Q7.

H(k) = (k + 5) % 15

H(K) = (353 + 5) % 13 = 7

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  |  |  |  |

0 1 2 3 4 5 6 7 8 9 10 11 12

H(K) = (44 + 5) % 13 = 10

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  | 44 |  |  |

0 1 2 3 4 5 6 7 8 9 10 11 12

H(K) = (33 + 5) % 13 = 12

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (1 + 5) % 13 = 6

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | 1 | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (49 + 5) % 13 = 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (679 + 5) % 13 = 8

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 | 679 |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (253 + 5) % 13 = 8

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (269 + 5) % 13 = 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 269 | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (61 + 5) % 13 = 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 269  61 | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (86 + 5) % 13 = 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 86 | 269  61 | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

Q8.

Linear Probing

H(k) = (k + 5) % 15

H(K) = (353 + 5) % 13 = 7

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  |  |  |  |

0 1 2 3 4 5 6 7 8 9 10 11 12

H(K) = (44 + 5) % 13 = 10

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  | 44 |  |  |

0 1 2 3 4 5 6 7 8 9 10 11 12

H(K) = (33 + 5) % 13 = 12

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (1 + 5) % 13 = 6

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | 1 | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (49 + 5) % 13 = 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (679 + 5) % 13 = 8

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 | 679 |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (253 + 5) % 13 = 8

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (269 + 5) % 13 = 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 269 | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (61 + 5) % 13 = 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 269 | 49 | 61 |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (86 + 5) % 13 = 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 86 | 269 | 49 | 61 |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

Q9.

Double Hashing Probing

H(k) = (k + 5) % 15

H(K) = (353 + 5) % 13 = 7

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  |  |  |  |

0 1 2 3 4 5 6 7 8 9 10 11 12

H(K) = (44 + 5) % 13 = 10

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  | 44 |  |  |

0 1 2 3 4 5 6 7 8 9 10 11 12

H(K) = (33 + 5) % 13 = 12

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (1 + 5) % 13 = 6

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | 1 | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (49 + 5) % 13 = 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 |  |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (679 + 5) % 13 = 8

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 | 679 |  | 44 |  | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (253 + 5) % 13 = 8

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (269 + 5) % 13 = 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 269 | 49 |  |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (61 + 5) % 13 = 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 269 | 49 | 61 |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12

h(k) = (86 + 5) % 13 = 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 86 | 269 | 49 | 61 |  |  | 1 | 353 | 679 |  | 44 | 235 | 33 |

0 1 2 3 4 5 6 7 8 9 10 11 12