

MERSENNE NUMBERS

1. I suggest you to reduce the scope of your proposal to either perfect numbers or Mersenne numbers, not both.
2. There are plenty of grammatical errors in your document, like “nuber”, “i”. Moreover, there are some redaction issues. Please try to improve your writing in the next assignment.
3. You say something that is absolutely false:
“ $p(n)$ is a perfect number if and only if it is of the form $p(n) = 2^{n-1}(2^n - 1)$.” If this were the case, the finding of perfect numbers would be a solved problem. Nevertheless, we do not even know if there are odd numbers. If you are going to choose the perfect numbers for your final assignment you should correct this and find a paper that discusses algorithms to find them, because your main reference does not discuss a particular method to find them.
4. Both pseudo-codes you proposed are misleading or wrong. For the case of perfect numbers, you try to give the traditional algorithm to calculate them, which is finding all the divisors of a number, summing them, and determining if the sum coincides with the original number. In your algorithm, from step (c) to step (d) it is not clear that the values that will be summed are the ones that divide the original number.
On the other hand, to find if a given number is a Mersenne number you have to indeed check if the number is prime. This is something completely skipped by your pseudo-code. This would be a good place to incorporate Lucas-Lehmer’s algorithm. Therefore, your second reference is useless. You should remove it, or better yet, find a better one.
5. What do you exactly mean by “taking into account that there was no way to make this calculation computationally”? Because your main reference discusses how computers were actively used to find these numbers.
6. The question “Why does it make sense to write a code that runs in parallel to solve that problem?” asks for you to discuss **how** a parallel algorithm can be implemented to improve the calculations of your problem. Therefore, it is not sufficient to say that parallel computing should be used because computations are time consuming.
7. With regard to your goals, the first one is not as interesting as the second one, so I think is better to discard this goal. On the other hand, as I stated, I expect that you decide between which set of numbers you want to study.
8. You should probably search and include more references that discuss the state of the art regarding algorithms to calculate the set of numbers of your preference, and make sure to drop the current second reference.