Report :

1) my code in the main program opens a file named "input.txt" and reads N and K values in it which are seperated by a space.

2) it then calls the main process by giving that already read N and K as input arguments.

3) then in the main process, i created the shared memory buffers using mmap in which the "sm" shared memory contains the given n numbers and it is shared to each of the created child process by this main process. "out1" is the shared memory pointer which points the "sm" shared memory so that the child process can get access to these numbers.

4) "sh" shared memory is the memory shared to the main process by each of the child process and it contains the perfect numbers once calculated by each of the child process and "in2" is the shared memory pointer to this "sh" shared memory buffer.

5) then main process creates k child process by fork option. now to stop getting excess child process we use exit() system other wise we get 2^(k) process.

6) now those n numbers in the shared memory "sm" is partioned to each child process such that ith child process gets (n/k) numbers (starting from (i-1)*(n/k) to i*(n/k)) from that give n numbers except for the kth child process which get the rest of the numbers.(beacuse n may not perfectly divisible by k. in this case the last kth process didn't get n/k process it may more than it or less than it.)

7) after this partiononing each child process starts finding perfect numbers(using perfect number function) from their repective partioned numbers and after finding, they share them to the "sh" shared memory using "in2" pointer and each child process output the OutFile in which it conatins which number is perfect and which is not.

8) then finally the code outputs the OutMain file in which contains perfect numbers found out by each of the process Pi.

Analysis:

if given 23 3 as inputs in the "input.txt" file then output files as follows:

OutFile1 :

1:Not a perfect number
2:Not a perfect number
3:Not a perfect number
4:Not a perfect number
5:Not a perfect number
6:Is a perfect number
7:Not a perfect number
8:Not a perfect number

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9:Not a perfect number

OutFile2:

10:Not a perfect number
11:Not a perfect number
12:Not a perfect number
13:Not a perfect number
14:Not a perfect number
15:Not a perfect number
16:Not a perfect number
17:Not a perfect number
18:Not a perfect number

OutFile3:

19:Not a perfect number
20:Not a perfect number
21:Not a perfect number
22:Not a perfect number
23:Not a perfect number
24:Not a perfect number
25:Not a perfect number
26:Not a perfect number
27:Not a perfect number
28:Is a perfect number

OutMain:

P1: num6
P2:
P3: num28
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