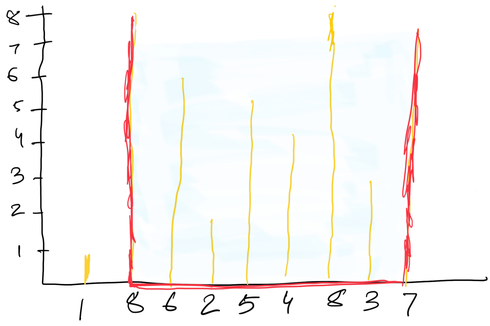
Container with most water

height = [1, 8, 6, 2, 5, 4, 8, 3, 7]

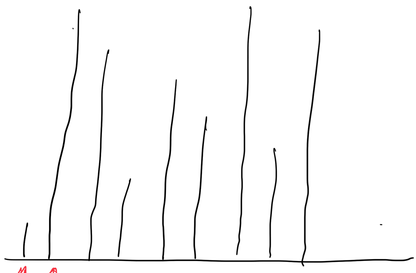
return max amount of water container can store



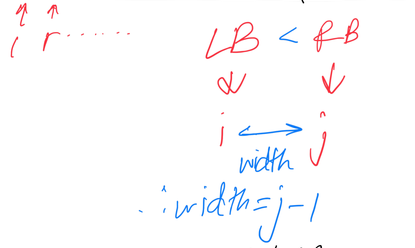

① Brute force

to make container simply pick two lines and find kitna paani ke sakta ha

left boundary & right boundary



```
maxWater = 0
for (i=0; i<n; i++) {
    for (j=i+1; j<n; j++) {
        width = j - i;
        height = min(height[i], height[j]);
        area = width * height;
        maxWater = max(maxWater, area);
    }
}
```

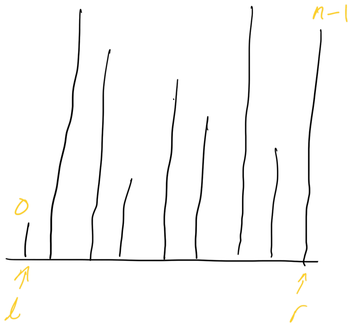



∴ width = j - i

time complexity : $O(n^2)$

② Optimal approach

2 pointer approach




if height[r] > height[l]

l++

if height[l] > height[r]

r--

height will always be controlled by chotti wali line

so usse hi change karna hai

```
lp = 0, rp = n-1, maxWater = 0
while (lp < rp) {
    width = rp - lp
    height = min(height[lp], height[rp])
    area = width * height
    maxWater = max(area, maxWater)
    height[lp] < height[rp] ? lp++ : rp--;
}
return maxWater;
```

can also write like this

```
if (height[lp] < height[rp]) {
    lp++;
} else {
    rp--;
}
```

time complexity : $O(n)$