

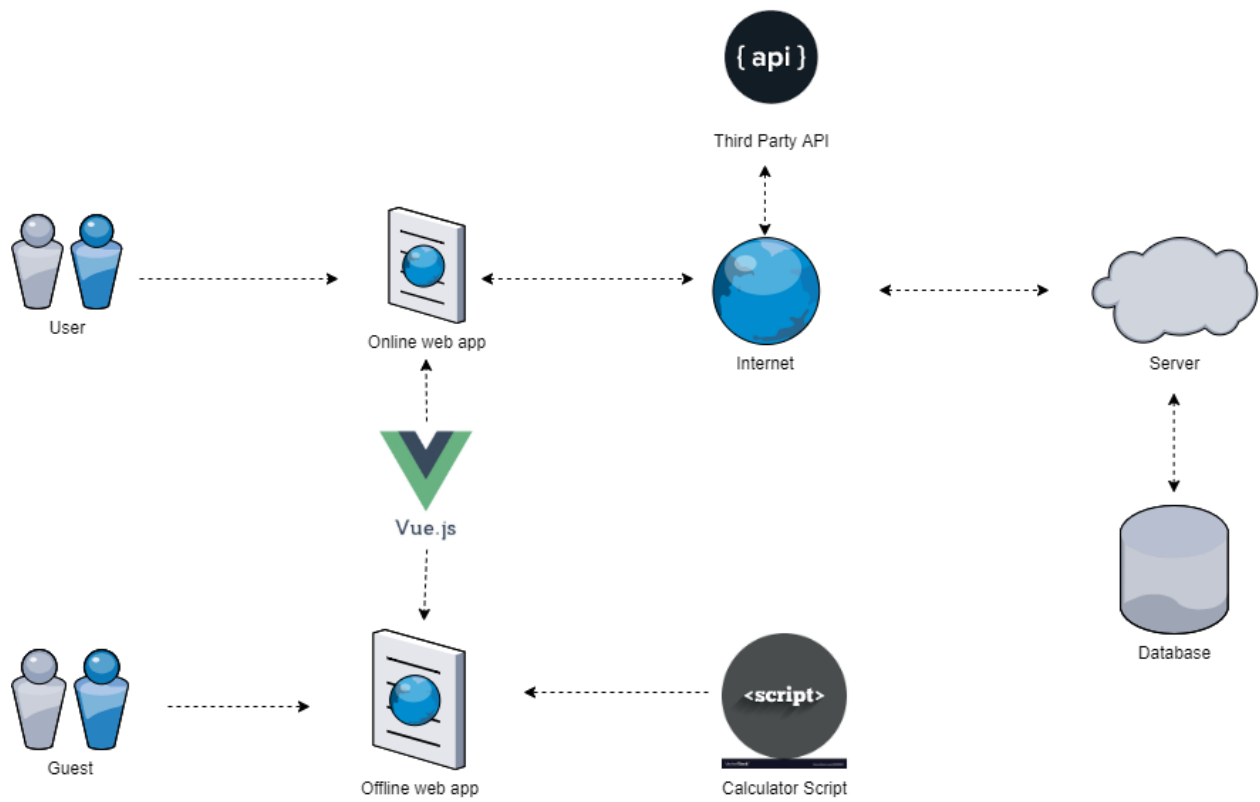
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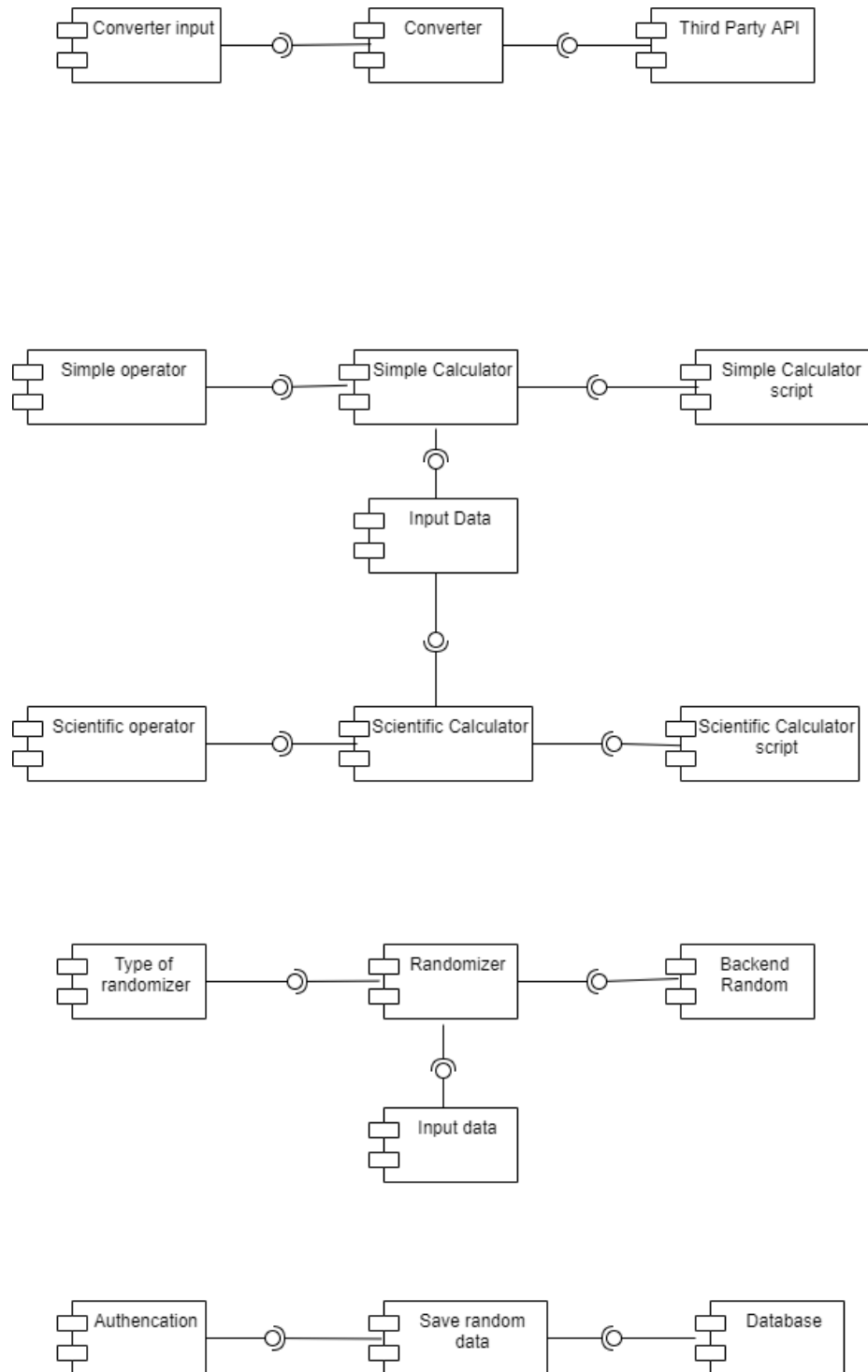
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1. System Architecture



