

## Saturday

1. Car fleet
2. Digit Multiplier
3. first -ve in k size window
4. Kadane's
5. k- concatenation
6. Max product subarray
7. Min length of string after Removal

## Sunday

1. Gas station
2. max. sum of smallest & second smallest
2. Min Domino Rotation for equal Rows
4. Smallest Range from k list
5. min size subarray sum
6. max Average subarray
7. Find all duplicates,



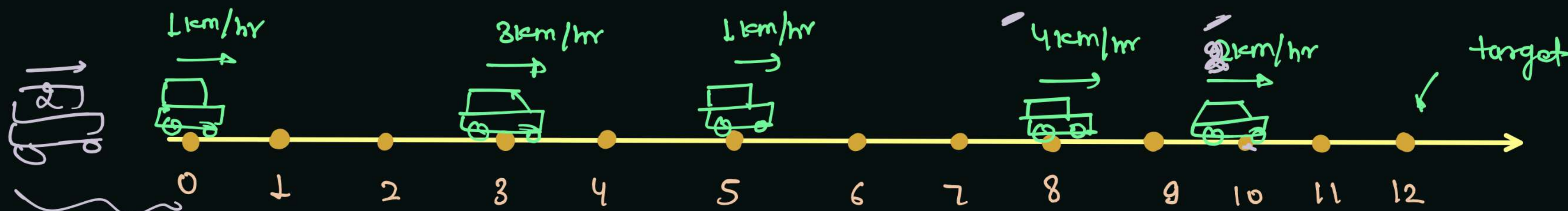
# Car Fleet

Saturday, 9 October 2021

2:15 PM

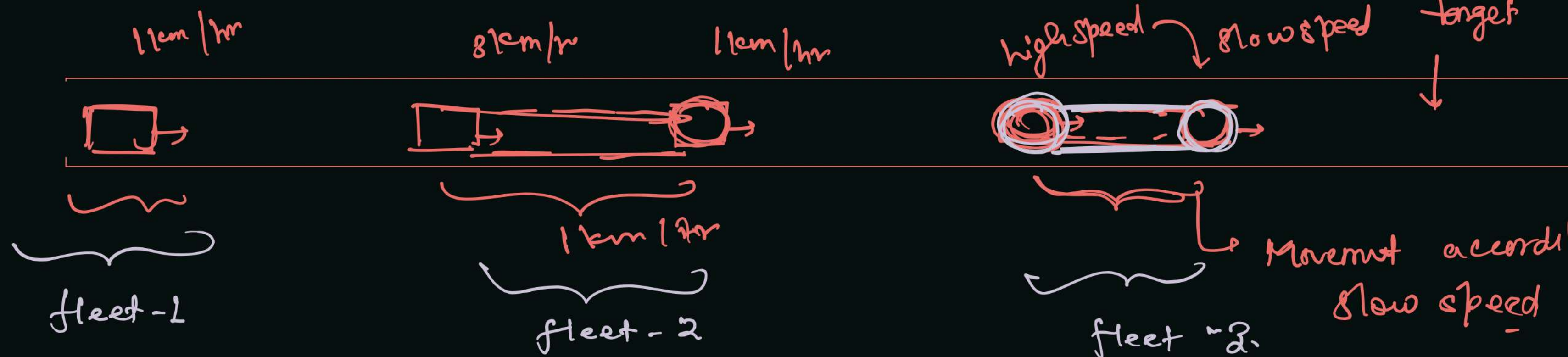
target = 12, position = [10, 8, 0, 5, 3], speed = [2, 4, 1, 1, 3]

Hint → For fleet,  
time required  
to reach  
at destination  
is an  
important  
factor.

