

IEEE is having its AGM next week and the president wants to serve cheese prata after the meeting. The subcommittee members are asked to go to food connection and get $P(P \leq 1000)$ pratas packed for the function. The stall has L cooks ($L \leq 50$) and each cook has a rank $R(1 \leq R \leq 8)$. A cook with a rank R can cook 1 prata in the first R minutes 1 more prata in the next $2R$ minutes, 1 more prata in $3R$ minutes and so on (he can only cook a complete prata) (For example if a cook is ranked 2.. he will cook one prata in 2 minutes one more prata in the next 4 mins an one more in the next 6 minutes hence in total 12 minutes he cooks 3 pratas in 13 minutes also he can cook only 3 pratas as he does not have enough time for the 4th prata). The webmaster wants to know the minimum time to get the order done. Please write a program to help him out.

Input

The first line tells the number of test cases. Each test case consist of 2 lines. In the first line of the test case we have P the number of prata ordered. In the next line the first integer denotes the number of cooks L and L integers follow in the same line each denoting the rank of a cook.

Output

Print an integer which tells the number of minutes needed to get the order done.

min

ex 1
 10
 4 1 2 3 4

and → 12

lo → 0

hi → 10^9

mid

← ————— →
search space → is of time because we want min time

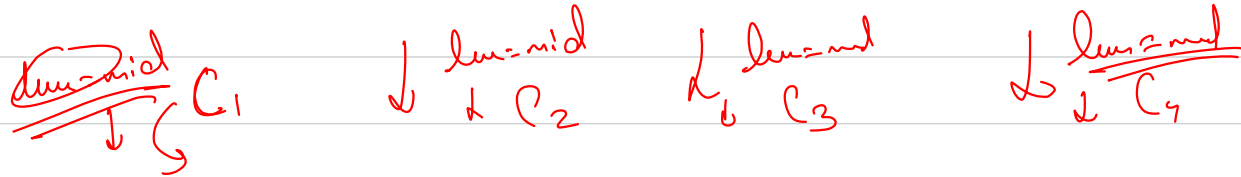
→ whether we can prepare atleast P, parotas

in mid mins will the cooks cook parallelly.

→ True → $hi = mid - 1$ → candidate as

→ False → $lo = mid + 1$

Given a time mid, check if cooks can make
 at least p parotas or not



1) consumes $\text{mid} - 1 \times R$

$\text{mid} - 1R - 2R \leftarrow$

no of
 steps ==
 no of
parotas

$-3R$

$-4R$

\vdots

$$(C_1 + C_2 + C_3 + C_4) \geq p$$

$$A = 2$$

$$B = 5$$

$$[1, 10]$$

$$\rightarrow 50 \text{ units}$$

Q Given two integers A and B . You have a list of size N . $A \rightarrow$ no. of painters

$B \rightarrow$ no. of units of time taken by the any painter to paint unit of a board.

The list represents the lengths of N boards.

Calc min time reqd to paint all boards

considering, any painter will only paint

contiguous sections of board.

2 painters can't share board.

$$A \leq 10^3$$

$$B \leq 10^6$$



$$ans[i] \leq 10^6 \quad n \leq 10^5$$



A painter \rightarrow Each takes 1 unit of time for simplest

do
max of
boards

1
<
1
1
1
mid

hi
sum of len of
boards

if we will consider this problem same as prev one, that painters are just parallelly painting & calc no. of boards they can paint then we are not considering the contiguous property.

So what to do ??



lo

hi

mid

check if
→ no of painters reqd to paint n

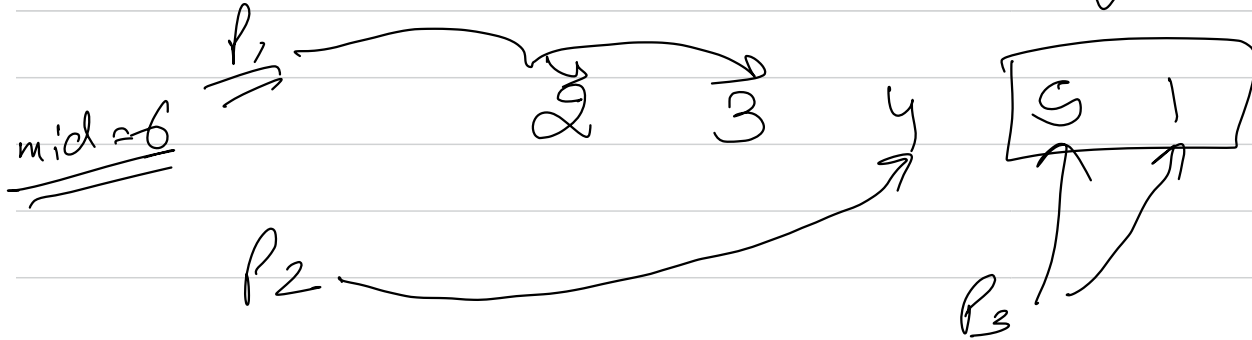
boards, is less than or equal to A.
such that any painter only paints only one

$B \leq 1$

→ How to find no of painters?

we have a mid ← taken by B.S

one painter can't paint for
more than mid unit of time



a=16 ←

0

B=1

1, 8, 11, 3

h
24
25

h
49
mid
80

h
21
12
5

mid

lo=7

mid → 6

12

2

1, 10

h
1
100
count

11
11 > mid

h
24
10

Q.2 Given number of pages of n different books
& m is the value of no. of students.

Books are arranged in inc order of pages.

One student can read consecutive books aly.

Assign books such that max no. of

pages assigned \hookrightarrow is minimax
no a student is

Minimize on a minimax
minimize of a max

BS

Minimax
Search problem