**Tree Comprehensive Experiment Report**

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Class: 计科201

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1. **Experimental purpose**

1、Do linear list operations by using basic operations of tree or binary tree.

2、Handle file operations.

3、Deep the understanding of tree and binary tree, gradually develop the programming ability to solve practical problems.

1. **Experimental environment**

Computers equipped with Visual C6.0/CFree.

The experiment lasted for 4 hours.

1. **Experimental content**

（Choose one of the following two:）

1、 The directory structure of the specified directory file system is given, you should write into the file dir\_structure.txt by the indentation method, and calculate the storage area of the directory.。（The indentation method is shown in P93）

2、 design a "automatic calculator" as follows：

（1）The expression that needs to be calculated is stored in the text file in the TXT text；

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

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

For example： （34-72.3）\*54.7-82.4

（4）"Automatic calculator" calculates each expression in the text file according to the input file name, and writes every expression of the result to the original file name in the \_out.txt, you should use the method of covering and when saving the records. The format of each row is：

expression = result。

For example：the original file is: A1.txt

The file for output is： A1\_out.txt

The format of the text in A1\_out.txt is：

（34-72.3）\*54.7-82.4 = -2177.41

For all the calculated results, you'd keep 4 digits after the decimal point if it is decimal.

（5）Generate a statistical document after the calculation, its content is：

Execution time：xxxx-xx-xx hh:mm:ss

The total number of expressions is：XXX

The number of correct expressions is：XXX

The number of error expressions is：XXX

Naming rules for filenames：original file name :\_log.txt，Write files with append write method。

For example：A1.txt corresponding to the statistical file：A1\_log.txt

Special remind：★The calculation process requires transform the infix expression to the postfix expression and then transform the postfix expression to expression tree. Finally get the result by calculating the expressions.

(If you are getting into trouble in calculating decimal, you can only consider integer calculation.)

1. **Important data structures**

二叉树

1. **Implementation analysis**

先定义二叉树的结构体，再生成一个二叉树，最后在实现二叉树相关基本操作的函数，通过文件输入输出提取数据放入二叉树进行相关操作。

1. **Debugging problem analysis**

定义的数据类型与输入的数据类型不匹配，通过编译查找发现问题。

1. **Summary**

通过对二叉树的创建生成以及相关基本操作的函数实现对二叉树有了更加深入的理解

1. **Crew Division**

|  |  |  |
| --- | --- | --- |
| **Group division** | | |
| **Member name** | **Work done** | **Completion situation** |
| **黄荣帅** | **二叉树的创建和求高度的函数实现** | **完成** |
| **叶宇轩** | **二叉树的输入输出和数据的保存** | **完成** |
| **王子昂** | **二叉树的查找左右孩子以及结点的实现** | **完成** |