COMP3121 Assignment1 - Q4

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Answer

Use binary search for the given array. For each search, if f(m) equal to m+1 (indicating that the missing term is not between index 0 and m), next binary search the right side, else binary search the left side. We keep doing binary search until we find the term i which satisfies $f(i) = i + 2$ and $f(i-1) = i + 1$, and we get the missing term k = i - 1. As the time complexity of binary search is O(logn) and there are $2^n - 1$ terms in the array, it most accesses $log2^n = n$ elements of A.