

Indian Institute of Technology Mandi
August-November 2017 Semester
**CS202: Advanced Data Structure and
Algorithms**
Programming Assignment 2

Course Instructor : Aditya Nigam

September 2, 2017

Date of evaluation of code: 6th September, 2017

Rohit's favourite game is Cricket and his favourite club is "Mumbai Indians". Mumbai Indians has reached the final of IPL which is to be held at the Wankhede Stadium in Mumbai. So, he decided to go there and watch his favourite team play. After reaching the stadium, he saw that many people have lined up for the match tickets. He knows that there are N rows in the stadium with different seating capacities. They may or may not be equal. The price of the ticket depends on the row. If the row has j (always greater than 0) vacant seats, then the price of the ticket will be j rupees. Now, every cricket fan standing in the line will get a ticket one by one.

Given the seating capacities of different rows, find the maximum possible pounds that the club will gain with the help of the ticket sales.

Input:

The first line consists of N and M . N denotes the number of seating rows in the stadium and M denotes the number of cricket fans waiting in the line to get a ticket for the match.

Next line consists of N space separated integers $X[1], X[2], X[3], \dots, X[M]$ where $X[i]$ denotes the number of empty seats initially in the i^{th} row.

Output:

Print in a single line the maximum rupees the club will gain.

Constraints:

$$1 \leq N \leq 1000000$$

$$1 \leq M \leq 1000000$$

$$1 \leq X[i] \leq 1000000$$

Sum of $X[i]$ for all $1 \leq i \leq N$ will always be greater than M .

Note:

1. Each array is implemented using the list data structure ([list.hpp](#)).
2. Everyone should use the [list.hpp](#) and [priority_queue.hpp](#) classes provided. Do not change the class names. It is expected to strictly use the interfaces provided in the classes to implement the tasks.
3. The implementation of [swap](#) function in [priority_queue.hpp](#) will earn you bonus marks.