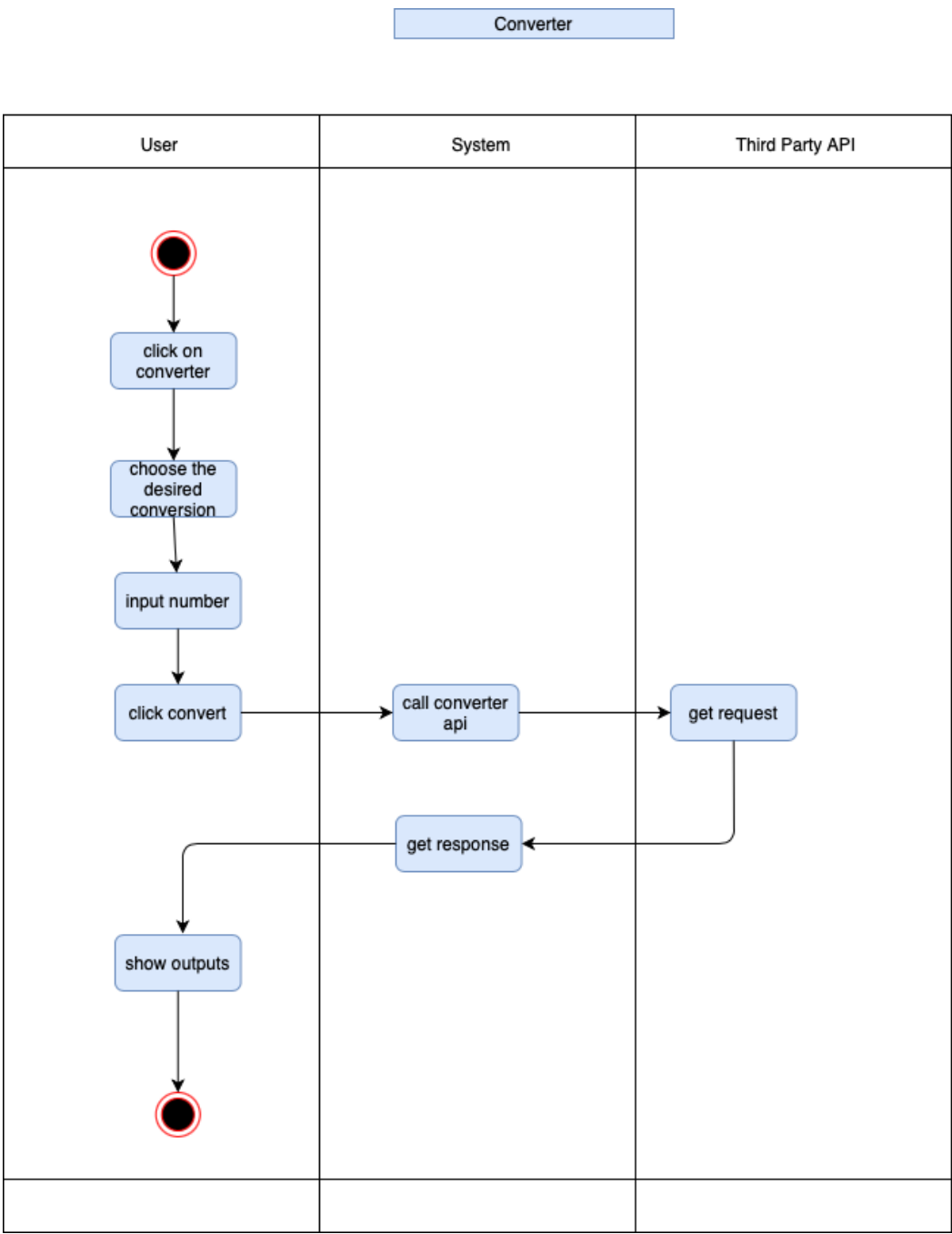
High Level Component

2. Component View

