Software Requirements Specification (SRS)

# Historian's Estimator - Date Comparison Tool

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# 1. Introduction

## 1.1 Purpose

The purpose of this document is to describe the software requirements specification (SRS) for the project 'Historian's Estimator'. This document defines the functionality, constraints, and intended use of the software.

## 1.2 Scope

Historian's Estimator is a C-based console application that calculates precise date differences between two Gregorian dates. It features intelligent auto-correction, historical date handling, and continuous interactive sessions for user convenience.

## 1.3 Definitions, Acronyms, and Abbreviations

SRS – Software Requirements Specification
AD – Anno Domini (used for historical year notation)
BC – Before Christ
GCC – GNU Compiler Collection
CLI – Command Line Interface

## 1.4 References

IEEE Std 830-1998: IEEE Recommended Practice for Software Requirements Specifications

## 1.5 Overview

This document details the system overview, functionalities, design constraints, and future improvements of the Historian's Estimator application.

# 2. Overall Description

## 2.1 Product Perspective

Historian's Estimator is a standalone C application with no external dependencies other than the standard C library. It is designed for cross-platform compatibility (Windows, Linux, macOS).

## 2.2 Product Functions

- Date difference calculation
- Smart auto-correction for invalid inputs
- Support for historical dates
- Convert negative years inputs into AD dates.
- Dual output formats
- Continuous operation until user exits
- Error Handling: Detects and prompts for invalid input re-entry

### 2.3 User Characteristics

Target users include students, researchers, and history enthusiasts seeking accurate date computations without using complex GUI tools. Basic familiarity with command-line environments is expected.

### 2.4 Constraints

- Must adhere to the Gregorian calendar system
- Implemented in pure C (ISO C99)
- Must run on standard terminal without GUI
- Limited to 32,767 years in either direction

### 2.5 Assumptions and Dependencies

Assumes valid terminal environments and user familiarity with date formats. No internet or third-party libraries required.

## 3. Specific Requirements

### 3.1 Functional Requirements

- The system shall accept two date inputs in dd mm yyyy format.
- The system shall auto-correct invalid or overflow dates.
- The system shall display differences in both days and years/months/days format.
- The system shall handle leap years accurately.
- The system shall prompt users to re-enter invalid inputs.
- The system shall allow continuous comparisons until exit.

### 3.2 Non-Functional Requirements

- Efficiency: Should run in less than 1 second for any valid input.
- Usability: Clear and user-friendly console prompts.
- Portability: Compatible across Windows, Linux, and macOS.
- Maintainability: Implemented as a single-file C program.
- Reliability: Handles input errors gracefully without crashing.

### 3.3 Interface Requirements

User Interface: Command-line interface with text-based prompts.
Hardware Interface: Requires minimal memory (under 1 MB).
Software Interface: Standard input/output streams only.
Communication Interface: None.

## 4. System Features

Each feature of the Historian's Estimator is designed to provide accurate and efficient date calculations with user convenience in mind.

### 4.1 Date Difference Calculation

Computes the total number of days between two valid dates and also represents the difference in years, months, and days.

### 4.2 Smart Auto-Correction

Automatically corrects invalid dates, such as adjusting overflow days and months, to ensure logical continuity.

### 4.3 Historical Date Support

Supports both AD and BC date notations within the range of ±32,767 years.

## 5. Future Enhancements

- Support for other calendar systems (Julian, Islamic, Hebrew)
- Date arithmetic (add/subtract days)
- Holiday calculation features
- GUI and web-based versions
- Batch processing for multiple date pairs