I. Let $G$ be a simple cycle of length $n$. For its RW Markov chain (with loop probabilities of 1/2), compute a lower bound for $1 - \lambda_2$ by the canonical path method by making use of $\phi \geq \frac{1}{2^n}$, and $1 - \lambda_2 \geq \frac{\phi^2}{2}$.

II. Let $G$ be a degree $d$ undirected graph, and let its RW Markov chain be ergodic. (i.e. $G$ is connected and aperiodic). Compute a lower bound for $1 - \lambda_2$ by the canonical path method.

III. If, in addition, $G$ has a spanning tree which is a complete binary tree, compute a lower bound for $1 - \lambda_2$ by applying $1 - \lambda_2 \geq \frac{1}{\phi}$

IV. Analyze the bit-saving algorithm for any general $\lambda_2 < 1$, and any BPP algorithm with an error of $\epsilon$. The algorithm samples the next address after a single step of the walk.