1. Ⅰ. 2-shingles set: {ac, cb, bc, bd}

Ⅱ. 2-shingles set: {ad, db, bc, ca}

Ⅲ. 2-shingles set: {cd, db, bd, da, ad}

Ⅳ. 2-shingles set: {bc, ca, ac, cb, bd}

Ⅴ. 2-shingles set: {bd, da, ad, dc, ca}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Ⅰ | Ⅱ | Ⅲ | Ⅳ | Ⅴ |
| Ac | 1 | 0 | 0 | 1 | 0 |
| Cb | 1 | 0 | 0 | 1 | 0 |
| Bc | 1 | 1 | 0 | 1 | 0 |
| Bd | 1 | 0 | 1 | 1 | 1 |
| Ad | 0 | 1 | 1 | 0 | 1 |
| Db | 0 | 1 | 1 | 0 | 0 |
| Ca | 0 | 1 | 0 | 1 | 1 |
| Cd | 0 | 0 | 1 | 0 | 0 |
| Da | 0 | 0 | 1 | 0 | 1 |
| Dc | 0 | 0 | 0 | 0 | 1 |

1. h1(x) = 7x + 1 mod 10

1 3 0 1 2

h2(x) = 8x + 2 mod 10

0 0 2 0 0

h3(x) = 6x + 2 mod 10

0 2 0 0 0

1. h1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Ⅰ-Ⅱ | Ⅰ-Ⅲ | Ⅰ-Ⅳ | Ⅰ-Ⅴ | Ⅱ-Ⅲ | Ⅱ-Ⅳ | Ⅱ-Ⅴ | Ⅲ-Ⅳ | Ⅲ-Ⅴ | Ⅳ-Ⅴ |
| Col/Col | 0.143 | 0.125 | 0.800 | 0.125 | 0.286 | 0.286 | 0.286 | 0.111 | 0.429 | 0.250 |
| Sig/Sig | 0.333 | 0.000 | 1.000 | 0.667 | 0.000 | 0.333 | 0.333 | 0.333 | 0.333 | 0.667 |