Problem 3 (due Monday, October 12)

An outcome of flipping a coin n times is called k-lucky if it contains a pattern which is repeated k times in a row. For example, the outcome THHTHTHTTH (T stands for “tales” and H for “heads”) of flipping a coin 10 times is 3-lucky since HT appears 3 times in a row. Let P_n be the probability that flipping a coin n times is 6-lucky. Find t as small as you can so that $P_n<t$ for all n.

Only one solution was received, form Yuqiao Huang. His solution and some additional comments are contained in the following link Solution