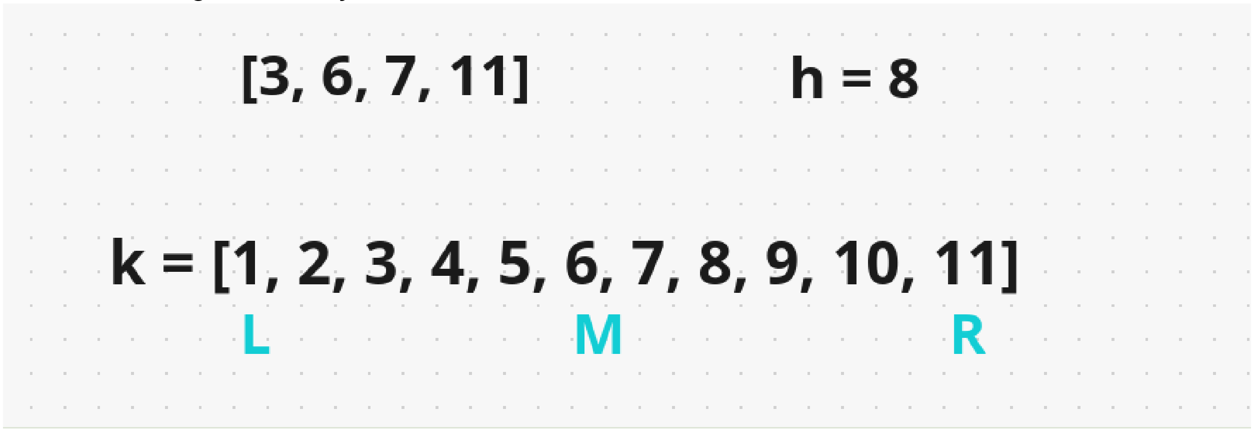
APPROACH

Let's understand the solution, as we are going to be using Binary Search we have given an Array [3,6,7,11]

And we have to eat every single pile of bananas in less than or equals to hours = 8.

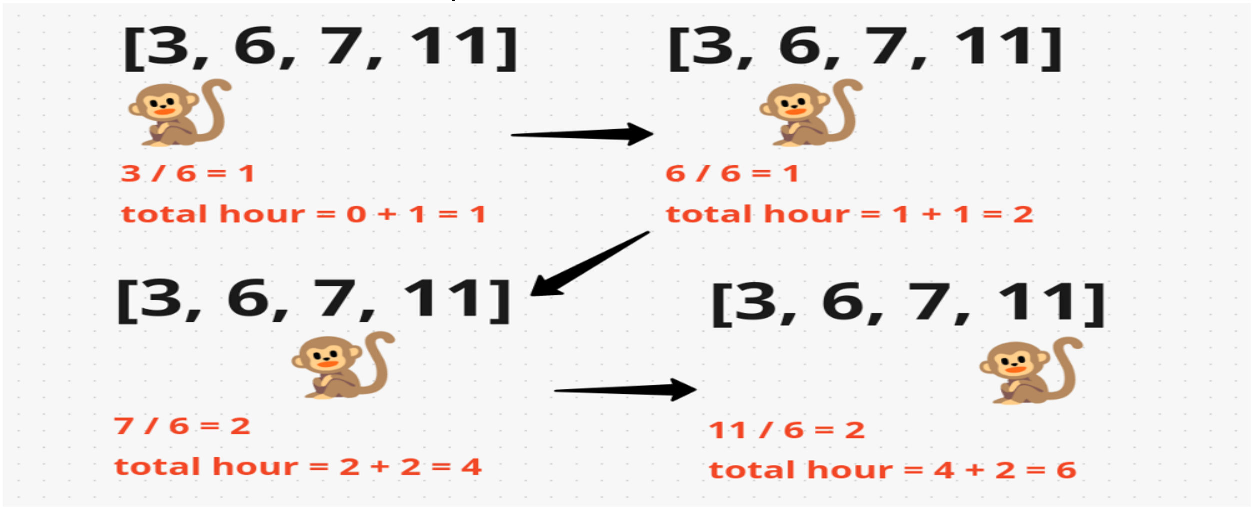
If we not able to do that Gurad will kill KOKO [just a joke]

As we know that the potential rate that we're eating bananas at **k** is going to be between **1** that's the minimum it could possibly be. The max it could possibly be is going to be whatever the max in our input array is and that is **11**.
So, then we're going to initialize a range like this **k = [1,2,3,4,5,6,7,8,9,10,11]** the entire range we have. Going all the way from **1** to the max value **11**.



So, in other words we're going to have a **left pointer** at the **minimum** and a **right pointer** at the **maximum** . Then we compute the middle by taking the **average of left & right / 2 i.e. 1 + 11 / 2 = 6**. So, our **middle** will be here at **6** in other words that **k** we're trying is going to be here at this rate that we're going to eat bananas at rate of **6** .