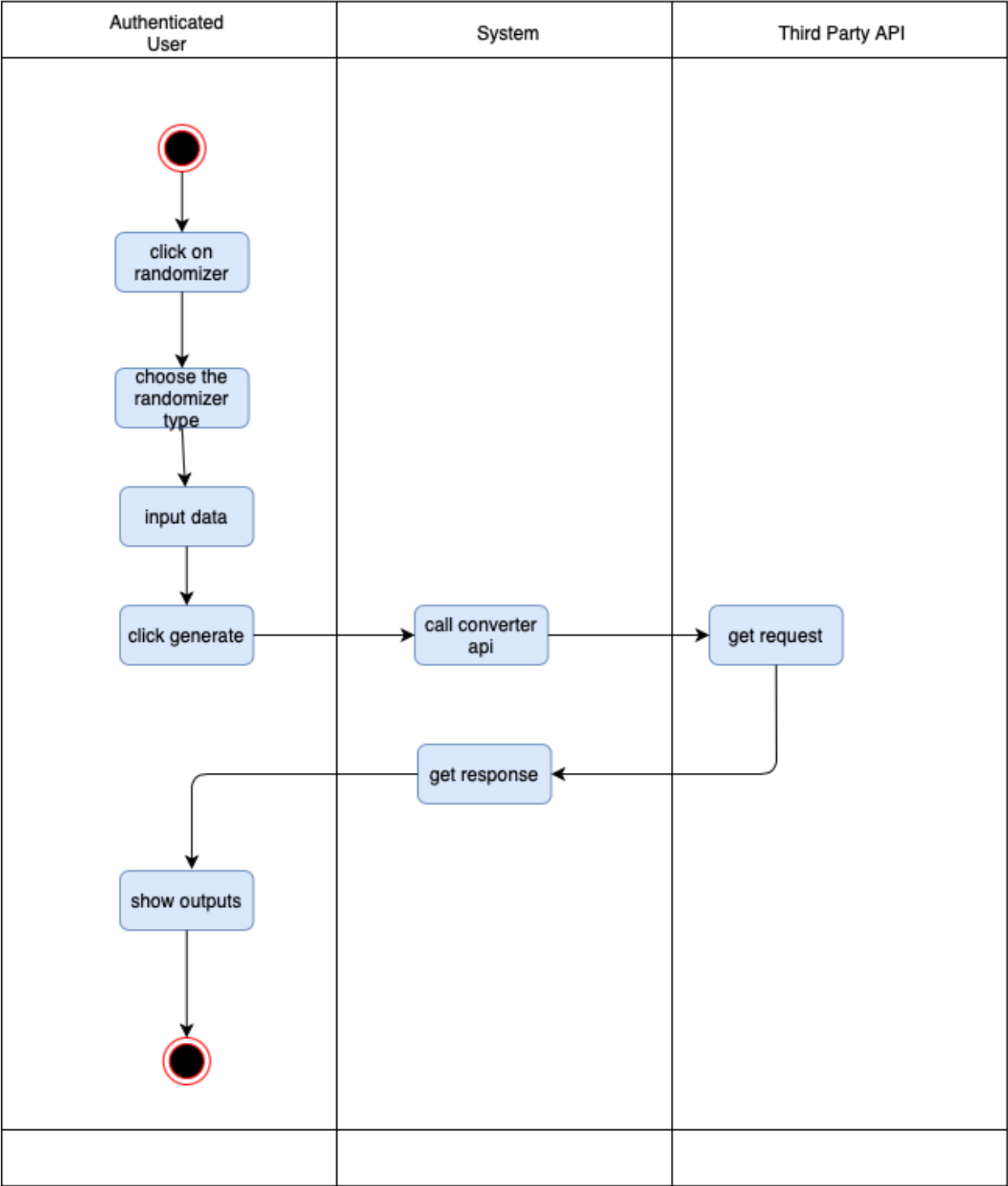


Mid Level Component

3. Process View

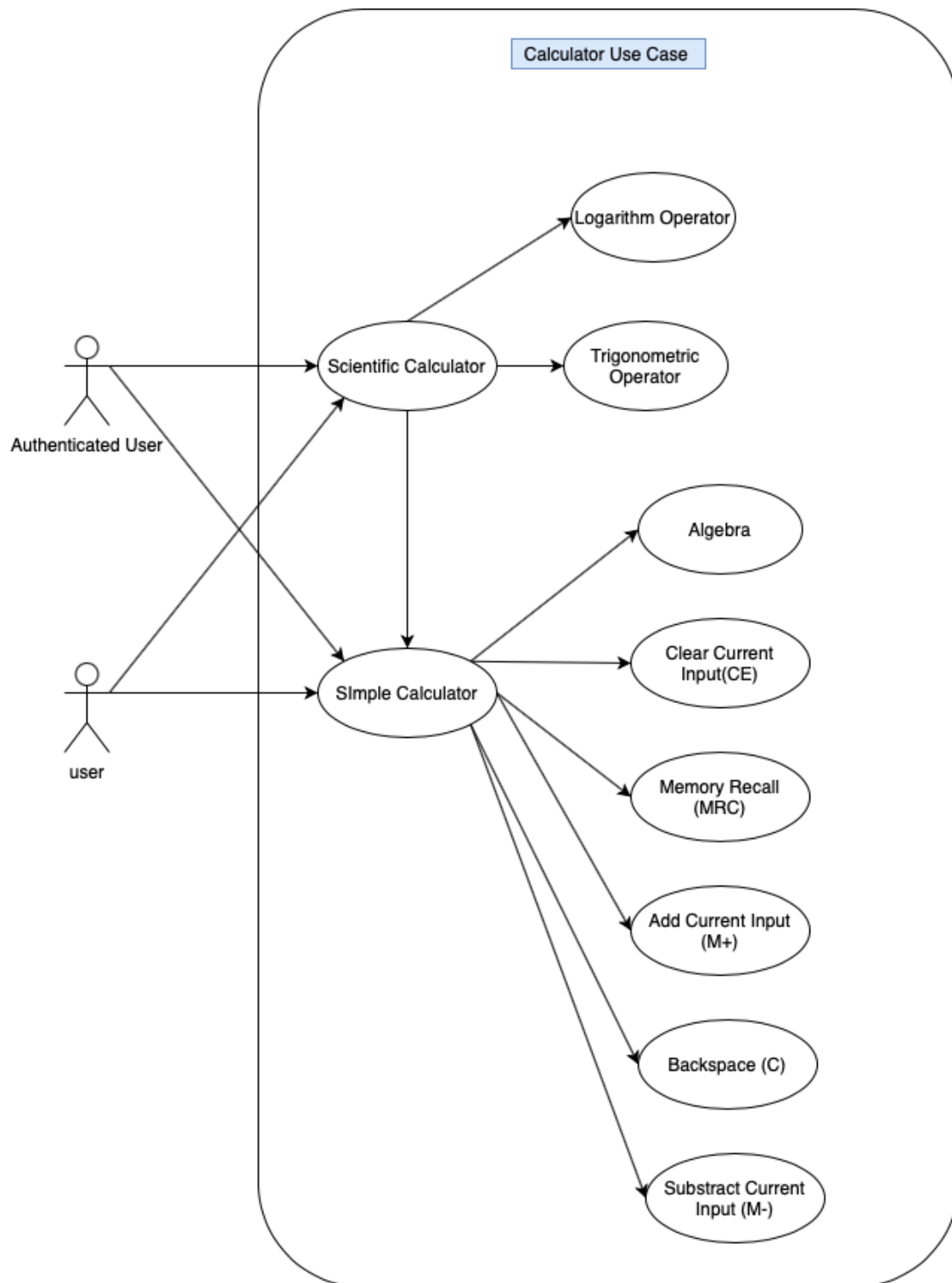


