An Expert System for Network Router Configuration

Software Test Plan

Michael A. Perez

Spring 2015

1. Introduction

Purpose

This document defines the overall plan to validate functional requirements specified in the Software Requirements Specification (SRS) document. Test cases will also be defined here, detailing the steps needed to validate each functional requirement.

Overview

This document classifies requirements as one of functional, non-functional, or other. Functional requirements describe the behavior of the system and the software architecture. Non-functional requirements describe the characteristics of the system, such as design constraints, and describe the system's technical architecture. Classifying requirements as "Other" is a catch-all method to describe requirements that are neither functional or non-functional. Document requirements fall under the "Other" classification. The test plan will consider all functional requirements for testing and those non-functional requirements that place constraints on the system.

2. Testing Strategy

The test cases developed here will be based on an analytical approach to the system requirements, especially on those requirements that are functional or that specify design-constraints. Traceability across use cases, requirements, and software product features provide various levels of detail as appropriate for each test case. For example, preconditions and steps for a test case can be based on the Use Case, the Requirement, or the Product Feature.

A model-based approach would also be appropriate here. A predefined list of responses to the Expert System's line of questioning should produce the queries in the same order and result in the same UCI configuration script each time.

3. Features to be Tested

Because of the level of technical specifics used in the language of the Specifications developed in the SRS, they will require low-level unit testing for validation. Because the Specifications developed in the SRS are written with implementation details in mind, they require low-level unit testing and are not appropriate here to validate the goals of the project. Here we will concern ourselves with the validation of the higher level Functional Requirements.

4. Test Cases

Name	TC01
Brief Description	The system should allow the user to start the Wizard and to stop or cancel the Wizard anytime during the interview process so that the user is not stuck in the interview process when they cannot answer any more questions.
Traceability	R3, R4
Preconditions	• System is running • Wizard is not initiated • Home screen is presented on screen
Steps	1. Initiate the configuration Wizard 2. Cancel and Reset the Wizard 3. Enter the following initial facts in the first screen. 4. Submit the initial facts form. 5. Cancel and Reset the Wizard. 6. Enter the initial facts again as in Step 3. 7. Submit the initial facts form again. 8. Respond Yes or No to the next prompt. 9. Cancel and Reset the Wizard
Expected Results	The wizard's interview process is canceled and re-started without issue in Steps 2, 5, and 9

Name	TC02
Brief Description	The system should be able to prompt the user for certain types of responses. This test case will validate that the system can present the user with a predefined list of responses and accept one item from that list as a response.
Traceability	R1, R2
Preconditions	• Test case, TC01 passes and was immediately performed before • Initial Wizard facts form is presented on screen
Steps	1. Submit the following initial facts: 2. Respond Yes to the prompt "XYZ" 3. Cancel and Reset the Wizard 4. Resubmit the initial facts from Step 1. 5. This time respond No to the prompt from step 2.
Expected Results	The wizard should present the same prompt for the same initial facts in steps 2 and 5. Responding Yes to this prompt should result in X while responding No to this prompt should result in Y.

Name	TC03
Brief Description	The interview process should end in a reasonable amount of time.
Traceability	R5, R6, R7
Preconditions	• Test case, TC02 passes and was immediately performed before • Initial Wizard facts form is presented on screen
Steps	1. Submit the following initial facts: 2. From now on out, respond with the following in the order shown: Yes, No Yes, Yes, No 3. Review the UCI script

Expected Results	After the last response in Step 2, the Wizard will have enough information and will stop to produce a UCI configuration script. In step 3, the System will present the UCI configuration script on screen.