

**INTERNATIONAL SCHOOL**

**COURSE PROJECT 1**

**CMU-CS 246 TIS**

**DEFINDED PROCESS DOCUMENT**

Version: 2.0

**CALCULATOR SYSTEM**

**Mentor: Nguyen Dang Quang Huy**

***Team Member*:**

Huy, Mai Vo Gia

Binh, Tran Phuc

Phuc, Tran Van

Son, Le Duc Hung

Duong, Vu Cong

**Approved by Huy Nguyen Dang Quang**

**Project Plan Review Panel Representative:**

Name Signature Date

**Capstone Project 1- Mentor:**

Name Signature Date

Da Nang, 09/2022

**PROJECT INFORMATION**

|  |  |
| --- | --- |
| **Project Acronym** | CS |
| **Project Title** | Calculator System | | | |
| **Start Date** | 2 – Mar–2025 | **End Date** | 8 – Mar–2025 | |
| **Lead Institution** | International School, Duy Tan University | | | |
| **Team Member** | **Name** | **Email** | | **Phone** |
| 29211338975 | Mai Vo Gia Huy | maivogiahuy995@gmail.com | | 0982001627 |
| 29216945279 | Tran Phuc Binh | binht7848@gmail.com | | 0337398848 |
| 29219041264 | Tran Van Phuc | tranvanp652@gmail.com | | 0707389125 |
| 29219020140 | Le Duc Hung Son | sonhung17012005@gmail.com | | 0976846033 |
| 29211148766 | Vu Cong Duong | vud66592@gmail.com | | 0793523425 |

**PROJECT PLAN DOCUMENT**

|  |  |  |  |
| --- | --- | --- | --- |
| **Document Title** | Project Plan Document | | |
| **Author(s)** |  | | |
| **Date** | 2 - Mar - 2025 | **File name:** | Project Plan Document |
| **URL** |  | | |
| **Access** | Project and CMU Program | | |

**SIGNATURE**

**Document Approvals:** The following signatures are required for approval of this document.

|  |  |  |  |
| --- | --- | --- | --- |
| **Mentor** | Huy, Nguyen Dang Quang | **Signature:** |  |
| **Date:** |  |
| **Scrum master** | Son, Le Duc Hung | **Signature:** |  |
| **Date:** |  |
| **ProDuct**  **Owner** | Binh, Tran Phuc | **Signature:** |  |
| **Date:** |  |
| **Team member(s)** | Phuc, Tran Van | **Signature:** |  |
| **Date:** |  |
| Huy, Mai Vo Gia | **Signature:** |  |
| **Date:** |  |
| Duong, Vu Cong | **Signature:** |  |
| **Date:** |  |

**REVISION HISTORY**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Person(s)** | **Date** | **Description** |
| **1.0** | All members | 2 - Mar - 2025 | Draf |
| **2.0** | All members | 16 - Apr - 2025 | Final |

**TABLE OF CONTENTS**

[1. PROJECT DESCRIPTION 4](#_Toc14366)

[Table:](#_Toc31208)[project description 4](#_Toc31208)

[2. PROJECT DEVELOPMENT APPROACH 4](#_Toc10975)

[2.1. TECHNICAL PROCESS 4](#_Toc24042)

[2.2. REASON FOR SELECTING 4](#_Toc14377)

[2.3. AGILE METHODOLOG 5](#_Toc16311)

[2.4. SCRUM PROCESS 5](#_Toc21722)

[3. PROJECT DEVELOPMENT DESCRIPTION 6](#_Toc1532)

[3.1. OVERVIEW 6](#_Toc1317)

[3.2. DEVELOPMENT SCOPE 6](#_Toc25456)

[3.2.1. SCIENTIFIC CALCULATION FEATURES 6](#_Toc15086)

[3.2.2. CALCULATION HISTORY MANAGEMENT 6](#_Toc3141)

[3.2.3. USER INTERFACE (UI/UX) 6](#_Toc17400)

