

1.功能说明

这部分简单介绍你的核心功能函数和功能逻辑，你可以着重说一下你觉得自己做的好的/困难的部分。

描述：1、主要是 需要考虑到根据用户的输入参数，决定使用那几种运算符“+.*/*”。为了能够随机地产生数字以及随机地产生运算符，使用C++ 中的随机数库，并使用时间作为了随机数算子；

2、为了记录用户的答题时间，这里使用 linux 中的sys/time.h 库文件，通过查询系统时间，计算答题前、答题后时间差；

3、输出，定义了几个变量（答题正确、错误数量、最短答题时间、平均答题时间）来记录答题的相关信息，最后在答题完毕之后，作为输出内容。

Func1 负责处理用户输入

```
//用户交互 设置计算参数
std::cout<<"please setting the numner: ";
std::cin>>calculate_num;

std::cout<<"please setting the range: ";
std::cin>>range;

std::cout<<"please conform whether multiplication and division ard included:
\nInput 0 or 1 :";
std::cin>>multi_divi_flag;
```

Func2 负责计算

```
while( i < calculate_num )
{
    // 获取两个随机数
    num1 = random() % range ;
    num2 = random() % range ;

    // 随机选择运算符号，并计算运算结果
    switch( ( random() % state_num ) )
    {
        case 0:
            real_sum = num1 + num2 ;
            std::cout<<i+1<<": "<<num1 <<" + "<<num2<<" = ";
            break;
        case 1:
            real_sum = num1 - num2 ;
            std::cout<<i+1<<": "<<num1 <<" - "<<num2<<" = ";
            break;
        case 2:
            real_sum = num1 * num2 ;
```

```

        std::cout<<i+1<<": "<<num1 <<" * "<<num2<<" = ";
        break;
    case 3:
        real_sum = num1 / num2 ;
        std::cout<<i+1<<": "<<num1 <<" / "<<num2<<" = ";
        break;
    default:
        break;
}

// 记录 答题开始的时间
gettimeofday(&tv,NULL);
begin_time_ms = tv.tv_sec * 1000 + tv.tv_usec / 1000 ; // ms
//等待用户的输入结果：
std::cin>>client_sum ;

// 计算答题耗费时间
gettimeofday(&tv,NULL);
curr_cost_time_ms = ( tv.tv_sec * 1000 + tv.tv_usec / 1000 ) -
begin_time_ms ;

// 记录有史以来最短答题时间 ;
if( min_cost_time_ms > curr_cost_time_ms ){ min_cost_time_ms =
curr_cost_time_ms ; }

// 计算累计答题时间
average_cost_time += curr_cost_time_ms ;

// 记录答题正确和错误的数量
if(client_sum == real_sum ) { answer_right_num ++ ; }
else { answer_error_num ++ ; }

i ++ ;
}

```

Func3 负责打印输出

```

// 统计结果，向终端打印输出。
average_cost_time /= calculate_num ;
std::cout<<"\n ***** the result below ***** \n"
    <<"Total pratice num: "<<calculate_num<<"\n"
    <<"answer_right num: "<<answer_right_num<<"\n"
    <<"answer_error_num: "<<answer_error_num<<"\n"
    <<"average_cost_time_ms: "<<average_cost_time<<" ms"<<"\n"
    <<"min_cost_time_ms: "<<min_cost_time_ms<<" ms"<<"\n"
    <<"***** " <<std::endl ;

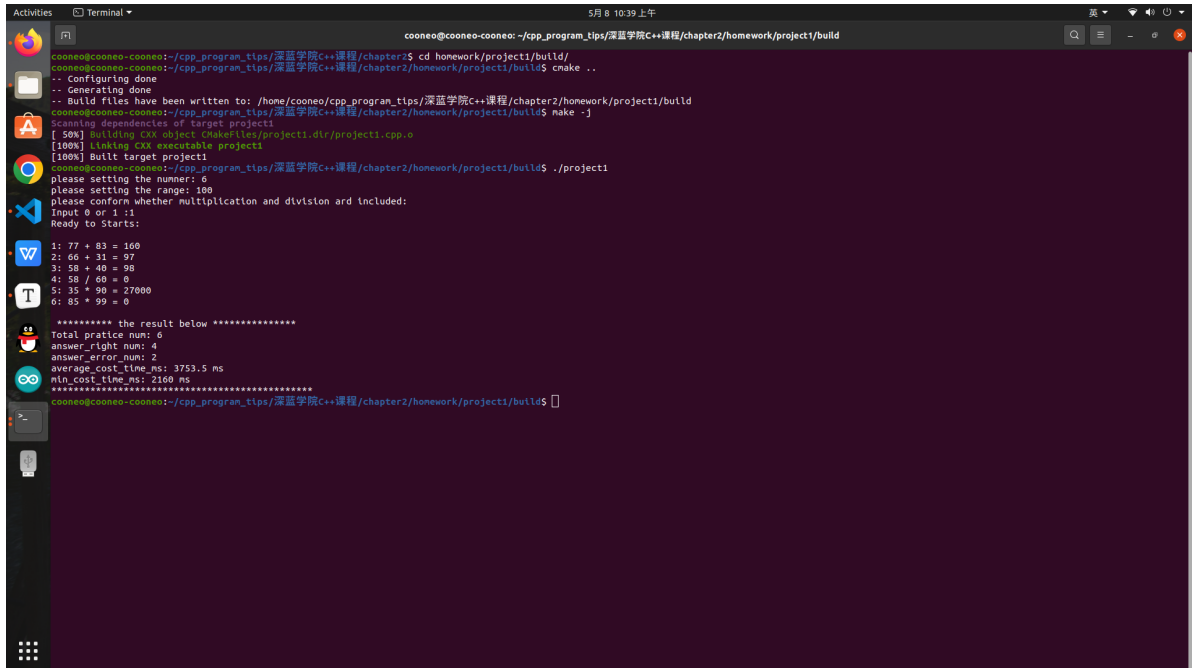
```

2.运行方式

使用的是 ubuntu20.04 OS + Cmake 编译方法，运行代码流程如下：

```
cd .... homework/project1/build/  
cmake ..  
make -j  
  
# run  
./project1
```

整个过程：



```
cooneo@cooneo-cooneo: ~/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build  
cooneo@cooneo-cooneo:~/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build$ cd homework/project1/build/  
cooneo@cooneo-cooneo:~/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build$ cmake ..  
-- Configuring done  
-- Generating done  
-- Build files have been written to: /home/cooneo/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build  
cooneo@cooneo-cooneo:~/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build$ make -j  
Scanning dependencies of target project1  
[ 50%] Building CXX object CMakeFiles/project1.dir/project1.cpp.o  
[100%] Linking CXX executable project1  
[100%] Built target project1  
cooneo@cooneo-cooneo:~/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build$ ./project1  
please setting the number: 6  
please setting the range: 100  
please conform whether multiplication and division are included:  
Input 0 or 1 : 1  
Ready to Start:  
1: 77 + 83 = 160  
2: 66 + 31 = 97  
3: 58 + 46 = 98  
4: 58 / 68 = 0  
5: 35 * 98 = 27800  
6: 85 * 99 = 0  
  
***** the result below *****  
Total practice num: 6  
answer_right num: 4  
answer_error num: 2  
average_cost_time_ms: 3753.5 ms  
min_cost_time_ms: 2160 ms  
*****  
cooneo@cooneo-cooneo:~/cpp_program_tips/深蓝学院C++课程/chapter2/homework/project1/build$
```