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PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   STANDINGS   CUSTOM INVOCATION

A. Heap Sort

time limit per test: 12 s
memory limit per test: 15 MB

You are given an array of n integers.

Your task is to find the sum of the largest k elements in the array.

Due to memory limitations, you cannot solve the problem using sorting. Instead, you need to use a min-heap of size $k + 1$ and build a heap with the following properties:

$insert$: Adds a new key to the heap.

$extract - min$: Returns and removes the node with the minimum value from the min-heap.

Use the following link as a reference for the heap data-structure:
https://en.wikipedia.org/wiki/Heap_(data_structure)

$EstimatedTimeComplexity$: $O(nlogn)$.

$EstimatedSpaceComplexity$: $O(k)$.

Input
The first input line contains two integers n ($1 \le n \le 10^7$) & k ($1 \le k \le \min(n, 1000)$): the number of elements in the array and the target elements.

Output
Output one number, the sum of the largest k elements in the sequence.

Examples

input	Copy
5 2
5 4 1 100 2	

output	Copy
105	

input	Copy
1 1
5	

output	Copy
5	

input	Copy
5 4
1 2 5 4 3	

output	Copy
14	

CP3 Lab LAU
Private
Manager
⭐

→ Group Contests ⌄

- Greedy Lab
- Greedy Practice I
- DP Practice Problems
- Exam 1 Sample
- Graphs Lab IIII
- Graphs Lab III
- Graphs Lab II
- Graphs Lab I
- Sorting Lab III
- Implementation Practice
- Sorting Lab II
- Sorting Lab I
- Sorting Lab
- AVL Trees Lab 2
- AVL Trees Lab 1
- AVL Trees Practice
- BST Lab 2
- BST Lab 1
- BST Lab

Sorting Lab III
Finished
Practice
⭐

→ Languages

The following languages are only available languages for the problems from the contest

Sorting Lab III:
- GNU G++17 7.3.0
- GNU G++20 13.2 (64 bit, winlibs)
- GNU G++23 14.2 (64 bit, msys2)
- Java 21 64bit
- Java 8 32bit

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Administration

Currently, manager mode is disabled. It means that you may take part in this mashup contest as regular user.

Do you want to enable manager mode?

[Enable manager mode]

→ Submit?

Language: GNU G++23 14.2 (64 bit, ms ⌄

Choose file: [Choose File] No file chosen

[Submit]

→ Last submissions

Submission	Time	Verdict
285350446	Oct/11/2024 19:34	**Accepted**

→ Contest materials

- Tutorial (en)   ✖

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