[3.2.4. CONTROL FUNCTIONS 7](#_Toc16425)

[3.2.5. ADDITIONAL FEATURES 7](#_Toc11877)

[3.2.6. ADVANCED ERROR HANDLING 7](#_Toc5431)

[3.3. DEVELOPMENT METHODOLOGY 7](#_Toc32349)

[3.3.1. SOURCE CODE MANAGEMENT WITH GitHub/GitLab 7](#_Toc5002)

[3.3.2. TortoiseSVN AND CONFIGURATION MANAGEMENT 8](#_Toc9691)

[3.3.3. SOFTWARE CONFIGURATION MANAGEMENT (SCM) PROCESS 8](#_Toc28239)

[4. REFERENCES 8](#_Toc30702)

# 1. PROJECT DESCRIPTION

|  |  |  |  |
| --- | --- | --- | --- |
| **Project code** | CS | **Contract type** | Internal Project |
| **Customer** | N/A | **End-user** | User |
| **Project type** | Internal | **Project Manager/**  **Scrum Master** | Huy, Mai Vo Gia |
| **Project category** | Develop Calculator Software | **Business Domain** | AI |
| **Application type** | Web Application |  |  |

## **Table:**project description

# 2. PROJECT DEVELOPMENT APPROACH

## 2.1. TECHNICAL PROCESS

We use agile methodology in our project, besides using software tools to manage work, assign tasks to team members such as Google Sheets, Google Drive, Discord, and Source code management tools like git. And for the project requirements, we use the Java programming language (NetBeans, Eclipse) for developing calculator software.

### 2.2. REASON FOR SELECTING

To keep up with today's increasingly changing technology trends, we want a truly flexible and easy project development model to adapt to that change. Our project will develop more new features in the future. We will continuously update and apply new technologies that increase the attractiveness and intelligence of the system.

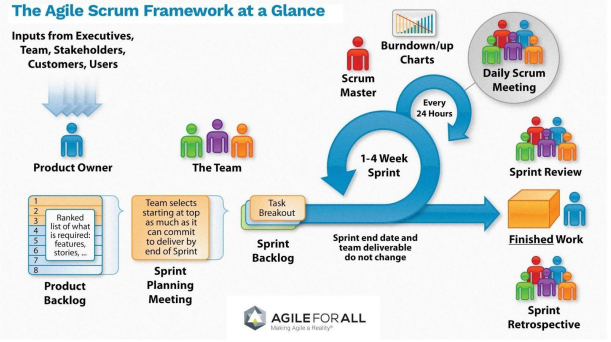
On an Agile project, the team does not attempt to develop all features at once. Instead, the team assigns a smaller subset of features to each sprint. That way, the developers have more time to perfect those items before release.

Having team members complete small, measurable amounts of work helps keep them focused and motivated. While our team is a small team with little experience in project development. Therefore, we cannot avoid problems that arise in the software development stages, and requirements can be changed to be more suitable. The traditional model that requires managerial skills and high accuracy, will not suit our team. Applying the Agile Scrum model will help us to solve these problems, bring a lot of experience and best performance for project development.

### 2.3. AGILE METHODOLOG

* The Agile methodology was firstly developed for the software industry.
* The task was to optimize and improve the development process and to try to identify and quickly correct problems and defects.
* This methodology allows providing better output, more quickly, through short and interactive sessions/sprints.
* In the era of digital transformation, where many organizations are migrating to a digital workplace, the Agile methodology suits perfectly companies that are looking to transform the way in which projects are managed and the way they operate as a whole.

**2.4. SCRUM PROCESS**

****

**Figure:** Scrum master

* The project can respond easily to change.
* Problems are identified early.
* The customer gets the most beneficial work first.
* Work done will better meet the customer’s needs.
* Improved productivity.
* Ability to maintain a predictable delivery schedule.

