

**Arithmetic Expression Evaluator
Software Development Plan
Version 1.0**

Arithmetic Expression Evaluator	Version: 1.0
Software Development Plan	Date: 13/09/2023
Software Development Plan_9_13_2023.docx	

Revision History

Date	Version	Description	Author
13/09/2023	1.0	The initial Software Development Plan	Alexandra, Deborah, Riley, Victor, Timo, Ellia

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Software Development Plan

1. Introduction

This document contains the plan and vision for our program. This serves as a reference that team members can use when completing project deliverables. Also, this document serves as the vision document for this project based on the requirements. The definitions, acronyms, abbreviations, and references that will be used will be found in the introduction. The rest of the document will be constituted of the following subsections: Project Overview, Project Organization, Management Process, and Annexes. This document will be subject to change.

1.1 Purpose

The purpose of the *Software Development Plan* is to gather all information necessary to control the project. It describes the approach to the development of the software and is the top-level plan generated and used by managers to direct the development effort.

The following people use the *Software Development Plan*:

- The **project manager** uses it to plan the project schedule and resource needs, and to track progress against the schedule.
- **Project team members** use it to understand what they need to do, when they need to do it, and what other activities they are dependent upon.

1.2 Scope

This *Software Development Plan* describes the plan to be used by the Arithmetic Expression Evaluator project, including deployment of the product. The details of the individual iterations will be described in the Iteration Plans.

1.3 Definitions, Acronyms, and Abbreviations

VCS – Version Control System

See the Project Glossary.

1.4 References

No References

1.5 Overview

This *Software Development Plan* contains the following information:

Project Overview	—	provides a description of the project's purpose, scope, and objectives. It also defines the deliverables that the project is expected to deliver.
Project Organization	—	describes the organizational structure of the project team.
Management Process	—	explains the estimated cost and schedule, defines the major phases and milestones for the project, and describes how the project will be monitored.
Annexes	—	provide an overview of the software development process, including methods, tools, and techniques to be followed.

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2. Project Overview

2.1 Project Purpose, Scope, and Objectives

The purpose of this project is to deliver a simple calculator that can find the value of basic expressions. These expressions can contain addition, subtraction, multiplication, division, modulo, and exponentiation operators. The only grouping symbol supported will be parenthesis. The calculator will have a graphical user interface and will run natively on Linux. We will also create planning documents that will aid in the creation of the calculator.

2.2 Assumptions and Constraints

Assumptions and Constraints:

- The project must be shipped ready by the deadline.
- Team members' schedules may not always align.
- Most team members will have outside work.
- All team members will need access to a Linux machine.
- The documents and code will be stored using Git.
- The Git repository will be stored on GitHub.
- The program must be compatible with Linux machines.
- The program will be written in C++.
- The program will have graphical user interface.

2.3 Project Deliverables

Deliverables for each project phase are identified in the Development Case. Deliverables are delivered towards the end of the iteration, as specified in section 4.2.4 *Project Schedule*

2.4 Evolution of the Software Development Plan

The *Software Development Plan* will be revised prior to the start of each Iteration phase.

3. Project Organization

3.1 Organizational Structure

The project team's organizational structure consists of a project manager and project team members. The project manager role is filled by Timo Arango, his responsibilities include planning, monitoring the project, and coordinating with team members. Project team members are the individuals responsible for completing the tasks required to achieve the project's objectives. Team members can have various roles and responsibilities depending on the project's need. Ellia Morse is the quality assurance engineer responsible for the final round of quality assurance.

3.2 External Interfaces

Not Applicable

3.3 Roles and Responsibilities

Person	Unified Process for EDUcation Role
Alexandra Stratton	Scheduler

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Deborah Onuosa	Note Taker
Victor Maduka	Head Coder
Riley Sirimongkhon-Dyck	Configuration Management Engineer
Ellia Morse	Quality Assurance
Timo A. Arango	Team Leader

Anyone on the project can perform [Any Role](#) activities.

4. Management Process

4.1 Project Estimates

Not Applicable

4.2 Project Plan

4.2.1 Phase Plan

Not Applicable

4.2.2 Iteration Objectives

Iterations	Objectives
Project part 1: Project management plan	We will make an all encompassing plan for our project. This will be further extended later by other documents.
Project part 2: Project requirements	We will gather more specifics on what the project will need to complete and document this.
Project part 3: Project architecture and design	We will take the project requirements created earlier and design an implementation that fully meets those requirements.
Project part 4: Project implementation	The implementation designed earlier will be implemented in C++.
Project part 5: Project test cases	We will create test cases for our program to test for bugs.
Updated project management plan, requirements, design, test cases, C++ code, user manual	Final edits will be made to the artifacts and code. These final edits will be checked by our Quality Assurance team members and will be submitted when production ready.

4.2.3 Releases

We will have the following releases of our program:

Demo (October 11th): The demo of the calculator will be able to perform all mathematical operations.

Beta (November 15th): The beta will be similar to the demo with the exception that it will also be able to interpret parentheses. It will also be able to validate the given expression.

4.2.4 Project Schedule

Dates	Deliverables
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September 21 st	Project part 1: Project management plan
October 26 th	Project part 2: Project requirements
November 2 nd	Project part 3: Project architecture and design
November 14 th	Project part 4: Project implementation
November 28 th	Project part 5: Project test cases
December 5 th	Updated project management plan, requirements, design, test cases, C++ code, user manual

4.2.5 Project Resourcing

Not Applicable

4.3 Project Monitoring and Control

- Requirements Management: Our code and artifacts will be in a GitHub repository. The current and all previous versions of the code will be accessible there.
- Quality Control: During meetings, members of the group will collaborate on documents and code to ensure the quality of the documents. The Quality Assurance team member will validate our work with other artifacts we have produced.
- Risk Management: During some meetings we will examine risks and determine which risks may be of concern. To mitigate risk, we will attempt to do things the correct way the first time even if it takes more time. Our quality assurance team member will be closely watching our work to try to mitigate these risks as well.
- Configuration Management: All change requests will be submitted as issues to GitHub. They will be approved by our configuration management team member and checked over by our quality assurance team member. For documents and code submitted to GitHub, we will make sure all names use underscore rather than space and that source code file names will be concise. For documents, the date of addition to GitHub will be postpended to the file name. For the time being, there is no plan to delete old files and they will be kept indefinitely. Everyone will have the repository on their laptops, and as such, we will not have a backup device exclusively dedicated to this repository.

4.4 Requirements Management

Not Applicable

4.5 Quality Control

Deliverables will go through a review to ensure that all requirements are fulfilled and to find defects. We will have a team member dedicated specifically to quality assurance. In our case, this role will be fulfilled by Ellia. All deliverables will be checked by her. She will get the final say in the approval of any deliverable.

4.6 Reporting and Measurement

Not Applicable

4.7 Risk Management

Not all risks can be accounted for, but there are a few situations that are foreseeable. A team member may leave or become sick and disrupt and cause a redistribution of the work. In addition, outside obligations and illness could prevent team members from being present at meetings and could prevent work from being completed effectively.

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4.8 Configuration Management

We will use Git as our VCS and will store our code and all artifacts on GitHub. All change requests will be done through the issue request system in GitHub. The final program will be managed by the Configuration Manager. Within our team, this role is fulfilled by Riley. All pushes to GitHub will have to go through him. He will check the current change requests on GitHub and approve them at his discretion.

5. Annexes

The project will follow the UPEDU process.

Other applicable process plans are listed in the references section.