

Report for Pgm3

Problem Statement

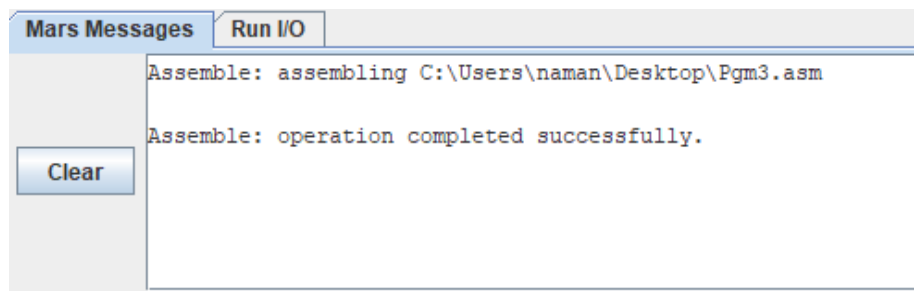
The purpose of this assignment is to read a file from a filename inputted by the user and then output the result of the summation of the multiplication of every two integers in that file. The integers can be positive or negative, and they will be interpreted as base 10 numbers. Each integer must be on its own line in the text file to meet the specifications of the program. Additionally, both a positive and negative count of integers should work.

Approach to Solution

The printing of value after the summation of the multiplication of the pair of integers in the file should be done utilizing the MIPS assembly language with the Mars IDE. Knowledge of the working with expression evaluation, system calls, reading from files, reading the length of strings, parsing integers, and basic structure of loops will be required. A computer running the Java Virtual Machine (JVM) will be needed along with access to the computer's registers for storage. Additionally, tools inside the IDE such as the assembling and running of the current program are essential.

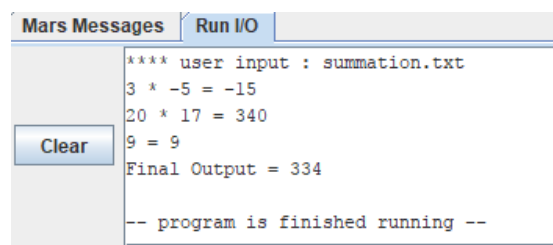
Solution Description

When the Mars IDE has been launched and Pgm3.asm has been opened, it is important to build (or "assemble") the program before running it. To do so, click the wrench and screwdriver button found in the tool icon layout. After clicking it, the program should successfully assemble, and there should be a success message from the "Mars Messages" tab at the bottom of the screen.



The message given after the program has been successfully assembled.

Once the program has successfully compiled, it is now time to run it. At the top of the screen, click the green play button in the tools with the description “Run the current program” when a mouse cursor is hovered over it. The user will be prompted to enter the name of a file. If the filename is valid and found in the same directory as the executable MARS launcher, the “Run I/O” tab should display every sequential pair of integers from the specified file being multiplied together along the result of their multiplication – each on a separate line. If an integer is not paired with any other integer in a file (due to an odd number of integers in the file), it will simply print that it is equal to itself. Once that has finished, the output will finally print the words “Final Output” and what it equates to, as shown in the screenshot below. If a file does not exist or exists but is empty, it will simply output 0 as the final result. The last thing printed is a new line character.



```
Mars Messages Run I/O
**** user input : summation.txt
3 * -5 = -15
20 * 17 = 340
9 = 9
Final Output = 334

-- program is finished running --
```

The result of the summation of the multiplication of every pair of integers in the file specified by the user is displayed in the output.