

20/11/20

CN LAB

```
String toBin(long long int num)
    String bin = BitSet<24>(num).toString();
    return bin;
```

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long long int toDec(String bin)
    long long int str = BitSet<24>(num).toUnsignedLong();
    return str;
```

```
void CRC(String dataword, String generator)
    int L-gen = generator.length();
    long long int gen = toDec(generator);
    long long int dword = toDec(dataword);
    long long int dividend = dword << (L-gen-1);
    int shift = (int) ceil(log2(dividend+1)) - L-gen;
    long long int rem;
    while ((dividend >= gen) || (shift >= 0))
        rem = (dividend >> shift) ^ gen;
        dividend = (dividend & ((1 << shift) - 1)) | (rem << shift);
        shift = (int) ceil(log2(dividend+1)) - L-gen;
    long long int codeword = (dword << (L-gen-1)) | dividend;
    cout << "Remainder: " << toBin(dividend) << endl;
    cout << "Codeword: " << toBin(codeword) << endl;
```