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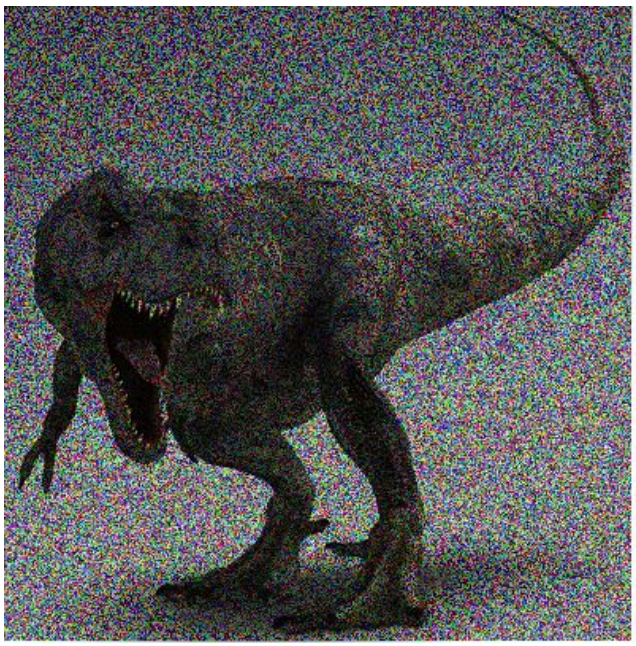
Assignment2: The Magic of XOR

Unmodified image:

Image after And'ing the T-rex(1), then And'ing using the RNG key and output image (2):



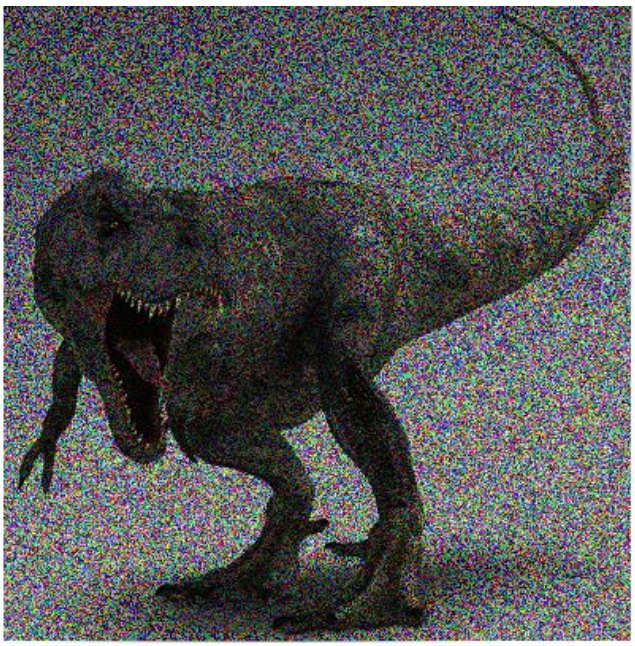
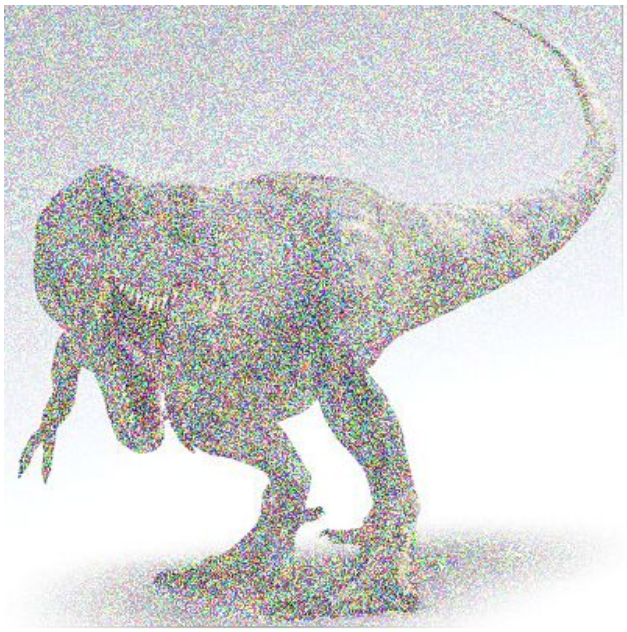


Image after Or'ing the T-rex(1), then Or'ing using the RNG key and output image (2):



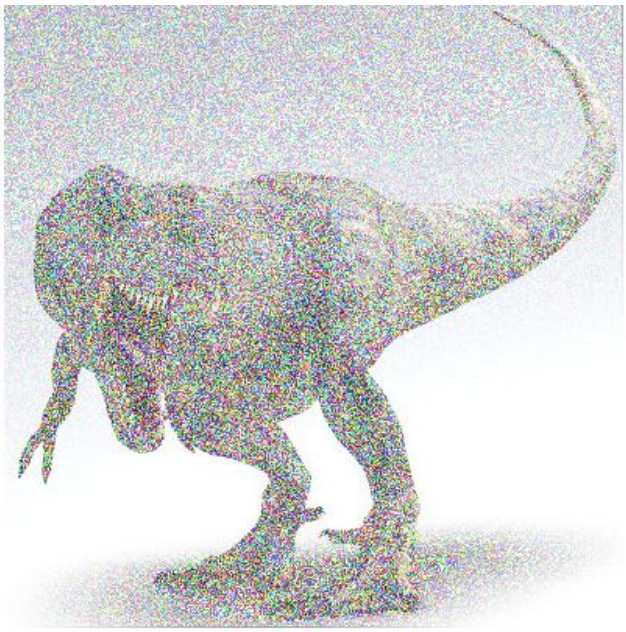
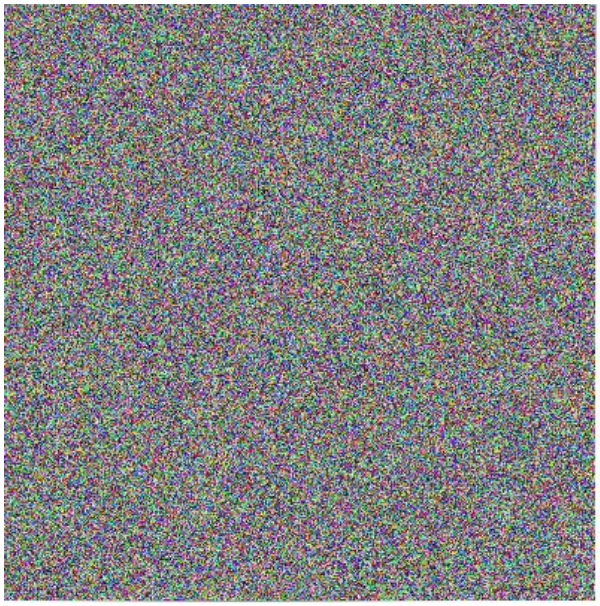


Image after XOR'ing the T-rex (1), then XOR'ing using the RNG key and output image (2):



Observations:

Only the XOR operations resulted in an image that was unrecognizable in the encrypted state and fully restored in the unencrypted state. RGB (0, 0, 0) is black, and (255, 255, 255) is white. Therefore, darker colors correspond to lower numbers, and vise versa. The AND operations resulted in an image that grew much darker; this is due to many of the bits for each RGB value getting set to 0. The OR operations resulted in an image that grew much lighter; this is due to many of the bits for each RGB value getting set to 1. Additionally, the images are still recognizable in the AND'ed and OR'd forms, meaning many of the bits (¾ on average) have been unchanged.