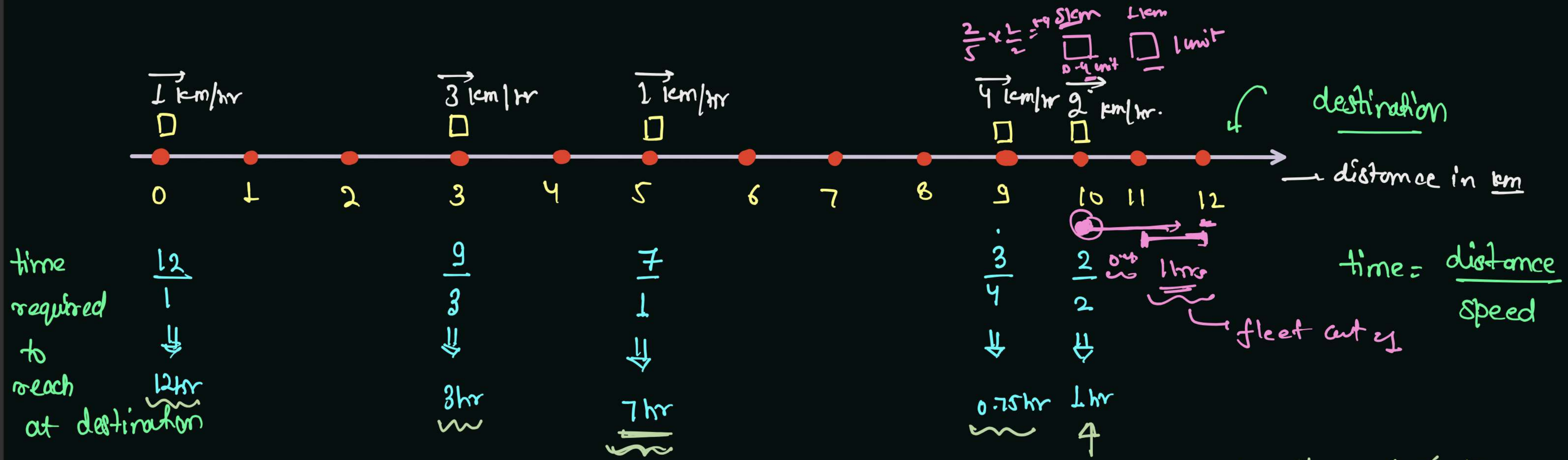


$$\text{time} = \frac{\text{dist}}{\text{speed}}$$

$$= \frac{2}{3}$$







Increment in fleet  
 $\text{time}[i] > \text{maxTime}$

$\text{if}(\text{time}[i] \geq \text{maxTime}) \{$   
 $\text{fleetCount} = \text{fleetCount} + 1$   
 $\}$

$\text{maxTime} = 12$   
 $\text{fleetCount} = 3$





$N = 100$ 

Smallest number 'S' such that multiplication of digit is equal to 'N'.

Ex: 545 ✓

554 ✓

455 ✓

2255 ✓

2525 ✓

⋮

Smallest Number = Result

455

first  
we  
in k  
size  
window

Smallest

- less digit
- increasing in order

factor of 100 is responsible for 5.

$$\frac{100}{2} = \frac{50}{2} = \frac{25}{5} = \frac{5}{5} = 1$$

give chance to max digit

$$\frac{100}{5} \rightarrow \frac{20}{5} \rightarrow \frac{4}{4} \rightarrow 1$$

5 5 4 ✓

$$\text{str} = \text{num} + \text{str} \rightarrow O(n)$$

2255 } Smallest X  
455 } Smallest

num + str }  $O(n)$

str + num } string  
builder  
 $O(n) \rightarrow O(2n) = O(n)$

9x  
8x  
7x  
6x  
5x  
4x



# First -ve in every k-Size Window

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$$4+3=7 > 4$$

$$k=3$$

$$i+k > \text{-ve index}$$

0 1 2 3 4 5 6 7 8  
 {12, -1, -7, 8, -15, 30, 16, 28}

$$\text{-ve index} = 8 \text{ } \cancel{4} \text{ } \cancel{2} \text{ } \cancel{1}$$

why from last to first

first -ve

$$k=4$$

Step 1

\* Mark -ve index from last k size window

$$8+2=10$$

1 1 2 4 4 0

0 1 2 3 4 5 6 7 8 9 10 11 12 13  
 5 7 -2 6 4 -1 -7 9 8 -2 2 6 -1 -7

2 2 2 2 6 2 6 9 9 9 12 Result

$$14-4+1$$

$$size=11$$

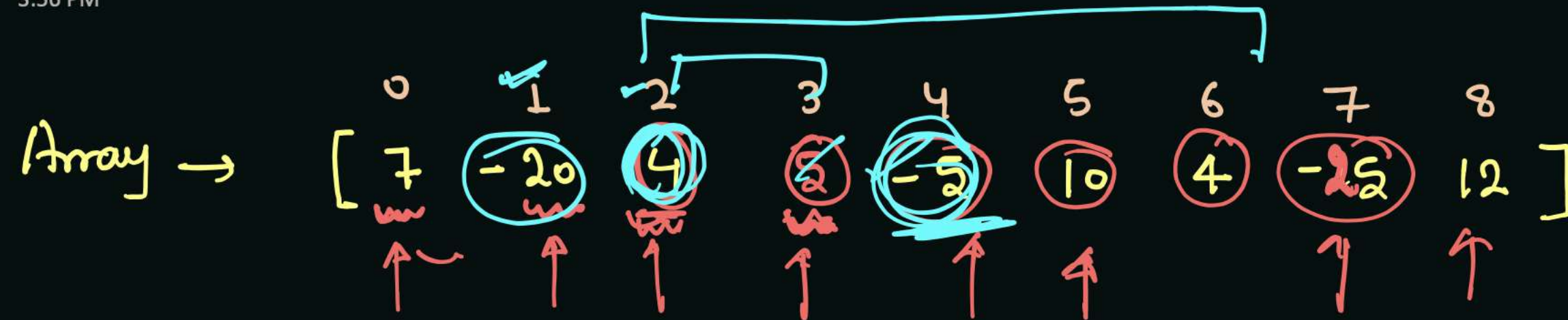
$$\text{result} = n-k+1$$

last Neg = 14  
 13  
 12  
 9  
 8  
 2



# Kadane's Algorithm

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csun = ~~0~~ ~~7~~ ~~-14~~ ~~4~~ ~~2~~ ~~4~~ ~~14~~ ~~18~~ ~~7~~ 12  
osun = ~~0~~ ~~7~~ ~~2~~ ~~14~~ 18

osun = Result

```
for(int i=0; i < arr.length; i++){  
    if(csum < 0){  
        csum = arr[i];  
    } else {  
        csum += arr[i];  
    }  
    osun = Math.max(osun, csum);  
}
```

# Min Length after removing elements from both end

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String →



Remove

Similar Ends

↳ Not Equal but similar

Ex

`a a a b c a`

✓

`a b c g g h a a s`

✓

and so on.....