**Realization of automatic calculator**

Class: Ji Ke 201 Student ID 1: 20403070214 Name 1: Wang Jiawei Experiment Date: 2021.12.02

Student ID card 2: 20401182118 Name 2: Shen Baolong

**One. Experimental purpose**

1) Be familiar with such basic operations.

2) Master all kinds of internal sorting operations.

3) Understand this kind of problems, and gradually cultivate the programming ability to solve practical problems.

**Two. E experience environment**

A computer with Visual Studio 2019.

The experiment lasted for 4 hours.

**Three. Experimental content**

1. Design an "automatic calculator" as follows:

(1) the expression to be calculated is stored in the text file of TXT text;

(2)Each line is an expression in the text;

(3) Expressions include operands, operators (such as addition, subtraction, multiplication and division) and brackets;

Example: (34-72.3)\*54.7-82.4

(4) The "automatic calculator" calculates each expression in the text file according to the input file name, and writes each expression of the result into the original file name in \_ out.txt. Overwrite method should be used when saving the record. The format of each line is:

E = result.

**Four. Application data structure**

Stack, convert the middle order expression into the post order expression. .

**Five. Realization concept analysis**

First, we need to define two stacks, which are used to access operators and operands respectively.

Next, we will define what are legal characters.

Then artificially define the priority of operators.

With the above basic operations on the input content, we can begin to convert the input infix expression into suffix expression.

Implement conversion:

Convert infix expression to suffix expression

Calculate suffix expression

**Six. Program debugging problem analysis**

During the experiment, we have a lot of questions about the number of times the function runs. After discussion and many experimental improvements, the problem was finally solved.

**Seven. Experimental summary**

Through this experiment, we have mastered the application of file operation, improved the understanding of sorting algorithm and data structure, gradually cultivated the programming ability to solve practical problems and improved the team cooperation ability.

**Eight. Crew department**

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| --- | --- | --- |
| **Group business division** | | |
| **Member name** | **Completed work** | **Completion status** |
| **Wang Jiawei** | **Main function, etc** | **accomplish** |
| **Shen Baolong** | **Conversion expression, etc.** | **accomplish** |