Results of the LLL Reduction Application (Applied to the Low-Density Subset Sum Problem)

The problem is to find a sum of the form:

$$s = \sum_{k=1}^{8} a_k 2^k \, , 0 \leq a_k \leq 1, a_k \in Z_2$$

Reference: Algorithm 2.6.3 (LLL Algorithm) © Henri Cohen 1996 ***A Course in Computational Algebraic Number Theory*** and the ***Handbook of Applied Cryptography*** © Alfred J. Menezes, Paul C. van Oorschot, and Scott A. Vanstone 1997.

the matrix to be reduced is:

```
  1.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   4.00
  0.00   1.00   0.00   0.00   0.00   0.00   0.00   0.00   8.00
  0.00   0.00   1.00   0.00   0.00   0.00   0.00   0.00  16.00
  0.00   0.00   0.00   1.00   0.00   0.00   0.00   0.00  32.00
  0.00   0.00   0.00   0.00   1.00   0.00   0.00   0.00  64.00
  0.00   0.00   0.00   0.00   0.00   1.00   0.00   0.00 128.00
  0.00   0.00   0.00   0.00   0.00   0.00   1.00   0.00 256.00
  0.00   0.00   0.00   0.00   0.00   0.00   0.00   1.00 512.00
  0.50   0.50   0.50   0.50   0.50   0.50   0.50   0.50 656.00
```

the reduced matrix is:

```
  1.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   4.00
 -2.00   1.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
  0.00  -2.00   1.00   0.00   0.00   0.00   0.00   0.00   0.00
  0.00   0.00  -2.00   1.00   0.00   0.00   0.00   0.00   0.00
  0.00   0.00   0.00  -2.00   1.00   0.00   0.00   0.00   0.00
  0.00   0.00   0.00   0.00  -2.00   1.00   0.00   0.00   0.00
  0.00   0.00   0.00   0.00   0.00  -2.00   1.00   0.00   0.00
  0.50   0.50  -0.50   0.50   0.50  -0.50   0.50  -0.50   0.00
 -0.50  -0.50   0.50  -0.50  -0.50   0.50  -2.50   1.50   0.00
```

sum: 328

```
x[i]    a[i]

0         2
0         4
1         8
0        16
0        32
1        64
0       128
```

1 256

Another problem (0 = no, 1 = yes) = 0