



Problem 7. «Algebraic cryptanalysis»

Bob decided to construct a new stream cipher **BOB-0.1**.

He used the binary key of length 8, say $K = (k_1, \dots, k_8)$. Then he generated the binary sequence β such that $\beta_n = k_n$ for all $n = 1, \dots, 8$ and for $n > 8$ it is defined as $\beta_n = \beta_{n-1} \oplus \beta_{n-8}$. Then Bob constructed the secret sequence γ for XORing it with a binary plaintext. The sequence γ is generated by the following rule: $\gamma_n = \beta_n \cdot \beta_{n+2} \oplus \beta_{n+7}$ for $n \geq 1$.

Alice intercepted the eight secret bits of γ after the first 1200 missed bits. These bits are 00100001. Is she able to recover the original key K ?

