Detailed Design
Test Plan version 1.3

Javanet

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1.   Introduction

1.0   Test Plan Identifier

This test plan is version 1, revision 3 of the test plan for the Javanet software. It describes testing requirements that must be met throughout the development and completion of the Javanet project.

1.1   References

Currently this document is backed by the following documents, all of which can be found under the *Documents* link of the **Phoenix Tech** homepage:

- Software plan – version 1.1
- Requirements specification – version 1.1
- Preliminary Design – version 1.1
- Test Plan – version 1.1

Phoenix Tech has also used previous Software Engineering Test Plans, and guidelines given by Dr. Lederman as references for this compilation.

1.2   Introduction

This document is the third revision and overview of the test plan, labeled version 1.0. The goal of our software is to provide an interactive and easy way for students to practice java programming. Javanet will serve as a simple and effective way for students to practice problems and do homework, as well as make it easier for our clients' to track their progress. This test plan is intended to evaluate the intricacies of the Javanet software and ensure that they are functioning properly. Throughout project development, we will continue to have an open channel of communication with our clients as to which requirements must be fulfilled, revised or removed. This test plan and its later versions and revisions will keep a record of these changes as they are made. These updates will later be finalized and used in our final Acceptance Test in May 2009.

Our test plan will begin with system testing. This aspect of testing involves validating the functional requirements of Javanet. These functional requirements, exception handling, our approach to testing, and the system's pass/fail criteria, are listed in the system test section. The system test will assist us in determining whether Javanet has met all of the requirements established by our clients. The system test will be followed by unit testing. During unit testing, our team will test each module individually to ensure that it is free of data, logic, or standards errors. The units are divided up by their respective screens. Every screen in Javanet has its own unit and within that unit a multitude of test cases. Each test case examines specific actions within each unit. As we progress, these units may become more in depth and dense. The final portion of the document contains integration and regression testing. This concerns the functionality of the units as a whole, and their interaction with each other at this stage of testing. Regression testing completes our testing, however it is only implemented if a software component that was previously functioning correctly ceases to do so or stops working completely. Regression testing is used to discover regression bugs which may be causing these errors. As our project continues to mature, the testing document will also.

2. System Test

2.1 Test Items & Functional Requirements

- Javanet must be web based and therefore accessible from anywhere.
- The product must work with the browsers
    - Internet Explorer 7.0 and 8.0
    - The latest version of Firefox 2 and 3
    - Safari 2.* or better
- Each type of user must be able to log in to and out of their account securely
- Students must be able to self-register
- Menu navigation buttons must redirect the user to the correct page.
- The code must be compiled correctly.
- The database must contain all required information for each user, from their username and password to each question and question set that has been created and submitted.
- Every link, button, text box, drop-down menu, etc. on each page will need to be tested to ensure that the correct page will come up or that the appropriate action takes place. For example, if a student clicks on Save and Compile, we must test that their code is compiled correctly and returned, saved in the database, and that the correct screen and result are displayed.

2.2 Non-functional Requirements Inventory

- The system should also be aesthetically pleasing.
- The system should have a consistent user interface
- The system should have a reasonable compilation time
- The system should adhere to Shneiderman's 8 Golden Rules (located in the Glossary Section 5.2 of the Detailed Design)

2.3   Approach to Testing

Our clients have expressed that while they must have the ability to operate our software easily and effectively, the most important aspect is the students' experience. Every facet of testing is of utmost importance, but the primary focus will be on the usefulness and functionality on the students' end.

Our overall approach to testing will primarily include unit testing. To guarantee thorough testing each module will be tested with both valid and invalid inputs. The units will be tested separately, however if a dependency between units exists, integration testing will be used to guarantee their compatibility. Some examples of unit tests are, verifying privilege level functionality, consistent cross platform user interface, among many others.

The users of our software can expect an intuitive user interface, informative feedback, and an all around pleasant experience while using Javanet.

If any problems, complications, or extraordinary circumstances should arise, we will discuss and work through them with the clients to ensure their needs are satisfied. Our concerns and progress will be discussed in the biweekly meetings with our clients. Constant communication between Phoenix Tech and our clients will ensure that we are in understanding with one another in order to produce the produced that they desire.

2.4   Item Pass/Fail Criteria

The following list outlines the required functionality to be included in the final solution.

