SIT782 Assignemnt 3 (System Implementation)

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Contents

1 Description of System Developed

1.1 What is the system Developed?

The system being developed is a Text-based web browser.

1.2 Functionalities and the features of your system?

- Text-based web browser.
- HTTP Client.
- HTML Parser.
- HTML Renderer.
- Mouse Event Listener.
- Interactive Graphical User-Interface.

1.3 Comparison to your proposal. State what was completed and what has not and why?

1.3.1 Completed Features

- HTTP Client: it is the module that is responsible for fetching the HTML document form the remote web-server. The browser works on HTTP GET Requests.
- Mouse Event Listener: the module listens was built to intercept users-inputs and trigger corresponding events.
- Interactive Graphical User-Interface: the user interface is very simple, with an input for web URl. Once when the user enters the URL and hits enter the HTML is rendered to the screen.
- HTML Parser: the parser parses the HTML from the HTTP response into a parse tree.
- HTML Renderer: the renderer parses the HTML into the final display. Although, only a small but the most popular HTML Tags are handled. Tags handled COMMENTS, HTML, HEAD, BODY, DIV, TITLE, P and H1 - H6.

Although, all the features mentioned above were implemented, certain features were developed to a point to demoninstrate its functionality. Mordern browsers have been around from 1990 and have built up very sophisticated features. The aim for the current project was to demoninstrate a skeleton implementation within a semester.

1.3.2 In-Complete Features

- There are 120 HTML tags defined by the W3c.
- Out of the above 10 Tags were depreciated.
- There are about 25 HTML Tags most commonly used.
- Out of 25 of the most popular TAGS used 10 were supported.
- The 10 Tags supported demoninstrated the key principles used in constructing a web browser.

1.4 Brief Summary on Achievement overall and each individual

1.4.1 Building a web browser from scratch requires large technical challenges. Some of the channenges were:

- Limited to 10 development hours per week for the entire project.
- Lack of design documentation for existing projects and literature in the subject.
- Most of the programming involved was experimental.
- Compilers were studied to understand parsing and rendering.

1.4.2 Individual Contributions

1. Arvind
    - Design and Analysis of the project.
    - Build HTML Parser and Renderer.

2 System Implementation Details

2.1 What has been Implemented?

- HTTP Client.
- HTML Parser.
- HTML Renderer.
- Mouse Event Listener.
- Interactive Graphical User-Interface.

2.2 How was it Implemented?

2.2.1 Techniques, languages, tools?

- Java
- Gradle
- JSoup Library

2.2.2 Algorithms

- Custom Model-View-Controller design pattern.
- Singleton Degign Pattern for the renderer.
- Factory Design Pattern for the RendererObject.
- Tree based algorithms for the Parser and Renderer.

2.2.3 Tools

- Gradle was used for build management.
- Trello was used for project management.
- Git was used to version code.

3 System Testing and Quality Assurance

3.1 Test Plan

3.1.1 Test Objective/ Requirement

- Iterative and experimental development required that tests be performed directly on the implementation.
- Testing involved White, Black and Grey box testing whith minimal or no Unit tests.

3.1.2 Assumptions

- Performance and Security Testing Out-of-scope.
- No automated tests were considered as the project was experimental.

4 System Documentation

4.1 User Manual