

Secret Sharing Progress

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Report

We have a dealer who wishes to share the secret s with n persons P_1, \dots, P_n . Each person gets a share of the secret and only a subset of authorized persons can unlock the secret. We have a threshold t where only t participants can unlock the secret but $t-1$ persons learn nothing about the secret. Share is a randomized algorithm where any input $m \in M$ outputs n -tuple of shares $(s_1 \dots s_n)$. Reconstruct is a deterministic algorithm give t -tuple of shares, outputs a message in M . A correctness requirement is satisfied that the probability that the authorized subset give m is 1.

For any possible secrets m and m' definitions (secret sharing security via identical distributions and secret sharing security with adversaries) requires that shares should look exactly the same. Hence we say that secret sharing t out of n is perfectly secure.

For 2 out of n , our secret $m \in \{0,1\}^n$, we randomly choose a string say $s_1 \in \{0,1\}^n$ then $s_2 = s_1 \oplus m$.