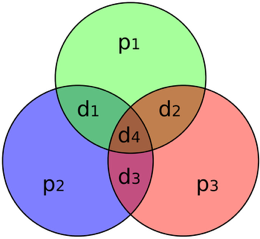
Hamming Code (Encode) | 汉明码

Figure 1  
Hamming(3,1) - 2  
Hamming (7,4) - 3  
Hamming(15, 11) - 4  
Hamming(31, 26) - 5

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Bit Position*** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| *Data Bit* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Bits (k) () | Parity Bits (m) () | Hamming Code Bits (n) () | Parity | 原则 | |
|  |  |  | Odd () | 配奇 | Even () | 配偶 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Bit Position* | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | … | 31 |
| ***Hamming code bits*** *Encoded data bits* | | | ***p1*** | ***p2*** | ***d1*** | ***p4*** | ***d2*** | ***d3*** | ***d4*** | ***p8*** | ***d5*** | ***d6*** | ***d7*** | ***d8*** | ***d9*** | ***d10*** | ***d11*** | ***p16*** | ***d12*** | ***d13*** | ***d14*** | ***d15*** | ***…*** | ***d26*** |
| *Parity bit coverage* |  | ***p1*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p2*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p4*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p8*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p16*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Bit Position* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | … | 31 |
| ***Hamming code bits*** | ***p1*** | ***p2*** | ***d1*** | ***p4*** | ***d2*** | ***d3*** | ***d4*** | ***p8*** | ***d5*** | ***d6*** | ***d7*** | ***d8*** | ***d9*** | ***d10*** | ***d11*** | ***p16*** | ***d12*** | ***d13*** | ***d14*** | ***d15*** | ***…*** | ***d26*** |
| *Data Bit* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |

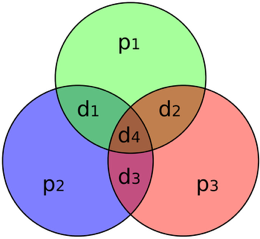
Hamming Code (Decode) | 汉明码

Figure 2  
Hamming(3,1) - 2  
Hamming (7,4) - 3  
Hamming(15, 11) - 4  
Hamming(31, 26) - 5

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Bit Position* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | … | 31 |
| ***Hamming code bits*** | ***p1*** | ***p2*** | ***d1*** | ***p4*** | ***d2*** | ***d3*** | ***d4*** | ***p8*** | ***d5*** | ***d6*** | ***d7*** | ***d8*** | ***d9*** | ***d10*** | ***d11*** | ***p16*** | ***d12*** | ***d13*** | ***d14*** | ***d15*** | ***…*** | ***d26*** |
| *Data Bit* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Bits (k) () | Parity Bits (m) () | Hamming Code Bits (n) () | Parity | 原则 | |
|  |  |  | Odd () | 配奇 | Even () | 配偶 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Bit Position* | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | … | 31 |
| ***Hamming code bits*** *Encoded data bits* | | | ***p1*** | ***p2*** | ***d1*** | ***p4*** | ***d2*** | ***d3*** | ***d4*** | ***p8*** | ***d5*** | ***d6*** | ***d7*** | ***d8*** | ***d9*** | ***d10*** | ***d11*** | ***p16*** | ***d12*** | ***d13*** | ***d14*** | ***d15*** | ***…*** | ***d26*** |
| *Parity bit coverage* |  | ***p1*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p2*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p4*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p8*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |
|  | ***p16*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | … |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Bit Position*** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| *Data Bit* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |