Algorithm

① set small = 1

② set big = M[len(M)-1] - M[0]

The answer should be one value in [small, big]

③ Binary search

while (small < big)

middle = (small + big) / 2

for every difference between M[i] and M[i-1], i in [1, len(M)-1]

calculate the times we need to add new elements:

$$\left\lceil \frac{M[i] - M[i-1]}{middle} \right\rceil - 1$$

(ceil)

For example

M[i] = 10

M[i-1] = 20 ⇒ 5 - 1 = 4

middle = 2

M[i] = 10

M[i-1] = 21 ⇒ 6 - 1 = 5

middle = 2

Add times together

if the sum > K:

middle ≠ answer,

answer should be bigger

left = middle + 1

else:

answer should ≤ middle

right = middle

left is the answer.

code: ipad-6.cpp