

SECTRA programming assignment – The Simple Calculator

Your task is to write a simple calculator that can add, subtract and multiply values in a set of registers. The syntax is quite simple:

```
<register> <operation> <value>  
print <register>  
quit
```

Allowed operations are add, subtract and multiply. Here is a simple example:

```
A add 2  
A add 3  
print A  
B add 5  
B subtract 2  
print B  
A add 1  
print A  
quit
```

The output should be:

```
5  
3  
6
```

The calculator should also support using registers as values, with lazy evaluation (evaluated at print), e.g. A multiply B. Here is another example:

```
result add revenue  
result subtract costs  
revenue add 200  
costs add salaries  
salaries add 20  
salaries multiply 5  
costs add 10  
print result  
QUIT
```

The output should be:

```
90
```

Additional requirements:

- Any name consisting of alphanumeric characters should be allowed as register names.
- All input should be case insensitive.
- The program should either take its input from the standard input stream, or from a file. When the program is launched with one command line argument, input should be read from the file specified in the argument. When accepting input from file, it should not be necessary to include quit to exit the program.
- Invalid commands can be ignored, but should be logged to the console.

You will be evaluated on the readability, simplicity and maintainability of the code. We will also test your program for major bugs and problems. The program should be easy to understand and make changes or additions to, e.g. adding a division operator. As you will be judged based on your submission, make sure to produce code having the same quality that we can expect from you in your daily work.

We would like you to solve this task using C++, Java or Python. If you feel that something is unclear in the specification, feel free to make assumptions about the problem, preferably based on what you think would be reasonable given the things you already know. However, make sure that you document these design decisions, preferably in a text file together with your submission.