Javanet will be a web-based application viewable on the four major browsers. These browsers are Internet Explorer 7.0 and 8.0, the latest version of Firefox 2 and 3, and Safari 2.* or better.

- Index page displays a login screen common to all users.
                    YES   NO
- All other pages display a "logout" option for all users.
                    YES   NO

The requirements are listed according to user case, as follows:

Student:

- Can self enroll by creating a username (Siena email based) and password.
  - **YES**　　　　**NO**
- Can log in with the confirmed username and password through a web interface:
  - **YES**　　　　**NO**
  - o An incorrect log in will display an appropriate error message.
    - **YES**　　　　**NO**
  - o A link to an identity validation page will be provided if password is forgotten.
    - **YES**　　　　**NO**
- Can view and edit various account information upon clicking username link.
  - **YES**　　　　**NO**
- Can enroll into their appropriate course.
  - **YES**　　　　**NO**
- Can select a "Practice" tab.
  - **YES**　　　　**NO**
  - o Can select practice question sets under given categories.
    - **YES**　　　　**NO**
  - o A check mark will be rewarded once the questions in a question set are completed.
    - **YES**　　　　**NO**
  - o A smile face will be rewarded once a category is completed.
    - **YES**　　　　**NO**
- Can select an "Assignments" tab.
  - **YES**　　　　**NO**
  - o Can choose from chronologically ordered assigned homework.
    - **YES**　　　　**NO**
  - o Can choose from chronologically ordered assigned quizzes.
    - **YES**　　　　**NO**
  - o Can choose from chronologically ordered assigned tests.
    - **YES**　　　　**NO**
- Can write, compile (or save) and submit solutions to questions.
  - **YES**　　　　**NO**
  - o If hints for questions have been enabled, the option to view those hints is available.
    - **YES**　　　　**NO**
  - o Test cases and their solutions can be seen on the right-hand side of the screen.
    - **YES**　　　　**NO**
  - o A read only version of Students' question solutions will be available once they have been submitted and graded.
    - **YES**　　　　**NO**
- Can view their grades via a "Gradebook" tab.
  - **YES**　　　　**NO**
  - o Links for each assignment will redirect students to a summary page.
    - **YES**　　　　**NO**
- Can log out of the system.
  - **YES**　　　　**NO**

Instructor User:

- Can login to the application through a web interface with a username and password.
  YES   NO
- Can select what course section page to view on login.
  YES   NO
- Can view and edit various account information upon clicking username link.
  YES   NO
- Can post a new announcement for students of that course to see upon login.
  YES   NO
- Can select "Courses" tab to switch into another course.
  YES   NO
- Can select an "Assignments" tab.
  YES   NO
    o Can choose from chronologically ordered assigned homework redirecting to the gradebook.
      YES   NO
    o Can choose from chronologically ordered assigned quizzes redirecting to the gradebook.
      YES   NO
    o Can choose from chronologically ordered assigned tests redirecting to the gradebook.
      YES   NO
- Can select a "Question Pool" tab.
  YES   NO
    o A search function will be available to filter through the Universal, Course, and Private pools.
      YES   NO
    o Can drag and drop questions from Universal and Course pools to Private pool.
      YES   NO
    o Can drag and drop questions from Private pool to Universal or Course pools to request publication from Administrator.
      YES   NO
    o Links under private pool will allow creation of a new question and or question set.
      YES   NO
- Have the following options when creating a question set:
  YES   NO
    o Creating a title.
      YES   NO
    o Selecting a category for the question set.
      YES   NO
    o Selecting a difficulty level for a question set.
      YES   NO
    o Creating a time limit.
      YES   NO

Instructor User Cont'd:

- - Editing each question in the question set or dragging into trash bin for unwanted questions.
        YES   **NO**
    - Adjusting the number of attempts allowed and points for each question.
        YES   **NO**
- Have the following options when creating a question:
        YES   **NO**
    - Creating a title.
        YES   **NO**
    - Selection a category for the question set.
        YES   **NO**
    - Selecting a difficulty level for a question set.
        YES   **NO**
    - Text box to enter question.
        YES   **NO**
    - Text box to enter solution.
        YES   **NO**
    - Entering and selecting parameter types and their solutions.
        YES   **NO**
    - Enabling hints.
        YES   **NO**
- Can select a "Gradebook" tab.
        YES   **NO**
    - Sub tabs will include: "Default", "Grades By Student", and "Grades By Assignment".
        YES   **NO**
- Can override a Student's grade when the automatically generated grade is inappropriate.
        YES   **NO**
- Can see statistics across all Instructor sections for the corresponding course after an exam is administered and completed.
        YES   **NO**
- Can see statistics across all Instructor sections for the corresponding course after a homework assignment is administered and completed.
        YES   **NO**
- Can give permission to a particular Student to view previous assignments, quizzes, and tests.
        YES   **NO**
- Can click to a Student view in order to best assist Students when they are in need of help.
        YES   **NO**
- Can log out of the system.
        YES   **NO**

