This thesis deals with a compression of bitmap indexes. Bitmap indexes may be reduced through specialized algorithms which look for long runs of identical bits. To improve the compression ratio, it is useful to reorder the rows of the index. Even though the problem of optimal reordering is NP-hard, there are efficient heuristics which reorder the index in polynomial time. Recent results suggest that Gray code based sorting provides an effective alternative to the classical lexicographical sorting. In this thesis, we replace the classical Gray code with a novel construction which generates a compressed Gray code. We describe this construction in detail and use both real-life and randomly generated datasets to test whether the novel construction is more efficient than the classical one when used in the WAH compression scheme.