Number System Converter - Process Documentation

Project Overview

The Number System Converter is a web-based application that allows users to convert numbers between different bases (Binary, Octal, Decimal, and Hexadecimal). It provides a clean interface for entering data, selecting bases, and viewing step-by-step conversion results.

Objectives

1. Simplify learning and practicing number system conversions.
2. Automate conversions between binary, octal, decimal, and hexadecimal.
3. Provide clear step-by-step breakdowns for educational use.

Development Process

The development followed six main stages: Planning, Design, Implementation, Testing, Deployment, and Maintenance.

Planning

Problem: Manual conversions are slow and error-prone. Goal: Build a simple and interactive tool. Scope: Web-based, browser-accessible, no installation required.

Design

UI Components include input fields, dropdowns for selecting bases, a Convert button, and result/steps display sections. Basic layout created using HTML and CSS.

Implementation

Technologies used: HTML5 (structure), CSS3 (styling), JavaScript (logic), GitHub Pages (hosting). Conversion logic includes validation, converting from source to decimal, and then to target base using parseInt() and toString().

Testing

Validation tests confirmed accuracy, error handling, and browser compatibility. Example: 1010 (Binary to Decimal) = 10.

Deployment

The project is hosted on GitHub Pages under the URL: https://brnezekiel.github.io/trial/. Steps include creating a GitHub repo, pushing files, and enabling Pages from settings.

Maintenance & Future Improvements

Future plans include adding support for custom bases, copy result feature, dark mode, conversion history, and real-time error detection.

Team / Roles

Developer: Ezekiel (brnezekiel) - Code, UI, Hosting
Documentation: Chris Munene - Technical documentation and process explanation.

Version Control

GitHub repository used for versioning, commits, and updates. Example commits: 'Added conversion steps', 'Fixed input validation bug'.

References

• parseInt():
https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/parseInt
• toString(): https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Number/toString
• GitHub Pages setup guide.

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