Course Coordinator User:

- Can log into the system.
  YES   NO
- Can switch into Instructor and Student view mode.
  YES   NO
- Can create questions or question sets to go into the Course pool.
  YES   NO
- Can import questions or question sets sent by Instructors to the Course pool to be shared with other Instructors of the course.
  YES   NO
- Can import questions or question sets sent by Instructors to the Universal pool to be available to all other Instructors.
  YES   NO
- Can change grades for students of the course that they are the coordinator for, if needed.
  YES   NO
- Can view grade book sorted by assignment.
  YES   NO
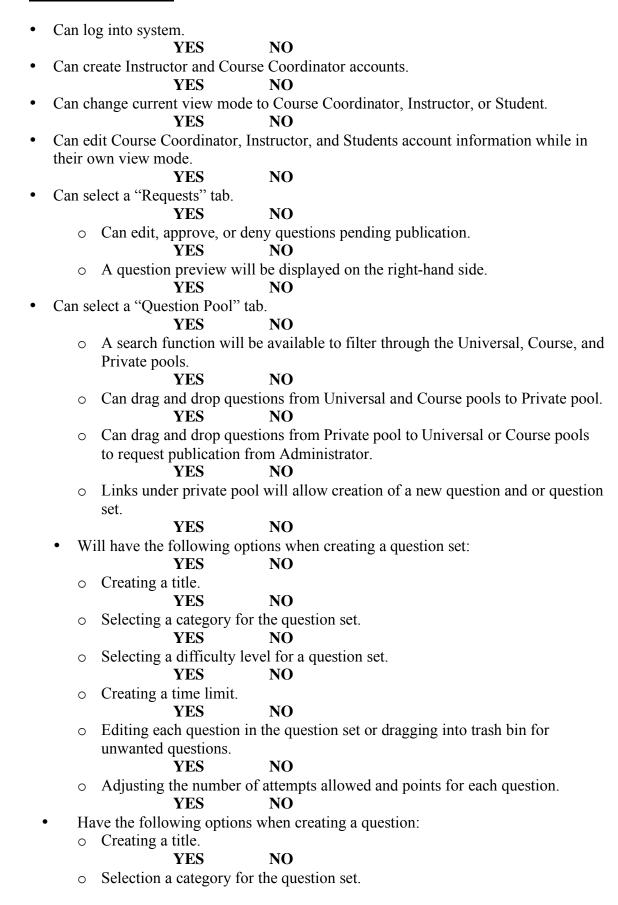- Can view grade book sorted by specific student.
  YES   NO
- Can view student progress across the course that they are the coordinator for.
  YES   NO
- Can log out of the system.
  YES   NO

Administrative User:

- Can log into system.
  - **YES**   **NO**
- Can create Instructor and Course Coordinator accounts.
  - **YES**   **NO**
- Can change current view mode to Course Coordinator, Instructor, or Student.
  - **YES**   **NO**
- Can edit Course Coordinator, Instructor, and Students account information while in their own view mode.
  - **YES**   **NO**
- Can select a "Requests" tab.
  - **YES**   **NO**
  - o Can edit, approve, or deny questions pending publication.
    - **YES**   **NO**
  - o A question preview will be displayed on the right-hand side.
    - **YES**   **NO**
- Can select a "Question Pool" tab.
  - **YES**   **NO**
  - o A search function will be available to filter through the Universal, Course, and Private pools.
    - **YES**   **NO**
  - o Can drag and drop questions from Universal and Course pools to Private pool.
    - **YES**   **NO**
  - o Can drag and drop questions from Private pool to Universal or Course pools to request publication from Administrator.
    - **YES**   **NO**
  - o Links under private pool will allow creation of a new question and or question set.
    - **YES**   **NO**
  - Will have the following options when creating a question set:
    - **YES**   **NO**
    - o Creating a title.
      - **YES**   **NO**
    - o Selecting a category for the question set.
      - **YES**   **NO**
    - o Selecting a difficulty level for a question set.
      - **YES**   **NO**
    - o Creating a time limit.
      - **YES**   **NO**
    - o Editing each question in the question set or dragging into trash bin for unwanted questions.
      - **YES**   **NO**
    - o Adjusting the number of attempts allowed and points for each question.
      - **YES**   **NO**
  - Have the following options when creating a question:
    - o Creating a title.
      - **YES**   **NO**
    - o Selection a category for the question set.

