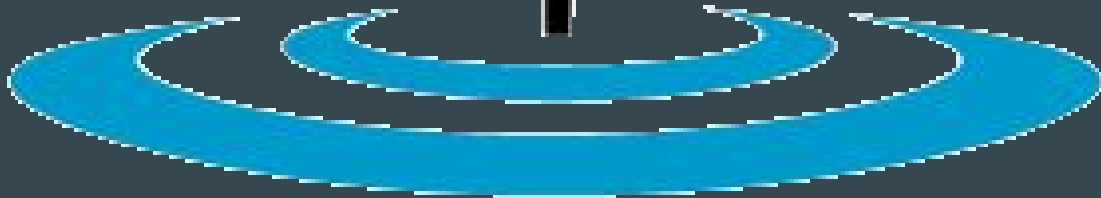# Our Experience with FOSS Testing

Joe Lester, Max Hyska, James Rhoten

Introduction

- Sakai
  - Open Source OAKS
  - Well Documented, included build guide
- Required Tomcat, Maven, and Java
  - Installation and configure guides available on their GitHub

Screenshot 1 (top left):

LOGOUT

MY WORKSPACE   JAMES'S SITE   STUDIVERSE COURSE

HOME
PROFILE
MEMBERSHIP
SCHEDULE
RESOURCES
ANNOUNCEMENTS
PREFERENCES
ACCOUNT
STUDIVERSE NEWS
HELP

Message Of The Day ?

Options

There are currently no messages at this location.

My Workspace Information Display ?

Options

Welcome to your personal workspace.

In Studiverse each user has his or her own individual worksite called My Workspace. My Workspace is a place where you can keep:

- personal documents
- create a personal profile
- maintain a schedule
- store resource and much more.

The Help functions offers context-sensitive articles on the functionalities and possibilities of Studiverse.

You have been given access to two different site types:

1. A course site on Sakai in which you are enrolled as a student
2. A personal course site in which you are enrolled as a teacher

Calendar ?

Options

December, 2016   <   Today   >

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	1	2	3

Recent Announcements ?

Announcements (viewing announcements from the last 10 days)

View   [All ▼]

There are currently no announcements at this location.

Screenshot 2 (bottom left):

LOGOUT

MY WORKSPACE   JAMES'S SITE   STUDIVERSE COURSE

HOME
PROFILE
MEMBERSHIP
SCHEDULE
RESOURCES
ANNOUNCEMENTS
PREFERENCES
ACCOUNT
STUDIVERSE NEWS
HELP

Resources ?

Site Resources | Upload-Download Multiple Resources | Options | Check Quota

Location: 📁 My Workspace

Remove | Move | Copy

	Title ▲	Access	Created By	Modified	Size

📁 My Workspace   [Add ▼] [Actions ▼]

▸ Show other sites

Upload Files
Create Folders
Add Web Links (URLs)
Create HTML Page
Create Text Document
Add Citation List

Screenshot 3 (right):

LOGOUT

MY WORKSPACE   JAMES'S SITE   STUDIVERSE COURSE

HOME
ANNOUNCEMENTS
LESSON BUILDER
RESOURCES
FORUMS
SITE INFO
INVITE PARTICIPANTS
SIMPLE PAGE
WEB CONTENT
TEST CENTER
GRADEBOOK
RESOURCES
ROSTER
CALENDAR
SCORM CONTAINER
SCORM PLAYER
SKIN SELECTOR
HELP

Gradebook ?

File ▾   Edit ▾   View ▾   Tools ▾   Help   trunk

Grade Items «

[Gradebook] [Attributes & Grades]

	Name	Points
☐	▸ 📁 **Gradebook**	**400**
☐	Quiz 01	100
☐	Quiz 02	100
☐	Quiz 03	+ 100
☐	Test01	200

New Item

Name: [Exam]
Points: [350]
Due date: [Optional]
Source: [Gradebook]
Include in grade: ☑
Extra credit: ☐
Release scores: ☑
Give ungraded no credit: ☐

[Add] [Add/Close] [Cancel]

Beginning Struggle

- Ubuntu
  - Virtual Machines
    - One laptop is dual boot windows and ubuntu
    - The other uses virtual box
- Project Dependencies
  - Many internal dependencies
  - Tomcat
  - Maven
  - Java8
- Conflicting Schedules
  - Work and school
  - Living on and off campus
- Hurricane!!!
  - Need we say more?

