**6 kyu**

**Abundant Array**

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Python

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Your task is to return an array of the first n abundant numbers, sorted by their abundance. If the abundance is the same for multiple numbers, sort them numbers from smallest to largest.

"An abundant number or excessive number is a number for which the sum of its proper divisors is greater than the number itself. The integer 12 is the first abundant number. Its proper divisors are 1, 2, 3, 4 and 6 for a total of 16. The amount by which the sum exceeds the number is the abundance. The number 12 has an abundance of 4, for example."

For example:

* 10 is not an abundant because the sum of its proper divisors is 8; 1+2+5=8.
* 12 is an abundant number with an abundance of 4; 1+2+3+4+6=16, 16-12=4.
* 18 is an abundant number with an abundance of 3; 1+2+3+6+9=21, 21-18=3.

The first 5 abundant numbers sorted by their abundance are [20, 18, 12, 24, 30]

| **Number** | **Sum of Divisors** | **Abundance** |
| --- | --- | --- |
| 20 | 22 | 2 |
| 18 | 21 | 3 |
| 12 | 16 | 4 |
| 24 | 36 | 12 |
| 30 | 42 | 12 |

You will be given n, a number between 0 and 300 and must return an array of that length, and must do so within the test's time limit.

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**def** SumDivisores( n):

    s = 0

    i = 1

**while**(i\*i <= n):

**if**(n%i==0):

            s +=i

**if**(n / i != i):

**if**(n/i != n):

                    s += (n/i)

        i+=1

**return** s

**def** abundance(n):

    suma = []

    abundancia = []

    nums = []

    primeros = 0

    i = 1

**while**(primeros < n):

        s = SumDivisores(i)

**if**(s > i):

            suma.append(s)

            abundancia.append(s - i)

            nums.append(i)

            primeros += 1

        i += 1

**for** i **in** range(0, len(nums) - 1):

**for** j **in** range(i + 1, len(nums)):

**if**(abundancia[i] > abundancia[j]):

                temp = nums[i]

                nums[i] = nums[j]

                nums[j] = temp

                temp2 = abundancia[i]

                abundancia[i] = abundancia[j]

                abundancia[j] = temp2

                temp3 = suma[i]

                suma[i] = suma[j]

                suma[j] = temp3

**elif**(abundancia[i] == abundancia[j]):

**if**(nums[i] > nums[j]):

                     temp = nums[i]

                     nums[i] = nums[j]

                     nums[j] = temp

                     temp2 = abundancia[i]

                     abundancia[i] = abundancia[j]

                     abundancia[j] = temp2

                     temp3 = suma[i]

                     suma[i] = suma[j]

                     suma[j] = temp3

**return** nums

**print**(abundance(12))