Requirements Document

Team Seven Source

Product Overview

The current Jama system does not support a graphical interface for traceability, relying solely on file hierarchies. The Jama Software Capstone project will be used to implement the graphical representation of data to highlight traceability within a Jama project. This project is set for completion by September 11th.

Purpose and Scope

The purpose is to display Jama's project data in a meaningful and insightful way that is accessible to users in identifying traceability throughout a modeled system. The system should be modular, thus open to modification by future users. The scope is limited to the display and interaction with a set of project items defined by the user.

Proposed Plan

In order to facilitate a graphical interface, we will be using the RESTful paradigm within a web app. Users will sign into our app using a username and password, which will then communicate with the Jama servers. The app will allow users to select a root item, which will then be represented as a graphic showing item relationships.

Terms and Definitions

- ❖ **App**: The application being created by the Capstone team
- ❖ **Traceability**: The emphasis of traceable information about project items concerning upstream and downstream relationships.
- ❖ **IR**: Intermediate Representation, in the context of a representation of a Jama project's item's traceable relationships
- ❖ **Item**: A structure belonging to a Jama project that represents specific data
- ❖ **Relationship**: A directed association between two items
- ❖ **Item Hierarchy**: A representation of items as a tree
- ❖ **Item Relationship Graph**: A representation of items as a graph with edges that are relationships

Authentication

Requirement: Input a Username
> JamaTrace shall provide a form field for users to input their username.
> Error: Incorrect username: request new username from user
> Error: Invalid characters: request new username from user

Requirement: Input a Password
> JamaTrace shall provide a form field for users to input their password.
> Error: Incorrect username: request new password from user
> Error: Invalid characters: request new password from user

Requirement: Store Valid Credentials
> JamaTrace shall store the username and password provided by a user to be used to request data from Jama.
> Error: Invalid credentials: request new credentials from user

Collecting a Graph

Requirement: Item Hierarchy JSON Specification
> JamaTrace shall provide a common JSON format to model item trees.

Requirement: Item Relationship Graph JSON Specification
> JamaTrace shall provide a common JSON format to model item relationship graphs.

Requirement: Gather List of Projects
> JamaTrace shall collect all projects accessible to a user and present them to the user to select from.
> Error: Invalid project: request new project from user

Requirement: Gather List of Items
> JamaTrace shall collect all items of a selected project and present them to the user to select from.
> Error: Invalid item: request new item from user
> Error: Invalid Type(s): request new item from user

Requirement: Request an Item

JamaTrace shall allow the user the select a root item from which to display a relationship graph.

Error: Invalid item: Re-Request item from Jama -> Request new item from user

Error: Invalid Type(s): Re-Request item from Jama -> Request new item from user

Requirement: Request Item Hierarchy

JamaTrace shall request from Jama the item hierarchy given a root item. The resulting data shall adhere to the Item Hierarchy JSON Specification.

Error: Invalid item(s): Re-Request item from Jama

Render Graph

Requirement: Configure D3

JamaTrace shall prepare D3 to render relationship graphs from Jama

Requirement: Prepare Data for D3

JamaTrace shall prepare the item hierarchy and relationship data from Jama into a relationship graph that adheres to the Item Relationship Graph JSON Specification to be consumed by D3

Error: Malformed Data: Re-Request Data from Jama

Error: Missing Data: Re-Request Data from Jama

Requirement: Send Relationship Graph Data to D3

JamaTrace shall send relationship graph data that adheres to the Item Relationship Graph JSON Specification to D3 for rendering

Error: Malformed Data : Reform Data and resend to D3

Nonfunctional Requirements

Requirement: Adhere to the modern WHATWG Living HTML Standard

JamaTrace shall strictly adhere to the WHATWG HTML Living Standard (https://html.spec.whatwg.org). JamaTrace's HTML output shall be continuously validated for compliance with the W3C's HTML5 validator.

Error: Invalid Markup: Manually resolve validation issues to conform to the WHATWG standard

Requirement: Adhere to the ECMAScript 2015 (ES6) standard

JamaTrace shall strictly adhere to the ECMAScript 2015 (ES6) standard and conventions (http://www.ecma-international.org/ecma-262/6.0/). JamaTrace's JavaScript output shall be continuously validated (linted) for compliance with a to be defined set of conventions using ESLint (http://eslint.org/).

Error: Invalid JavaScript Code: Manually resolve validation issues to conform to the ES6 standard and to be defined conventions

Requirement: Adhere to other applicable W3C technology standards

JamaTrace shall strictly adhere to any other applicable technology standards specified by the W3C (HTML, CSS, DOM API, Web Accessibility Initiative, etc.). The developers of JamaTrace shall continuously evaluate code modifications utilizing a peer review process to determine conformance to the standards.

Error: Manually Discovered Invalid Code: Manually resolve issues to conform to specified W3C standards

Requirement: Adhere to the JSON Schema standard

JamaTrace shall strictly adhere to the JSON Schema standard (http://json-schema.org) when specifying the schema design of applicable JSON data. JamaTrace's JSON interchange data shall be continuously validated with AJV (https://www.npmjs.com/package/ajv) for compliance with the JSON Schema standard.

Error: Invalid JSON: Manually resolve issues to conform to specified JSON schema