The Testing Framework

Testing Framework utilizes:

- Script- manages test cases compares results and runs drivers
- Source code- code being tested
- Drivers- Code to instantiate and use source code from terminal
- Results Display- HTML file that displays results in a browser

TESTING REPORT

Test Case Number	Requirment Tested	class.method tested	Driver Source	Oracle	Method Inputs	Method Output	Test Result
Test01	Search the list set to null for null element	StringUtil.contains	ContainsDriver.java	true	null:null	true	PASS
Test02	Test Empty least for element test.	StringUtil.contains	ContainsDriver.java	false	:test	false	PASS
Test03	Valid list containing one element which is being searched for.	StringUtil.contains	ContainsDriver.java	true	test:test	true	PASS
Test04	Valid list containing elements	StringUtil.contains	ContainsDriver.java	false	test1:test2	false	PASS
Test05	Valid list containing elements	StringUtil.contains	ContainsDriver.java	false	test7:test1,test2,test3,test4	false	PASS
Test06	Valid list containing elements	StringUtil.contains	ContainsDriver.java	true	test3:test1,test2,test3,test4	true	PASS
Test07	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	thetesthasrun	TheTestHasRun	thetesthasrun	PASS
Test08	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	null	null	null	PASS
Test09	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	null	null	null	PASS
Test10	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	thetesthasrun	thetesthasrun	thetesthasrun	PASS
Test12	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	the test hasrun	The TEST HAsruN	the test hasrun	PASS
Test13	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	the test has run	THE TEST HAS RUN	the test has run	PASS
Test14	The string must be trimmed of blanks and made lowercase	StringUtil.trimToNullLower	TrimLowerDriver.java	thetesthasrun	THETESTHASRUN	thetesthasrun	PASS
Test15	Must return a string representation of the course	Course.toString	ToStringCourseDriver.java	Test:It Has Run	Test:It Has Run	Test:It Has Run	PASS
Test16	Must return a string representation of the course	Course.toString	ToStringCourseDriver.java	:	:	:	PASS
Test17	Must return a string representation of the course	Course.toString	ToStringCourseDriver.java	null:null	null:null	null:null	PASS
Test18	Must provide a String representation of a User	User.toString	ToStringUserDriver.java	01:tester	01:tester:Joe	01:tester	PASS
Test19	Must return a string representation of a User	User.toString	ToStringUserDriver.java	null:null	null:null:null	null:null	PASS
Test20	Must return a string representation of a User	User.toString	ToStringUserDriver.java	:	::	:	PASS
Test21	Must return a string representation of a Student	Student.toString	ToStringStudentConstructorOne.java	:	::	:	PASS
Test22	Must return a string representation of a Student	Student.toString	ToStringStudentConstructorOne.java	null:null	null:null:null	null:null	PASS
Test23	Must return a string representation of a Student	Student.toString	ToStringStudentConstructorOne.java	01:tester	01:tester:Joe	01:tester	PASS
Test24	Must provide a String representation of a Student	Student.toString	ToStringStudentConstructorOne.java	642029:Frank J. Corn	642029:Frank J. Corn:null	642029:Frank J. Corn	PASS
Test25	Must provide a String representation of a Student	Student.toString	ToStringStudentConstructorTwoDriver.java	000001:Frank13B0y	000001:Frank13B0y:Frank Boy:null:SteveWasHere	000001:Frank13B0y	PASS

HackerMan?

Fault Injection

- Injected faults purposely into the code that would cause some tests to fail

- Good for testing that the framework is working properly

- Extremely helpful in learning the ins and outs of the source code.

Lessons Learned

- Scheduling, Scheduling, Scheduling
- Complexity of Projects
    - Can get massive and tangled
    - Folder Structures
- Division of labour
    - Specializing

Adaptations

- Good Team culture
  - Willingness to help each other out
  - Comradery
- Get Organized
  - Expect things to change
  - Solid, but Flexible