

To carry out a Differential Cryptanalysis attack, you must test input pairs and the difference between their outputs. Start this by making a distribution table; put all possible input pairs through Sbox S0, then store the xors of the pairs and the xors of the output. This results in a sixteen by four array of potential keys.

The next step revolves around finding potential values for the keys. S0 turns out to have more threes than any other number. This can be exploited by testing inputs with an output xor of three. Take one of these xors of three, and xor it with all other inputs that also xor'd to three. This process gives a set of potential keys.

Do this process again, this time using a different pair of inputs (whose output also xor's to three). The overlap of these potential key sets should contain the real key.