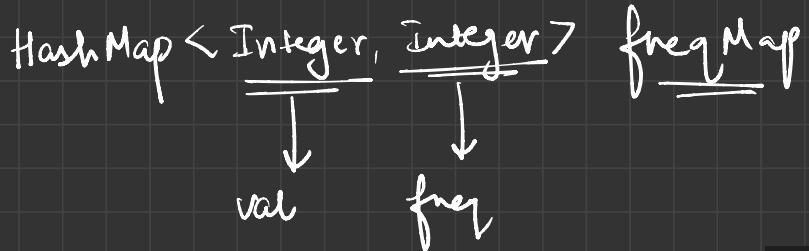




Peter and Special Number

$$\text{arr}[] = \{ 1, 2, 3, 5, 2, 5, 5, 3, 5, 5 \}$$

<u>num</u>	<u>freq</u>	
1	1	✓ sp. No.
2	2	✓ sp. No.
3	2	X
5	5	✓ sp. No.
→ <u>ans = 5</u>		



key	freq
2	2
3	2
1	1
→ 5	5

$sp = \cancel{2} / \cancel{5}$

$key = 5$
 $freq = 5$

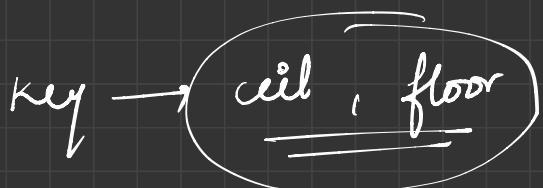
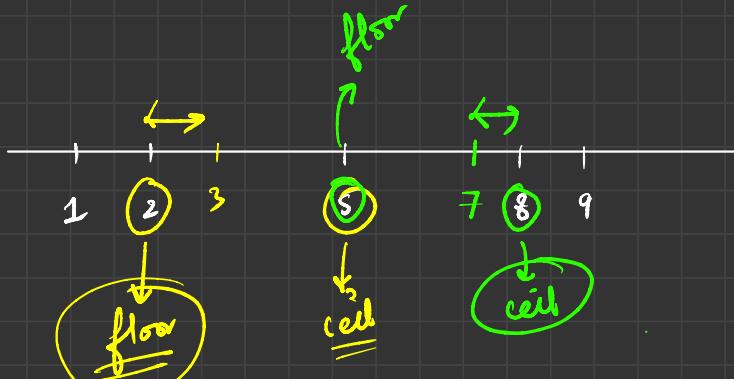
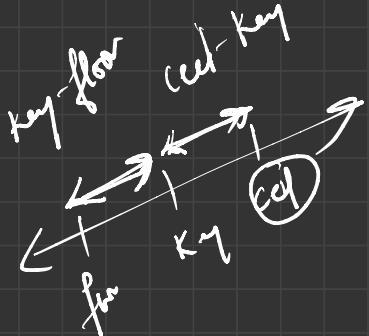
TC: O(N) SC: O(N)

```

int sp = -1;
for (int key : fmap.keySet()) {
    int freq = fmap.get(key);
    if (key == freq) {
        // special number
        if (key > sp) {
            if special number sto
            sp = key;
        }
    }
}
return sp;
    
```

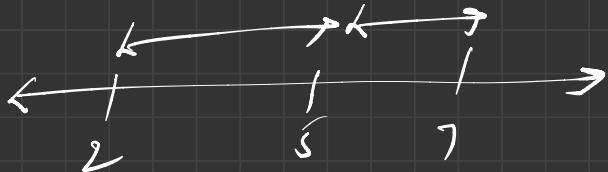
$$\text{arr}[] = \{ 1, 2, 5, 8, 9 \}$$

Key = 7



\rightarrow abs diff | $\text{key} - \text{ceil}$
 \rightarrow abs diff | $\text{key} - \text{floor}$

$$5 - 2 = 3 \quad 7 - 5 = 2$$



$$d1 = 3$$

$$d2 = 2$$

$$\underline{d1 < d2}$$

$$d1 > d2 \rightarrow \text{cell}$$

```

public static int minDifference(int[] arr, int key) {
    // Write your code here

    int ceil = 8;
    int floor = 5

    int lo = 0;
    int hi = arr.length - 1;

    while (lo <= hi) {
        int mid = (lo + hi) / 2;

        if (arr[mid] == key) {
            return arr[mid];
        } else if (arr[mid] > key) {
            // here arr[mid] > key, hence this can be your potential just greater value
            ceil = arr[mid];
            hi = mid - 1;
        } else {
            // here arr[mid] < key, hence this can be your potential just smaller value
            floor = arr[mid];
            lo = mid + 1;
        }
    }

    if (ceil == -1) {
        return floor;
    }

    if (floor == -1) {
        return ceil;
    }

    int d1 = key - floor;
    int d2 = ceil - key; → 8 - 7 = 1

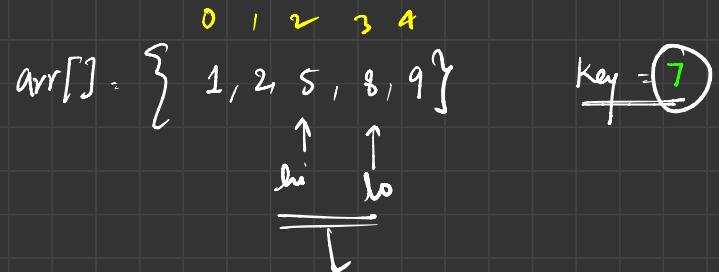
    if (d1 < d2) {
        return floor;
    } else {
        return ceil;
    }
}

