Software Design - Assignment 1

Team number: 19
Team members

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Introduction

Author(s): Hugo & Toyesh & Dora

- **General idea of the project:**
  We will design a calculator that operates through plugins. The system itself is a 'skeleton' calculator that uses a predesigned basic plugin for the basic calculations consisting of the +, -, *, and / operations. Additionally, the user can choose the plugins depending on his/her needs from a plug-in store. For example, it will include scientific operations like trigonometry and calculus. The system will be developed in such a way that it accounts for the addition (or deletion) of the plugin extensions and changes the user interface accordingly. Furthermore, it will keep a track of the operators already included in the calculator and prevent the duplication of the data, thus preventing redundancy.

- **UI:**
  This system will provide a graphical user interface for users to use the system easily. It will include a responsive display/screen which in turn will consist of the numbers, AC/C button and the operators. As mentioned before, the addition or deletion of the plugins will be accounted for accordingly in the interface.

- **Users:**
  Finally, the prospective users of this calculator, due to its flexibility in the choice of plugins, can be anyone. Starting from a highschooler wanting to use basic scientific functions to a highly skilled mathematician wanting to solve some extremely complex equations, it can be fine tuned accordingly.

Features

Author(s): Hugo & Yudai & Dora

Functional features

ID	Short name	Description
F1	Input	The calculator should ask for an expression as an input.
F2	Calculation	The calculator should be able to calculate any supported expression with plug-ins.
F3	undo/redo	The calculator should be able to undo **the calculation results** and afterwards also redo them. - **undo**: move back to the previous calculation and its result - **redo**: move forward to the state before undoing
F4	success/fail	The calculator should check for syntactic errors and/or overlapping plugins and/or mathematical errors, as well as any other errors we do not expect but could encounter while working on the project.
F5	add/remove plugins	The users shall choose a plug-in from the store to add on to the calculator and the calculator should allow plugins to extend support for operations. The function of the calculator and plug-ins are independent of each other.
F6	AC	The calculator should be able to clear all the associated histories with previous calculations.
F7	Output	The calculator should be able to display the results of calculations.
F8	Plugin Store	A user can choose a plugin from a plugin store and install it on the calculator.

Quality requirements

Author(s): Hugo & Toyesh & Yudai

ID	Short name	Quality attribute	Description
QR1	Input validation	Reliability	When the user input a command and execute it (F1), the syntax of the command shall always be validated against the format specified in F5.
QR2	Intuitive UI	Usability	The UI design should be intuitive to the user regardless of their level of familiarity with the app. (F1 ~ F9)
QR3	Ease with maintaining the system	Maintainability	Regarding F6, the calculator itself is independent from plug-ins and their functions, and it should be easy to maintain the system.

Each quality requirement must be tagged with the corresponding quality attribute (see corresponding slides of the first lecture for knowing them).

Java libraries

Author(s): Toyesh & Yudai

- **JFoenix**
  We will use JavaFX to implement user-friendly interfaces to enhance the calculator's usability and availability.
- **cache2k**
  We will use this library to cache the result of calculation easily for the functional requirement of storing calculation results in F9.

Time logs

<Copy-paste here a screenshot of your time logs - a template for the table is available on Canvas>

Team number	19		
Member	Activity	Week number	Hours
Group	Meeting	1	0.5
Hugo & Toyesh & Dora	Define the general idea of the project	1	2
Hugo & Yudai & Dora	Define functional features	1	2
Hugo & Toyesh & Yudai	Define quality requirements	2	2
Yudai & Toyesh	Search Java libraries	1	1
Group	Meeting	1	0.5
		TOTAL	8