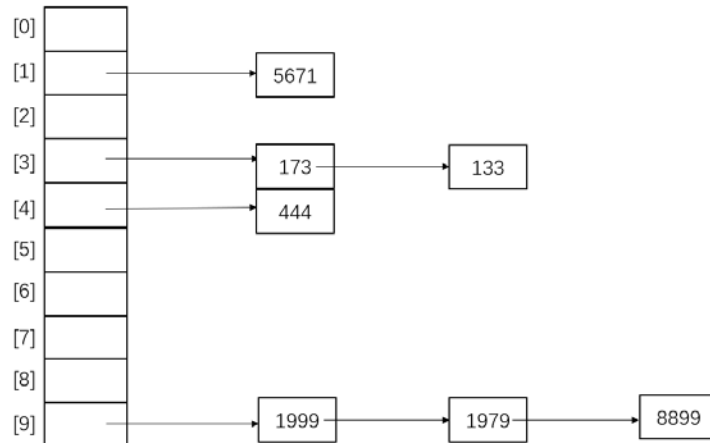


Assignment7

Zhicun Chen

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1.(a) The result is the picture below:



(b) The result is the picture below:

1979	5671	1999	133	173	444				8899
[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]

(c) The result is the picture below:

1979	5671		133	173	444			1999	8899
[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]

(d) The result is the picture below:

	5671	1999	133	444	173		1979		8899
[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]

2. We have two formulas:

$$U(L) = \frac{1}{2} \left[1 + \left(\frac{1}{1-L} \right)^2 \right]$$

$$S(L) = \frac{1}{2} \left[1 + \frac{1}{1-L} \right]$$

Therefore, we can solve this problem by solving two inequalities below.

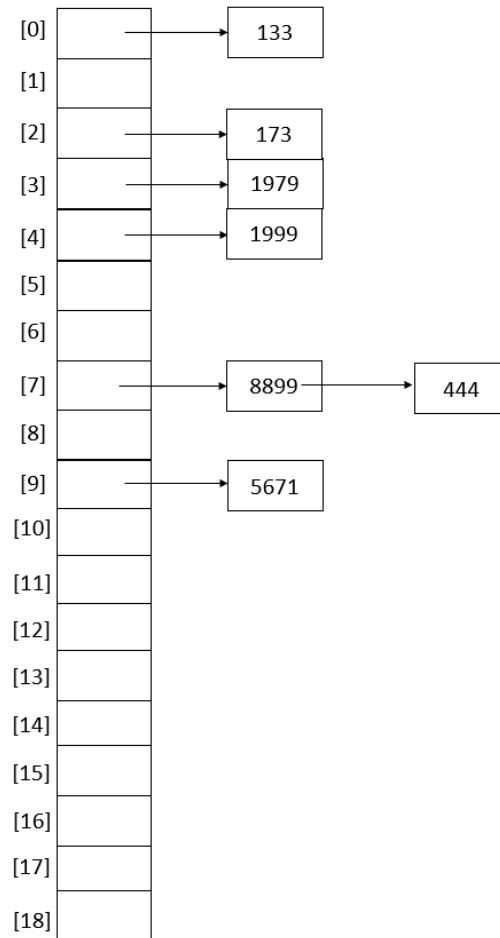
$$U(L) = \frac{1}{2} \left[1 + \left(\frac{1}{1-L} \right)^2 \right] \leq 13$$

$$S(L) = \frac{1}{2} \left[1 + \frac{1}{1-L} \right] \leq 10$$

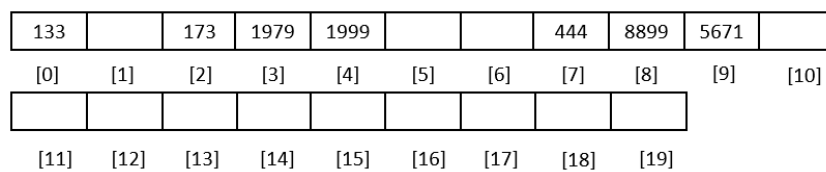
And we can calculate that the load factor must be less than and equal to 0.8. So, the n should be bigger than $1000/0.8=1250$. Pick the smallest prime number bigger than 1250, we have $n=1259$.

Therefore, the hash table's size should be 1259.

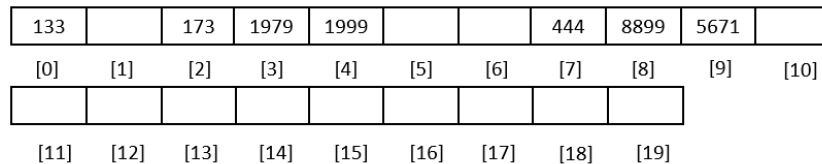
3. (a) The result is the picture below:



(b) The result is the picture below:



(c) The result is the picture below:



(d) The result is the picture below:

