Linear Array:

N = 13

4k+3 prime = 19

- 27 => 27 % 13 = (1)
- 53 => 53 % 13 = 1 (collision) / q = 53/13 = 4 (offset) / ip = (53+4) % 13 = (5)
- 13 => 13 % 13 = (0)
- 10 => 10 % 13 = (10)
- 138 => 138 % 13 = (8)
- 109 => 109 % 13 = 5 (collision) / q = 109/13 = 8 -> offset / ip = (109+8) % 13 = 0 (collision)
  ip = (117+8) % 13 = 8 (collision) / ip = (125+8) % 13 = (3)
- 49 => 49 % 13 = 10 (collision) / q = 49/13 = 3 -> offset / ip = (49+3) % 13 = 0 (collision)
  ip = (52+3) % 13 = 3 (collision) / ip = (55+3) % 13 = (6)
- 174 => 174 % 13 = 5 (collision) / q = 174/13 = 13 / 13 % 13 = 0 / offset = 19 / ip = (174+19) % 13 = (11)
- 26 => 26 % 13 = 0 (collision) / q = 26/13 = 2 -> offset / ip = (26+2) % 13 = (2)
- 24 => 24 % 13 = 11 (collision) / q = 24/13 = 1 -> offset / ip = (24+1) % 13 = (12)

Array:

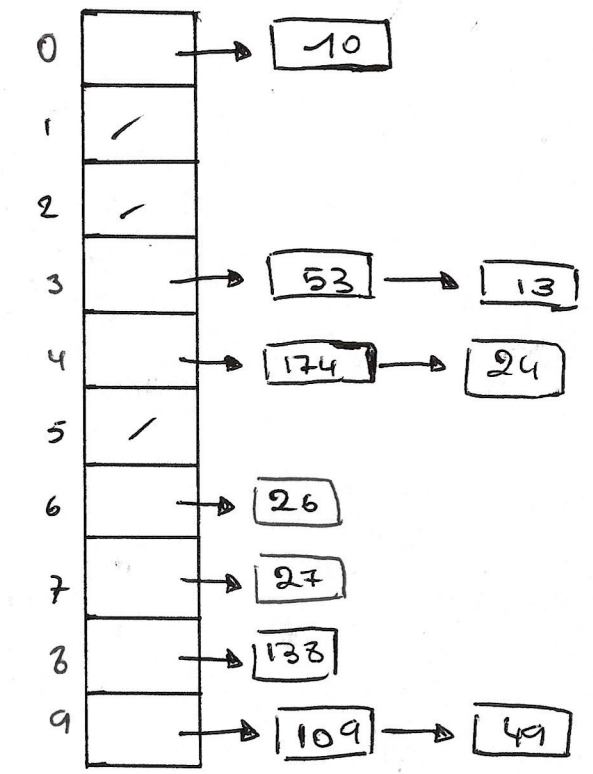
0	1	2	3	4	5	6	7	8	9	10	11	12
13	27	26	109		53	49		138		10	174	24

Bucket hashing:

N = 10

- 27 => 27 % 10 = 7
- 53 => 53 % 10 = 3 ¹
- 13 => 13 % 10 = 3 ²
- 10 => 10 % 10 = 0
- 138 => 138 % 10 = 8
- 109 => 109 % 10 = 9 ¹
- 49 => 49 % 10 = 9 ²
- 174 => 174 % 10 = 4 ¹
- 26 => 26 % 10 = 6
- 24 => 24 % 10 = 4 ²

Array:



2. Fill in the table based on exercise 1

Number of comparisons to retrieve this element

Key	Linear array - (Length of Collision Path +1)	Buckets - (# of elements in linked list compared)
53	1+1 = 2	1
138	0+1 = 1	1
109	3+1 = 4	1
49	3+1 = 4	2
174	1+1 = 2	1
26	1+1 = 2	1