12. Bold numbers are the error bits

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Original Transmission | | | | | | | Parity bits |
| **1** | 1 | **1** | 1 | 0 | 0 | 1 | 1 |
| **0** | 1 | **1** | 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| Parity Byte | | | | | | |  |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |

The general set of circumstances under which 4-bit errors will be undetected are when its two bits from two rows that swap from 1 to 0 and 0 to 1.

c. Advantages

* CRC has better error detection because it is more reliable than internet checksum when it comes to detecting errors in data. This is because the CRC algorithm is more complex.
* CRC has a larger range of errors, it can detect dingle-bit errors, burst errors and some other errors.

Disadvantages

* CRC requires more resources to do because it has more complicated algorithms. In other words it is more expensive
* CRC requires more overhead because the algorithms are more complicated.