Now let's check can we eat all the piles of bananas at rate of 6. Let's check it,

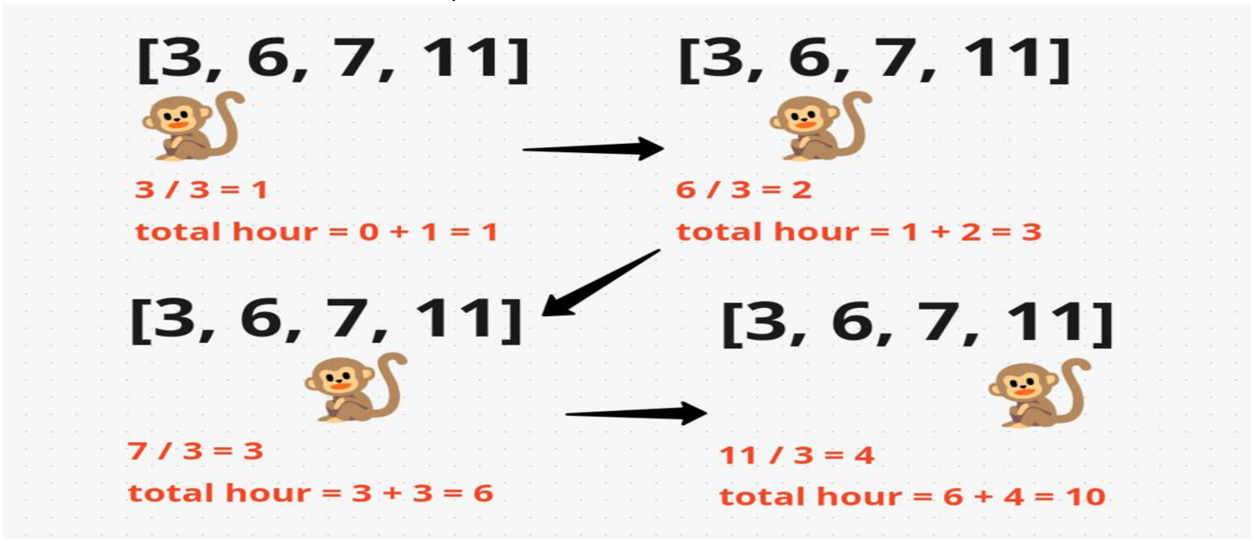


If you see that we just eat all piles of bananas in **6 hour** is that a good value. Well it is less than or equals to **8 hours**, but still we have to find the **minimum possible** of **k** value. This might be

the solution but less try is there any more **smaller k** value then **6**.
So, we **decrement** our **right pointer to mid - 1** becuase there might be the best possible solution available.

So, once again we compute the middle by taking the **average of left & right / 2 i.e. 1 + 5 / 2 = 3** our **k** is here at **3** value

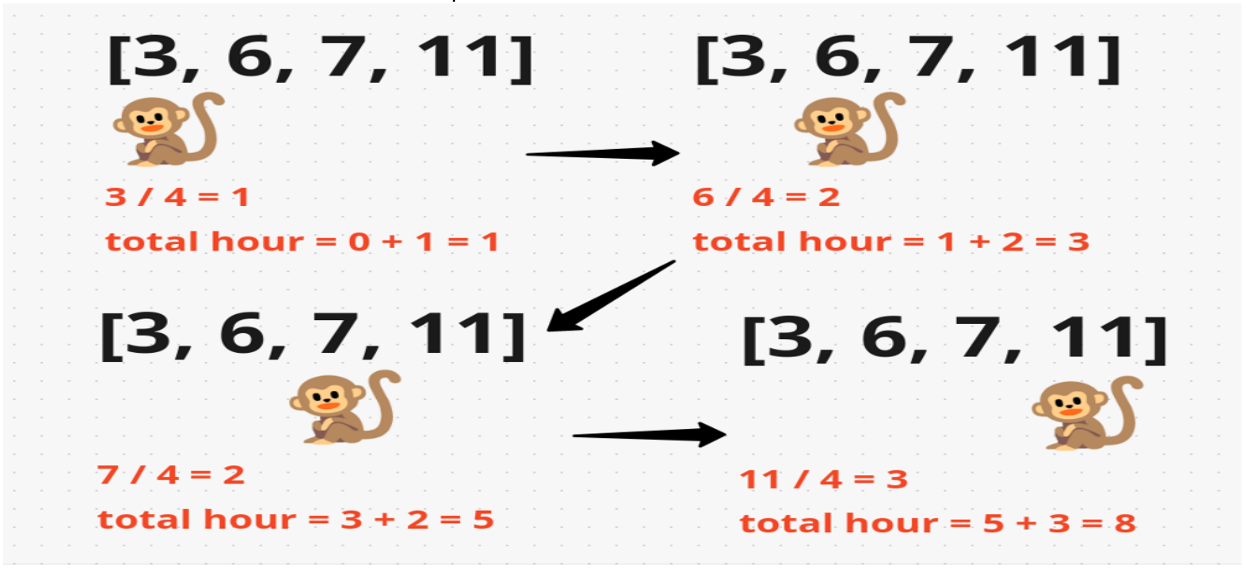
Now let's check can we eat all the piles of bananas at rate of 3. Let's check it,



If you see that we just eat all piles of bananas in **10 hour** but if you see we went over **8 hours** we took too long to eat all the bananas. So, eating at **rate of 3** didn't work.
Let's start searching to right of our range we **increment** our **left pointer to mid + 1** *but remember when we shift our right pointer from the last position to mid -1 we just consider that this range will not work. And that's how Binary search work!*

So, once again we compute the middle by taking the **average of left & right / 2 i.e. 4 + 5 / 2 = 4** our **k** is here at **4** value

Now let's check can we eat all the piles of bananas at rate of 4. Let's check it,



If you see that we just eat all piles of bananas in **8 hour**. So, we able to eat all bananas in less than or equals to **8 hours** if we had a rate of **4**. Let's compare this with our current result. So, far we find a value of **6** we update this **6** and we can say there is a more smaller rate we can use i.e. **4**.

But if we try to calculate more further on then we see our right pointer moves more left to the left pointer. Then we can now stop our Binar Search.

ANALYSIS :-

- **Time Complexity :-** BigO(N * log(M)) where N is no of piles & M is range of K (left to right)
- **Space Complexity :-** BigO(1) as not using any extra space