<u>Administrative User Cont'd:</u>

                        YES   **NO**
- o Selecting a difficulty level for a question set.

                        YES   **NO**
- o Text box to enter question.

                        YES   **NO**
- o Text box to enter solution.

                        YES   **NO**
- o Entering and selecting parameter types and their solutions.

                        YES   **NO**
- o Enabling hints.

                        YES   **NO**
- Can create questions and question sets to go into the Universal pool.

                        YES   **NO**
- Can change grades, if needed.

                        YES   **NO**
- o Switching view modes to either a Course Coordinator or Instructor.

                        YES   **NO**
- Can archive student information from the database.

                        YES   **NO**
- Can deactivate accounts.

                        YES   **NO**
- Can log out of the system.

                        YES   **NO**

2.5   Test Deliverables

The following items will be delivered as part of the test plan:
- Test Plan document
- Test Plan cases

The following items may be delivered as part of the final test plan.
Exact specifications of the final test plan will be determined at a later date
- Test Plan document
- Test Plan cases
- Error and execution logs
- Problem reports and corrective actions

2.6   Schedule

The Gantt chart is Phoenix Tech's method for organization. Documents and presentations will be delivered on time as usual, according to dates marked on the chart.

The Waterfall Method is another technique we use to schedule and organize our project components.

Scheduled milestones left this semester:
- *Monday, March 9, 2009 – Detailed Design document due*
- *Tuesday, March 10, 2009 – Detailed Design presentation*
- Monday, April 27, 2009 – Acceptance Test documents due
- Tuesday, April 28, 2009 – Acceptance Test presentation
- Friday, May 1, 2009 – Academic Celebration Presentation

3. Unit Test

3.1 Unit Test Legend

ID: Unique number to identify specific test cases.

P/F: (Pass/Fail) The result of the test.

Description: What is being tested.

Action: What is done, or input.

Expected result: The action that should be the result of the test.

Observed Result: What the test actually produced.

Comments: Any comments relative to how the test ran, or what bugs need to be fixed.

3.2 Unit Test Catalog

Test Result	Test Number	Unit Test Name
	1	Javanet Welcome
	2	Welcome : Student
	3	Welcome : Instructor
	4	Welcome : Course Coordinator
	5	Welcome : Administrator
	6	Reset Password
	7	Student Registration
	8	Student Profile Editing
	9	Student Home
	10	Student Practice
	11	Student List Assignments
	12	Student Homework
	13	Student Homework Question
	14	Student Homework Question Solution
	15	Student View Gradebook
	16	Instructor Profile Editing
	17	Instructor Home
	18	Instructor List Assignments
	19	Instructor Question Pools
	20	Instructor Create Question Set
	21	Instructor Create Question
	22	Instructor View Gradebook – Default
	23	Instructor View Gradebook – by Student
	24	Instructor View Gradebook – by Assignment
	25	Course Coordinator Profile Editing
	26	Course Coordinator Home
	27	Course Coordinator Pending Requests
	28	Course Coordinator List Assignments
	29	Course Coordinator Question Pools
	30	Course Coordinator Create Question Set
	31	Course Coordinator Create Question
	32	Course Coordinator View Gradebook – Default
	33	Course Coordinator View Gradebook – by Student
	34	Course Coordinator View Gradebook – by Assignment
	35	Administrator Home
	36	Administrator Profile Editing
	37	Administrator Pending Requests
	38	Administrator Create Question Set
	39	Administrator Create Question
	40	Administrator View Gradebook – Default
	41	Administrator View Gradebook – by Student
	42	Administrator View Gradebook – by Assignment
	43	Administrator View Question Pools
	44	Administrator List Assignments
	45	Integration Testing
	46	Regression Testing
P = Pass		
F = Fail		