Randomizer

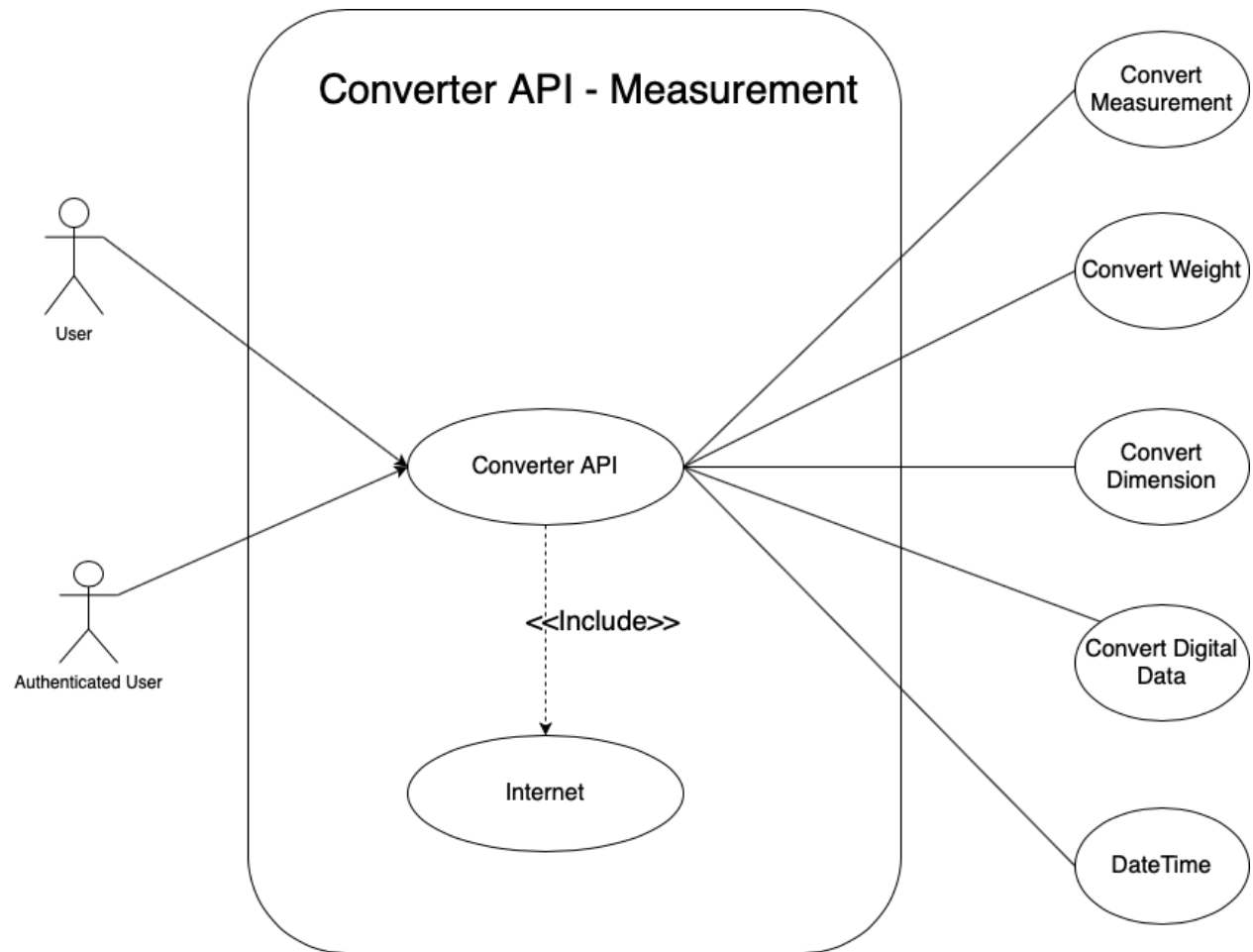


[Link to Cross-Functional](#)