1. **PROJECT DEVELOPMENT DESCRIPTION**

****3.1. OVERVIEW****

**The project aims to develop a Calculator application by expanding and upgrading an existing basic calculator application. The primary goal is to add advanced features to meet the needs of modern users who require more complex calculations, improve the user experience, and enhance the stability of the system through advanced error handling.**

****3.2. DEVELOPMENT SCOPE****

****3.2.1. SCIENTIFIC CALCULATION FEATURES****

**Add scientific calculation functions such as:**

* Factorial (**n!**).
* Base 10 logarithm (**log10 x**) and natural logarithm (**ln x**).
* Trigonometric functions: **sin (x)**, **cos (x)**, **tan (x)**, **cot (x)**.
* Angle unit conversion: Degrees **↔ Radians**.

****3.2.2. CALCULATION HISTORY MANAGEMENT****

* **Store calculation history in **JSON** or **text** files, rather than just keeping it temporarily in memory**.
* **Allow users to search through previous calculations**.
* **Enable users to delete individual history entries as needed**.

****3.2.3. USER INTERFACE (UI/UX)****

* **Add **Light Mode** and **Dark Mode** for user preferences based on lighting conditions.**
* **Allow users to select fonts and color schemes for a personalized experience.**
* **Support keyboard shortcuts to speed up the calculation input process.**

****3.2.4. CONTROL FUNCTIONS****

* **Add the **CE** (Clear Entry) button to allow users to delete a single number without affecting the entire expression.**
* **Add ← (Backspace) and → (Forward) functions to move the cursor and delete characters in either direction.**

****3.2.5. ADDITIONAL FEATURES****

* **Allow users to Copy/Paste results to/from the clipboard.**
* **Support complex mathematical expressions such as: "5 + (3 \* 2) - √9" instead of individual operations.**

****3.2.6. ADVANCED ERROR HANDLING****

**Test and handle common errors such as:**

* **Operations exceeding limits, for example, very large numbers.**
* **Invalid operations, such as division by 0 or square roots of negative numbers.**
* **Syntax errors, such as "5++2", "√-9".**

**Display detailed, user-friendly error messages.**

****3.3. DEVELOPMENT METHODOLOGY****

****T**he project uses the Agile methodology combined with Scrum to ensure flexibility, quick adaptation to changes, and the production of high-quality results throughout the development phases. The project is divided into multiple short sprints (2–3 weeks), with each sprint focusing on developing and completing a set of specific features. At the end of each sprint, there will be a demo and review session to evaluate results and gather feedback from users or mentors.**

****3.3.1. SOURCE CODE MANAGEMENT WITH GitHub/GitLab****

**The team uses **Git** combined with **GitHub** or **GitLab** to:**

* **Manage source code versions.**
* **Branch (branching) for individual features.**
* **Control code merging (merge/pull requests).**
* **Track change history and collaborate effectively within the team**

****3.3.2. TortoiseSVN AND CONFIGURATION MANAGEMENT****

**In addition to Git, the team uses **TortoiseSVN** for configuration management during the testing phase, especially when working with documentation, software configurations, or binary files. Using Tortoise helps track changes, mark versions, and supports rollbacks if necessary.**

****3.3.3. SOFTWARE CONFIGURATION MANAGEMENT (SCM) PROCESS****

**The team follows the **Software Configuration Management (SCM)** process to ensure consistency and proper control over project components. The **SCM** process includes:**

* **Version control for source code, documentation, and configurations.**
* ****Change management:** Tracking feature change requests and updates according to each sprint.**
* ****Regular integration testing:** Ensuring that the code integrates smoothly without introducing errors.**
* ****Release management:** Preparing stable build/install versions after each sprint or significant milestone.**

**4. REFERENCES**

**1**. <https://scrumguides.org/docs/scrumguide/v2020/2020-Scrum-Guide-Vietnamese.pdf>

**2**. <https://blog.epal.vn/phuong-phap-luan-agile-va-mo-hinh-scrum-la-gi-chia-se-cach-lam-viec-hieu-qua-khi-ung-dung-scrum/>