Requirements Document

1 Introduction

Many BSUIR students face with processing complex number values while studying some basic principles of Electric Circuits Theory.

They have quite a few options. Online calculators often have problems with delay between operations caused by overloaded servers or student's weak network connection capabilities. Other option is usage of console calculator which is badly distributed and hard to find. Moreover, it is very inconvenient.

Complex calculator named "Fastcalc" aims to be an easy in use and quite effective app to do simple operations with complex numbers. It will do basic arithmetic operations with two complex operands. All operations are performed on floating point numbers. "Fastcalc" will also provide user with easy way to flip between exponential and numeric form of complex numbers.

The application is able to perform only enlisted operations and it performs those operations only with decimal numbers whit floating point (other bases than 10 are unacceptable input).

2 User Requirements

2.1 Software Interfaces

The application will be able to work on the following platforms: Windows, UNIX, and Mac OS. Java Virtual Machine is required to be installed. The application will not be available on mobile platforms.

2.2 User Interfaces

System will interact with user via Graphical User Interface, which is represented by a window that contains a button for each operation and four edit boxes for each of operands (two for real and imaginary part of rectangular form and two for radius and angle used in exponential form). The user interface preview is show in Appendix A.

User input (only digits) may be typed into edit boxes with keyboard or may be typed by pressing corresponding buttons on virtual numpad (which consists of buttons).

User input is accepted only in decimal numbers.

Invalid input is handled by showing user a warning instead of calculation result.

2.3 User Characteristics

Users of product are to be acquainted with complex numbers. They are expected to know, how the operations are performed.

2.4 Assumptions and Dependencies

This list of requirements is highly influenced by opinion of students

that are viewed as future users of the product. On the other hand, they are also influenced by time resources of developer and his will to spend them in most effective way to make “Fastcalc” as good for end user as possible.

3 System Requirements

3.1 Functional Requirements

3.1.1 Operations on two complex operands available:

a) Addition.
b) Subtraction.
c) Multiplication.
d) Division.

3.2 Non-Functional Requirements

3.2.1 Result must be precise enough so that it always contain at least three digits after point.

3.2.2 Calculations must be made less than in 1 second on every desktop platform, where JVM is supported.

Appendix A. The User Interface.

The user interface, which user sees right after launching the application is shown on figure 1.

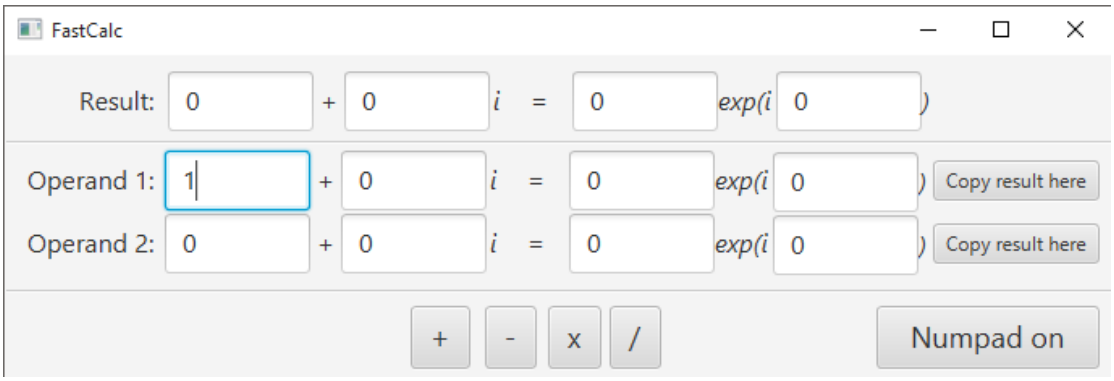
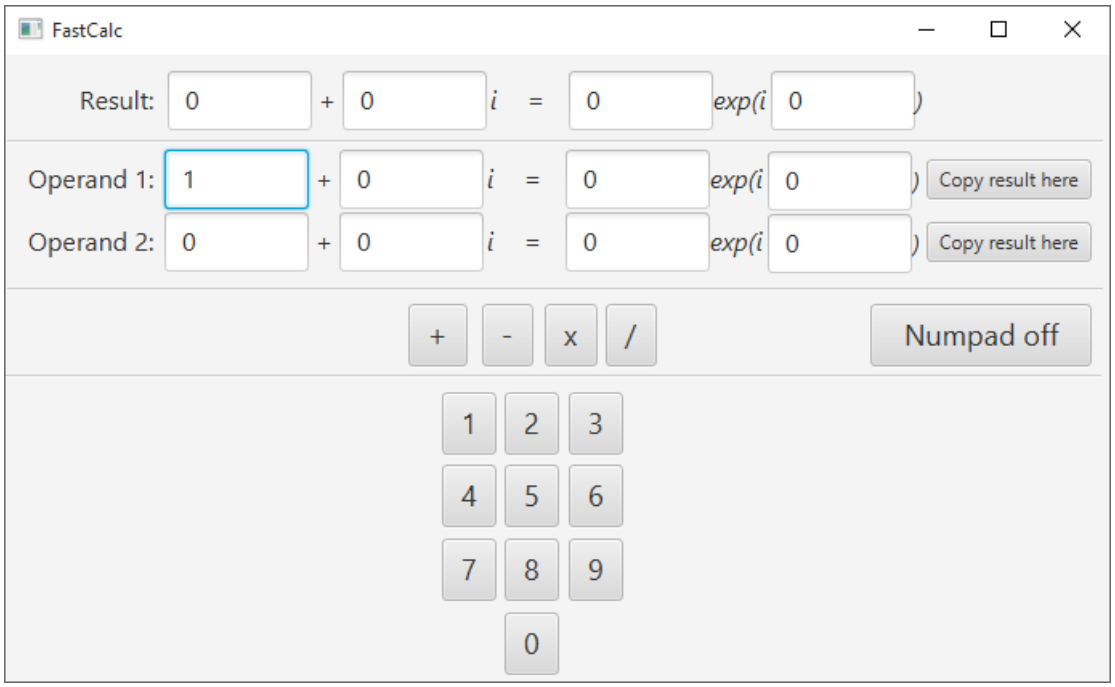


Figure 1. The default user interface.

The numpad is hidden by default. It will be shown after pressing the button “Numpad on”. User interface with numpad on is shown on figure 2.

Figure 2. User interface with numpad on.



After pressing “Copy result here” result values will be copied to corresponding operand’s fields.

Result’s fields are not user-editable.