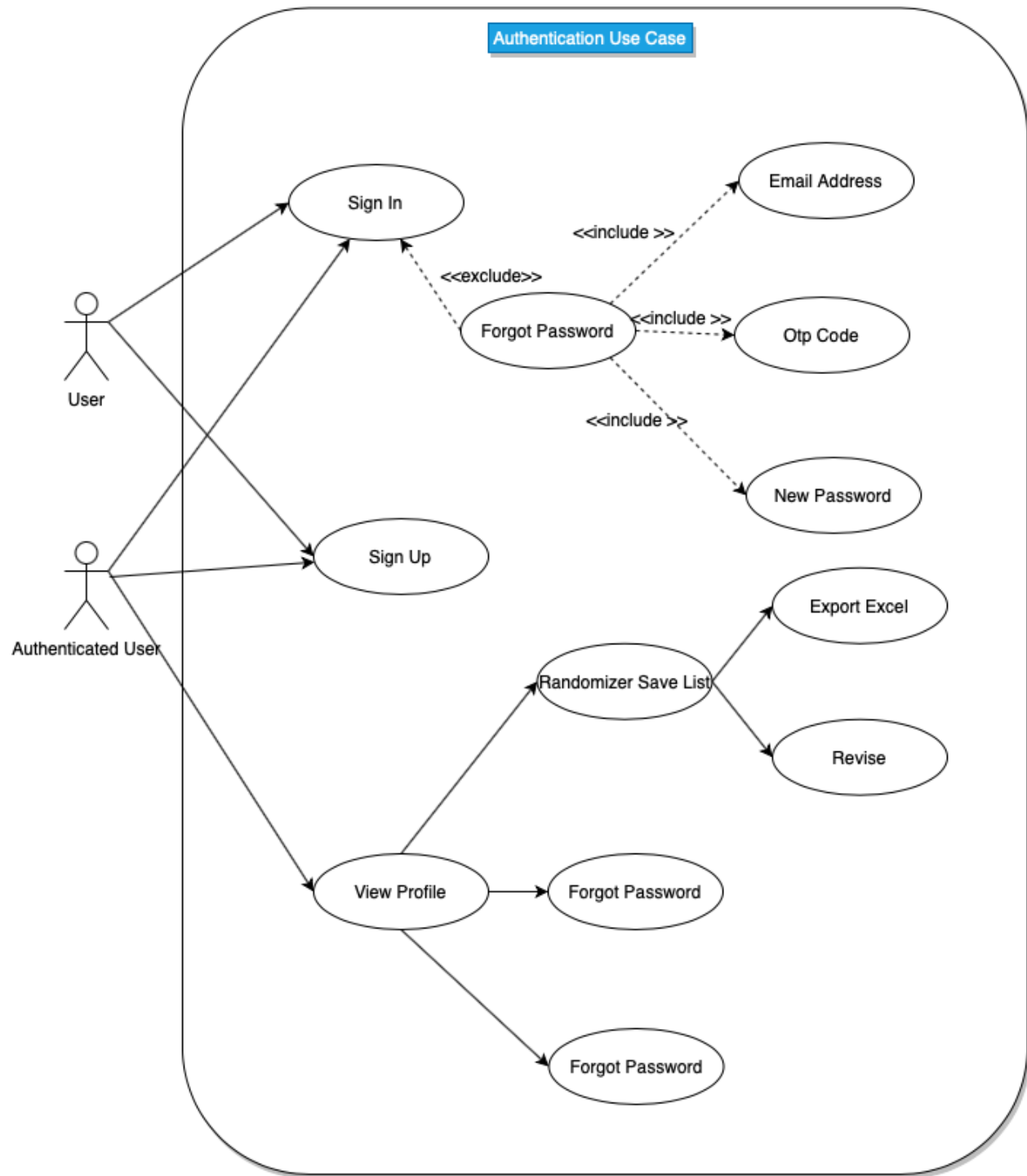
4. Use Case View