```

$7 - 5 = 2$

$8 - 7 = 1$

→ 8 → ⑧



Y cash And Manufacturing

$\text{arr}[] = \{ 1, 2, 5, 3 \}$

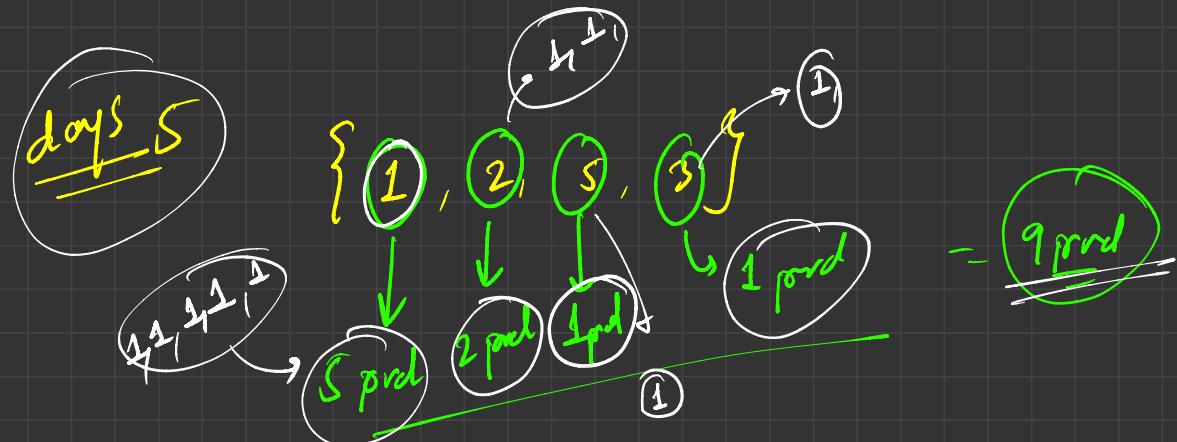
\downarrow

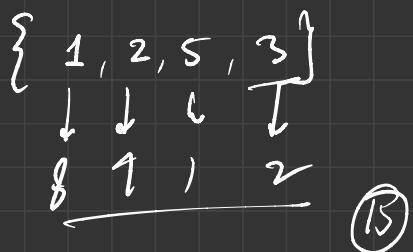
2 days to produce 1 prod

1 day to produce 1 product

8 day for 1 prod

3 day for 1 prod



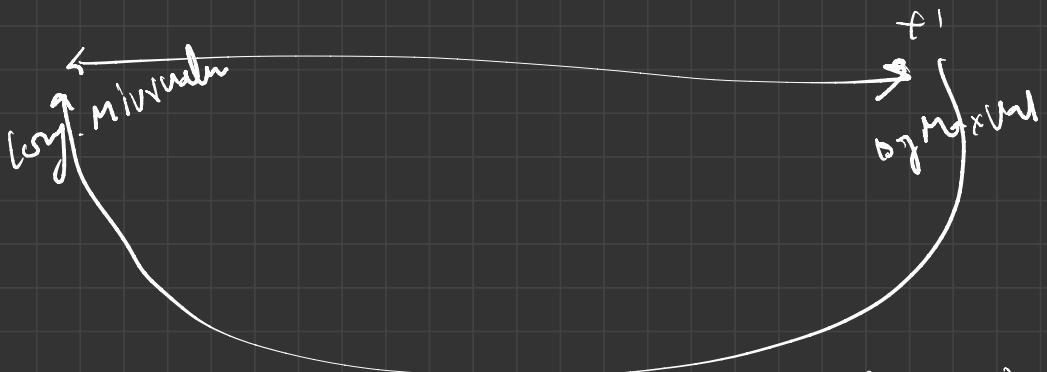


$\frac{20 \text{ pound}}{9 \text{ pound}}$

$k = \frac{15 \text{ pound}}{\text{unit}}$



pAns = ~~10 days~~ ~~8 days~~



$$= \frac{(lo + hi)}{2}$$

$a = \text{Long_MAX_value}$

$$= \frac{lo}{2} + \frac{hi}{2}$$

$b = 1$

$c = \frac{a+ b}{2}$
Long_MIN_value

$$= \frac{lo}{2} + \frac{lo}{2} - \frac{lo}{2} + \frac{hi}{2}$$

$\boxed{\text{mid} = lo + \frac{(hi-lo)}{2}}$

$$\{ \textcircled{1}, \textcircled{2}, \textcircled{3}, \textcircled{5} \} \rightarrow S/3 = 1$$
$$\{ \textcircled{1}, \textcircled{2}, \textcircled{3}, \textcircled{5} \} \rightarrow S/5 = 1$$
$$\{ \textcircled{1}, \textcircled{2}, \textcircled{3}, \textcircled{5} \} \rightarrow S/2 = 2$$

5 days $S/1 = 5 \text{ prod}$

$$\{ 1, 2, 3, 5 \}$$

