Trupti Thakur

CMSC -204

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Hashing Lab

1. Linear array of 10 elements using division hashing and the linear-quotient collision path algorithm

**Array:**

Pk = 27 53 13 10 138 109 49 174 26 24 , N =10

13

27

26

109

53

49

138

10

174

|  |
| --- |
| 24 |

**0**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**11**

**12**

1. ip= 27 % 13 = 1 , Array [1] =27
2. ip = 53 % 13 = 1

q=53/13= 4 , 4 % 13 = 4, offset =4

ip = (1 + 4)%13 = 5, Array[5] = 53

1. ip = 13 % 13 = 0 Array [0] =13
2. ip = 10 % 13 = 10 Array[10] = 10
3. ip = 138 % 13 = 8 Array[ 8] = 138
4. ip = 109 % 13 = 5 collision 1

q = 109 / 13 =8, 8 % 13 = 8 , Offset = 8

Ip= (5 + 8) % 13 = 0 collision 2

Ip=( 0 + 8) % = 8 collision 3

Ip= ( 8 + 8) % 13 = 3 Array [3] = 109

1. Ip= 49 % 13 = 10 collision 1

Q = 49 /13 = 3, 3 % 13 = 3 ,Offset = 3

Ip=( 10 + 3 ) % 13 = 0 = collision 2

Ip = ( 0 + 3 ) % 13 = 3 , collision 3

Ip = ( 3 + 3 ) % 13 = 6 , Array [6 ] = 49

1. Ip= 174 % 13 = 5 collision 1

Q = 174 / 13= 13, 13 % 13 = 0 ,Offset = 19

Ip = ( 5 + 19) % 13 = 11 Array [ 11] = 174

1. Ip = 26 % 13 = 0 collision 1

Q = 26 /13 = 2 , 2 % 13 = 2 , offset =2

Ip = ( o + 2) % 13 = 2 Array [2] = 26

10 ) ip = 24 % 13 = 11 collision 1

Q = 24 /13 = 1, 1 % 13 = 1 offset = 1

Ip= ( 11 + 1 ) % 13 = 12 Array [ 12] = 24

**B ) Bucket hashing of 10 elements (N=10) ip = (pk) % N**

Pk = 27 53 13 10 138 109 49 174 26 24 , N =10

**Array:**

**0**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

10

13

53

174

24

26

27

138

49

109

2)

Number of comparisons to retrieve this element

Buckets - (# of elements in linked list

compared)

Linear array -

(Length of

Collision Path +1)

Key

53

138

109

49

174

26

2 1

1 1

4 1

4

2

2 1

2 1