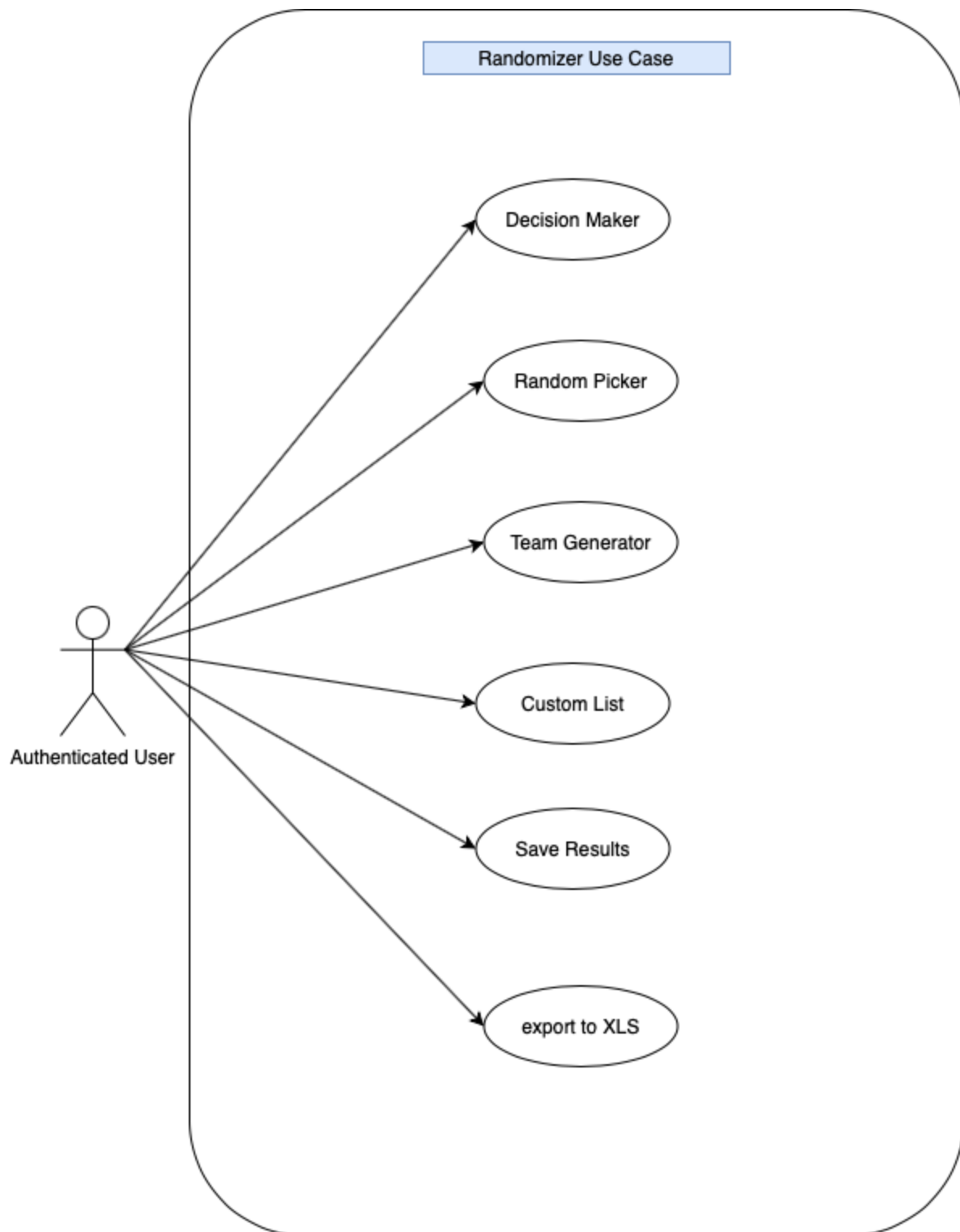
[Link Simple & Scientific Calculator Use Case](#)



