E7 – P15

Define the function d(*n*) to be the sum of all the positive factors of a given positive integer *n*, including 1 and *n*. we call a number *n*, a superperfect number if d(d(*n*)) = 2*n* for the given *n*. For example, *n* = 64 is a superperfect number. The factor of *n* = 64 are: 1, 2, 4, 8, 16, 32, 64, so d(*n*) = 127. The factors of 127 are: 1, 127 (because 127 is a prime), so d(127) = 128. This means d(d(*n* = 64)) = 128 = 2*n*, therefore *n* = 64 is superperfect.

Develop a Python program to output the largest superperfect number below a given integer input from a file. The output should be displayed on screen and written to a file named "Output.txt".

Special requirement: You must define at least 2 functions and use them in your code.

Format:

Input: input_file

(Each line of the input file will contain a positive integer)

Output: Display on screen and write to the output file named "Output.txt" the largest superperfect number below the integer in each line of the input file. Each output number will appear on a separate line.

Sample:

Case 1

Input: test_data1.txt

Input data: 20

1000

10000

Output: On screen and in output file

16

64

4096