**Test result report**

**Calculator (calc.exe)**

**17.10.2024-13.11.2024**

**Test team:**

| **Name** | **Position** | **Role in the project** |
| --- | --- | --- |
| Ponomarev Ivan | Future junior tester | Requirements analysis, creation of checklists and test cases, testing, creation of TRR |

**Testing process description:**

Test environment: ОС Windows 10 build 22H2.

Test Level: System testing.

Test types used: Functional, GUI testing.

All test scenarios where created based on customer requirements (the requirement is attached on the last page) using black-box testing techniques.

All tests performed manually, execution details see at: test statistic sections of this document.

**Summary:**

19 bugs found.

This was testing the first version of the application.

Quality is not perfect, but it is ok for the current stage of the project.

Although 19 bugs were found this week, this is expected at this stage of the project, as this is the first version of

the app.

Since 4 critical bugs and 8 major ones were found, consequently we have a risk for PROD deployment delay.

**Testing timetable:**

| Tester | Date | Description | Duration |
| --- | --- | --- | --- |
| Ponomarev Ivan | 17.10.2024 | Requirements analysis | 2 hours |
| Ponomarev Ivan | 21.10.2024 | Creation of checklists and test cases | 2 hours |
| Ponomarev Ivan | 29.10.2024 | Testing | 4 hours |
| Ponomarev Ivan | 13.11.2024 | Creation of TRR | 1 hours |

**Recommendations**:

It is recommended to pay special attention to regression testing due to the sharp increase in the number of bugs in previously implemented and tested functionality.

**New bugs found:**

| 1 | Addition and subtraction with 0 in numbers are calculated incorrectly. | Critical |
| --- | --- | --- |
| 2 | When adding numbers with numbers 6 and 9, the wrong result is displayed. | Critical |
| 3 | When dividing by 0, the sign is reversed instead of resetting the result to 0. | Critical |
| 4 | Button "8" disappears when pressed. | Critical |
| 5 | Error windows appearing instead of resetting the result to 0 without error windows appearing when extracting from under the square root of a negative number. | Major |
| 6 | "55" is displayed instead of "5" in the input field when pressing the "5" button | Major |
| 7 | Sequence of calculations is not supported. | Major |
| 8 | The input field supports at least 50 characters instead of 20. | Major |
| 9 | In science mode there are 2 white buttons that shouldn't be there. | Major |
| 10 | "9" is displayed instead of "6" in the input line when pressing the "6" button. | Major |
| 11 | "6" is displayed instead of "9" in the input line when pressing the "9" button in simple and science mode. | Major |
| 12 | The button "\*" is not displayed on the same axis as the buttons above and to the left of it. | Minor |
| 13 | Button "0" changes color from white to blue when pressed. | Minor |
| 14 | In scientific mode, the background color changes from white to brownish green when you press the button "О программе" before entering scientific mode. | Minor |
| 15 | Button "0" does not have shadows like the other buttons. | Minor |
| 16 | The Latin "ʤ" is located instead of "3" on button "3". | Minor |
| 17 | The image of an upright deer is located instead of "x^2" on the "x^2" button. | Minor |
| 18 | "Инжинерный" is displayed instead of "Инженерный" when press the "Выбор" button. | Minor |
| 19 | Repeated calculations with incorrect result when pressing "=" button again. | Minor |

**All bugs statistics:**

| **Status** | **Quantity** | **Severity** | | | |
| --- | --- | --- | --- | --- | --- |
| **Critical** | **Major** | **Medium** | **Minor** |
| Submitted | 19 | 4 | 7 | - | 8 |

**The list of the requirements for the calculator application.**

Business Requirements:

1. Employees of our company need a calculator application.

User Requirements:

1. User can work in 2 modes – simple and scientific.
2. In simple user can add, subtract, multiply and divide.
3. In scientific user can perform squaring and square root extraction.
4. The user is to be able to see the actions performed and the result.
5. User should have an access to user guide.

Functional Specifications:

1. The following mathematical operations are supported with four types of numbers: positive, negative, integer and fractional numbers in “Simple” mode:
   1. Addition
   2. Subtraction
   3. Multiplication
   4. Division
2. In “Scientific” mode supports all functions of “Simple” mode.
3. In “Scientific” mode supports 2 additional operations with four types of numbers: positive, negative, integer and fractional numbers:
   1. Squaring
   2. Square root extraction
4. There no installation, app is started by clicking on the .exe file;
5. There should be an opportunity to create a sequence of calculations, e.g. 1+2+4\*3, in this case all record is displayed in I/O field and result appears only after clicking on “=” button or pressing “Enter” button on keyboard.
6. In such cases, like division by Zero or square root of negative number or any other incorrect operation, application has to drop the result to “0” without any additional notification or an error.
7. Option “Mode” in menu bar consist of 2 option: “Simple” and “Scientific”
8. Buttons of squaring and square root should be displayed after changing the mode to “Scientific” only;

System and Non-Functional Specifications:

1. Application should be downloaded to PС as .exe file
2. Programming language is Delphi.
3. OS support is Windows 7-10 latest builds.
4. The language of the application is Russian.
5. Application size should be less than 100 Mb.
6. In the top left corner there is a small picture of calculator and the name of application – «Calculator ».
7. Font size of all signatures has to be equal.
8. Font color is black.
9. Capacity of input/output field should be at least 20 symbols.
10. Input/output field color is white.

GUI Specifications:

1. To open the application, you should double-click on the calculator executable file.
2. The default value in the I/O field is 0.
3. Keyboard layout (additionally see [Picture 1](#bookmark=kix.5g0vbkk580sr)):
   1. Numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0
   2. Arithmetical buttons for simple mode:
      1. + for addition
      2. – for subtraction
      3. \* for multiplication
      4. / for division
   3. Additional arithmetical buttons for scientific mode:
      1. x2 for squaring
      2. √ for square root extraction
   4. Action buttons:
      1. = for result of the calculation
      2. C for removal of data in I/O field
      3. < for last character deletion (from right to left);
   5. To minimize the application, you should press button «\_»;
   6. To close the application, you should press button «x»;
4. Input field must contain 20 signs max.
5. There are 2 options in menu bar – “Mode” to select calculator mode and “User guide” to get user guide.

Picture 1 (GUI schema)