[Link Converter](#)



Authentication Use Case



[Link Randomizer](#)

5. Roadmap-User Stories

Actor	Epic	User Story	Acceptance Criteria
User	Authentication	As a user. I want to register as a user so that I will have access to the randomizer feature.	<ul style="list-style-type: none"> - Required an user account to save their own data
		As a user, I want to login with email and password so that I can use randomizer.	<ul style="list-style-type: none"> - Valid email - Email and password combination exists in database
		As an authenticated user, I want to change my name in the system.	<ul style="list-style-type: none"> - Length between 1-255
		As a user, I sometimes forget my password.	<ul style="list-style-type: none"> - You can request to change your password through your email - Using an email account to request OTP code. - get and add otp code from gmail. - add a new password.
		As a user. I want my data that was saved in my account to be secured.	<ul style="list-style-type: none"> - The password will be encrypted (not showing in plain text) - The password will required to contain at least one capital character and one number - The account will be block for a 10 minutes after 3 times wrong password - The account will completely block after 30 times trying - Token (next generation technology) will be used for authentication purpose (not easily to be hacked) - The data can only be accessed by users themselves

Actor	Epic	User Story	Acceptance Criteria
User	Scientific Calculator	As a user, I want to use a trigonometric operator so that I can calculator the length and angle of the triangles.	<ul style="list-style-type: none"> - No authentication is required. - The user can use both offline and online. - The user needs to input numbers then use a trigonometric operator such as SIN, COS, TAN, then the calculator will return a result. Example, if the user input 90 then click on SIN the result would be 1. - Display an error when invalid input is occurred. Example, input 11111 with operator sinh the result will be error.
		As a user, I want to use the input number option so that I can convert my number with any scientific operators.	<ul style="list-style-type: none"> - Input numbers are from 0-9 and the user can input only 17 numbers continually.
		As a user, I want to use a clear result function so that I can continue to use the calculator.	<ul style="list-style-type: none"> - Display with button C. - The user can click on button C to clear any calculated results.
		As a user, I want to use a logarithm operator so that I can get the value of inverse function to exponentiation.	<ul style="list-style-type: none"> - No authentication is required. - The user can use both offline and online. - The logarithm of a given number x is the exponent to which another fixed number, the base b, must be raised, to produce that number x.
		As a user, I want to use algebra operator so that I can use the functions such as +, -, *, /, %, Square root, exponentiation, etc.	<ul style="list-style-type: none"> - No authentication is required - The user can use both offline and online. - The user just gives value x then input with some of the algebra operators to get the result. - For example, $x = 4$ then the user input with square root, the result would be 2.

Actor	Epic	User Story	Acceptance Criteria
User	Converter	As a guest. I would like to convert Measurements.	<ul style="list-style-type: none"> - Required internet connection - Input amount to convert - Amount must be an decimal type - Amount must be bigger than 0 - Units that can be converted: Meters, Kilometers, Centimeters, Millimeters, Micrometers. Nanometers. Miles, Yards, Foot, and Inches.
		As a guest. I would like to convert Weights.	<ul style="list-style-type: none"> - Required internet connection - Input amount to convert - Amount must be an decimal type - Amount must be bigger than 0 - Units that can be converted: Kilogram, Gram, Milligram, Pound, Ounce, and Carat.
		As a guest. I would like to convert Volume.	<ul style="list-style-type: none"> - Required internet connection - Input amount to convert - Amount must be an decimal type - Amount must be bigger than 0 - Units that can be converted: Cubic Meter, Cubic Kilometer, Cubic Centimeter, Cubic Millimeter, Liter, MillimeterUS Gallon, Cubic Mile, Cubic Yard, Cubic Foot and Cubic Inch.
		As a guest. I would like to convert Dimensions.	<ul style="list-style-type: none"> - Required internet connection - Input amount to convert - Amount must be an decimal type - Amount must be bigger than 0 - Units that can be converted: Square Meters, Square Kilometers, Square Centimeters, Square

			Millimeters, Hectares, Square Mile, Square Yards, Square Feet, Square Inches and Acres
		As a guest. I would like to convert Digital Data.	<ul style="list-style-type: none"> - Required internet connection - Input amount to convert - Amount must be an decimal type - Amount must be bigger than 0 - Can convert digital data
		As a guest. I would like to convert Datetime.	<ul style="list-style-type: none"> - Required internet connection - Input amount to convert - Amount must be an decimal type - Amount must be bigger than 0 - Units that can be converted: Second, Millisecond, Microsecond, Nanosecond, Picosecond, Minute, Hour, Day, Week, Month, and Year. - Also can convert: Epoch Timestamp to Human Date.
		As a guest, I would like to be able to reverse the conversion unit.	<ul style="list-style-type: none"> - Required internet connection - Has already choose one conversion type

Actor	Epic	User Story	Acceptance Criteria
User	Randomizer	As an authenticated user, I want to use a random picker so that I can get a random result of one thing among many other things.	<ul style="list-style-type: none"> - Names box (a box that a user can list down their things in order to random) included in random picker. - The user can list as many items as they like inside a names box but the result will show only one data random picker. - The names box can be empty but the showing result of data random picker empty.

