Software Engineering Project

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Product Backlog

Scientific Programmable Calculator

User Stories

Priority Order

The priority order goes from value 1 to 6 where 1 is the highest priority and 6 the lowest.

ID	Description	Acceptance Criteria	Priority	Story points

Basic Operations

ID	Description	Acceptance Criteria	Priority	Story points
A1.	As a user I want to add 2 complex numbers	Given I've saved at least 2 complex numbers, when I press the "+" button, then I want as result the sum between the last 2 saved numbers	1	1
A2.	As a user I want to subtract 2 complex numbers	Given I've saved at least 2 complex numbers, when I press the "-" button, then I want as result the difference between the last 2 saved numbers	1	1
A3.	As a user I want to multiply 2 complex numbers	Given I've saved at least 2 complex numbers, when I press the "x" button, then I want as result the product between the last 2 saved numbers	1	1
A4.	As a user I want to divide 2 complex numbers	Given I've saved at least 2 complex numbers, when I press the "/" button, then I want as result the division between the last 2 saved numbers	1	1

A5.	As a user I want to make the square root of a complex number	Given there are some complex numbers saved, when I press the "rad" button, then I want as result the square root of the last one saved	1	1
A6.	As a user I want to invert sign of a complex number	Given there are some complex numbers saved, when I press the "+/-" button, then I want as result the opposite of the last one saved	1	1
A7.	As a user I want to insert a number without his imaginary part if this one is equal to zero in order to execute operations with real numbers	Given I'm a user who want to use real numbers in operations, when I want to insert numbers that have imaginary part equals to zero, then I can insert only the real part	1	1

Data Access

B1.	As a user I want to save entered numbers to use them in next operations	Given I've entered a complex number, when I press the "save" button, then I can memorize the value of this number	2	1
B2.	As a user I want to delete all saved numbers because they might be useless	Given I've saved some numbers, when I press the "clear" button, then I can delete all saved numbers	2	1
B3.	As a user I want to delete the last saved number in case I don't need it	Given I've saved a number, when I press the "del" button, then I can delete just the last number saved	2	1
B4.	As a user I want to duplicate the last saved number	Given I've saved a number, when I press the "dup" button, then I can duplicate the last number saved	2	1
B5.	As a user I want to swap the last two entered numbers to invert their order in the next operation	Given I've saved at least 2 numbers, when I press the "swap" button, then I can invert the order of the last 2 saved numbers	2	2

B6.	As a user I want to pick the second last element saved	Given I've saved at least 2 numbers, when I press "csl" (copy second last) button, then I can have access to the second last element	2	2

Variables

C1.	As a user I want to save values into variables to use them in next operations	Given I've saved at least one number, when I digit ">x" in the text area, where x is the name of a variable, then I can save the last saved number in the selected variable	3	5
C2.	As a user I want to take values from variables to use them in next operation	Given I previously saved one number in a variable, when I digit "<x" in the text area, where x is the name of a variable, then I can use the value in the selected variable as operand of the next operation	3	5
C3.	As a user I want to add the last entered number to the value of a variable	Given I've saved a number, when I digit "+x" in the text area, where x is the name of a variable, then I can add the last saved number to the variable value	3	5
C4.	As a user I want to subtract the last entered number to the value of a variable	Given I've saved a number, when I digit "+x" in the text area, where x is the name of a variable, then I can subtract the last saved number to the variable value	3	5

User-Defined Operations

D1.	As a user I want to define custom formulas to execute a sequence of operations	Given I need to execute a sequence of operations, when I press the "create custom function" button, then I can define a new custom operation	4	8

D2.	As a user I want to define custom operations from other custom operations	Given I've already created a custom operation, when I press the "create custom function" button, I can define a new custom operation including the previous one too	4 13
D3.	As a user I want to modify custom operations	Given I've already created a custom operation, when I select it, then I can modify it	4 5
D4.	As a user I want to delete custom operations	Given I've already created a custom operation, when I select it, I can delete it	4 3
D5.	As a user I want to save custom operations in a file so I can use them in a different usage session	Given I've already created a series of custom operations, when I press "save custom operation", then all the operations will be saved in a file	4 5
D6.	As a user I want to reload custom operations from a file so I can use them in the current usage session	Given I've already saved a series of custom operations in a file, when I press the "reload" button, I can reuse the previous operations saved	4 5

Save/Restore Variables

E1.	As a user I want to save a backup of all variables not to lose their values	Given I've already assigned a value to at least one variable, when I press the "save var" button, the all the variables will be saved	5 5
E2.	As a user I want to restore the previous values of all variables	Given I've already saved the variables, when I press the "restore var" button, I can restore the previous value of the variables	5 3
E3.	As a user I want to make the backup of all variables several times to temporarily modify a variable without making this modification visible outside	Given I've already done a backup of all variables, when I press the "save var" button then I can make a new backup without deleting the previous one	5 5

Secondary Operations

F1.	As a user I want to perform the pow operation on a complex number	Given there are some complex numbers saved, when I press the "pow" button, then I want as result the power of the last one saved	6	2
F2.	As a user I want to perform the mod operation on a complex number	Given there are some complex numbers saved, when I press the "mod" button, then I want as result the module of the last one saved	6	2
F3.	As a user I want to perform the arg operation on a complex number	Given there are some complex numbers saved, when I press the "arg" button, then I want as result the phase of the last one saved	6	2
F4.	As a user I want to perform the log operation on a complex number	Given there are some complex numbers saved, when I press the "log" button, then I want as result the natural logarithm of the last one saved	6	3
F5.	As a user I want to execute the exp function on a complex number	Given there are some complex numbers saved, when I press the "exp" button, then I want as result the exponential of the last one saved	6	3
F6.	As a user I want to execute the sin function on a complex number	Given there are some complex numbers saved, when I press the "sin" button, then I want as result the sin of the last one saved	6	3
F7.	As a user I want to execute the cos function on a complex number	Given there are some complex numbers saved, when I press the "cos" button, then I want as result the cos of the last one saved	6	3
F8.	As a user I want to execute the tan function on a complex number	Given there are some complex numbers saved, when I press the "tan" button, then I want as result the tan of the last one saved	6	3

F9.	As a user I want to execute the asin function on a complex number	Given there are some complex numbers saved, when I press the "asin" button, then I want as result the arcsin of the last one saved	6	3
F10.	As a user I want to execute the acos function on a complex number	Given there are some complex numbers saved, when I press the "acos" button, then I want as result the arccos of the last one saved	6	3
F11.	As a user I want to execute the atan function on a complex number	Given there are some complex numbers saved, when I press the "atan" button, then I want as result the arctan of the last one saved	6	3

Graphical User Interface

| G1. | As a user I want to interact with the calculator through a graphical interface so I can perform the operations in a more intuitive way | Given I'm a user, when I open the Calculator Software, than I can perform the operations through a graphical interface | 1 | 3 |

Definition of Done

A User Story will be considered **"done"** when:

- its implementation is in accordance with the acceptance criteria.
- it has been successfully tested (with JUnit).
- it has been integrated with other functionalities.
- an appropriate documentation (Javadoc) has been provided by the team, in order to better understand how it has been implemented.