

A Cryptographic Application of Number Systems Base Conversion

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We revisit the problem of conversion between number systems and ask the following question: given a nonnegative decimal number d , what is the value of the digit at position j in the corresponding base b number? Thus, we do not require the knowledge of other digits except the one we are interested in. Accordingly, we present a conversion function that relates each digit in a base b system to the decimal value that is equal to the base b number in question. We also show some applications of this new algorithm in the areas of parallel computing, cryptography and steganography. To this end, the suggested application to the last two areas is as follows. The sender and receiver can agree before hand on the base and positions of digits that carry the real information. Thus, for example, the sender can flood a channel with ones and zeros. While other users think of this as noise, the receiver will know what to do with the hidden information.