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(i) longest substring with non-repeating characters :-

Example

SI = 11

a	
b	2
c	
d	
e	

19 + 4.5 \Rightarrow
20 +

\rightarrow Acquire & release strategy
 \rightarrow Acquire ^{one by one} & store it in }
hashmap.

\rightarrow Till, the size of each element is maximum upto 1 only.

And, if its size of hashmap is greater than previous stored answer, update it with the current hashmap elements.

→ when any element comes twice, then start relating the elements from 'left hand'.

Release all elements in the hash must have the max. size of one only.

→ Then again start the process of acquiring.

$j \rightarrow$ left hand. \rightarrow starting (-1)

$i \rightarrow$ right hand \rightarrow starting (0)

So, an array = ~~$(j+1 \dots i+1)$~~

$(j+1 < \text{subshy} < i+1)$