Test Strategy

Table of Contents

Introduction

The management of the company Software Development Company (SDC) has found an open source abondonware software called "My web server". This abondonware software comes with source code but also with legacy requirements, these legacy requirements can be found in Appendix A in this document. SDC's goal with “My web server” is to try to redistribute the server on a wide range of Internet of Things (IoT).

Task: To evaluate the current state of the web server "My web server" and see if it fulfills the stakeholders Goals, see section “Stakeholders“ and section “Stakeholders Goals” in this document.

Deliverable

The task that has been described in the “Introduction” and the final results will be summarized in 4 different documents:

- strategy.pdf
- testPlan.pdf
- testCases.pdf
- testReport.pdf

“Strategy.pdf (this document)”: Describes the stakeholders and what their goals/needs are regarding the current product “My web server”. This document also contains clarified milestones to more easily measure progress that leads to meeting stakeholder goals. Also this document contains what resources are available for the task that have been described in the “Introduction” and a short glossary that ca be used for the described documents.

“testPlan.pdf”: Contains what should be tested and what should not be tested and why it should or should not be tested based on the stakeholders and their goals that are described in document strategy.pdf. This document also contains how these tests should be performed, at what test level they should be performed at and what techniques should be used to perform these tests. In addition to what tests that should be tested and the approach to these tests this document also contains the risks involved in the test plan and how these risks can be mitigated.

"testCases.pdf": Contains documented test cases that are detailed description on how the tests should be exercised and what the expected results are. The test-cases are based on what should be tested in the document testPlan.pdf

"testReport.pdf" contains the results from the exercised test cases written in document testCases.pdf and how these results can be interpreted and used.

Stakeholders

List of stakeholders

- Software Development Company (SDC) (prime stakeholder)
- Internet of thing developers (IoT) developers
- End-customer

Stakeholders Goals

SDC goals**:**

1. To know if the found web-server “My web server” can be used on a wide range of IoT devices.

2. To know if the found web-server “My web server” fulfill the requirements in the legacy. requirements (See Appendix A).

IoT developers goals:

1. To know the compatibility between “My web server” and their IoT device(s).

2. To know how “My web server” can be integrated whit their IoT device(s) and the adaptability of “My web server”.

End-customers goals:

1. To know “My web server” securability.

2. To know “My web server” accessibility.

Milestones

Following is a list of milestones that have been setup to more easily measure the progress to fulfill the stakeholders goals concerning “My web server”. They are placed with the highest priority first and the lowest last in the list.

1. Implemented tests of "My web server" which with concrete clear results can give feedback to SDC goals 1 & 2 so it can be stated if web server "My web server" is worth continuing to invest in as a web server for IoT devices. If these tests show that an investment is worthwhile, these tests should indicate how further development of the project should continue.

2. Implemented tests of “My web server” on IoT devices which with concrete and clear results show integration and adaptability between web server and IoT devices and further point out how integration and adaptability can be improved.

3. Implemented tests of "My web server" on IoT devices which with concrete and clear results show the degree of securability and accessibility and further point out how securability and accessibility can be improved when it comes to using "My web server" on IoT devices.

Available Resources

List available resources

- Time: 30h/personal
- Personal: One software tester
- Other: Domain experts from course 1dv609
- Technical resources:
    - Testing environment: Ubuntu 20.04
    - Virtual Box v. 6.1.14
    - KVM v. 4.2.1
    - Docker v. 19.03.14
    - JMeter v. 5.3
    - Postman v. 7.36.0
    - Newman v. 5.2.1
    - IntelliJ IDEA

Approach to fulfill stakeholders goals

In order to be able fulfill the different goals that the different stakeholders have concerning “My web browser”, the goal is to complete the previously mentioned milestones in this document. To succeed in this, knowledge about Java, knowledge about web server and knowledge about IoT is needed. In addition to this also knowledge about how a Java application, a web server and IoT devices can be tested and how to perform these tests. The software tester in this project should possess this knowledge and together with the technical resources available be able to fulfill the previously mentioned milestones.

Glossary

“My web browser” = The web-server = The System
SDC = Software Development Company = Main stakeholder
IoT = Internet of Things
End-customer = End user of "My web server" integrated in any IoT device

Appendix A, Legacy Requirements

Supplementary Specification

Req 1. The web server should be responsive under high load.

Req 2. The web server must follow minimum requirements for HTTP 1.1

Req 3. The web server must work on Linux, Mac, Windows*.

Req 4. The source code should be released under GPL-2.0.

Req 5. The access log should be viewable from a text editor.

* XP, Vista, 7, 8, 10, Server 2008

Use Cases

Actors
Administrator. Installs, Starts, stops the Web server, inspects usage.

Browser: Accesses shared resources.

UC1 Start Server

Primary Actor
Administrator

Postcondition:

- A web server has been started
- A note in the access log was written, that the server was started

Main scenario

1. Starts when an administrator wants to start the server.
2. System asks for socket port number and shared resource container
3. The administrator provides a socket port number and a shared resource container
4. The system starts a web server on the given port and presents that the server was started and writes a note in the access log.

Alternate Scenarios

- 4a. The web server could not be started due to the socket was taken
    1. The system presents an error message: “Socket XX was taken” (XX is the socket number, Example “80”)
    2. Exit Use Case
- 4b. The web server could not be started due to restriction on the shared resource container

1. The system presents an error message: “No access to folder XX” (XX is the shared resource container provided, Example “\var\www”)
2. Exit Use Case

- 4c. The access log could not be written to
    1. The system presents an error message. “Cannot write to server log file log.txt”
    2. Exit Use Case

UC2 Stop Server

Primary Actor
Administrator

Precondition:
- A web server has been started

Postcondition:
- A note in the access log was written, that the server was stopped

Main scenario
1. Starts when a user wants to stop the server.
2. The system stops the web server and presents that the webserver has been stopped

UC3 Request shared resources

Primary Actor
Browser

Precondition:
- A web server has been started

Postcondition:
- A note in the access log was written, that access happened with the request information and the result of the request.

Technical note
- Browser and System communicate using HTTP 1.1.
- Error messages are part of the HTTP 1.1 protocol
    - 200 OK
    - 400 Bad request
    - 403 Forbidden
    - 404 Not Found

Main scenario

1. Starts when a Browser wants to access a shared resource
2. The system delivers the shared resource to the browser and a success message is written to the access log.

Alternate Scenarios

- 2a: The shared resource cannot be found
    1. The system presents that the resource cannot be found
    2. Exit Use Case
- 2b: The shared resource is outside the shared resource container
    1. The system presents that the resource is forbidden
    2. Exit Use Case
- 2c: The resource request is invalid or malformed
    1. The system presents that the request cannot be handled
    2. Exit Use Case
- 2d: The server encountered an error when trying to process the request
    1. The system presents that it has an internal error
    2. Exit Use Case