

User stories:

Android device user, simple calculation:

As an Android device user, I want to do some basic everyday calculation with only one operator and two operands.

I open the app and enter a simple mathematical expression in the infix notation with two operands. After pressing the “=” button, the app displays the result.

Android device user, compound calculation:

As an Android device user, I want to do some compound calculations on the set of decimal rational numbers and the operands {+, -, \*, /}.

I open the app and enter a compound mathematical expression on the alphabet of the ten decimal digits, the radix point, and the parentheses in infix notation with implicit operator precedence. After hitting the equal sign, the app evaluates the mathematical expression in the correct order.

Android device user, who makes mistakes:

As an Android device user, I want to do some compound calculations on the set of decimal rational numbers and the operands {+, -, \*, /}.

I open the app and enter an expression that cannot be generated by the in-order traversal of the context-free grammar ignoring parentheses

(Note that it is not defined by this grammar, but rather the string (or the input tape of the corresponding nondeterministic pushdown automaton) would generate a derivation tree should we consider all symbols of the input string nonterminals in the context-free grammar):

$S \rightarrow * | + | \text{number}$

$+ \rightarrow + + | + * | + \text{number} * + | * * | * \text{number} | \text{number} + | \text{number} * | \text{number} \text{ number}$

$* \rightarrow + + | + * | + \text{number} * + | * * | * \text{number} | \text{number} + | \text{number} * | \text{number} \text{ number}$

Then I receive an error message.