Bilkent University
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Problem Of The Month

Term: March 2015

In each step one can choose two indices $1 \leq k, l \leq 100$ and transform the 100 tuple $(a_1, \ldots, a_k, \ldots, a_l, \ldots, a_{100})$ into the 100 tuple $(a_1, \ldots, \frac{a_k}{2}, \ldots, a_l + \frac{a_k}{2}, \ldots, a_{100})$ if a_k is an even number. We say that a permutation $(a_1, \ldots, a_{100})$ of $(1, 2, \ldots, 100)$ is *good* if starting from $(1, 2, \ldots, 100)$ one can obtain it after finite number of steps. Find the total number of distinct good permutations of $(1, 2, \ldots, 100)$.