

1145-05-1639 **Chetak Hossain*** (chetak.hossain@gmail.com), NCSU Dept of Math, BOX 8205 NCSU,
Raleigh, NC 27695. *Combinatorics of the Boolean-Catalan Numbers*. Preliminary report.

The sequence OEIS A071356 is the coefficient sequence of an ordinary generating function similar to the Catalan numbers. We show that the sequence counts several families of combinatorial objects using generating function arguments. Specifically, a family of underdiagonal lattice paths, a family of pattern avoiding permutations, and a family of pattern avoiding inversion sequences. Furthermore, we construct bijections between the families. More specifically, we construct two surjective maps from all permutations to the lattice paths, whose fibers are intervals of the weak order and the equivalence classes of an equivalence relation on posets defined using pattern avoidance. In one case, the bottom elements of the interval are the pattern avoiding permutations in question. In the other case, the reverse Lehmer codes of the top elements of the intervals are the pattern avoiding inversion sequences. (Received September 23, 2018)