		As an authenticated user, I want to have the decision maker so that I can get one decision among other decisions.	<ul style="list-style-type: none"> - Decision box(a box that the user can list down their decision inside the box) included in the decision maker. - The user can list as many decisions as they like inside the decision box but the result will show only one decision. - The names box can be empty but the showing result of the decision empty.
		As an authenticated user, I want to use a team generator so that I can assign members to each group randomly.	<ul style="list-style-type: none"> - Items box(a box which the user can list down the items with the member identity for example like name or ID) Include in the team generator. - Include group quantity. - The user can list as many members as they like inside the items box and the result will divide the assigned member to each group based on the number of groups that are input by the user.
		As an authenticated user, I want to use the custom list so that I can get an order list randomly.	<ul style="list-style-type: none"> - Items box(a box which a user can list down their items) included in the custom list. - Include quantity items that the user would like to see. - Include duplicate option if duplicate is checked the result of random items can be duplicated otherwise the result of random items are unique. - Show the random items in the order list from 1 until the numbers of quantity. - Show the number of lists depending on the quantity that the user inserts.
		As an authenticated user, I want to save the result that I got from random so that I can retrieve them on next login.	<ul style="list-style-type: none"> - Click on button button save to save their random data. - Display the loading icon while the process is still running. - Display done when the save process is successful.

			<ul style="list-style-type: none"> - Display fails when the save process is failed and asks to re-save.
		As an authenticated user, I want to export my random data as an XLS file so that I can bring it outside.	<ul style="list-style-type: none"> - Click on the export XLS button in order to export. - Ask users to browse the directory or folder to their local device. - Display done when the save process is successful. - Display fails when the save process is failed and asks to re-export.

Actor	Epic	User Story	Acceptance Criteria
User	Simple calculator	As a user, I want to find the sum of two numbers, so I can find the total of the two numbers.	<ul style="list-style-type: none"> - Given that I have entered 2 numbers and an operand. - The result should show after I hit the '=' sign
		As a user, I want to subtract two numbers, so I can find the difference between them.	<ul style="list-style-type: none"> - Given that two and a subtract operation have been entered. - The result must be negative if the first number is smaller than the second number.
		As a user, I want to multiply two numbers, so that I can get the product of the two.	<ul style="list-style-type: none"> - There should be 2 number inputs and a multiply operand.
		As a user, I want to divide two numbers, so that I can get the quotient.	<ul style="list-style-type: none"> - It should show the decimal number if the two numbers are not divisible. - Show error when dividing by 0.

		As a user, I want to compute two with two or more operations,	<ul style="list-style-type: none"> - Given that I have input two or more operands for the computation - When the divisor is 0, the computed result should be infinity - The result should be computed correctly according to the operand precedence.
		As a user, I want to change the sign of numbers when I hit +/- sign, so I can reverse the sign of the numbers.	<ul style="list-style-type: none"> - Given that I have entered the numbers and haven't entered any operand. - When I hit the +/-, the sign of the number should change to the opposite one.
		As a user, I want to clear the current number that I'm entering when I hit 'C' button, so that I can start again.	<ul style="list-style-type: none"> - Given that I entered all the operations required for my computation and I haven't hit the '=' sign, when I hit 'C', it must only clear the current number that is showing in the display, not everything.
		As a user, I want to clear every previous input when I hit CE, so I can start from the beginning again.	<ul style="list-style-type: none"> - Given that I have entered something in the calculator or I am in the middle of entering. - After I hit CE, the calculator will reset and show 0 in the display
		As a user, I want to find the percentage of the numbers when I hit %.	<ul style="list-style-type: none"> - The result should have decimal numbers if applicable.
		As a user, I want to find the square root of the a number when I hit the square root button.	<ul style="list-style-type: none"> - Given I have entered a number, or the number resulted from the previous operations.

		As a user, I want to find the square of a number when I hit the x^2 button.	<ul style="list-style-type: none"> - Must entered a number before hitting the x^2 button - If I entered 2 and hit the button, the result should be 4, for example.
		As a user, I want to find the 1 over a number when I hit the $1/x$ button.	<ul style="list-style-type: none"> - Must entered a number before hitting the $1/x$ button - If X is 0, throw error
		As a user, I want to know the result of all operations that I entered when I hit the = sign.	<ul style="list-style-type: none"> - Given that I have entered any form of algebra equation. - The result should be computed correctly, given operand precedence. - When I only entered one just a number, after I hit the = sign, it should just show that number with no operations applied to it.
		As a user, I want the result to show error if it occurs, so that I know what is wrong with the operation.	<ul style="list-style-type: none"> - Given I have entered algebra operations and it is mathematically impossible to solve, then it should show error text. - If I divide any number by 0, thus it should also show error. - After error is shown, I can clear everything and start again.