

Programming Problems in your Programming Language

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1. Write a program which computes $g(N, k) = \sum_{i=1}^N i^k$ where N and k are given as inputs.
2. Check if a given input number N is prime.
3. Find the sum of all prime numbers strictly less than N where N is provided as an input.
4. Enumerate all the Pythagorean triplets (x, y, z) where x, y, z are integers and $x^2 + y^2 = z^2$ and $z \leq 100000000$. Output the count at the end.
5. Write a program to print all combinations of $\{1, \dots, n\}$ where n is given as an input.
6. Write a program for insertion sort.
7. Write a sorting program using Radix sort.
8. Write merge sort program.
9. Write a program to compute the sum of two input matrices.
10. Write a program to compute the product of two input matrices.
11. Write a program to compute the alphabet histogram in given English language text file. **Bonus:** File Support
12. Write a C program to list all the unique words in a file. **Bonus:** File Support