PROCESS DOCUMENTATION

Project Title: Automation of Number System Conversions from One Number System to Another
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1. Introduction

This project aims to automate the conversion of numbers between various number systems — Binary, Decimal, Octal, and Hexadecimal — using a cross-platform mobile application developed with Flutter.
The main objective is to provide a simple, fast, and reliable tool that works on both Android and iOS platforms.

2. Problem Statement

Manual conversion between number systems can be time-consuming and error-prone. Students and developers frequently require quick conversions while learning digital logic, programming, or computer architecture.
This project automates the process to eliminate human error and improve efficiency.

3. Objectives

To build a mobile app that converts numbers between Binary, Decimal, Octal, and Hexadecimal systems.

To make the app available on both Android and iOS.

To provide an intuitive and user-friendly interface.

To document the entire development and deployment process.

4. Tools & Technologies

Tool Purpose

Flutter SDK (Dart) Cross-platform app framework
Visual Studio Code / Android Studio Code editor.

5. Development Process

The project followed an Agile mini-sprint model:

1. Planning Phase: Defined requirements and roles.

2. Design Phase: Created basic UI sketches and data flow diagrams.

3. Development Phase: Implemented core conversion logic and UI screens.

4. Testing Phase: Tested all base conversions using predefined test cases.

5. Deployment Phase: Generated APK file and prepared iOS build instructions.

6. System Design Overview

Input: Number in any of the four bases (Binary, Octal, Decimal, Hexadecimal).
Process: The input is parsed according to its base and converted into the target base using built-in int.parse() and toRadixString() methods.
Output: Converted number displayed as text.

7. Testing Plan

Unit Testing: Verified conversion functions with sample values.

Functional Testing: Checked all UI elements and dropdown interactions.

Performance Testing: Ensured instant conversion without laging.

8. Conclusion

The project successfully automated number system conversion across four major bases and deployed the app to Android.
It enhanced teamwork, technical knowledge of Flutter, and understanding of software documentation.