**Dated: October 03, 2018**

## OS Lab 5: Problem statement

Assignment is for 1 week starting with October 1, 2018.

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Implement a read-only file system that performs mathematical operations based on names and input numbers given to it.

- Create a user-level math file system (**mathfs**)
  - Runs via FUSE
- The root of **mathfs** comprises of seven directories
- Each directory represents a mathematical function:

1. /factor - Computes the prime factors of a number.
2. /fib - Computes the first n Fibonacci numbers.
3. /add - Adds two numbers
4. /sub - Subtracts two numbers.
5. /mul - Multiplies two numbers.
6. /div - Divides two numbers.
7. /exp - Raises a number to a given exponent.

- Suppose you mount your file system on /math
  – Create a directory /math:

```
mkdir /math
```

  – Run the program, giving it the mount point:

```
./mathfs /math
```

**Example:**
**When you execute the command**

```
$ cat /math/add/6/4
```

It should produce the sum of 6+4 as:

```
10
```

**More Examples:**
A function can be invoked by opening a "file" under the mathfs mount point and reading its contents. For example:

a. /factor/138 should act as a file containing the numbers 2, 3, 23, one per line and ending with a newline.
b. /fib/3 should act as a file containing the numbers 1, 1, 2, one per line and ending with a newline.

c. /add/5/3 should act as a file containing the number 8 and ending with a newline.
d. /sub/5/3 should act as a file containing the number 2 and ending with a newline.
e. /mul/5/3 should act as a file containing the number 15 and ending with a newline.
f. /div/5/3 should act as a file containing the number 1.6666 and ending with a newline.
g. /exp/2/3 should act as a file containing the number 8 and ending with a newline.

**Reference:**

https://www.cs.rutgers.edu/~pxk/416/hw/a-7.html