

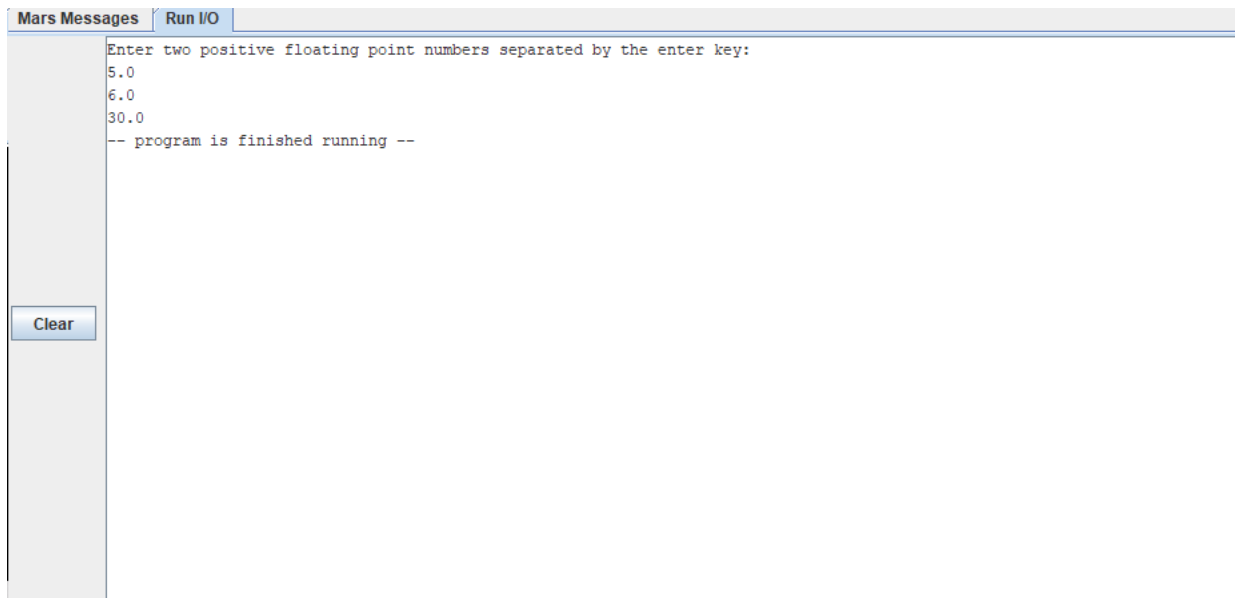
Project 3

Program 1:

1. 2 integers as the inputs, and outputs the two multiplied together as a single floating-point number
2. User begins by entering two positive integers, and the program will output the result of the two multiplied together without using any mul or div instructions. It does this by looping through the second number and adding that number together that many times.
- 3.

Column1	Column2
\$a0	Return value of syscall
\$v0	Argument of syscall
\$f0	First input
\$f1	Second input
\$f2	Index value
\$f3	Holds return value
\$f4	Holds value 0.0
\$f5	Holds value 1.0
\$f12	Argument of syscall

4. Floating point input/output, Loops, Multiplication procedure without mul, converting ints to floats



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Mars Messages Run I/O
Enter two positive floating point numbers separated by the enter key:
5.0
6.0
30.0
-- program is finished running --
Clear

```

5.

Program 2:

1. 3 signed integers as input, one signed integer as output
2. The program first asks the user to input 3 signed integers separated by the enter key. Takes those inputs and performs some arithmetic on the numbers. Program checks if the function is dividing

[Type here]

[Type here]

[Type here]

by zero, if so it exits. It also checks if the function has overflow, it does it says it, otherwise it says it doesn't.

3.

Column1	Column2
\$v0	Return value of syscall
\$a0	Argument of syscall
\$s0	Value of a
\$s1	Value of b
\$s2	Value of c
\$t0	Copy of b
\$t1	Copy of c
\$t2	Index value for loop
\$s3	Stores b^c
\$t3	Copy of a
\$t4	Stores a^2
\$s4	Stores copy of a^2
\$t5	Stores $c - a^2$ to check denom
\$t6	stores $a + b^c$
\$t7	Stores $\$t6 / \$t5$
\$t8	Stores a copy of $\$t7$
\$s5	Stores $\$t8$
\$t9	Stores $3*b$
\$s6	Stores copy of $\$t9$
\$s7	Final Result

4. Overflow, Unsigned Integer math, Check division by zero, Leaf procedures, Input/Output

Mars MessagesRun I/O

Clear

Enter three signed numbers separated by the enter key:
0
-4
2
-4
No Overflow
-- program is finished running --

Enter three signed numbers separated by the enter key:
-2
15
4
Division by Zero
-- program is finished running --

5.

Program 3:

[Type here]

[Type here]

[Type here]

1. 3 Inputs per CPU, so 2 Integers, 2 Single Floating-point numbers, and 2 Integers for clock rate. Output which CPU is faster and by how much
2. Program has the user enter the inputs for CPU A, and then inputs for CPU B. It then uses a formula to calculate the CPU time for each CPU. Then depending on which is faster it branches to that and does division to find out how much faster it is, then outputs that to the console.
- 3.

Column1	Column2
\$v0	Return value of syscall
\$a0	Argument of syscall
\$f2	Holds IC for CPU A
\$f4	Holds CPI for CPU A
\$f6	Holds Clock rate for CPU A
\$f8	Holds IC for CPU B
\$f10	Holds CPI for CPU B
\$f14	Holds Clock rate for CPU B
\$f16	Holds Execution time for CPU A
\$f18	Holds Execution time for CPU B
\$f12	Argument of syscall

4. Floating point input, Floating point output, Floating point Arithmetic, Leaf Procedures, Multiple Input parameters

Mars Messages	Run I/O
	<pre>Processor A: Enter instruction Count: 100 Enter CPI: 2.0 Enter Clock Rate: 4 Processor B: Enter instruction Count: 100 Enter CPI: 1.2 Enter Clock Rate: 2 A is 1.2 times as Fast as B -- program is finished running --</pre>
Clear	
	<pre>Processor A: Enter instruction Count: 100 Enter CPI: 4 Enter Clock Rate: 4 Processor B: Enter instruction Count: 100 Enter CPI: 2.0 Enter Clock Rate: 4 B is 2.0 times as Fast as A</pre>

- 5.